

Subject: FINANCIAL AND MANAGEMENT ACCOUNTING

Credits: 4

SYLLABUS

Introduction to Financial Accounting

Introduction, Scope and Objectives, Branches of Accounting, Accounting Principles and Standards.

Financial Accounting Framework

Journalizing Transactions: Recording of Transaction, Advantages of Journal, Classification of Accounts and its Rules, Compound Entries; Ledger: Introduction, Posting and its Rules; Trial Balances: Trial Balance Preparation, Errors Disclosed by Trial Balance, Methods of Allocating Errors in Trial Balance.

Basic Principles of Preparing Final Account

Capital Expenditure; Revenue Expenditure; Deferred Revenue Expenditure; Capital Receipts; Income Statements: Profit and Loss Statement; Balance Sheet; Final Accounts: Adjustments.

Concept of Management Accounting

Principles, Functions and Scope of Management Accounting; its Limitations; Management Accountant: Functions; Basic Cost Concepts; Components of Total Cost; Elements of Cost and Cost Sheet; Methods, Systems and Techniques of Costing.

Tools of Financial Analysis

Budgets: Introduction, Advantages and Disadvantages, Essentials of Budgetary Control, Budget Manual and its Working, Budget Key Factor; Fixed and Flexible Budgets; Functional and Master Budgets: Sales and Cash Budget; Zero Based and Incremental Budgets.

Suggested Reading:

1. Financial Accounting: A Managerial Perspective, HPH by Narayanswamy, Publisher: Prentice Hall of India Private Limited
2. Financial Accounting for Business Managers, by Bhattacharyya, Ashish K Publisher: Prentice Hall of India Private Limited
3. Financial Accounting for Management: Text & Cases by Subhash Sharma, Publisher: Macmillan India Limited
4. Management Accounting - Concepts & Applications by Kothari G, Publisher: Macmillan India Limited.

INTRODUCTION TO ACCOUNTING

Structure

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1.1 INTRODUCTION

Dear students, let me introduce to you this entire subject which is **scoring** and fruitful in many ways. So let's start... In this unit our objective is to get acquainted with the basic need, development & definition of basic terms. The accounting records maintained help various interested parties in variety of manner. For some persons, it will be informative whereas for others it may take crucial investment decisions based on the accounting information. Accounting is the language of the business, the basic function of which is to serve as a means of communication. If you ask to whom does it communicate the results of business operations then the various interested parties are owners, creditors, investors, governments and other agencies. Any language has three important jobs to perform: To act as a medium of communication; to help in understanding the existing literature; to make additions to the already existing literature. Accounting has been performing all these roles. As a language it is responsible for preparing financial statements with its own syntax. The syntax of the accounting language comprises of the total system of recording and analyzing business transaction called Double Entry System of Book-Keeping, the basic principles on which it is based like Accounting Standards or Generally Accepted Accounting Principles (GAAP).

1.2 DEFINITION OF ACCOUNTING

To start with we can say that, accounting is concerned with the processes of recording, sorting, and summarizing data resulting from business operations and events. The definition is given by the American Institute of Certified Public Accountants which clearly brings out the meaning and function of accounting. According to it accounting is: “The art of recording, classifying and summarizing in a significant manner and in terms of money, transactions and events which are, in part at least, of a financial character and interpreting the result thereof.” Now as you have read the aforesaid definition now let’s perceive what it means to say: Accounting is an art: Accounting classifies as an art, as it helps in attaining our aim of ascertaining the financial results. Analysis & interpretation of financial data are the art of accounting, requiring special knowledge, experience and judgment.

It involves recording, classifying and summarizing: recording means systematically writing down the transactions and events in account books soon after their occurrences, classifying is the process of grouping transactions or entries of one nature at one place. This is done by opening accounts in a book call ledger. Summarizing involves the preparation of reports & statements from the classified data (ledger) understandable and useful to management and other interested parties. This involves preparation of final accounts. It records transaction in the terms of money: This provides a common measure of recording and increases the understanding of the state of affairs of the business.

Deals with financial transaction: It records only those transaction and events, which are of financial character. If a transaction has no financial character then it will not be measured in the terms of money and will not be recorded. Interpretation: It is the art of interpreting the results of operations to determine the financial position of the enterprise, the progress it has made and how well it is getting along. Accounting involves communication: The results of analysis and interpretation are communicated to management and to other interested parties.

1.3 ACCOUNTING – A MEANS AND NOT AN END

After analyzing properly the information supplied by the accounting statements the users of the same take decision for the future activities. Since accounting supplies the necessary information, it performs, in fact, a service function and, at the same time, it is sued to represent economic position of an entity. Therefore, it becomes clear that keeping of accounts is not the primary objective of either a person or an entity. On the contrary, the primary objective is to take decision on the basis of financial facts presented by accounting statements. Thus, the understanding of accounts is not the basic objective; it only helps to realize a specific objective. As such, accounting is not an end in itself but a means to an end. It is essentially a service function designed to provide relevant information concerning an entity for those who are interested in interpreting and using that information.

1.3.1 Objectives and Functions

As you have already seen above that, the primary or basic objective of accounting is to supply the necessary information to the users and analysts for taking futuristic decisions, so let’s have a look at its other objects and functions, they are:

- Providing necessary information about the financial activities to the interested parties
- Providing necessary information about the efficiency, or otherwise, of the management regarding the proper utilization of the scarce resource.
- Providing necessary information for predictions (financial forecasting)
- Facilitates to evaluate the earning capacity of the firm by supplying a statement of financial position, a statement of periodical earning together with a statement of financial activities to the various interested person.
- Facilitates decisions regarding the changes in the manner of acquisition, utilizations, preservation and distribution of the scarce resources.
- Facilitates decisions regarding replacement of fixed assets and expansion of the firm
- Provides necessary data to the government for taking proper decisions relating to duties, taxes and price control etc.
- Devices remedial measure for the deviations between the actual and budgeted performance.
- Provides necessary data and information to the managers for internal reporting and formulation of overall policies.

1.3.2 Branches of Accounting

- **Financial Accounting:** Accounting as discussed above, deals with recording, classifying and summarizing business events, which have already occurred and is, therefore, historical in nature. That's why it is called Historical Accounting or Post-mortem Accounting or more popularly financial Accounting. Its aim is to develop information about income and financial position on the basis of business events, which have taken place during a period of time. Information provided by financial accounting system about financial results and financial position on historical basis is significant but not sufficient for smooth, orderly and efficient running of the business. Management needs more information for planning and control of the business activities. The answer lays in two more forms of accounting namely, Cost Accounting and Management Accounting.
- **Cost Accounting:** It deals with detailed study of cost with reference to cost ascertainment, cost reduction and cost control. The emphasis is no historical costs as well as future decision-making costs.
- **Management Accounting:** It provides information to the management not only about cost but also about revenue, profits, investments etc. to enable managers to discharge their functions of managing the business more efficiently and effectively. Thus, it provides required database to managers to plan and control the activities of business enterprises.
- **Social Responsibility Accounting:** It involves accounting of social costs incurred by the enterprises and social benefits created by it reporting thereof.

1.3.3 Distinction between Book-Keeping and Accounting

Book-keeping differs from accounting in the following respects:

| Basis of Distinction | | Book-keeping | Accounting |
|----------------------|--------------------------------|---|---|
| 1. | Scope | Book-keeping involves: (a) Identifying the transactions; (b) Measuring the identified transaction; (c) Recording the measured classifying the recorded transactions. | Accounting in addition to Book-keeping involves: (a) Summarizing the classified transactions; (b) Analyzing the summarized results; (c) Interpreting the analyzed results; (d) Communicating the interpreted information to the interested parties. |
| 2. | Stage | Book-keeping is primary stage. | Accounting is the secondary stage. It starts where Book-keeping ends. |
| 3. | Basic | The basic objective of Book-keeping is to maintain systematic records of financial transactions. | The basic objective of accounting is to ascertain net results of operations and financial position and to communicate information to the interested parties. |
| 4. | Who Performs | Book-keeping work is performed by junior staff. | Accounting work is performed by senior staff. |
| 5. | Knowledge Level | The Book-keeper is not required to have higher level of knowledge than that of an accountant. | The accountant is required to have higher level of knowledge than that of Book-keeper. |
| 6. | Analytical Skill | The Book-keeper may or may not possess analytical skill. | The accountant is required to possess analytical nature. |
| 7. | Nature of Job | The job of a book-keeper is often routine and clerical in nature. | The job of an accountant is analytical in nature. |
| 8. | Designing of Accounting System | It does not cover designing of accounts system. | It covers designing of accounting system. |
| 9. | Supervision and Checking | The Book-keeper does not supervise and check the work of an accountant. | An accountant supervises and checks the work of a book-keeper. |

1.3.4 Users of Accounting Information

1. **Owners:** Owner(s) refers to a person or group of persons who have supplied capital for running the business. It refers to Individual in case proprietor partners in case of partnership firm and shareholders in case of Joint Stock Company. Information needs of shareholders have assumed great significance in the corporate business world because of separation of ownership and management in case of joint stock companies. Owners are interest in the financial information to know about *safety* of amount invested and *return* on amount investment.
2. **Managers:** For managing business profitably, information about financial results and financial position is needed by management. By providing this information, accounting helps managers in efficient and smooth running of a business enterprise.

3. **Investors:** Prospective investors would like to know about the past performance of the business enterprise before making investment in that concern. By analyzing historical information provided by accounting records, they can arrive at a decision about the expected return and the risk involved in investing in a particular business enterprise.
4. **Creditors and Financial Institutions:** Whosoever is extending credit or loan to a business enterprise, would like to have information about its repaying capacity, credit worthiness etc. Analyzing and interpreting the financial statements of the business enterprise can obtain the required information.
5. **Employees:** Employees are concerned about job security and future prospects. Both of these are intimately related with the performance of the business enterprise. Thus by analyzing financial statements they can draw conclusions about their job-security and future prospects.
6. **Government:** Government policies relating to taxation, providing subsidies etc. are guided by relevance of the industry in the economic development of the country and the past performance of the industry. Information about past performance is provided by the accounting system. Collection of taxes is also based on accounting records.
7. **Researchers:** Researchers need financial information for testing hypothesis and development of theories and models. The required information is provided by accounting system.
8. **Customers:** Customers who have developed loyalties to a business are certainly interested in the continuance of the business. They certainly want to know about the future directions of the enterprise with which they are associating themselves. The way to information about the enterprise is through their financial statements.
9. **Public:** An enterprise affects the public at large in many ways such as a provider of employment to a number of persons, being a customer to many suppliers, a provider of amenities in the locality or a cause of concern to the public due to pollution etc. Hence, public at large is interested in knowing the future directions of enterprise and the only window to peep inside the enterprise is their financial statements.

Above-mentioned list of group of users of accounting information is not exhaustive. Anyone having an interest in the business enterprise can use information for decision-making.

1.3.5 Advantages and Limitations of Accounting

The advantages of accounting are as follows:

1. **Facilitates to Replace Memory:** Accounting facilitates to replace human memory by maintaining complete record of financial transactions. Human memory is limited by its very nature. Accounting helps to overcome this limitation.
2. **Facilitates to Comply with Legal Requirements:** Accounting facilitates to comply with legal require an enterprise to maintain books of accounts. For example, Sec. 209 of The Companies Act 1956, requires a company to maintain proper books of accounts on accrual basis, Sec 44AA of The Income Tax 1961 requires certain persons to maintain specified books of accounts.

3. **Facilitates to Ascertain Net Result of Operations:** Accounting facilitates to ascertain net results of operations by preparing Income Statement.
4. **Facilitates to Ascertain Financial Position:** Accounting facilitates to ascertain financial position by preparing Position Statement.
5. **Facilitates the Users to Take Decisions:** Accounting facilitates the users (i.e., Short-term Creditors, Long-term Creditors, Present Investors, Potential Investors, Employee groups, Management, General Public, Tax Authorities) to take decisions by communicating accounting information to them.
6. **Facilitates a Comparative Study:** Accounting facilitates a comparative study in the following four ways:
 - Comparison of actual figures with standard or budgeted figures for the same period and the same firm;
 - Comparison of actual figures of one period with those of another period for the same firm (i.e. Intra-firm Comparison);
 - Comparison of actual figures of one firm with those of another standard firm belonging to the same industry (i.e. Inter-firm Comparison); and
 - Comparison of actual figures of one firm with those of industry to which the firm belong (i.e. Pattern Comparison).
7. **Assist the Management:** Accounting assists the management in planning and controlling business activities and in taking decisions. For example, Projected Cash Flow Statement facilitates the management to know future receipts and payments and to take decision regarding anticipated surplus or shortage of funds.
8. **Facilitates Control over Assets:** Accounting facilitates control over assets by providing information regarding Cash Balance, Bank Balance, Debtors, Fixed Assets, Stock etc.
9. **Facilitates the Settlement of Tax Liability:** Accounting facilitates the settlement of tax liability with the authorities by maintaining proper books of accounts in systematic manner.
10. **Facilitates the Ascertainment of Value of Business:** Accounting facilitates the ascertainment of value of business in case of transfer of business to another entity.
11. **Facilitates Raising Loans:** Accounting facilitates raising loans from lenders by proving them historical and projected financial statements.
12. **Acts as Legal Evidence:** Proper books of accounts maintained in systematic manner act as legal evidence in case of disputes.

The Limitations are as follows: The financial accounting is mainly concerned with the preparation of final accounts, i.e. Profit and Loss Account and Balance sheet. The business has become so complex that mere final accounts information is not sufficient in meeting information needs. The management needs information for planning; controlling and co-

coordinating business activities. It is because of the limitations of financial accounting that cost accounting and management accounting have developed. Some of the limitations of financial accounting are discussed as follows:

1. **Historical Nature:** Financial accounting is historical in nature in the sense that it is a record of all those transactions, which have taken place in the business during a particular period of time. The impact of future uncertainties has no place in financial accounting. As management needs information for future planning, financial accounting can only give information about what has happened and not about what will happen. It does not suggest what should be done to increase the efficiency of the concern.
2. **Provides Information About the Concern as a Whole:** In financial accounting, information is recorded for the whole concern. One can find information about total expenses and total receipts only. The information is not recorded product-wise process-wise, department-wise or any other line of activity. It is essential to record information activity-wise so as to be helpful for cost determination and cost control purposes.
3. **Not Helpful in Price Fixation:** Financial accounting is not helpful in fixing prices of products. The cost of a product can be obtained only when all expenses have been incurred. It is not possible to determine the price in advance. The concern may be required to quote a price for the supply of goods in the near future (for submitting tenders, etc.) Financial accounting cannot supply all these information's, so it is helpful in price determination, Price fixation requires information about variable and fixed costs, direct and indirect costs. Indirect expenses are estimated on the basis of past records for price determination purposes.
4. **Cost Control not Possible:** Cost control is not possible in financial accounting. The cost figures are known only at the end of a financial period. When the cost already been incurred then nothing can be done to control it. There is no technique in financial accounting, which can help to ascertain whether the cost is more or less while the expenses are being incurred. There is no procedure to assign responsibility for higher costs, if any. The costing process requires a constant review of actual costs from time to time and this thing is not possible in financial accounting.
5. **Appraisal of Policies not Possible:** It is not possible to evaluate various policies and programs in financial accounting. There is no technique for comparing actual performance with budgeted targets. Whether the work is going on as per schedule or not, cannot be determined. The only criterion for determining efficiency is to see profits at the end of financial period. The profitability is the only yardstick for evaluating managerial performance. Profits of an enterprise are influenced by a number of outside factors also, so it is not a reliable test for ascertaining efficiency of the management.
6. **Only Actual Costs Recorded:** Financial accounting records only actual cost figures. The amount paid for purchasing materials, property or other assets is recorded in account books. The prices of goods and assets go on varying from time to time. The present prices of assets may be absolutely different from the recorded costs. Financial

accounts do not record price level changes. The recorded costs cannot provide correct information or exact values of assets.

7. **Not Helpful in Taking Strategic Decisions:** Management is to take strategic decisions like replacement of labor by machinery, introduction of a new product, discontinuation of an existing line of production, expansion of capacity, etc. The impact of these decisions and cost involved will have to be ascertained in anticipation. Various alternative suggestions are to be studied before taking a final decision. Because information is recorded for the whole concern and it is available only when the event has taken place.
8. **Technical Subject:** Financial accounting is a technical subject. The recording of transactions and making their use requires knowledge of accounting principles and conventions. A person who is not conversant with accounting subject has little utility of financial accounts.
9. **Quantitative Information:** Financial accounting records only that information which can be quantitatively measured. Anything which cannot be quantitatively measured will not form a part of financial accounting even though it is important for the business. The policies and plans of the government have a direct bearing on the working of the business. It is essential to determine the impact of government decisions on the entrepreneurial policies. Financial accounts will avoid qualitative factors because they cannot be quantitatively measured.
10. **Lack of Unanimity about Accounting Principles:** Accountants differ on the use of accounting principles. In spite of the efforts of International Accounting Standards Committee, there is a lack of unanimity on the use of accounting principles and procedures. The methods of valuing inventory and methods of charging depreciation are the most controversial issues on which unanimity has not been possible. The preference for the use of different accounting principles brings in an element of subjectivity and human biased ness. The use of different accounting methods reduces the usefulness and reliability of accounts.
11. **Chances of Manipulation:** There are chances of using financial accounts to suit the whims of management. The over-valuation or under-valuation of inventory may change the figures of profits. More profits may be shown to get more remuneration, issue more dividends or to raise the prices of company's shares. Less profit may be shown to save taxes for not paying bonus to workers, etc. The possibility of manipulating financial accounts reduces their reliability.

1.3.6 Bases of Accounting

The income of business belongs to owner and is a direct result of matching of revenues of a period and expenses of the same period. It is always calculated at the end of the period and, hence, is an ex-post or actual income. The matching of revenues and expenses of a period can be done on the following three bases called **Bases of Accounting**:

- **Accrual Bases:** Under this base, the incomes as well as expenses are considered on the bases of their occurrence in an accounting period and not on the bases of their actual receipts/ payments. Hence, revenues are recognized if they belong to the period, irrespective of the fact whether received in cash or not expenses are

recognized in an accounting period if (a) A cause-effect relationship can be established with the revenues earned (for example, purchases, wages, salaries etc.); (b) It amounts to some kind of a systematic allocation of an already incurred cost in the past (for example, depreciation, writing off of deferred revenue expenditures); (c) It amounts to expenses related with the period (for example, rent paid, salaries paid etc.); or (d) The amount represents something which is permanently lost (for example, loss of material by fire or theft etc.) It is not material whether expenses are paid in cash or not. Hence, in accrual bases, we make a matching of the revenues earned and expenses incurred during a particular period. This matching is in line with the GAAP of Realization (or Revenue Recognition), Expense Recognition and Matching. In fact, the Matching concept and Accrual concept are used interchangeably.

- **Pure Cash Bases:** Under the method, the revenues are not recognized and recorded unless they are received in cash. Similarly, expenses are recognized only when they are paid in cash. Hence, income of a period is calculated by setting off expenses paid in cash against revenues received during a period and is clearly violative of three concepts mentioned above. The application of pure cash bases of accounting is without sound logic. It would mean that inventories, when purchased and paid for in cash, will be treated as expense. Logically, inventories should be treated as expense when they are sold. The acquisition of fixed assets will have to be treated as expense of the period in which they are paid instead of periods in which benefits are derived from them. The practice of GAAP does not permit application of cash bases of accounting for any kind business entity.
- **Modified Cash Bases or Hybrid System:** The system is a mixture of both the bases of accounting discussed above. In this, accrual bases are followed normally for expenses and cash bases are followed normally for revenues. Professionals who term their Income Statement as 'Receipt & Expenditure Account' normally follow such system. It must be understood very clearly that the most genuine and authentic system, having widespread applicability, is accrual system and the other two systems are quite infrequently used. The practical utility of these two systems is minimal.

Illustration 1.1

A business generates sales of Rs. 2, 00,000 (including Rs. 40,000 as credit sales) and expenses amount to Rs.1, 40,000 (including Rs.25, 000 still payable) during an accounting period. Compute the profit of the business as per three bases of accounting for the accounting period.

Under Accrual Bases:

$$\begin{aligned} \text{Income} &= \text{Revenue earned} - \text{Expenses Incurred} \\ &= \text{Rs. 2, 00,000} - \text{Rs. 1, 40,000} \\ &= \text{Rs. 60,000} \end{aligned}$$

Under Pure Cash Bases:

$$\begin{aligned} \text{Income} &= \text{Revenue Received} - \text{Expenses Paid} \\ &= \text{Rs. 1, 60,000} - \text{Rs. 1, 15,000} \\ &= \text{Rs. 20,000} \end{aligned}$$

1.3.7 Basic Terms in Accounting

For proper understating of accounting system, it is necessary to understand important terms that are used in the business world. The Institute of Chartered Accountants of India (ICAI) has done an excellent compilation of the various terms used in the business under “Guidance Note on Terms Used in Financial Statements”. Some important terms explained in the guidance note are reproduced below:

1. **Capital:** Generally refers to the amount invested in an enterprise by its owners e.g., aid up share capital in a corporate enterprise. It is also used to refer to the interest of owners in the assets of an enterprise.
2. **Assets:** Tangible objects or intangible rights owned by an enterprise and carrying probable future benefits.
3. **Liability:** The financial obligation of an enterprise other than owners’ funds.
4. **Revenue:** The gross inflow of cash, receivables or other consideration arising in the course of ordinary activities of an enterprise resources yielding interest, royalties and dividends. Revenue is measured by the charge made to customers or clients for goods supplied and services rendered to them and by the charges and rewards arising from the use of resources by them. It excludes amounts collected on behalf of third parties such as certain taxes. In an agency relationship, the revenue is the amount of commission and not the gross inflows of cash, receivables or other consideration.
5. **Cost of Goods Sold:** The cost of goods sold during an accounting period. In manufacturing operations, it includes (i) cost of materials; (ii) labor and factory overheads; selling and administrative expenses are normally excluded.
6. **Profit:** A general term for the excess of revenue over related cost. When the result of this computation is negative, it is referred to as loss.
7. **Expenditure:** Incurring a liability, disbursement of cash or transfer of property for the purpose of obtaining assets, goods or services.
8. **Expenses:** The cost relating to the operation of an accounting period or the revenue earned during the period or the benefit of which do not extend that period.
9. **Deferred Expenditure:** Expenditure for which payment has been made or a liability incurred but which is carried forward on the presumption that it will benefit over a subsequent period or periods. This is also referred to as deferred revenue expenditure.
10. **Sales Turnover:** The aggregate amount for which sales are affected or services rendered by an enterprise. The terms gross turnover and net turnover (or gross sales and net sales) are sometimes used to distinguish the sales aggregate before and after deduction of returns and trade discounts.
11. **Inventory:** Tangible property held for sale in the ordinary course of business, or in the process of the production for such sale, or the consumption in the production of goods or services for sale, including maintenance supplies and consumables other than machinery spares.

12. **Accumulated Depreciation:** The total to date of the periodic depreciation charges on depreciable assets.
13. **Profit and Loss Statement:** A financial statement which presents the revenue and expenses of an enterprise for an accounting period and shows the excess of revenue over expenses (or vice versa). It is also known as profit and loss account.
14. **Appropriation Account:** An account sometimes included as a separate section of the profit and loss statement showing application of profits towards dividends, reserves, etc.
15. **Prior Period Item:** A material change or credit which arises in the current period as a result of errors or omissions in the preparation of the financial statements of one or more prior periods.
16. **Accounting Policies:** The specific accounting principles and the methods of applying those principles adopted by an enterprise in the preparation and presentation of financial statements.
17. **Cash Basis of Accounting:** The method of recording transactions by which revenues and costs and assets and liabilities are reflected in the accounts in the period in which actual receipts or actual payments are made.
18. **Accrual Basis of Accounting:** The method of recording transactions by which revenue, costs, assets and liabilities are reflected in the accounts in the period in which they accrue. The 'accrual basis of accounting' includes considerations relating to deferrals, allocations, depreciation and amortization. This basis is also referred to as mercantile basis of accounting.
19. **Balance Sheet:** A statement of the financial position of an enterprise as at a given date, which exhibits its assets, liabilities, capital, reserves and other account balances at their respective book value.
20. **Book Value:** The amount at which an item appears in the books of account or financial statement. It does not refer to any particular basis on which the amount is determined e.g., cost, replacement value, etc.
21. **Goodwill:** An intangible asset arising from business connection or trade name or reputation of an enterprise.
22. **Sundry Creditor:** Amount owed by an enterprise on account of goods purchased or services received or in respect of contractual obligations. Also, it is termed as trade creditor or account payable.
23. **Sundry Debtor:** Persons from who amounts are due for goods sold or services rendered or in respect of contractual obligations. Also, termed as debtor, trade debtor, and account receivable.
24. **Contingent Asset:** An asset the existence, ownership or value of which may be known or determined only on the occurrence or non-occurrence of one or more uncertain future events.

25. **Contingent Liability:** An obligation relating to an existing condition or situation which may arise in future depending on the occurrence or non-occurrence of one or more uncertain future events.

1.4 ACCOUNTING PRINCIPLES AND STANDARDS

So students, as you were been introduced to this splendid concept of accounting previously, so now lets understand its ground rules so as to play it successfully. Accounting aims to provide financial information about a business enterprise to various interested groups for decision-making. As accounting communicates financial information for decision-making to many parties outside the reporting business entity, it is necessary that there is uniformity in the preparation of financial statements of different business enterprises at a point of time. It also requires consistency in the preparation of financial statements of a business enterprise over a period of time. If every business could follow his own notion about the accounting terms like revenue, expenses, assets, liabilities, income etc., there will be complete chaos. To have uniformity and consistency in the preparation of financial statement, accounting operates within a framework of ‘Generally Accepted Accounting Principles’ (GAAP), follows a conceptual framework and adheres to the ‘accounting standards’ (AS) issued by the recognized regulatory body. This is referred to as the theory base of accounting.

The term GAAP is used to describe, rules or guidelines variously called concepts, conventions, axioms, assumptions, postulated, principles, modifying principles etc., developed for the preparation of financial statement. Yorston, Smith and Brown define accounting principles as “the body of doctrines commonly associated with the theory and procedure of accounting, serving as an explanation of current practices and as guide for the selection of conventions and procedures where alternatives exist.” Thus, it provides explanation for accounting practices followed by a business enterprise at a point of time. However, it must be clearly understood that accounting theory is not and probably will never be in completely stable state. Accounting principles are constantly evolving and are influenced by changes in the social, legal and economic environment; professional bodies like the Institute of Chartered Accountants of India, the American Institute of Certified Public Accountants, International Accounting Standards Board, etc. and the needs of users of financial information. Accounting, being a man-made system, must evolve and adjust itself to the changes in needs of the man-kind. As a result, accounting principles are not as exact and rigid as laws of natural sciences. Therefore emphasis is on general, instead of universal, acceptability of accounting principles. The GAAP are the building blocks of the accounting language. Rather, they are the pillars on which the structure of accounting is resting. If we remove these principles, the entire structure of accounting will come down. The GAAP, which the makers and users of accounting information should understand before analysis and interpretation of financial statements, include the following concepts:

- (a) Accounting Entity
- (b) Stable Money Measurement
- (c) Going Concern
- (d) Accounting Period
- (e) Cost
- (f) Revenue Recognitions (or Realization)
- (g) Expenses Recognition
- (h) Matching (or Accrual)
- (i) Full, Fair and Adequate Disclosure

- (j) Dual Aspect (or Duality)
- (k) Verifiable Objectivity (Neutrality and Reliability)
- (l) Materiality
- (m) Consistency
- (n) Conservatism
- (o) Timeliness
- (p) Industry Practices
- (q) Substance over Form

Of this, the first four concepts [from (a) to (d)] are the most basic assumption on which accounting structure rests. The next six [from (e) to (k)] are the basic accounting principles which help us in ascertaining the result of a business entity. However, we are essentially operating in a social system, which is bound to be inexact. Hence, we need to be flexible in our approach. Hence the basic knowledge needs to modify due to changing circumstances/situations to enhance the utility of the information generated by the accounting system. The next six concepts [from (l) to (q)] serve the same purpose. Accounting standard on 'Disclosure of Accounting Policies' (AS-1)

Issued by ICAI recognizes that the 'Fundamental Accounting Assumption' while drafting accounts of a business enterprise are Going Concern, Matching (or Accrual), and Consistency. If these are followed, no disclosure is necessary. It further emphasizes that enterprise should consider Prudence, Substance over Form and Materiality as considerations in the selection of accounting policies where accounting policies are defined as "referring to the specific accounting principles and the method of applying those principles adopted by the enterprise in the preparation and presentation of financial statements". The end result of the application of these accounting principles is the preparation of meaningful financial statements. These statements should have some qualitative characteristics. The qualitative characteristics are attributes that make the information provided in financial statements useful to the users.

Now let's study it.

1. **Accounting Entity:** Accountants treat a business as distinct from the persons who own it; then it becomes possible to record transactions of the business with that of proprietor also. The concept of separate business entity is applicable for all types of organizations like sole proprietorship, partnership etc., where the business affairs are free from the private affairs of the proprietor or partner.
2. **Money Measurement:** Accounting records normally those transactions, which are being expressed in monetary terms. Measurement of business events in monetary terms helps in understanding the state of affairs of the business in a much better way. For example, if a business owns two factory buildings, five lathe machines and Rs. 1, 00,000 as cash at bank, we cannot add these numbers so as to produce a meaningful result. However, if we say the value of two factory buildings is Rs. 10,00,000, the value of five lathe machines is Rs. 5,00,000 and cash of Rs. 1,00,000 then we can add these values and say that the value of assets owned by the business is Rs. 16,00,000. This is definitely informative and useful.
3. **Going Concern Concept:** It is assumed that the business will exist for a long time and transactions are recorded from this point of view. Based on this concept, accountants, while valuing assets will not consider the forced sale value of assets (market value), but the assets normally will be reflected at the cost of acquisition minus depreciation.

Similarly depreciation is provided based on the expected life of the assets. The concept, however, does not imply the permanent continuance of the business. The underlying presumption is that the business will continue in operations long enough to charge against income, the cost of fixed assets over their economic lives and to pay the liabilities when they fall due. This concept is applicable to the business as a whole and not for a particular division or branch. Merely closing of a branch or division, will not and may adversely affect the ability of the business enterprise to continue other business normally. Once the business enterprise goes in to liquidation or becomes insolvent, this concept does not apply. In other words the going concern status of the concern will stand terminated from the date of appointment of a receiver.

4. **Accounting Period Concept:** According to this concept, the life of the business is divided into appropriate segments of time (say 12 months) for studying the results. While the life of the business is considered to be indefinite (according to the going concern concept), the measurement of income and studying the financial position of the business after a very long time would not be helpful in taking corrective steps at the appropriate time. Therefore it is necessary that after each segment of time interval, the management should review the performance. The segment of time interval is called accounting period, which is usually a year. At the end of each accounting period, Income statement and a balance sheet is prepared. The income statement discloses the profit or loss made by the business during an accounting period, and the balance sheet discloses the state of affairs of the business as on the last date of the accounting period. The term 'conventions' includes those customs or traditions, which guide the accountants while preparing the accounting statements. The following are the important accounting conventions:

Accounting Conventions:

1. **Cost Concept:** Transactions are entered in the books of account at the amounts actually involved. As asset is ordinarily recorded at the price at which it has been acquired. For example, a Plot of land purchased by a business firm for Rs. 5, 00,000, would be recorded at this value irrespective of its current market price. Cost concept has the advantage of bringing objectivity in the presentation of the financial statements. In absence of these concepts the figures shown in the accounting records would have depend on the subjective view of a person.
2. **Realization Concept:** Accounting is a historical record of transactions; it only records, what has happened. It does not anticipate events through anticipated adverse effects of events that have already occurred are usually recorded. For example, 'A' places an order on 'B' for supply of certain goods. Upon receipt of the order 'B', procures raw material employs labor and produces and delivers the goods to 'A'. In this case the sale transaction will be recorded in the books of 'B', only when the goods are delivered and not upon receipt of an enforceable purchase order from 'A'.
There is certain exception to this concept.
 - i) In case of Hire Purchase transaction the ownership of the goods passes to the buyer only when the last installments is paid, but sales are presumed to have been made to the extent of installments received and installments outstanding. (Installments due but not received)
 - ii) In case of contract accounts, though the contractor is liable to pay only when the whole of contract is completed as per terms of the contract, the profit at the end

of accounting year is calculated on the basis of the work completed and certified by a competent authority.

3. **Expenses Recognition:** Cost is the total outlay or expenditure on acquiring resources required for production of goods or rendering of services. Cost of resources utilized and lost during a particular period is termed as expired cost or expense and is charged to the revenue of the period to obtain information about income. Costs of the resources remaining unutilized or unexpired at the end of the period is carried forward to the next accounting period and are termed as assets.
4. **Accrual Concept:** The accrual system is a method whereby revenue and expenses are identified with specific period of time like a month, half year or a year. It implies recording of revenue and expenses of a particular accounting period, whether they are received/ paid in cash or not. Under the cash system of accounting, the revenue and expenses are recorded only if they are actually received/ paid in cash irrespective of the accounting period to which they belong. But under accrual method, the revenue and expenses relating to that particular accounting period only are considered.
5. **Disclosure:** Apart from the statutory obligations, good accounting practice also demands that all significant information should be disclosed fully and fairly. The financial statements have to prepare honestly and should disclose the information, which is of material interest to owners, present and potential creditors and investors. Whether something should be disclosed or not will depend on whether it is material or not. Materiality depends on the amounts involved in relations to the assets group involved or profits. In case of Financial Statements of a Limited Company, the practice followed is to append the notes to the accounts and disclose of significant accounting policies. This is in pursuance of the convention of full disclosure.
6. **Dual Aspect Concept:** Each transaction has two aspects. With every increase in the money owned to others, there must be an increase in Assets or loss. Thus at any time the accounting equations is:
$$\text{Assets} = \text{Liabilities} + \text{Capital or alternatively};$$
$$\text{Capital} = \text{Assets} - \text{Liabilities}.$$
For example, a proprietor brings in Rs. 1, 00,000 in cash as Capital to start a small business. Rs. 1, 00,000 is the Capital and corresponding amount of Rs. 1, 00,000 will appear as cash on hand (Assets).
7. **Verifiable Objectivity:** According to this concept all accounting transactions should be evidenced and supported by objective documents. These documents includes invoices, contracts, correspondence, vouchers, bills, pass books, cheque books etc. such supporting documents provides the basis for making accounting entries and for verification by the auditors later on. This concept also has its limitations. For example, it is difficult to verify internal allocation of costs to accounting periods.
8. **Materiality:** According to this convention the accountant should attach importance to material details and ignore insignificant details. This is because otherwise accounting will be unnecessarily overburdened with minute details. The question what constitutes material details are left to the discretion of the accountant? Moreover, an item may be material for one purpose while immaterial for another. The term materiality is a subjective term. The accountant should regard an item as material if there is reason to believe that knowledge of it would influence decision of the informed investor.

According to Kohler “Materiality means characteristic attaching to a statement, fact or item whereby its disclosure or method of giving it expression would be likely to influence the judgment of a reasonable person.”

9. **Consistency:** The accounting practices should remain the same from one year to another. For example: Consistency in Valuation of Stock in Trade or Method of Charging Depreciation. If the stock has been valued by adopting the principle of cost or market value, whichever is less, the same principle has to be consistently followed year after year. Similarly method of charging depreciation, either Straight Line or Written down Value method, has to be consistently followed. This is necessary for comparison of results. However, consistency does not mean inflexibility. In case due to change in law. Or from the point of view of improved reporting, this convention is broken, and then adequate disclosure as to the impact on the profit due to such change has to be mentioned in the notes appended to the notes to accounts.
10. **Conservatism:** Financial Statements are usually drawn up rather on a conservative basis. In the initial stages when the anticipated profits which were accounted did not materialize. This resulted in less acceptability of accounting figures by the end-users. Therefore accountants follow the rule ‘anticipate no profits but provide for all possible losses’. Similarly, based on this convention, the inventory is valued at cost or market price whichever less is. Necessary provision for bad and doubtful debts is made in the books of account. Window-dressing, i.e. showing a position better than what it is, is not permitted. It is also not proper to show a position substantially worse than what it is. In other words, secret reserves are not permitted. Therefore this convention has to be applied with reasonable caution and care.
11. **Timeliness:** Financial reports must be timely to have any usefulness for decision makers. Timeliness in financial reporting requires estimation of depreciation, provision for bad and doubtful debts, provision for discount etc. to prepare the financial statements of different accounting periods. For detailed discussion refer to accounting period assumption.
12. **Industry Practice:** Sometimes practice prevailing in a particular industry is given precedence over generally accepted accounting principles. Examples are valuation of gold on the basis of market price, agriculture products on the basis of minimum support price determined by the government etc.
13. **Substance over Form:** The accounting treatment and presentation in financial statements of transactions and the events should be governed by their substance and not merely by their legal form. Hence, when goods are purchased on hire-purchase basis, the property in goods is transferred to the buyer on the payment of the last installment only. However, the buyer for all practical purpose uses the goods as if he is the owner of the goods in question from the date of acquisition. This aspect is reflected in the books of the buyer normally by recording the asset at its cash price at the time of payment of initial amount (down payment). Hence, substance should always override the legal form. To quote Shiv Khera, “Attitude can make or break you. Success is vital but not without a feeling of fulfillment, like good looks are wastes without goodness. So always choose substance over form. Never the reverse

Accounting Standard: We have already seen that accounting communicates the financial results of the business to various parties by means of financial statements, which have to exhibit a ‘true & fair’ view of state of affairs. Like any other language, accounting also has complex set of rules. However, these rules have to be used with a reasonable degree of flexibility in response to specific circumstances of the business and also in line with the changes in the economic environment, social needs, legal requirement and technological developments. Thus these rules, though not rigid, but cannot be applied arbitrarily. They normally operate within the boundary of rationality.

Accounting Standards are defined as the policy documents issued by a recognized expert accounting body relating to various aspects of measurement, treatment and disclosure of accounting transactions and events.

In India Accounting Standards are prepared by the Accounting Standard Board constituted by the Institute of Chartered Accountants of India. The summary of various accounting standards is as follows:

| S. No | Accounting Standard No. | Title of Accounting Standard | Mandatory with effect from | Enterprises to which applicable |
|-------|-------------------------|--|--|---------------------------------|
| 01 | AS 1 | Disclosure of Accounting Policies | 1.4.1991 for companies 1.4.1993 all other enterprises | All |
| 02 | AS 2 | Valuation of Inventories | 1.4.1999 | All |
| 03 | AS 3 | Cash Flow Statements | 1.4.2001 | See Note 1 |
| 04 | AS 4 | Contingencies and Events occurring after the Balance | 1.4.1995 | All |
| 05 | AS 5 | Net profit and Loss for the period, prior period items and changes in accounting policies. | 1.4.1996 | All |
| 06 | AS 6 | Depreciation Accounting | 1.4.1995 | All |
| 07 | AS 7 | Accounting for construction Contracts | Like AS 1 | All |
| 08 | AS 8 | Accounting for research and development | Like AS 1 | All |
| 09 | AS 9 | Revenue Recognition | Like AS 1 | All |
| 10 | AS 10 | Accounting for Fixed Assets | Like AS 1 | All |
| 11 | AS 11 | Accounting for the effects of changes in Foreign Exchange Rates | 1.4.1995 | All |
| 12 | AS 12 | Accounting for Government Grants | 1.4.1994 | All |
| 13 | AS 13 | Accounting for Investments | 1.4.1995 | All |
| 14 | AS 14 | Accounting for Amalgamation | 1.4.1995 | All |
| 15 | AS 15 | Accounting for retirement benefits in the financial statements of employers | 1.4.1995 | All |
| 16 | AS 16 | Borrowing Costs | 1.4.1995 | All |
| 17 | AS 17 | Segments Reporting | 1.4.2000 | All |

| | | | | |
|----|-------|----------------------------------|------------|------------|
| 18 | AS 18 | Related Party disclosures | 1.4.2001 | See note 1 |
| 19 | AS 19 | Leases | 1.4.2001 | All |
| 20 | AS 20 | Earnings Per Share | 1.4.2001 | All |
| 21 | AS 21 | Consolidated Financial Statement | 1.4.2001 | See note 2 |
| 22 | AS 22 | Accounting for Taxes on Income | See note 4 | See note 3 |

Notes:

1. AS 3 and AS 17 are mandatory for those enterprises whose equity or debt securities are listed on a recognized stock exchange in India or enterprises who are in the process of issuing equity or debts securities that will be listed on a recognized stock exchange in India and all commercial, industrial businesses whose turnover for the accounting period is more than Rs. 50 Crore.
2. AS 20 are mandatory for those enterprises whose equity shares or potential equity shares are listed on a recognized stock exchange in India.
3. AS 21 is mandatory if an enterprise presents consolidated financial statements. This accounting standard does not make it mandatory to consolidate the financial statement for an enterprise. But the enterprises, which is presenting a consolidated financial statement shall prepare in accordance with AS 21.
4. AS 22 comes into effect in respect of accounting periods commencing on or after 1.4.2001. It is mandatory in following cases:
 - (i) All the enterprises whose equity or debt securities are listed on a recognized stock exchange in India and enterprises which are in the process of issuing equity or debt securities that will be listed on a recognized stock exchange in India.
 - (ii) All the enterprises of a group, if a parent presents consolidated financial statements and Accounting Standard is mandatory in nature in respect of any of the enterprises of that group in items of (i) above.
 - (iii) All the accounting period commencing on or after 1.4.2002, in respect of companies not covered by (i) or (ii) above;
 - (iv) All the accounting period commencing from 1.4.2003, in respect of all other enterprises.

1.5 SYSTEM OF BOOK - KEEPING

Bookkeeping as explained earlier, is an art of recording pecuniary or business transactions in a regular and systematic manner. The recording of transactions may be done according to any of the following two systems:

1. **Single Entry System:** This is an incomplete double entry system. According to Kohler, “It is system of Book-keeping in which as a rule only records of cash and personal accounts are maintained, it is always incomplete double entry, varying with circumstances”. Since all records are not kept, it is not reliable and can only be suitable for small business firms.
2. **Double Entry System:** Every transaction in accounting is considered as having two aspects. Double Entry System is the name given for recognizing both the aspect of any business transaction as per prescribed set of rules. For example Rs. 1,000 in cash received from Hemant. This is a transaction having the following two aspects.

- a. Receiving Cash Rs. 1,000.
- b. Hemant is the giver of Rs. 1,000.

As per the prescribed rules followed for accounting one aspect is given debit effect and other aspect is given a credit effect of equivalent amount.

The above system of accounting is known as **Double Entry System**. The system does not mean that a transaction is entered double i.e. twice; it only means that the two fold aspects of transaction are accounted for under this system. Both the aspects are equal in monetary terms in opposite directions. If one is debit, the other one will be credit. If the one is credit, then the other second one will be debit. Both debit & credit aspect must be equal in monetary terms. Thus Double Entry System is a system of accounting which gives to the two fold aspects of any monetary business transaction according to certain prescribe rules.

Main Features of Double Entry System:

- (i) Both the aspects of the transaction i.e. debit as well as the credit are to be recorded. Recoding of one aspect of transaction is not recognized in the Double Entry System.
- (ii) Both personal and impersonal aspects of a transaction are recorded in Double Entry System. The aspects of any transaction may be personal or impersonal or one may be personal and the other may be impersonal also.
- (iii) Since one aspect is debited with equal amount and the other aspect is credited; therefore the total of debit effects must agree with total of the credit effects. This is done by preparing a trial balance to rest the arithmetical accuracy.

Stages of Double Entry System of Accounting:

- 1st Stage Recording Transaction in Journal & Subsidiary Books
- 2nd Stage Posting in Ledger (Classified group)
- 3rd Stage Preparation of Trial Balance
- 4th Stage Preparation of Final Accounts
- 5th Stage Management Accounting

1.6 SUMMARY

Accounting is the language of business through which the business house communicates with the outside world. Over a period the nature of the accounting function has changed. Initially more thrust was on book-keeping that is maintenance of records manually. However, today, where computerized accounting soft wares are used, role of accountants is more towards analysis and interpretation than the mere maintenance of the data. The accounting information is useful not only for the owners and managements but also useful to creditors, employees, government and prospective investors. The main objective of the accounting is to reflect the true and fair picture of profitability and financial position, which helps management to take corrective actions and future decisions.

1.7 REVIEW QUESTIONS

1. Define the term Accounting. State its functions. Explain the Accounting is different from Book-keeping?
2. Who are interested persons in the Accounting Information?
3. Write short notes on:
 - a. Fundamental accounting assumptions.
 - b. Going Concern Concept.
 - c. Periodicity concept
4. Accounting period assumption is made to provide timely information to the user of accounting information'. Explain clearly stating the nature of information provided by financial statements of an accounting period.
5. State whether the following statements are true or false:
 - a. Accounting entity is recognized by law;
 - b. Accounting records changes in the level of prices and non-monetary events;
 - c. Full disclosure requires disclosure of insignificant information;
 - d. Revenue increases capital;
 - e. Revenue is recognized when it is earned irrespective of cash inflow;
 - f. Assets are always equal to liabilities *plus* capital;
 - g. Purchasing power of money and level of prices are inversely related;
 - h. Income statement reports income on historical cost basis;
 - i. Cost of fixed assets becomes expense over the period of its use;
 - j. Income is excess of revenue over cost;
 - k. Cost and expense over the period of its use;
 - l. Income is excess of revenue over cost;
 - m. Cost and expense are same;
 - n. Recognition of an expense is related to outflow of cash.

FINANCIAL ACCOUNTING FRAMEWORK

Structure

2.1 Journalizing Transactions

- 2.1.1 Journal
- 2.1.2 Rules of Debit and Credit
- 2.1.3 Classification of Accounts
- 2.1.4 Rules for Accounting

2.2 Compound Entries

2.3 Opening Entry

2.4 Ledger

- 2.4.1 Posting
- 2.4.2 Balancing of Ledger Account

2.5 Subsidiary Books of Accounts

- 2.5.1 Cash Book
- 2.5.2 Purchase Book
- 2.5.2 Journal Paper

2.6 Trial Balances

2.1 JOURNALISING TRANSACTIONS

Accounting is the art of recording, classifying and summarizing the financial transactions and interpreting the results thereof. Thus the accounting cycle involves following 4 major phases:

1. **Recording of Transactions:** This is done in the book called Journal;
2. **Classifying the Transactions:** This is done in a book called ledger;
3. **Summarizing the Transactions:** This includes preparation of Trial Balance, Profit and Loss Account and Balance Sheet of the business;
4. **Interpreting the Results:** This involves computation of various accounting ratios etc., to know about the liquidity, solvency and profitability of the business. The recoding of the transactions in the Journal is explained in this chapter:

2.1.1 Journal

The Journal records all daily transactions of a business in the order in which they occur. A Journal may therefore be defined as a book containing a chronological record of transactions. It is the book in which the transactions are recorded first of all under the double entry system. Thus Journal is a book of the original record. A Journal does not replace but precedes the ledger. The process of recording transactions on the basis of rules of double entry system in a journal is termed as 'Journalizing'. The record of a business transaction in journal is called a journal entry.

A Performa of journal is given below:

| Date | Particulars | L.F. | Debit (Rs.) | Credit (Rs.) |
|-------------|--------------------|-------------|--------------------|---------------------|
| (1) | (2) | (3) | (4) | (5) |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Let's see the advantages of Journal

Recording of business transaction in Journal Book on the basis of double entry system has following advantages:

1. Complete Information about the business: The Journal gives complete information about business transaction in chronological order. Accounts to be debited and credited are recorded at one place.
2. Explanation of the Transaction: An entry in the journal book includes a brief explanation of the transaction called narration.
3. Minimum Errors: Double entry system used for recording is clearly visible in journal as both debit and credit aspects are recorded at one place. It also makes posting into ledger accounts easier. This ultimately reduces possibility of errors.

2.1.2 Rules of Debit and Credit

All transactions in the Journal are recorded on the basis of the rules of debit and credit. For this purpose transaction have been classified into three categories:

- a) Transactions relating to persons.
- b) Transactions relating to properties and assets.
- c) Transactions relating to incomes and expenses.

On the basis of the above it is necessary to keep the accounts in respect:

- a) Each person with whom it deals (Customer, Suppliers)
- b) Each Property or asset, which it owns (Building, Machinery etc.)
- c) Each item of Income and Expense (Commission, Rent, Salary etc.)

2.1.3 Classification of Accounts

Accounts can be classified into Personal, Real and Nominal accounts:

Personal Accounts: Personal accounts include the accounts of persons with whom the business deals. These accounts can be further classified into three categories:

1. **Natural Personal Account:** The natural personal account means persons who are creations of God. E.g. Vijay's A/c, Shubham's A/c.
2. **Artificial Person Accounts:** These include accounts of corporate bodies or institution, which are recognized as persons in business dealings e.g. Government, Club, Limited Company, Co-operative Society etc.

3. **Representative Personal Account:** These are the accounts which represent a certain person or group of persons. E.g. When the rent is due to landlord, an outstanding rent account represents the account of a landlord to whom the rent is payable.

Real Accounts: Real Accounts may be of the following types:

1. **Tangible Real Account:** Tangible real accounts are those which relate to such things which can be touched, felt and measured etc. e.g. Cash Account, Building A/c, Furniture A/c etc.
2. **Intangible Real Account:** These accounts represent such things which cannot be touched; however, they can be measured in terms of money. e.g. Patent A/c, Goodwill A/c.
3. **Nominal Accounts:** These accounts are opened in the books of accounts to simply explain the nature of the transactions. They do not really exist. E.g. Salary paid to employee, rent paid to landlord. Nominal accounts mainly include accounts of expense, losses, income and gains.

2.1.4 Rules for Accounting

| Type of Account | Rules for Accounting |
|------------------|--|
| Personal Account | Debit the Receiver Credit the giver |
| Real Accounts | Debit what comes in Credit what goes out |
| Nominal Accounts | Debit all expenses (losses) and Credit all Incomes (gains) |

Examples of Journal Entries:

1. A commences business with a capital of Rs. 1, 00,000 on 1.1.2001. In this case two accounts are involved, i.e. Account of A, who is a proprietor and Cash account. Account of A is of personal nature and cash account is a tangible asset. Applying the above rules, A is giver of cash, therefore A's capital account shall be credited and Cash is coming in the business. Cash being the real account, the account will be debited. The journal entry shall be passed as follows:

| Date | Particulars | L.F. | Debit (Rs.) | Credit (Rs.) |
|----------|--|------|-------------|--------------|
| 1.1.2001 | Cash Account... Dr To Capital Account (Being commencement of Business) | | 1,00,000 | 1,00,000 |

The words in the bracket are called the narration, which describe the nature of the transaction.

2. A pays rent of Rs. 5,000 of premises to Landlord L on 01.01.2001

| Date | Particulars | L.F. | Debit (Rs.) | Credit (Rs.) |
|----------|--------------------|------|-------------|--------------|
| 1.1.2001 | Real Account... Dr | | 5,000 | |

| | | | | |
|--|---|--|--|-------|
| | To Cash Account (Being rent paid for January 2001) | | | 5,000 |
|--|---|--|--|-------|

In this case **Real Account** is a nominal account and being an expense for the business is debited as per above rule. Since the rent is paid by way of cash, the cash balance shall go down and hence the cash account is credited.

3. Goods purchased worth Rs. 20,000 on credit from S on 01.01.2001

| Date | Particulars | L.F. | Debit (Rs.) | Credit (Rs.) |
|----------|--|------|-------------|--------------|
| 1.1.2001 | Goods Account... Dr To S Account (Being purchase of goods on credit) | | 20,000 | 20,000 |

Goods account is a real account, being asset. Since goods are coming in, goods account is debited. Account of S, who is supplier and giver of goods, his account, is credited, being personal account.

2.2 COMPOUND ENTRIES

Earlier we learned the art of recording the simple entries now let's study the compound journal entries. Sometimes there are number of transaction on the same date relating to one particular account or of one particular nature. Such entries can be passed by way of a single journal entry instead of passing an individual journal entry. It may be recorded in any of the following three ways:

1. One particular account may be debited while several accounts may be credited.
2. One particular account may be credited while several accounts may be debited.
3. Several accounts may debit and several accounts may be credited.

For Example: Pass a compound journal entry in each of the following cases:

1. Payment made to S (Supplier) Rs. 10,000, and he allowed cash discount of Rs.1, 000.
2. Cash Received from C (Customer) Rs. 8, 0000 and cash discount allowed to him Rs. 800.
3. A going concern was purchased having following assets and liabilities: Cash Rs. 5,000, Land Rs. 50,000, Furniture Rs. 10,000, and Stock Rs. 20,000, Trade Creditors Rs. 10,000, and Bank overdraft Rs. 10,000.

Solution:

| Date | Particulars | L.F. | Debit (Rs.) | Credit (Rs.) |
|----------|---|------|-------------------------------------|----------------------------|
| 1.1.2001 | S Account... Dr To Cash Account To Discount received (Being amount paid to S, in full settlement of his bill, after receiving cash discount) | | 10,000 | 9,000 1,000 |
| 1.1.2001 | Cash Account... Dr Discount Allowed A/c... Dr To C Account (Being cash received from C, in full settlement of our bill, Cash discount allowed Rs. 800) | | 7,200 800 | 8,000 |
| 1.1.2001 | Cash Account... Dr Land Account ... Dr Furniture Account... Dr Stock Account... Dr To Creditors To Bank Overdraft To Capital Account (Being running business taken over) | | 5,000 50,000 10,000 20,000 | 10,000 10,000 65,000 |

2.3 OPENING ENTRY

In case of a running business, the assets and liabilities appearing in the previous year's balance sheet will have to be brought forward to the next year. This is done by means of a journal entry, which is known as "Opening Entry". All assets are debited while all liabilities are credited. The excess of assets over liabilities is the proprietor's capital and is credited to his capital account. For Example: Pass the Opening Entry on 1.1.2001 on the basis of the following information taken from business of Mr. Shubham.

1. Cash in hand Rs. 20,000
2. Sundry Debtors Rs. 60,000
3. Stock in trade Rs. 40,000
4. Plant and Machinery Rs. 50,000
5. Land and building Rs. 1, 00,000
6. Sundry Creditors Rs. 1, 00,000

Solution

| Date | Particulars | L.F. | Debit (Rs.) | Credit (Rs.) |
|----------|---|------|-------------|--------------|
| 1.1.2001 | Cash Account... Dr | | 20,000 | |
| | Sundry Debtors Account... Dr | | 60,000 | |
| | Stock in Trade... Dr | | 40,000 | |
| | Plant and Machinery... Dr | | 50,000 | |
| | Land and Building... Dr | | 1,00,000 | |
| | To Sundry Creditors | | | 1,00,000 |
| | To Capital Account | | | 1,70,000 |
| | (Being the balances brought forward from the last year) | | | |

Some useful accounting fundamental equation of accounting and important terms is given below:

1. Increase in Asset debit, decrease in Asset credit
2. Increase in Asset debit, decrease in liability credit
3. Decrease in Asset credit, Increase in Asset debit
4. Increase in Liability credit, decrease in liability debit

The basic accounting elements are assets, Liabilities, equity, expenses and income. These terms are defined below:

Assets: An asset is a resource controlled by an enterprise as a result of past events and from which future economic benefits are expected to flow to the enterprise.

Liability: A liability is a present obligation of the factors arising from past events the settlement of which is expected to result in an outflow from the enterprise of resources embodying economic benefits.

Equity: Equity is the residual interest in the assets of the enterprise after deducting its liabilities

Income: Income is the increase in economic benefits during the accounting period in the form of inflows of assets or decrease in liabilities that result in increase in equity, other than those relating to contribution from equity participants.

Expenses: Expenses are decrease in benefits during the accounting period in the form of outflows or depletion of assets or incurrence of liabilities that result in decrease in equity, other than those relating to distributions to equity participants.

2.4 LEDGER

As we have seen purpose of journal entry was to record the entries in the books of account. And now to know the balance on each account at the end of the period, a summary of all transaction relating to one account is necessary and this is done in the ledger. Thus the activity of classifying, summarizing and grouping is done in the Ledger.

The ledger is the principal book of accounts, which contains the various accounts. A account is summarized record of similar transactions during an accounting period relating a particular person or thing. Therefore all the accounts whether real, nominal or personal are collected in the ledger.

Ledger shows the net effect under one particular head relating to the similar transaction, which has, take place in a particular period. For example, if a business person wants to know

the total sales for a particular period; he will have to do a great deal of searching to go through all the transactions of cash sales and credit sales recorded in the journal; to find out the total sales. This task is simplified; by sorting and accumulating all similar transactions relating to one particular account head and consolidating them in one account maintained in the ledger. This will help in knowing the effect of the relevant account at a glance. Hence it becomes possible to find the figures of purchases, sales, net amount payable and receivable from particular individuals during a period immediately by reference to the ledger.

In case of large organization where large numbers of accounts are required to be maintained; three separate ledgers are maintained as follows:

- a) Debtors' ledger - Containing all the dealings with customers on credit.
- b) Creditors' ledger - Containing all the dealings with supplier on credit.
- c) General ledger - All the remaining accounts i.e. real and nominal accounts.

The Account in the ledger is maintained in the following 'T' Form, each account is divided in to two sides the left hand side representing the debit side and the right hand side representing the credit side. Each side of the ledger has column detailing, (a) Date (b) Particulars (c) Folio and (d) Amount.

Dr. Title of the Account **Cr.**

| Date | Particulars | Folio | Rs. | Date | Particulars | Folio | Rs. |
|------|-------------|-------|-----|------|-------------|-------|-----|
| | | | | | | | |

Sometimes ledger is also maintained in running account form as shown below:

| Date | Particulars | Folio | Dr. Amt Rs. | Cr. Amt. Rs. | Balance Rs. |
|------|-------------|-------|----------------|-----------------|----------------|
| | | | | | |

2.4.1 Posting

Posting means the process of transferring all the debits and credit items from the journal onto the accounts maintained in the ledger. Each amount entered in the debit column of the journal is posted by entering it on the debit side of the account in the ledger with relevant details; similarly, each amount entering it on the credit side of the account in the ledger with relevant details.

The Procedure of Posting:

- i) Enter the debit aspect of the transaction entered in journal on the debit side of the account in the ledger with all the relevant details in the respective column.
- ii) In the Folio column of the journal the page number of the ledger in which posting is done is entered.
- iii) Now enter the credit aspect of the transaction in journal on the credit side of the account in the ledger with all the relevant details in the respective column.
- iv) The entering of the folio number on the corresponding page as explained in item 2 above to be repeated in case of the credit item.
- v) It is customary to prefix the name of the account credited and entered on the debit side of the account in the ledger with word 'To'.
- vi) Similarly the name of the account debited and entered on the credit side of the account in the ledger is prefixed with 'By'.

It may be noted that the words to and by do not have any special meaning, hence the prefix can be conveniently ignored as done by modern accountants.

2.4.2 Balancing of Ledger Account

The totals of the debit side and credit side of an account are taken to ascertain the difference between the two sides. This difference is known as the balance on the account. The total of the heavier side is entered on the lighter side for arriving at the balance. When the total of the debit side exceeds the total of the credit side the balance is said to in debit, i.e. known debit balance. When the total of the credit side exceeds the total of the debit side it means that the account has a credit balance. The balancing of the account is necessary to ascertain the net effect whether debit or credit on the account.

Problem

Journalize the following transaction, post them to ledger and balance the accounts:

| Date, March 1998 | Rs. |
|--|------------|
| 1 Santosh started his business with cash... | 10,000 |
| 2 Purchased furniture from Yadav on credit... | 500 |
| 4 Bought goods for cash from Manish... | 7,000 |
| 6 Sold goods on credit Amer... | 3,700 |
| 7 Sold goods for cash to Joshi... | 2,900 |
| 14 Paid cash to Yadav... | 500 |
| 18 Goods purchased on credit from Nahar... | 9,800 |
| 20 Sold goods on credit to Naidu... | 5,480 |
| 22 Received from cash due from him... | 3,700 |
| 24 Joshi returned goods sold on 7 th in cash... | 2,900 |
| 28 Received cash from Naidu... | 4,480 |
| 30 Paid Office Salaries... | 500 |
| 31 Rent... | .250 |
| 32 Received Commission... | 100 |

Solution: Journal

| Date | Particular | L.F. | Dr. Rs. | Cr. Rs. |
|----------------|--|-------------|----------------|----------------|
| 1993 Mar. 1 | Cash A/c... Dr. To Santosh Capital A/c (Started business with cash) | | 10,000 | 10,000 |
| Mar. 2 | Furniture A/c... Dr. To Yadav's A/c (Purchased furniture on credit from Yadav) | | 500 | 500 |
| Mar. 4 | Goods A/c... Dr. To Cash A/c (Cash purchases from Manish) | | 7,000 | 7,000 |
| Mar. 6 | Amar A/c... Dr. To Goods A/c (Credit Sales to Amar) | | 3,700 | 3,700 |
| Mar. 7 | Cash A/c... Dr. To Goods A/c (Cash sales to Joshi) | | 2,900 | 2,900 |
| Mar. 14 | Yadav A/c... Dr. To Cash A/c (Paid to Yadav on A/c) | | 500 | 500 |
| Mar. 18 | Goods A/c ... Dr To Nahar A/c (Credit purchases from Nahar) | | 9,800 | 9,800 |
| Mar. 20 | Naidu A/c ... Dr. To Goods A/c (Credit Sales to Naidu) | | 5,480 | 5,480 |
| Mar. 22 | Cash A/c... Dr. To Amar A/c (Received Cash from Amar on account) | | 3,700 | 3,700 |
| Mar. 24 | Goods A/c... Dr. To Cash A/c (Refunded cash to Joshi on return of goods by him.) | | 2,900 | 2,900 |
| Mar. 28 | Cash A/c ... Dr. To Naidu A/c (Received Cash from Naidu on account) | | 4,480 | 4,480 |
| Mar. 30 | Salaries A/c ... Dr. Rent A/c... Dr. To Cash A/c (Paid salaries and rent for the month of...) | | 500 250 | 750 |
| Mar. 31 | Cash A/c ... Dr. To Commission A/c (Received cash for commission) | | 100 | 100 |
| Total | | | 51,710 | 51,710 |

Solution: Ledger:

Capital A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|----------------|----------------|------|--------|---------------|----------------|------|--------|
| 1998 Mar.31 | To Balance c/d | | 10,000 | 1998 Mar.1 | By Cash A/c | | 10,000 |
| | | | 10,000 | April.1 | By Balance b/d | | 10,000 |
| | | | | | | | 10,000 |

Cash A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|---------------|-------------------|------|--------|---------------|-----------------|------|--------|
| 1998 Mar.1 | To Capital A/c | | 10,000 | 1998 Mar.4 | By Goods A/c | | 7,000 |
| Mar.7 | To Goods A/c | | 2,900 | Mar.14 | By Yadav A/c | | 500 |
| Mar.22 | To Amar A/c | | 3,700 | Mar.24 | By Goods A/c | | 2,900 |
| Mar.28 | To Naidu A/c | | 4,480 | Mar.30 | By Salaries A/c | | 500 |
| Mar.31 | To Commission A/c | | 100 | Mar.30 | By Rent A/c | | 250 |
| | | | 21,180 | Mar.31 | By Balance c/d | | 10,030 |
| April.1 | To Balance b/d | | 10,030 | | | | 10,000 |
| | | | | | | | 10,000 |

Goods A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|---------------|--------------|------|-------|---------------|--------------|------|-------|
| 1998 Mar.4 | To Cash A/c | | 7,000 | 1998 Mar.6 | By Amar A/c | | 3,700 |
| Mar.18 | To Nahar A/c | | 9,800 | Mar.7 | By Cash A/c | | 2,900 |
| Mar.24 | To Cash A/c | | 2,900 | Mar.20 | By Naidu A/c | | 5,480 |

Furniture A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|---------------|----------------|------|-----|----------------|----------------|------|--------|
| 1998 Mar.2 | To Yadav A/c | | 500 | 1998 Mar.31 | By Balance c/d | | 10,000 |
| | | | 500 | | | | 10,000 |
| April.1 | To Balance b/d | | 500 | | | | 10,000 |

Yadav A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|----------------|-------------|------|-----|---------------|------------------|------|-----|
| 1998 Mar.14 | To Cash A/c | | 500 | 1998 Mar.2 | By Furniture A/c | | 500 |

Amar A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|---------------|--------------|------|-------|----------------|-------------|------|-------|
| 1998 Mar.1 | To Goods A/c | | 3,700 | 1998 Mar.22 | By Cash A/c | | 3,700 |

Nahar A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|----------------|----------------|------|-------|----------------|----------------|------|-------|
| 1998 Mar.31 | To Balance c/d | | 9,800 | 1998 Mar.18 | By Goods A/c | | 9,800 |
| | | | 9,800 | | | | 9,800 |
| | | | | April.1 | By Balance b/d | | 9,800 |

Naidu A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|----------------|----------------|------|-------|----------------|----------------|------|-------|
| 1998 Mar.20 | To Yadav A/c | | 5,480 | 1998 Mar.28 | By Cash A/c | | 4,480 |
| | | | | Mar.31 | By Balance c/d | | 1,000 |
| | | | 5,480 | | | | 5,480 |
| April.1 | To Balance b/d | | 1,000 | | | | |

Salaries A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|----------------|----------------|------|-----|----------------|----------------|------|-----|
| 1998 Mar.30 | To Cash A/c | | 500 | 1998 Mar.31 | By Balance c/d | | 500 |
| | | | 500 | | | | 500 |
| April.1 | To Balance b/d | | 500 | | | | |

Rent A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|----------------|----------------|------|-----|----------------|----------------|------|-----|
| 1998 Mar.30 | To Cash A/c | | 250 | 1998 Mar.31 | By Balance c/d | | 250 |
| | | | 250 | | | | 250 |
| April.1 | To Balance b/d | | 250 | | | | |

Commission A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|----------------|----------------|------|-----|----------------|----------------|------|-----|
| 1998 Mar.31 | To Balance c/d | | 100 | 1998 Mar.31 | By Cash A/c | | 100 |
| | | | 100 | | | | 100 |
| | | | | | By Balance b/d | | 100 |

(Since goods are sold at profit, goods A/c cannot be closed unless we know profit or stock on hand on the last date.) (C/D means carried down, and b/d means brought down.)

2.5 SUBSIDIARY BOOKS OF ACCOUNTS

A Journal is divided into separate books for the sake of convenience and to enable handling of numerous transaction of repetitive nature. This facilitates easy working and curtails down the voluminous work involved in the posting and entering each transaction in Journal & Ledger. All similar transaction pertaining to one particular class is recorded one particular book. For example, all transaction relating to credit purchases of goods are recorded in one book known as Purchase Day Book; similarly all transactions relating to credit sales of goods are recorded in Sales Day Book.

The name subsidiary books are as follow:

- (i) **Cash Book:** To record all transactions in cash or by cheques. Cash-book may be also of two columns.
- (ii) **Petty Cash Book:** To record all cash transactions of petty expenses.
- (iii) **Purchase Day Book:** To record all transactions of goods purchased on credit.
- (iv) **Sales Day Book:** To record all transactions of credit sales of goods.
- (v) **Purchase return Book:** To record all transactions relating to return of goods to suppliers.
- (vi) **Sales Return Book:** To record all transactions relating to return of goods by the customers.
- (vii) **Bill Receivable Book:** To record all transactions relating to Bill Receivables.
- (viii) **Bill Payable Book:** All Transactions relating to acceptance of bills are recorded in this book.
- (ix) **Journal Proper:** In Journal proper are recorded all transactions other than those recorded above.

In regard to entering the transactions in the above books, it necessary to note the following:

- (i) Goods mean only those items in which the business concerns in dealing in. It means the stock in trade of the business which are purchase with intention of resale after conversion or otherwise at a profit.
- (ii) Purchases: goods for resale. It means all the goods purchased for the resale or for the purpose of conversion into goods for resale. It does not include purchase of assets or stationery. It is an error of principle to record purchase of assets or stationery in the purchase day book.
- (iii) Sales: It means the sale of goods forming stock in trade in which the business concern is dealing in. It does not include sale of assets etc. It is an error of principle to record sale of assets in the sales day book.

2.5.1 Cash Book

Cash Book is of various type; which are as follows:

- (a) Simple cash Book
- (b) Cash Book with Book Column
- (c) Cash Book with Bank and Discount column.
- (d) Multi column Cash Book.

Simple Cash Book: Only Cash receipts and cash payments are recorded in this book. It is just like a ledger; left side being debit side and right side being the credit side. Excess of debit side over the credit side represents balance of cash in hand. Similarly the Cash Book opens with opening cash on hand as the opening entry on the debit side.

Specimen of Simple Cash Book

| Dr. | | | | Cr. | | | |
|------|----------|------|------------|------|---------|------|------------|
| Date | Payments | L.F. | Amt. (Rs.) | Date | Receipt | L.F. | Amt. (Rs.) |
| | | | | | | | |
| | | | | | | | |

- **Two Columnar Cash Book:** This Cash Book contains an additional column for the purpose of entering the transactions relating to bank. All banks transactions regarding deposits of cash and cheques and payment by cheques and withdrawals in cash are entered in the bank column.
- **Three Columnar Cash Book:** This Cash book contains an additional column for entering the discount amount paid and received on account of various transactions. This column dispenses with the opening of discount column in the ledger.
- **Multi Columnar Cash Book:** This Cash Book contains various columns for recording the transactions of receipts and payments under various heads of accounts. This Cash Book is more used in school, colleges, hospitals, government offices etc. There is no need of opening cash account in the Ledger as the Cash Book serves the purpose of cash account. However, the other accounts, which are affected by cash receipts and payments, are posted in the concerned accounts in the Ledger.
- **Petty Cash Book:** In any business, a number of transactions are of petty nature involving petty payments. If the main cash book is used for this, the recording becomes voluminous and heavy; involving considerable wastage of time. Hence a petty cash Book is maintained in which all the petty expenses like postage, refreshment, stationery, cartage, etc. are recorded. Petty Cash Book can also have analytical columns for recording the expenses head-wise. This enables easy posting in the ledger since the petty payments are grouped and recorded head-wise under different columns.

2.5.2 Purchases Book

In this book, is recorded all the credit transactions only relating to the purchases of the goods in which the business is dealing in. Therefore, purchase of furniture, machinery or other assets purchased on credit are not recorded in this book.

Purchases Return Book: The goods which are purchased on credit may be returned by the purchaser if he finds these are defective or if they are not as per specifications. Such returns are entered in the returns outward book or purchases returns book. It may be noted that only those transactions which relate to the goods in which the business in dealing in is recorded in this book.

Sales Book: In this book is recorded all the credit sales transactions relating to the goods dealt with by the business. If furniture, machinery or other assets are sold on credit then they are not recorded in this book.

Sales Return Book: In this book is recorded the return of goods which have been earlier sold on credit. This book is also known as returns outward book. Only the transactions relating to the goods dealt with by the businessmen are recorded.

Bill Receivable Book: The bills which have been drawn by the businessman but accepted by the other party are known as Bill Receivable and are entered in this book.

2.5.3 Journal Proper

If a transaction is such that it cannot be recorded in any of the books mentioned above, then it is recorded in a book, which is called journal proper, If a transaction is not related with Cash Book, Petty Cash Book, Purchases Book, Purchases Return Book, Sales Book, Sales Return Book, Bill Receivable Book, or Bill Payable Book, then it is recorded in this book which is known as Journal Proper. Such Transactions may be related to:

- i) Opening entries;
- ii) Closing entries;
- iii) Transfer entries;
- iv) Rectification entries;
- v) Adjusting entries; or
- vi) Miscellaneous entries.

Opening Entries: Every year new books of accounts are used. Old books are closed at the end of the year. When balances of personal and real accounts of old books are recorded in the new accounting year on the first day in new books, then these entries are called opening entries.

Problem:

Following balances appeared in the books:

Umesh of Tirupati on December 31, 1998 passed the necessary opening entry on January 1, 1999.

Credit Balance: Capital Rs. 20,000; Bills payable: Rs. 15,000; Creditors: Rs. 10,000.

Debit balances: Furniture Rs. 4,000; Machinery Rs. 20,000; Debtors Rs. 5,000; Bill Receivable Rs. 11,800; Cash Rs. 4,200.

Solution: Journal: In the Books of Mr. Umesh

| Date 1999 | Particulars | L.F. | Dr. Amount (Rs.) | Cr. Amount (Rs.) |
|----------------------|---|-------------|---------------------------------|---------------------------------|
| Jan.1 | Furniture A/c ... Dr. | | 4,000 | |
| | Machinery A/c ... Dr. | | 20,000 | |
| | Debtors A/c ... Dr. | | 5,000 | |
| | Bill Receivable A/c ... Dr. | | 11,800 | |
| | Cash A/c ... Dr. | | 4,200 | |
| | To Capital A/c | | | 20,000 |
| | To Bill Receivable A/c | | | 15,000 |
| | To Creditors A/c | | | 10,000 |
| | (Being record of last year's balance brought forward in new books.) | | | |

Closing Entries: While closing accounts at the end of the year balances of nominal accounts are transferred to Trading and Profit & Loss account. All the balances, which are transferred to Trading and Profit & Loss account at the end of the accounting period through accounting entries, are recorded in journal proper. Such entries are called closing entries.

Following are the examples of closing entries:

(A) Closing entries in relation to trading account:

1. Trading A/c... Dr.
 To Purchases A/c...
 To Wages A/c
 To Carriage Inward A/c
 To Fuel and Power A/c
 To Direct or Manufacturing Expenses A/c
 (Being transfer of the above mentioned balance to Trading A/c)

2. Sales A/c... Dr.
 To Trading A/c
 (Being sales during the year)

3. Closing Stock A/c... Dr.
 To Trading A/c
 (Being value of stock on hand in the closing date of the year)

4. Trading A/c... Dr.
 To Profit & Loss A/c
 (Being transfer of Gross Profit)
 Or

5. Profit & Loss A/c... Dr.
 To Trading A/c
 (Being transfer of Gross Loss)
 Only one entry will be made out of above 4. And 5.

(B) Closing entries about P. & L. A/c

1. Profit & Loss A/c ... Dr.
 To Salaries A/c
 To Discount A/c
 To Advertising A/c
 To Rent and Rates A/c
 To Printing and Stationery A/c
 To Trade Expenses A/c
 To Postage and Telegram A/c
 To Insurance Charges A/c
 To Carriage Outward A/c
 To Other Indirect Expenses A/c
 (Being transfer of the above mentioned expenses to Profit and Loss A/c.)

2. Discount Received A/c... Dr.
 To Commission Received A/c
 To Interest on Investment A/c
 To Other revenue receipts and income A/c
 (Being transfer of revenue income to Profit and Loss A/c.)

3. Profit and Loss A/c... Dr.
 To Capital A/c
 (Being transfer of Net Profit to Capital A/c)
 Or

4. Capital A/c... Dr.
 To Profit & Loss A/c
 (Being transfer of Net Loss to Capital A/c)
 Only one entry will be made out of above 3. And 4. If there is net profit, then third entry will be made and if there is net loss then fourth entry will be passed.

Problem: Pass the closing entries in the books of Deepak from the following debit and credit balances, which were taken out at December 1998.

| | Dr. | Cr. |
|---------------------|--------------|--------------|
| | (Rs.) | (Rs.) |
| Stock | 1,000 | |
| Machinery | 2,000 | |
| Purchases | 18,000 | |
| Fuel | 1,000 | |
| Wages | 4,000 | |
| Factory Lighting | 1,000 | |
| Discount | 800 | |
| Salaries | 6,000 | |
| Discount received | - | 200 |
| Office Expenses | 3,000 | |
| Sales | - | 30,000 |
| Commission received | - | 400 |

| | | |
|------------------|---------------|---------------|
| | Dr. | Cr. |
| | (Rs.) | (Rs.) |
| Debtors | 10,000 | |
| Rates and taxes | 500 | |
| Stationery | 600 | |
| Trade Expenses | 200 | |
| Carriage Outward | 600 | |
| Carriage Inward | 300 | |
| Capital | - | 18,400 |
| | <u>49,000</u> | <u>49,000</u> |

Closing Stock Rs. 10,000.

Solution: Journal: In the Books of Deepak

| Date 1998 | Particulars | L.F. | Dr. Amount (Rs.) | Cr. Amount (Rs.) |
|----------------------|--|-------------|---|---|
| Dec.31 | Trading A/c... Dr. To Stock A/c To Purchases A/c To Fuel A/c To Wages A/c To Factory Lighting A/c To Carriage Inwards A/c (Being record of last year's balance brought forward in new books.) | | 4,000 20,000 5,000 11,800 4,200 | 20,000 15,000 10,000 |
| | Sales A/c... Dr. To Trading A/c (Being transfer of Sales to Trading A/c) | | 30,000 | 30,000 |
| | Closing Stock A/c... Dr. To Trading A/c (Being value of Stock-in-hand on the closing date of the year) | | 10,000 | 10,000 |
| | Trading A/c ... Dr. To Profit and Loss A/c (Being transfer of Gross Profit) | | 14,700 | |
| | Profit & Loss A/c Dr. To Salaries A/c To Discount A/c To Office Expenses A/c To Rates and Taxes A/c To Stationery A/c To Trade Expenses A/c To Carriage Outward A/c (Being transfer of the above mentioned expenses to profit and Loss A/c.) | | 11,700 | 6,000 800 3,000 500 600 200 600 |
| | Discount A/c ... Dr. Commission A/c... Dr. To Profit and Loss A/c | | 200 400 | 600 |

| | | | | |
|--|--|-----|-------|-------|
| | (Being transfer of revenue income to Profit and Loss A/c) | | | |
| | Profit and Loss A/c... To Capital A/c (Being transfer of Net Profit to Capital.) | Dr. | 3,600 | 3,600 |

- Rs. (30,000 + 10,000) – 25,300 = Rs. 14,700;
- Rs. (14,700 + 600) – 11,700 = Rs. 3,600

Problem: Enter the following transactions on the books of original records of Mr. Khan of Mumbai: 1997:

- January 1 - Opening balance: Furniture Rs. 800; Machinery Rs. 2,000; Debtors Rs. 1,200; Creditors Rs. 3,000; Capital Rs. 3,500; Cash in hand Rs. 2,000; Cash at bank Rs. 500;
- January 2 - Purchased goods from a on credit Rs. 1,000;
- January 4 - Purchased 50 bags of sugar @ Rs. 45 per bag.
- January 6 - Paid rent Rs. 50,
- January 7 - Gave Rs. 100 as donation;
- January 13 - Sold goods to E on credit Rs. 1,000;
- January 17 - Returned goods to A Rs. 50;
- January 18 - Returned goods to B Rs. 40; E returned goods Rs. 60;
- January 19 - Paid Rs. 400 to B by cheque in full settlement of his accounts;
- January 20 - Received Rs. 600 from E in cash; purchased furniture in cash Rs. 400;
- January 21 - Purchased furniture on credit from Mohan Rs. 200;
- January 23 - Sold old furniture on credit to R Rs. 40;
- January 24 - Withdraw Rs. 100 for personal use;
- January 31 - Outstanding wages are Rs. 50 and outstanding Salaries are Rs. 200.

Solution:

In the Books of Mr. Khan

Purchases Book:

| Date 1997 | Particulars | Ref. No. | L.F. | Amount Rs. |
|--------------|---------------------------------------|-------------|------|---------------|
| Jan.2 | A | | | 1,000 |
| Jan.3 | B | | | 500 |
| Jan.4 | C – 50 Bags of Sugar @ Rs. 40 per bag | | | 2,000 |
| | Total | | | 3,500 |

Purchases Return Book

| Date 1997 | Particulars | Ref. No. | L.F. | Amount Rs. |
|--------------|-------------|-------------|------|---------------|
| Jan.17 | A | | | 50 |
| Jan.18 | B | | | 40 |
| | Total | | | 90 |

Sales Book

| Date 1997 | Particulars | Ref. No. | L.F. | Amount Rs. |
|--------------|--|-------------|------|---------------|
| Jan.5 | D – 30 Bags of Sugar @ Rs. 45 per bag. | | | 1,350 |
| Jan.13 | E | | | 1,000 |
| | Total | | | 2,350 |

Sales Return Book

| Date 1997 | Particulars | Ref. No. | L.F. | Amount Rs. |
|--------------|-------------|-------------|------|---------------|
| Jan.18 | E | | | 60 |
| | Total | | | 60 |

Cash Book

| Date 1997 Jan | Receipts | L F | Disc | Cash Rs. | Bank Rs. | Date 1997 Jan | Payments | L F | Disc | Cash Rs. | Bank Rs. |
|---------------------|----------------------|--------|------|-------------|-------------|---------------------|-----------------|--------|------|-------------|-------------|
| 1 | To Bal. b/d | - | - | 2,000 | 500 | 6 | By Rent A/c | - | - | 50 | - |
| 20 | To E | - | - | 600 | | 7 | By Donations | - | - | 100 | - |
| 21 | To Cash A/c | | - | - | 300 | 19 | By B A/c | - | 60 | - | 400 |
| 22 | To Furnitur e A/c | - | - | 80 | - | 20 | By Furniture | - | - | 400 | - |
| | | | | | | 24 | By Drawings | - | - | 100 | - |
| | | | | | | 31 | By Bank A/c | | | | 300 |
| | | | | | | | By Bal. c/d | | | 1730 | 300 |
| | Total | | | 2680 | 800 | | | | 60 | 2680 | |

Rs. 500 – Returns 40 = Rs. 460; Rs. 460 – 400 = Rs. 60.

Journal Proper

| Date | Particular | L.F. | Dr. Amount | Cr. Amount |
|--------|---|------|---------------|---------------|
| 1998 | | | Rs. | Rs. |
| Jan. 1 | Furniture A/c... Dr. | | 800 | |
| | Machinery A/c... Dr. | | 2,000 | |
| | Debtors A/c... Dr. | | 1,200 | |
| | Cash A/c... Dr. | | 2,000 | |
| | Bank A/c... Dr. | | 500 | |
| | To Creditors A/c | | | 3,000 |
| | To Capital A/c | | | 3,500 |
| | (Opening entry for the balances in new books) | | | |
| Jan.21 | Furniture A/c.... Dr. | | | |
| | To Mohan | | 200 | |
| | (Furniture purchased from Mohan) | | | 200 |
| Jan.23 | R. Dr. | | | |
| | To Furniture A/c | | 40 | |
| | (Sales of old furniture to R) | | | 40 |
| Jan.31 | Salaries A/c... Dr. | | | |
| | Wages A/c ... Dr. | | 200 | |
| | To Outstanding Salaries A/c | | 50 | |
| | To Outstanding Wages A/c | | | 200 |
| | (Salaries and Wages outstanding) | | | 50 |
| | Total Rs. | | 6,990 | 6,990 |

2.6 TRIAL BALANCES

Let us now understand Trial Balance. It is a list of debit and credit balances extracted from the ledger as on a particular date. Since for every debit entry there is a corresponding credit entry of equivalent amount; therefore the total of the debit and credit balances must agree in equal amount. A trail Balance essentially proves the arithmetical accuracy of the entries passed in the books of account and is derived from the ledger, where all the accounts find a place. Trial Balance is prepared after striking the balance of the various accounts in the ledger. A Trial Balance has four column; normally. Particulars, ledger folio, debit balances and credit balances. It is prepared at certain intervals of period i.e. monthly quarterly, half yearly and normally for the accounting year. Trail Balance is an essential mechanism for ensuring the arithmetic accuracy of the accounts.

Objects of Preparing Trial Balance:

- It forms the very basis on which final accounts are prepared.
- It helps in knowing the balance on any particular account in the ledger.
- It is a test of arithmetical accuracy.

A trial balance is not a conclusive proof of the absolute accuracy of the account. It does not indicate the absence of an error. So also, a non-tailed trial balance indicates the presence of book keeping error.

Errors Disclosed By the Trial Balance:

A Trail Balance will be in disagreement on account of the following errors.

- Wrong posting of entries i.e. a debit entry of Rs. 500 for purchase of furniture wrongly posted as Rs. 50 in the account.

- b) Omission of posting e.g. when a debit entry of Rs. 500 for purchase of furniture has been not posted at all.
- c) Duplication of posting e.g. when a debit entry of Rs. 500 for purchase of furniture has been posted twice to the account.
- d) Wrong side of posting e.g. when debit entry is posted on the credit side or credit entry is posted on the debit side. I.e. when debit entry of Rs. 500 is posted on the credit side and vice versa.
- e) Errors in casting the totals of debit or credit side of the Trail Balance.
- f) Wrong Transfer of balances to the trial balance.
- g) Omission of entering the balance of account in the trial balance.
- h) Balance of cash book omitted to be recorded in the trial balance.
- i) Wrong balancing of account.
- j) Errors in the total or posting or entries of subsidiary book.
- k) Wrong carry forward of balances in the various books, i.e. day books, cash book etc.

Errors Not Disclosed By Trial Balance:

- a) The following error does not affect the agreement of the trial balance:
- b) Errors of omission to record any transaction.
- c) Posting of wrong amount both debit and credit side to the account.
- d) Error made in posting of debit or credit entry is compensated by an identical error of equal amount. These errors are known as errors of compensation.
- e) Errors made in posting a transaction on the correct side of wrong account.
- f) Erroneously recording a transaction twice. These are known as errors of duplication.
- g) Errors of principle; when the accounting principle is disregarded; e.g. a capital item treated as revenue item and vice versa, i.e. purchase of furniture posted to Purchase A/c.

Methods of Locating Errors in Trial Balance: The following are the some of the ways of detecting errors in trial balance.

- a) When digits are wrongly interchanged; it causes the error to occur in multiples of 9. Therefore, if the difference is a multiple of 9, there are good chances of error occurring in transposition of digits, e.g. when 96 is recorded as 69.
- b) When the difference is an even number divide by 2 and check whether such an amount is wrongly entered on the wrong side of debit or credit.
- c) If the difference is a multiple of 10 or 100 or 1000, then there are chances of the error occurring in the totaling.
- d) Ensure that all the balances of ledger accounts have been considered in the trial balance.
- e) Ensure that there is no omission of recording the balances from the subsidiary books on cash book.
- f) Check for all the postings and totals.

If the difference still persists, it can be transferred temporarily to Suspense A/c and on locating the errors at a future date, the Suspense A/c can be closed.

Problem:

Journalize the following transactions and post them to Ledger and balance the accounts. Also prepare a Trial Balance as on 31st April 1993.

April 1993

| | |
|----------|---|
| April 1 | Ravi started business with Rs. 15,000 of Rs. 4,000 were borrowed at 15% p.m. from Shri Shashi |
| April 2 | Purchased goods worth Rs. 4,000 from Anant at 2% trade discount |
| April 3 | Cash sales to Madan Rs. 1,200. |
| April 6 | Credit sales to Salvi Rs. 2,000 less trade discount 2%. |
| April 9 | Paid cash Rs. 1,950 to Anant and received discount of Rs. 10. |
| April 12 | Received Rs. 1,950 from Salvi in full settlement of his dues |
| April 14 | Returned goods of the price of Rs. 100 to Anant. |
| April 16 | Paid into bank Rs. 5,000 |
| April 18 | Issued a cheque for Rs. 1,000 to Anant on account |
| April 19 | Purchased goods of Rs. 2,000 from Anant. |
| April 22 | Sold goods costing Rs. 1,000 at 25% profit to Ratan. |
| April 22 | Received commission Rs. 800 from S & Co. |
| April 24 | Received a cheque for Rs. 395 from Ratan & he was allowed discount Rs. 5. |
| April 25 | Ratan returned goods of Rs. 50. |
| April 30 | Paid Salaries Rs. 2,000 out of which Rs. 1,200 paid by cheque. |
| April 30 | Paid into Bank Rs. 500. |
| April 30 | Paid Office Rent by cheque Rs. 300. |

Solution: Journal

| Date | Particulars | L.F. | Dr. (Rs.) | Cr. (Rs.) |
|---------------|--|-------------|------------------|------------------|
| 1993 Apr.1 | Cash A/c ... Dr. To Capital A/c To Shashi's Loan A/c (Being Cash brought into business and loan taken from Shashi @ 15% to start the business.) | | 15,000 | 11,000 4,000 |
| Apr.2 | Purchases A/c... Dr. To Anant's A/c (Being Credit purchases from Anant.) | | 3,920 | 3,920 |
| Apr.3 | Cash A/c ... Dr. To Sales A/c (Being Cash sales.) | | 1,200 | 1,200 |
| Apr.6 | Salvi A/c ... Dr. To Sales A/c (Being Credit sales to Salvi) | | 1,960 | 1,960 |
| Apr.9 | Anant's A/c ... Dr. To Cash A/c To Discount A/c (Being cash paid to & received discount from Anant.) | | 1,960 | 1,950 10 |
| Apr.12 | Cash A/c... Dr. Discount A/c ... Dr. To Salvi's A/c (Being cash received from & allowed discount to Salvi.) | | 1,950 10 | 1,960 |
| Apr.14 | Anant's A/c ... Dr. To Returns Outwards A/c (Being returned goods to Anant.) | | 98 | 98 |
| Apr.16 | Bank A/c ... Dr. To Cash A/c (Being Cash paid into Bank.) | | 5,000 | 5,000 |
| Apr.18 | Anant's A/c ... Dr. To Bank A/c (Being cheque issued to Anant.) | | 1,000 | 1,000 |
| Apr.19 | Purchase A/c ... Dr. To Anant's A/c (Being credit purchases from Anant.) | | 2,000 | 2,000 |
| Apr.22 | Raten's A/c ... Dr. To Sales A/c (Being credit sales to return.) | | 1,250 | 1,250 |
| Apr.22 | Cash A/c ... Dr. To Commission A/c (Being commission received.) | | 800 | 800 |
| Apr.24 | Cash A/c ... Dr. Discount A/c ... Dr. To Ratan's A/c (Being received a cheque from & allowed | | 395 5 | 400 |

| | | | | |
|--------|--|-----|-------|--------------|
| | discount to Ratan.) | | | |
| Apr.25 | Returns Inwards A/c ... To Ratan's A/c (Being Received goods returned by Ratan.) | Dr. | 50 | 50 |
| Apr.30 | Interest A/c ... To Cash A/c (Being paid interest for April'93 to Shashi on loan taken from him.) | Dr. | 50 | 50 |
| Apr.30 | Salaries A/c ... To Cash A/c To Bank A/c (Being paid salaries Rs. 800 in cash and Rs. 1,200 by cheque.) | Dr. | 2,000 | 800 1,200 |
| Apr.30 | Bank A/c... To Cash A/c (Being Cash deposited in Bank.) | Dr. | 500 | 500 |
| Apr.30 | Rent A/c ... To Bank A/c (Being issued cheque for office rent for April'93.) | Dr. | 300 | 300 |

Solution: Ledger

Cash A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|--------|----------------------|------|---------------|---------|-----------------|------|---------------|
| 1993 | | | | 1993 | | | |
| Apr. 1 | To Capital A/c | | 11,000 | April 9 | By Anant's A/c | | 1,950 |
| 3 | To Shashi's Loan A/c | | 4,300 | 16 | By Bank A/c | | 5,000 |
| 12 | To Sales A/c | | 1,200 | 30 | By Interest A/c | | 50 |
| 22 | To Salvi's A/c | | 1,950 | 30 | By Salaries A/c | | 800 |
| 24 | To Commission | | 800 | 30 | By Bank A/c | | 500 |
| May 1 | To Ratan's A/c | | 395 | 30 | By Balance c/d | | 11,045 |
| | | | <u>19,345</u> | | | | <u>19,345</u> |
| | To Balance b/d | | 11,045 | | | | |

Bank A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|--------|----------------|------|--------------|----------|-----------------|------|--------------|
| 1993 | | | | 1993 | | | |
| Apr.16 | To Cash A/c | | 5,000 | April 18 | By Anant's A/c | | 1,000 |
| 30 | To Cash A/c | | 500 | 30 | By Salaries A/c | | 1,200 |
| | | | | 30 | By Rent A/c | | 300 |
| | | | | 30 | By Balance c/d | | 3,000 |
| | | | <u>5,500</u> | | | | <u>5,500</u> |
| May 1 | To Balance b/d | | 3,000 | | | | |

Salaries A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|------|------------|------|-----|------|------------|------|-----|
|------|------------|------|-----|------|------------|------|-----|

| | | | | | | | |
|-----------------------|----------------------------|--|-----------------------|-----------------|----------------|--|----------------|
| 1993 April30 30 | To Cash A/c To Bank A/c | | 800 1,200 2,000 | 1993 April30 | By Balance c/d | | 2,000 2,000 |
| May24 | To Balance b/d | | 2,000 | | | | |

Rent A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|-----------------|----------------|------|------------|-----------------|----------------|------|------------|
| 1993 April30 | To Bank A/c | | 300 300 | 1993 April30 | By Balance c/d | | 300 300 |
| May1 | To Balance b/d | | 300 | | | | |

Commission A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|-----------------|----------------|------|------------|-----------------|----------------|------|------------|
| 1993 April30 | To Balance c/d | | 800 800 | 1993 April22 | By Cash A/c | | 800 800 |
| | | | | May 1 | By Balance b/d | | 800 |

Interest A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|-----------------|----------------|------|----------|-----------------|----------------|------|----------|
| 1993 April30 | To Cash A/c | | 50 50 | 1993 April30 | By Balance c/d | | 50 50 |
| May 1 | To Balance b/d | | 50 | | | | |

Discount A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|-----------------------|----------------------------------|------|---------------|--------------------------|----------------------------------|------|---------------|
| 1993 April12 24 | To Salvi's A/c To Ratan's A/c | | 10 5 15 | 1993 April 9 30 | By Anant's A/c By Balance c/d | | 10 5 15 |
| May 1 | To Balance b/d | | 5 | | | | |

Capital A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|-----------------|----------------|------|------------------|--------------------|----------------|------|------------------|
| 1993 April30 | To Balance c/d | | 11,000 11,000 | 1993 April 1 | By Cash A/c | | 11,000 11,000 |
| | | | | May 1 | By Balance b/d | | 11,000 |

Shashi's Loan A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|------|------------|------|-----|------|------------|------|-----|
| | | | | | | | |

| | | | | | | | |
|------------------|----------------|--|-------|--------------------|----------------|--|-------|
| 1993 April 30 | To Balance c/d | | 4,000 | 1993 April 1 | By Cash A/c | | 4,000 |
| | | | 4,000 | | | | 4,000 |
| | | | | May 1 | By Balance b/d | | 4,000 |

Salvi's A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|--------------------|--------------|------|-------|------------------------|-----------------|------|-------|
| 1993 April 6 | To Sales A/c | | 1,960 | 1993 April 12 12 | By Cash A/c | | 1,950 |
| | | | 1,960 | | By Discount A/c | | 10 |
| | | | | | | | 1,960 |

Anant's A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|--------------------|--------------------------|------|-------|--------------------|------------------|------|-------|
| 1993 April 9 | To Cash A/c | | 1,950 | 1993 April 2 | By Purchases A/c | | 3,920 |
| 9 | To Discount A/c | | 10 | 19 | By Purchases A/c | | 2,000 |
| 14 | To Return outward A/c | | 98 | | | | |
| | To Bank A/c | | 1,000 | | | | |
| 18 | To Balance c/d | | 2,862 | | | | |
| 30 | | | 5,920 | May 1 | By Balance b/d | | 5,920 |
| | | | | | | | 2,862 |

Ratan's A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|------------------|----------------|------|-------|------------------|---------------------------|------|-------|
| 1993 April 22 | To Sales A/c | | 12,50 | 1993 April 24 | By Cash A/c | | 395 |
| | | | | 25 | By Discount A/c | | 5 |
| | | | | | By Returns Inwards A/c | | 50 |
| | | | | 30 | By Balance c/d | | 800 |
| | | | 1,250 | | | | 1,250 |
| May 1 | To Balance b/d | | 800 | | | | |

Purchases A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|----------------|----------------|------|-------|-----------------|----------------|------|-------|
| 1993 Apr. 2 | To Anant's A/c | | 3,920 | 1993 April30 | By Balance c/d | | 5,950 |
| 19 | To Anant's A/c | | 2,000 | | | | |
| | To Balance b/d | | 5,920 | | | | 5,950 |
| May 1 | | | 5,920 | | | | |

Sales A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|-----------------|----------------|------|-------|--------------------|-----------------|------|-------|
| 1993 April30 | To Balance c/d | | 4,410 | 1993 April 3 | By Cash A/c | | 1,200 |
| | | | | 6 | By Salvis's A/c | | 1,960 |
| | | | 4,410 | 22 | By Ratan's A/c | | 1,250 |
| | | | | May 1 | By Balance b/d | | 4,410 |
| | | | | | | | 4,410 |

Returns Outward A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|-----------------|----------------|------|-----|-----------------|----------------|------|-----|
| 1993 April30 | To Balance c/d | | 98 | 1993 April14 | By Anant's A/c | | 98 |
| | | | 98 | | | | 98 |
| | | | | May 1 | By Balance b/d | | 98 |

Returns Inwards A/c

| Date | Particular | L.F. | Rs. | Date | Particular | L.F. | Rs. |
|-----------------|----------------|------|-----|-----------------|----------------|------|-----|
| 1993 April25 | To Ratan's A/c | | 50 | 1993 April30 | By Balance c/d | | 50 |
| | | | 50 | | | | 50 |
| May 1 | To Balance b/d | | 50 | | | | |

Trial Balance as on 30th April 1993

| Particular | Dr. (Rs.) | Cr. (Rs.) |
|-----------------------|--------------|--------------|
| Cash A/c | 11,045 | -- |
| Bank A/c | 3,000 | -- |
| Salaries A/c | 2,000 | -- |
| Rent A/c | 300 | -- |
| Commission A/c | -- | 800 |
| Interest A/c | 50 | -- |
| Discount A/c | 5 | -- |
| Capital A/c | -- | 11,000 |
| Shashi's Loan A/c | -- | 4,000 |
| Creditors (Anant) A/c | -- | 2,862 |
| Debtor (Ratan) | 800 | -- |
| Purchases A/c | 5,920 | -- |
| Sales A/c | -- | 4,410 |
| Returns Outwards A/c | -- | 98 |
| Returns Inwards A/c | 50 | -- |
| Total | 23,170 | 23,170 |

Problem:

Enter the following transactions in the subsidiary books and post them into ledger and prepare a Trial balance.

| | | |
|---------|--|----------|
| 1998 | | |
| 1 Dec. | Mr. X started a business | |
| 5 Dec. | Purchased furniture from Vikram Furniture for | 1,00,000 |
| 7 Dec. | Purchased goods for cash | 20,000 |
| 10 Dec. | Purchased goods from AB & Co. for Rs. 30,000. Trade Discount 20% | 15,000 |
| 12 Dec. | Opened a bank account by depositing | 25,000 |
| 14 Dec. | Sold goods for cash | 15,000 |
| 15 Dec. | Purchased Stationery for Rs. 1,000 from Sayyed Stationery Mart | |
| 18 Dec. | Sold goods to Yusuf | 5,000 |
| 20 Dec. | Goods returned by Yusuf | 400 |
| 21 Dec. | Payment to AB & Co. by cheque | 5,000 |
| 22 Dec. | Purchased goods on credit from Ramesh & Co. for | 20,000 |
| 23 Dec. | Returned goods to Ramesh & Co. worth | 2,000 |
| 23 Dec. | Paid Electricity bill for | 400 |
| 29 Dec. | Cash sale for | 5,000 |
| 30 Dec. | Withdraw Rs. 2,000 for private use from bank. | |

Solution: Cash Book (With Bank Column)

Dr.

Cr.

| Date | Particulars | L F | Cash | Bank | Date | Particulars | L F | Cash | Bank |
|--------------------|-----------------------------|--------|----------|--------|--------------------|----------------|--------|----------|--------|
| 1998 1Dec 12 | To Capital | | 1,00,000 | | 1998 1Dec 12 | By Purchase | | 15,000 | |
| | To Cash (Opening A/c) | | | 25,000 | 21 | By Bank | | 25,000 | |
| 14 | To Sales | | 15,000 | | 23 | (Opening A/c) | | | |
| 29 | To Sales | | 5,000 | | | By AB & Co. | | 5,000 | |
| | | | | | | By Electricity | | 400 | |
| | | | | | 30 | By Drawing | | 2,000 | |
| | | | | | 31 | A/c | | 79,600 | 18,000 |
| | | | 1,20,000 | 25,000 | | By Bal. C/d | | 1,20,000 | 18,000 |
| | To Bal. B/d | | | | | | | | |
| 1999 1Jan | | | 79,600 | 18,000 | | | | | |

Purchase Day Book

| Date | Particulars | L.F. | Rs. |
|-----------------|----------------------------|------|--------|
| 1998 10 Dec. | AB & Co. 30,000 | | |
| | Less: Trade discount 6,000 | | 24,000 |
| 22 Dec. | Ramesh & Co. | | 20,000 |
| | Purchases Account Dr. | | 44,000 |

Sales Day Book

| Date | Particulars | L.F. | Rs. |
|-----------------|-------------------|------|-------|
| 1998 18 Dec. | Yusuf | | 5,000 |
| | Sales Account Cr. | | 5,000 |

Purchase Return Book

| Date | Particulars | L.F. | Rs. |
|-----------------|-----------------------------|------|-------|
| 1998 23 Dec. | Ramesh & Co. | | 2,000 |
| | Purchases Return A/c... Cr. | | 2,000 |

Sales Return Book

| Date | Particulars | L.F. | Rs. |
|-----------------|---------------------------|------|-----|
| 1998 20 Dec. | Yusuf | | 400 |
| | Sales Returns A/c ... Dr. | | 400 |

Journal Proper

| Date | Particulars | L.F. | Rs. | Rs. |
|----------------|---|------|--------|--------|
| 1998 5 Dec. | Furniture A/c ... Dr. To Vikram Furniture A/c (Being furniture purchased on credit) | | 20,000 | 20,000 |
| 15 Dec. | Stationery A/c To Sayyed Stationery Mart A/c (Being purchase of Stationery) | | 1,000 | 1,000 |

Ledger of X Capital Account

| Date | Particular | Rs. | Date | Particular | Rs. |
|----------------|----------------|----------|---------------|----------------|----------|
| 1998 31 Dec | To Balance c/d | 1,00,000 | 1998 1 Dec | By Cash A/c | 1,00,000 |
| | | 1,00,000 | | | 1,00,000 |
| | | | 1999 1 Jan | By Balance b/d | 1,00,000 |

Furniture Account

| Date | Particular | Rs. | Date | Particular | Rs. |
|---------------|----------------------------|--------|----------------|----------------|--------|
| 1998 5 Dec | To Vikram Furniture A/c | 20,000 | 1998 31 Dec | By Balance c/d | 20,000 |
| | | 20,000 | | | 20,000 |
| 1999 1 Jan | To Balance b/d | 20,000 | | | |

Vikram Furniture Account

| Date | Particular | Rs. | Date | Particular | Rs. |
|----------------|----------------|--------|---------------|------------------|--------|
| 1998 31 Dec | To Balance c/d | 20,000 | 1998 5 Dec | By Furniture A/c | 20,000 |
| | | 20,000 | | | 20,000 |
| | | | 1999 1 Jan | By Balance b/d | 20,000 |

Purchases Account

| Date | Particular | Rs. | Date | Particular | Rs. |
|----------------|-------------------------|--------|----------------|----------------|--------|
| 1998 9 Dec | To Cash A/c | 15,000 | | | |
| 1998 31 Dec | To Purchase day book | 44,000 | 1998 31 Dec | By Balance c/d | 59,000 |
| | | 59,000 | | | 59,000 |
| 1999 1 Jan | To Balance b/d | 59,000 | | | |

Sales Account

| Date | Particular | Rs. | Date | Particular | Rs. |
|--------|----------------|--------|--------|-------------------|--------|
| 1998 | | | 1998 | | |
| | | | 14 Dec | By Cash A/c | 15,000 |
| | | | 29 Dec | By Cash A/c | 5,000 |
| 31 Dec | To Balance c/d | 25,000 | 31 Dec | By Sales Bay Book | 5,000 |
| | | 25,000 | | | 25,000 |
| | | | 1999 | | |
| | | | 1 Jan | By Balance b/d | 25,000 |

Stationary Account

| Date | Particular | Rs. | Date | Particular | Rs. |
|--------|-------------------------------|-------|--------|----------------|-------|
| 1998 | | | 1998 | | |
| 15 Dec | To Sayyed Stationery Mart A/c | 1,000 | 31 Dec | By Balance c/d | 1,000 |
| | | 1,000 | | | 1,000 |
| 1999 | | | | | |
| 1 Jan | To Balance b/d | 1,000 | | | |

Sayyed Stationary Account

| Date | Particular | Rs. | Date | Particular | Rs. |
|--------|----------------|-------|--------|-------------------|-------|
| 1998 | | | 1998 | | |
| 31 Dec | To Balance c/d | 1,000 | 15 Dec | By Stationery A/c | 1,000 |
| | | 1,000 | | | 1,000 |
| | | | 1999 | | |
| | | | 1 Jan | By Balance b/d | 1,000 |

Electricity Account

| Date | Particular | Rs. | Date | Particular | Rs. |
|--------|----------------|-----|--------|----------------|-----|
| 1998 | | | 1998 | | |
| 23 Dec | To Cash | 400 | 31 Dec | By Balance c/d | 400 |
| | | 400 | | | 400 |
| 1999 | | | | | |
| 1 Jan | To Balance b/d | 400 | | | |

Drawing Account

| Date | Particular | Rs. | Date | Particular | Rs. |
|--------|----------------|-------|--------|----------------|-------|
| 1998 | | | 1998 | | |
| 30 Dec | To Bank | 2,000 | 31 Dec | By Balance c/d | 2,000 |
| | | 2,000 | | | 2,000 |
| 1999 | | | | | |
| 1 Jan | To Balance b/d | 2,000 | | | |

Purchases Return Account

| Date | Particular | Rs. | Date | Particular | Rs. |
|--------|----------------|-------|--------|---------------------------|-------|
| 1998 | | | 1998 | | |
| 31 Dec | To Balance c/d | 2,000 | 31 Dec | By Purchase returns books | 2,000 |
| | | 2,000 | | | 2,000 |
| | | | 1999 | | |
| | | | 1 Jan | To Balance b/d | 2,000 |

Sales Return Account

| Date | Particular | Rs. | Date | Particular | Rs. |
|--------|----------------------|-----|--------|----------------|-----|
| 1998 | | | 1998 | | |
| 31 Dec | To Sales Return Bank | 400 | 31 Dec | By Balance c/d | 400 |
| | | 400 | | | 400 |
| 1999 | | | | | |
| 1 Jan | To Balance b/d | 400 | | | |

AB & Co. Account

| Date | Particular | Rs. | Date | Particular | Rs. |
|--------|----------------|--------|--------|------------------|--------|
| 1998 | | | 1998 | | |
| 21 Dec | To Bank A/c | 5,000 | 10 Dec | By Purchases A/c | 24,000 |
| 31 Dec | To Balance c/d | 19,000 | | | 24,000 |
| | | 24,000 | | | |
| | | | 1999 | | |
| | | | 1 Jan | By Balance b/d | 19,000 |

Ramesh & Co. Account

| Date | Particular | Rs. | Date | Particular | Rs. |
|--------|----------------|--------|-------|------------------|--------|
| 1998 | | | 1998 | | |
| 23 Dec | To Purchases | 2,000 | 2 Dec | By Purchases A/c | 20,000 |
| | Return | | | | |
| 31 Dec | To Balance c/d | 18,000 | | | 20,000 |
| | | 20,000 | | | |
| | | | 1999 | | |
| | | | 1 Jan | By Balance b/d | 18,000 |

Yusuf Account

| Date | Particular | Rs. | Date | Particular | Rs. |
|--------|----------------|-------|--------|------------------|-------|
| 1998 | | | 1998 | | |
| 18 Dec | To Sales A/c | 5,000 | 20 Dec | By Sales Returns | 400 |
| | | | 31 Dec | By Balance c/d | 4,600 |
| | | 5,000 | | | 5,000 |
| 1999 | | | | | |
| 1 Jan | To Balance b/d | 4,600 | | | |

Trial Balance as on 31-12-1998

| Sr. | Particular | L.F. | Dr. | Cr. |
|-----|------------|------|-----|-----|
|-----|------------|------|-----|-----|

| No. | | Rs. | Rs. |
|-----|--------------------------|-----------------|-----------------|
| | Capital Account | | 1,00,000 |
| | Furniture Account | 20,000 | |
| | Vikram Furniture Account | | 20,000 |
| | Purchases Account | 59,000 | |
| | Sales Account | | 25,000 |
| | Stationery Account | 1,000 | |
| | Sayyed Stationery Mart | | 1,000 |
| | Electricity Account | 400 | |
| | Drawings Account | 2,000 | |
| | Purchases Returns A/c | | 2,000 |
| | Sales Returns A/c | 400 | |
| | AB & Co. Account | | 19,000 |
| | Ramesh & Co. Account | | 18,000 |
| | Yusuf Account | 4,600 | |
| | Cash Account | 79,600 | |
| | Bank Account | 18,000 | |
| | Total | 1,85,000 | 1,85,000 |

2.7 REVIEW QUESTIONS

Illustration 1. Show the classification of the following Accounts according to traditional approach:

- (a) Building;
- (b) Purchases;
- (c) Sales;
- (d) Bank Deposits;
- (e) Rent;
- (f) Rent Outstanding;
- (g) Cash
- (h) Adjusted Purchases;
- (i) Closing Stock;
- (j) Investments;
- (k) Debtors;
- (l) Sales Tax Payable;
- (m) Discount Allowed;
- (n) Bad Debts;
- (o) Capital;
- (p) Drawings;
- (q) Provision for Depreciation Account;
- (r) Interest Receivable Account;
- (s) Rent Received in Advance Account;
- (t) Prepaid Salary Account;
- (u) Provision for Bad and Doubtful debts account;
- (v) Bad debts recovered account;
- (w) Depreciation Account;
- (x) Personal income tax Account;
- (y) Stock reserve account;
- (z) Provision for discount on creditors account.

Also classify the above-mentioned accounts according to accounting equation approach.

Nature of Account

| Sr. No. | Title of Account | Traditional Approach | Accounting Equation Approach |
|---------|---------------------|----------------------|------------------------------|
| (a) | Building | Real | Asset |
| (b) | Purchases | Real | Asset |
| (c) | Sales | Nominal (Revenue) | Temporary Capital (Revenue) |
| (d) | Bank Deposits | Personal | Asset |
| (e) | Rent | Nominal (Expense) | Temporary Capital (Expense) |
| (f) | Rent Outstanding | Personal | Liability |
| (g) | Cash | Real | Asset |
| (h) | Adjusted Purchases | Nominal (Expense) | Temporary Capital (Expense) |
| | Closing Stock | | |
| (i) | Investments | Real | Asset |
| (j) | Debtors | Real | Asset |
| (k) | Sales Tax Payable | Personal | Asset |
| (l) | Discount Allowed | Personal | Liability |
| (m) | Bad Debts | Nominal (Expense) | Temporary Capital (Expense) |
| (n) | Capital | Nominal (Expense) | Temporary Capital (Expense) |
| (o) | Drawings | Personal | Capital |
| (p) | Provision for | Personal | Temporary Capital (Drawings) |
| (q) | Depreciation | Valuation (Real) | Asset |
| | Interest Receivable | | |
| (r) | Rent Received in | Personal | Asset |
| (s) | Advance | Personal | Liability |
| | Prepaid Salary | | |
| (t) | Provision for Bad | Personal | Valuation (Asset) |
| (u) | and Doubtful debts | Valuation (Personal) | Valuation (Asset) |
| | Bad debts | | |
| (v) | recovered | Nominal (Gain) | Temporary Capital (Gain) |
| (w) | Depreciation | Nominal (Expense) | Temporary Capital (Expense) |
| (x) | Personal income | Personal (Drawing) | Temporary Capital (Drawings) |
| (y) | tax | Valuation (Real) | Valuation (Asset) |
| (z) | Stock Reserve | Valuation (Personal) | Valuation (Liability) |
| | Provision for | | |
| | discount on | | |
| | creditors | | |

1. Give an example of business transactions affecting only:
Assets, (ii) Liabilities, (iii) Capital
2. Differentiate between (i) Temporary capital accounts and nominal accounts; (ii) Trade discount and cash discount.
3. Do you agree with the following statements? (i) Sales day book is a part of ledger. (ii) Opening stock account is nominal account. (iii) Purchase day book records all credit purchases of goods. (iv) Drawings account is a temporary capital account. (v) A transaction can increase an asset and decrease a liability. (vi) Discount account records trade discount. (vii) Patent rights in the made for prompt payment is called trade discount. (viii) The allowance made for prompt payment is called trade discount.

(ix) Capital + Long term liabilities = Fixed Assets + Current Assets + Cash – Current Liabilities.

4. What are the rules of debit and credit for (i) Assets (ii) Liabilities (iii) Capital (iv) Revenue (v) Expenses (vi) Valuation Accounts?
5. Explain the term journal and state its significance.
6. What the different categories in which the accounting transactions are classified. Also state the rules of Debit and Credit in connection with classification of accounting transaction.

BASIC PRINCIPLES OF PREPARING FINAL ACCOUNT

Structure

- 3.1 Capital and Revenue Expenditure
 - 3.1.1 Revenue and Deferred Revenue Expenditure
 - 3.1.2 Capital and Revenue Receipts
 - 3.1.3 Capital Profit and Loss
- 3.2 Income Statements
 - 3.2.1 Trading Account, Profit and Loss Account
- 3.3 Balance Sheets
 - 3.3.1 Form and Contents of Balance Sheet
 - 3.3.2 Schedules
 - 3.3.3 Balance Sheet Items
 - 3.3.4 Assets and Liabilities Side
- 3.4 Final Accounts
- 3.5 Problems on Final accounts
- 3.6 Review Questions

3.1 CAPITAL AND REVENUE EXPENDITURE

It is that expenditure the benefit of which is not fully consumed in one year but spread over several years. It is that expenditure which results in the purchase or acquisition of asset or property. It is expenditure incurred in connection with the purchase of asset. It is expenditure incurred to bring an old asset into working condition. It is expenditure incurred for extending or improving an existing asset to increase its productivity or to increase the earning capacity of business or to decrease working expenditure. It can be said that the capital expenditure benefits not only the current accounting year but also many years in future. The expenditure is generally non-recurring and the amount spent will be normally large. However, it should be noted that all large expenditures need not be capital expenditure. Capital expenditures are shown in Balance Sheet.

3.1.1 Revenue and Deferred Revenue Expenditure

Revenue Expenditure: It is that expenditure which benefits the current accounting year. It is not carried forward to the next year or years. It is that expenditure which is incurred in the normal course of business to run the business and to maintain the fixed assets of business. It is that expenditure which is incurred to purchase goods meant for resale or to purchase materials which will be used in converting it into final product. It can be therefore said that revenue expenditure is a recurring expenditure made to maintain the business. The amount

spent is generally small and the benefit is for a short period, not more than one year. All revenue expenditures are charged to Trading and Profit and Loss Account.

Deferred Revenue Expenditure: It is that expenditure which is originally revenue in nature but the amount spent is so very large or abnormal that the benefit is received for not one year for many years. A proportionate amount is charged to Profit and Loss Account of each year and balance is carried forward to subsequent years as deferred revenue expenditure and is shown as an asset in the Balance Sheet. e.g. Heavy advertisement expenditure.

3.1.2 Capital and Revenue Receipts:

Capital receipts are those receipts which are received not in ordinary course of business. These are non-recurring receipts. Money obtained from sale of fixed assets or investments, issue of shares or debentures, loans taken are some of the examples of capital receipts. Capital receipts are shown as liability of reduced from assets appearing in the Balance Sheet. Revenue receipts are receipts obtained in normal course of business. It is a receipt against supply of goods or services. Money obtained from sales, interest, dividend, transfer fees, etc., are examples of revenue receipt. Revenue receipts are credited to Profit and Loss Account.

3.1.3 Capital Profit and Loss:

Those profits which are not earned during regular course of business and which are not earned on account of the day to day trading activities of the business are capital profits.

Examples: Profit on sale of asset. Premium received on issue of shares. These types of profits are normally not taken to Profit and Loss Account but are shown on the liabilities side of the Balance Sheet. Those losses which are incurred not during regular course of business. e.g., Discount on issue of shares.

Illustration 3.1

- An old machinery was purchased for Rs. 1, 00,000 on which Rs. 25,000 was spent to bring it in working condition: Ans. Both the above expenses are capital expenditures Rs. 1, 00,000 is spent to acquire the asset and Rs. 25,000 is spent to make the machinery productive. The machinery will be now used for many years and its cost will be Rs. 1, 25,000.
- A building purchased for Rs. 10, 00,000 and Rs. 1, 00,000 was spent for expenses like brokerage, stamp duty, registration charges, and other legal expenses: Ans. Both the above expenditures are capital. Rs. 10,00,000 for purchase of asset and all the incidental expenses for buying the asset amounting to Rs. 1,00,000. The cost of the building will be now Rs. 11, 00,000.
- Repairs to building: Ans. It is a revenue expenditure because it is incurred for maintaining the building, the reason for repairs is not important, neither the amount.
- Amount Spent for replacement of defective and worn out parts of an old plant: Ans. It is revenue expenditure as it is incurred to keep the plant in normal working condition. No new asset comes into existence.
- Heavy expenditure incurred on advertisements: Ans. Normally advertisement is revenue expenditure, but as heavy amount is spent it will be treated as deferred revenue expenditure. The benefit of it will be received for many years. Proportionate amount will be written off every year by debiting Profit and Loss Account and the remaining amount will be shown in the Balance Sheet on asset side.

Illustration 3.2

- A machinery costing Rs. 5, 00,000 was imported on which freight and insurance Rs. 7,000, custom duty Rs. 13,000 clearing charges Rs. 5,000, installation charges Rs. 10,000 were incurred: Ans. Rs. 5, 00,000 spent for purchase of asset as well as all other expense incidental to purchase Rs. 35,000 until the machinery comes in working condition should be considered as capital expenditure. The cost of machinery will be Rs. 5, 35,000
- On existing machinery new equipments were fixed costing Rs. 30,000 to increase the production by 25%: Ans. The above expenditure is capital expenditure as it increases the production capacity and thereby increases the earning capacity of the business. It is a non-recurring expense and should be added to the value of asset.
- Taxes paid: Ans. It is revenue expenditure as it is a regular expense of the business. It is recurring expenses. The benefit is only for one year.
- Expenditure for repainting the factory shed: Ans. As repainting is a normal expenditure made for maintenance of the factory it will be revenue expenditure. It is a recurring expense and no new asset comes into existence.
- Traveling expenses of Directors for a trip abroad for purchasing imported machinery: Ans. As the traveling expenses is incidental expenditure to purchase machinery. It should be treated as capital expenditure and should be added to the cost of machinery. In the case Directors fail to purchase the machinery, it should be treated as deferred revenue expenditure and should be written off over a reasonable period of say 3 to 5 years.

Illustration 3.3

The following is the summarized Trading Account of Kinnar Co. Ltd. an iron manufacturing Company for the year ended 31st March, 1980.

| Dr. | | Cr. | |
|--------------------------------|------------|---------------------------------|------------|
| Particulars | Rs. | Particulars | Rs. |
| To Opening Stock (500 tons) | 30,000 | By Sales (5,500 tons) | 4,12,500 |
| To Materials Consumed | 2,10,000 | By Closing Stock (400 tons.) | 26,000 |
| To Wages | 95,000 | | |
| To Other Mfg. Exp. | 92,000 | | |
| To Gross Profit c/d | 11,500 | | |
| | 4,38,500 | | 4,38,500 |

The total production during the year was 6,000 tons out of which certain quantity were used for construction of the company's building. Wages include Rs. 5,000 and other manufacturing expenses include Rs. 2,000 incurred directly for construction of the building. Recast the Trading Account and ascertain the amount to be capitalized to the Building Account.

Solution:

Dr. Trading Account for the year ended 31st March, 1980 Cr.

| <i>Particulars</i> | | <i>Rs.</i> | <i>Particulars</i> | | <i>Rs.</i> |
|--------------------------------|--------------|------------|---|--|------------|
| To Opening Stock (500 tons) | | 30,000 | By Sales (5,500 tons) | | 4,12,500 |
| To Materials Consumed | | 2,10,000 | By Building A/c (Amount of cost of iron to be capitalized) | | 39,000 |
| To Wages | 95,000 | | By Closing Stock (400 tons.) | | 26,000 |
| Less: For Building | <u>5,000</u> | 90,000 | | | |
| To Other Mfg. Exp. | 92,000 | | | | |
| | <u>2,000</u> | 90,000 | | | |
| Less: For Building | | 57,500 | | | |
| To Gross Profit c/d | | 4,77,500 | | | 4,77,500 |

Working Notes:

Dr. Quantity Cr.

| <i>Particulars</i> | <i>Tons</i> | <i>Particulars</i> | <i>Rs.</i> |
|--------------------|--------------|-------------------------|--------------|
| To Opening Stock | 500 | By Sales | 5,500 |
| To Production | 6,000 | By Closing Stock | 400 |
| | | By Building (bal. Fig.) | 600 |
| | <u>6,500</u> | | <u>6,500</u> |

To find cost of per ton:

| Particulars | Rs. |
|---------------------------------------|-----------------|
| Materials Consumed | 2,10,000 |
| Wages | 90,000 |
| Manufacturing expenses | 90,000 |
| Total Cost of Manufacture 6,000 tons. | <u>3,90,000</u> |

$$\therefore \text{Cost per ton} = \frac{3,90,000}{6,000} = \text{Rs. } 65.$$

$$\text{Cost of 600 tons of iron used for building} = 600 \times 65 = 39,000$$

To find amount capitalized to Building Account:

| Particulars | Rs. |
|------------------------|---------------|
| Wages | 5,000 |
| Manufacturing expenses | 2,000 |
| Iron | 39,000 |
| Total | <u>46,000</u> |

Illustration 3.4

- a) **A cinema theatre incurred Rs. 10,000 for additional exists:** The above expenditure does not increase the earning capacity of business neither a new asset comes into existence. Therefore, the above expense should be considered as revenue expenditure.
- b) **Cost of goodwill purchased:** It is a capital expenditure. The amount spent will give benefit for many years.
- c) **A petrol driven engine of a passenger bus replaced by a diesel engine:** It is a capital expenditure as it is non-recurring expense and it will improve the efficiency of the bus. It will also increase the earning capacity of the bus as diesel will cost less than petrol. It decreases the working expenditure.
- d) **Customs duty paid on import of raw materials:** It is revenue expenditure as raw materials are trading goods, and all expenses related to purchase of trading goods are revenue. It is usual expenses.
- e) **Purchase of uniforms, umbrellas and raincoats for staff and employees:** It is a normal expenditure for staff welfare and should be considered as revenue expenditure.

Illustration 3.5

- a) **Legal expenses incurred in connection with the issue of share capital:** Any expenditure incurred at the time of formation of company is debited to Preliminary Expense Account. Legal expenses are also debited to preliminary expenses. The term of preliminary expenses is shown under the head Miscellaneous Expenses, on the assets side of the Balance Sheet. It is an example of deferred revenue expenditure, and is written off over a period of years.
- b) **Cost of Replacement of defective part of the machinery:** When a machine is purchased, the cost incurred is debited to the Machinery Account, but when any part of the machine is replaced on subsequent occasion, the expenses incurred are debited to Machinery Repairs Account. Such expenses are known as Revenue Expenditure. It is incurred to maintain the asset.
- c) **Expenditure incurred in preparing a project Report:** All the time when project report is being prepared. Certain expenses are required to be incurred such as market survey expenses. When expenses are incurred it is not certain as to whether the project would materialize or not. If the project materializes and expenses incurred are sizeable they are treated as capital expenditure. Whereas, in case of a project which does not materialize, the project expenses are treated as revenue expenditure.
- d) **Expenditure incurred for training employees for better running of machinery:** Expenditure incurred for training employees for better running of machinery no doubt results into greater efficiency and thereby increases profits of the business. However, such expenses are treated as revenue expenditure as it does not result into acquisition of any tangible assets.
- e) **Expenditure incurred for repairing cinema screen:** When the cinema screen is first constructed, the expense incurred is capitalized. On a subsequent date, when the screen is repaired, expenditure incurred for repairs is treated as Revenue Expenditure. The case would be different if the cinema screen is replaced by a wider screen. In such a case, part of the expenses is treated as revenue expenditure and the balance amount is treated as capital expenditure.

Illustration 3.6

- a) **Damages paid for Breach of Contract:** It is a revenue expenses as such expenses are ordinary and normal expenses and are incurred in the ordinary course of business.
- b) **Stock of Rs. 5,000 destroyed by fire and Rs. 3,500 received from Insurance Company:** The recovery of Rs. 3,500 from insurance Company is a revenue receipt because it is on account of trading asset. The loss is a revenue loss as stock is a trading asset, and this loss will be debited to Profit & Loss Account.
- c) **Profit on Sale of Investment:** If the investments are trading assets then the profit on sale will be treated as revenue receipt and shown on credit side of Profit and Loss Account if investments are not trading assets then the profit will be treated as capital gain.
- d) **Legal expenses incurred in an income tax appeal:** Legal expenses incurred in connection with income tax appeal are revenue expenses because they are normal business expenses incurred, while doing business.

Illustration 3.7

- a) **Compensation for loss of goodwill:** It is a capital receipt as Goodwill is an asset and any amount received on loss of asset should be treated as capital receipt.
- b) **Dividend on Investment:** As it is regular income it is a revenue receipt.
- c) **Sale of old machinery:** Amount received on sale of old machinery should be considered as capital receipt as it is not a receipt that arises in ordinary course of business.
- d) **Wages Paid for extension of building:** If wages are paid for construction of work resulting in extension of building then it is treated as capital expenditure as it create fixed assets. Such expenses will be capitalized.
- e) **Import duty on raw materials purchased:** It is revenue expenditure. Raw materials are trading assets. Import duty paid on materials purchased is an expenditure relating to purchase of trading assets. It is an ordinary business expenditure and hence revenue expenditure.

Illustration 3.8

Give example of any five expenditure which are of Revenue nature but can be treated as capital expenditure in certain circumstances.

- a) **Carriage:** Carriage inward on goods purchased is a revenue expenses. But carriage inward paid on purchase of plant, furniture etc should be capitalized and treated as part of the cost of the assets.
- b) **Repairs:** Repairs to fixed assets which help to maintain them in a state of working efficiency is revenue expenditure. However when the amounts are spent by way of

repairs to put second hand machinery in working orders then such repairs should be capitals.

- c) **Wages:** Wages paid to workers engaged in the production of goods is a revenue expense. But where workers are engaged in extension of buildings or manufacture of tools or erection of plant then wages paid to workers should be capitalized and treated as a part of plant then wages paid to such workers should be capitalized and treated as a part of the cost of the asset concerned.
- d) **Legal Charges:** Legal charges paid in normal course of business is a revenue expenses, however legal charges paid in connection with purchase of properties should be added to the cost of property i.e. it should be capitalized.
- e) **Brokerage:** Brokerage paid on purchase of properties, fixed assets or investments should be capitalized.

3.2 INCOME STATEMENTS

After the agreement of the Trial Balance, the trader closes his ledger accounts with a view to ascertain (1) the gross profit, (2) the net profit, and (3) the financial position of the form of a Balance Sheet.

The gross profit on purchase and sale of goods is ascertained from the Goods Account. This is because the goods account has on the debit side the stock of goods at commencement and purchases during the period and on the credit side total sales and the stock goods at end. The difference between the total of the two sides represents either gross profit or gross loss of the trader during a given period.

In practice, however, an account under the heading of goods account is not opened. The trader in order to give him more detailed information sub-divides the transactions relating to the movements of his goods and maintains separate accounts of his:

- (1) Cash and credit purchases under the heading of “Purchases Account”;
- (2) Cash and credit sales under the heading of “Sales Account” and
- (3) A separate stock account.

If there are returns of goods to and from the trader; separate ledger accounts are opened under the headings of Returns Inwards Account and Returns Outwards Account. The balances of these separate accounts at the end of the period appear in the trial balance (instead of the balance of Goods Account). Thus the Goods Account is split up and separate accounts are opened as follows:

- (1) Opening Stock Account, i.e. stock at commencement;
- (2) Purchases Account including both cash and credit purchases;
- (3) Sales Account including both cash and credit sales;
- (4) Returns Inwards Account, i.e. total goods returned by customers;
- (5) Returns Outwards Account, i.e. total goods returned to vendors; and
- (6) Closing Stock Account, i.e. stock of goods at end.

These separate accounts, in totals, are ultimately transferred to one common heading called (instead of Goods Account) Trading Account.

3.2.1 Trading, Profit And Loss Account

| Dr. | Trading Account | | Cr. |
|----------------------------|-----------------|-----------------------|-----|
| | Rs. | | Rs. |
| To (Opening) Stock | | By Sales | |
| To Purchases | | Less: Returns Inwards | |
| Less: Return Outward | | By (Closing) Stock | |
| To Carriage/freight Inward | | | |
| To Clearing charges | | | |
| To Octroi charges | | | |
| To Wages | | | |
| To Direct Expenses | | | |
| * To Gross Profit | | | |
| (Balancing Figure) | | | |
| Total | | Total | |

In order to find out the gross profit or gross loss of the business a Trading Account is prepared. This account gives the overall profit of the business relating to accounting period, which is subject to deduction of general administrative, selling & other expenses. Gross Profit is the difference between sale proceeds of a particular period and the cost of the goods actually sold during that period.

Profit and Loss Account is prepared with a view to ascertain the profit or loss on account of business activity during an accounting period. Profit and Loss account is also an account like other accounts in the ledger which discloses the net effect in form of profit or loss resulting from settling off the expenses incurred against the revenue earned during the accounting period. The Profit and Loss A/c measures net income by matching revenues and expenses as per the accepted accounting principles. The difference between total revenue and total expenses represents net income or net loss according to whether the difference is positive or negative. In this regard it is pertinent to note that all the expenses incurred for the period are to be debited to this account – whether paid or not; likewise all revenues earned whether received or not are to be credited to this account.

The Balance of the Trading Account showing Gross Profit or Gross Loss becomes the opening transfer entry of this account on the credit or debit side respectively. All the revenue expenses appear on the debit side including those expenses which do not find a place in Trading A/c as well as the losses on sale of capital asset or any abnormal loss. The credit side of the account shows the revenue earned including the non-trading income like interest on bank deposit or securities, dividend on shares, rent of let-out property, profit arising from sale of fixed assets etc. after transfer of all the nominal accounts from the Trial Balance to the Profit & Loss A/c. the net result of the Profit & Loss Account is ascertained by balancing it. If the credit side is more than the debit side, it indicates net profit for the period. Conversely, if the debit side is more than credit-side, it indicates net loss for the period.

Profit & Loss Account

| | | |
|-----|-------------------------------|-----|
| Dr. | For the year ended as on..... | Cr. |
|-----|-------------------------------|-----|

| | | | |
|---|--|--|--|
| To Goss Loss To Salaries To Office Rent To Office expenses/General Expenses/Administrative Expenses/Sundry expenses To Telephone charges/Rent To Rates & Taxes To Insurance To Printing & Stationery To Audit fees To Postage & Telegram To Interest paid To Bank charges To Commission paid To Discount allowed To Advertisement To Bad debts To Carriage Outward To Depreciation on Building Furniture Equipment * To Net Profit transferred to Capital | | By Gross Profit By Interest Received By Discount Received By Commission Received By Bad Debts Recovered * By Net Loss Transferred to Capital | |
|---|--|--|--|

Method of preparing the Profit & Loss Account

- (1) Transfer the Gross Profit or Gross Loss from the Trading Account to the Profit & Loss Account.
- (2) Transfer all debit balances of Nominal Accounts in the Trial Balance (not counting those put in the Trading A/c) to the debit of Profit & Loss Account.
- (3) Transfer all credit balances of Nominal Accounts in the Trial Balance (not counting those taken to Trading A/c) to the credit of Profit & Loss Account.
- (4) Transfer the balance in Profit & Loss Account (which represents net profit or net loss) to the proprietor's Capital Account.

Income or gains, under each appropriate heading earned during the period (whether actually received or not) is credited. Any expense paid or incurred during the period, pertaining to a subsequent period is excluded, and Any income received during the period not yet earned but received in advance (expected to be earned during a subsequent period) is excluded. In fact, what is aimed at by the Profit and Loss Account of a given period is that it should show the net result of that period only and for that purpose it should be debited with expenses of the period only, and credited with all incomes of the period only? If any account of expenses is debited with an item of expense which properly belongs to a preceding period (paid in arrears) or subsequent period (paid in advance) it is evident that such item must be transferred to some other account so that the nominal account concerned may remain debited with the expense of the current period only. In the same way if an income account is credited with an income of a preceding period (received in arrears) or a subsequent period (received in advance) it must also be excluded from the Income Account by a transfer entry to leave the income account

concerned with the income pertaining to the current period only. From a given Trial Balance, all items of expenses and income which have not been transferred to the Trading Account should be taken to the Profit and Loss Account. The items of Expenses stand debited in the Ledger and should be transferred to the debit side of the Profit and Loss Account and those of income (showing credit balances are credited to the Profit and Loss Account by passing the necessary closing entries through the Journal. The net profit or net loss as shown by the Profit and Loss Account is thereafter transferred to the Capital Account. The Profit and Loss Account will thus close.

Illustration 3.9

Following are some of the items extracted from the books of Mr. Ambar as on December 31st 1998. Prepare Trading Account for the year ending December 31st 1998 and also pass Closing and Adjustment entries.

| Particulars | Rs. | Particulars | Rs. |
|-------------------------------|--------|--------------------------|----------|
| 1. Stock as on 1.1.98 | | 2. Carriage on Purchases | 1,050 |
| (a) Raw Materials | 14,700 | | |
| (b) Work in progress | 6,650 | | |
| (c) Finished Goods | 10,850 | 4. Plant & Machinery | 49,000 |
| 3. Purchases of Raw Materials | 59,600 | 6. Sales | 1,17,040 |
| 5. Lighting | 945 | 8. Repairs to Plant | 770 |
| 7. Direct Wages | 9,100 | 10. Sale of Scrap | 1,750 |
| 9. Rent | 4,200 | | |

Adjustments:

1. Stock as on 31.12.98 is Raw Materials 11,340. Work-in-progress Rs. 5,460 and finished goods Rs. 12,670.
2. Direct wages are outstanding Rs. 630.
3. Machinery is to be depreciated by 10%.
4. Office Premises occupied $\frac{1}{5}$ th of the total area.
5. Lighting is to be charged as to $\frac{2}{3}$ for Factory and $\frac{1}{3}$ for office.

| Dr. | Trading Account | | Cr. |
|--------------------------|-----------------|--------------------|----------|
| | Rs. | | Rs. |
| To (Opening) Stock | | By Sales | 1,17,040 |
| (a) Raw Materials | 14,700 | By Sale of Scrap | 1,750 |
| (b) Work in progress | 6,650 | By (Closing) Stock | |
| (c) Finished Goods | 10,850 | Raw Materials | 11,340 |
| To Purchases | 59,600 | Work in progress | 5,460 |
| | | Finished Goods | 12,670 |
| To Lighting | 630 | | |
| To Direct wages# | 9,730 | | |
| To Carriage on Purchases | 1,050 | | |
| To Rent | 3360 | | |
| To Repairs to Plant | 770 | | |
| To Gross Profit | 40920 | | |
| | | Total | |
| | 148260 | | 148260 |

Note: # direct wages 9100
 +outstanding 630
 Direct wages 9730

3.3 BALANCES SHEET

The American Institute of Certified Public Accountants defines Balance Sheet as “A tabular statement of summery of balances (debits and credits) carried forward after an actual and constructive closing of books of account and kept according to principles of accounting.” The purpose of the balance sheet is to show the resources that the company has, i.e., its assets, and from where those resources come from *i.e.* its liabilities and investments by owners and outsiders. The balance sheet is one of the important statements depicting the financial strength of the concern. It shows on the one hand the properties that it utilized and on other hand the sources of those properties. The balance sheet shows all the assets owned by the concern and all the liabilities and claims it owes to owners and outsiders. The balance sheet is prepared on a particular date. The right hand side shows properties and assets. Normally there is no particular sequence for showing various assets and liabilities. The Companies Act, 1956 has prescribed a particular form for showing assets and liabilities in the balance sheet for companies registered under this act. These companies are also required to give figures for the previous year along with the current year’s figures.

3.3.1 Form and Contents of Balance Sheet

There is no specific form for the preparation of Balance Sheet in the case of proprietary concerns and partnership firms. The balance sheet is generally divided into parts, *i.e.* assets,

liabilities and capital. The balance sheet is usually prepared in horizontal form. The assets are shown on the right hand side and capital and liabilities are shown on the left hand side. The order of assets and liabilities is either (i) on liquidity basis or (ii) on permanency basis. When balance sheet is prepared on liquidity basis then more liquid assets like cash in hand, cast at bank, investments, etc., are shown first and the least liquid assets will be shown at last. On liabilities side, the liabilities to be paid in the short period are shown first, long-term liabilities next and capital on the last. The liquidity form is suitable for the banking and other financial companies. When balance sheet is prepared on permanency basis, on assets side fixed assets are shown first and liquid assets are shown at last. On liabilities side the capital is shown first, 'long-term liabilities next, short term and current liabilities in the last. The Companies Act has adopted permanency form for preparing balance sheet.

The Companies Act, 1956 has prescribed a form for the preparation of Balance Sheet. This form is set out in Part I of Schedule VI or as near thereto as circumstances admit. Section 211 (i) states that every balance sheet of a company shall give a true and fair view of the state of affairs of the company as at the end of the financial year and shall, subject to the provisions of the sections, be in the form set out in Part I of Schedule VI, or as near thereto as circumstances admit or in such other form as may be approved by the Central Government either generally or in particular case; and in preparing the balance sheet due regard shall be had, as far as may be to be general instructions for preparation of balance sheet under the heading "Notes" at the end of that Part.

3.3.2 Schedules

The details of various items are shown separately in Schedules. The will incorporate all the information required under Part I A of Schedule VI. The schedules, accounting policies and other explanatory notes will form a part of the Balance Sheet. A number of schedules are prepared to supplement the information supplied in the balance sheet. The Schedule of Investments, Fixed Assets, Debtors, etc. are prepared to give details about these transactions. A banking company may prepare a detailed schedule of Advances so as to supplement the balance sheet information. All these schedule are used as part of financial statements.

3.3.3 Balance Sheet Items

1. **Share Capital:** The share capital is shown as a first item on the liabilities side of the balance sheet. Authorized and Issued Capital is shown giving the number of shares and their amount. The number of shares for which public has applied (subscribed capital) are mentioned along with the type of capital i.e., Preference Share Capital, Equity Share Capital. If the capital is issued for other than cash. The amount of such capital is mentioned. The fact of issue of bonus share is also mentioned. Any unpaid calls are deducted from the called up capital. If forfeited shares are re-issued then this amount is added to the paid-up capital.
2. **Reserves and Surplus:** Under this heading all those reserves which have been created out of undistributed profits are shown. Capital reserves are classified as capital reserves and revenue reserves. Capital reserves are those reserves which are not free for distribution as profits whereas revenue reserves are created out of appropriations of profits. Various items included here are:
 - (a) Capital Reserves;
 - (b) Capital Redemption Reserve;
 - (c) (c) Share Premium Account;

- (d) Other Reserves;
 - (e) Surplus, i.e., profit and loss account;
 - (f) Proposed additions to reserves and;
 - (g) Sinking Fund. The additions and deductions since last balance sheet be shown under each head. The word “Fund” in relation to any reserve should be used only where such reserve is specifically represented by earmarked investments.
3. **Secured Loans:** All those loans against which securities are given are shown under this category. Debentures are shown under this heading. Loans and advances from bank; subsidiary companies, etc. should be shown separately and the nature of securities should also be mentioned.
 4. **Unsecured Loans:** These are the loans and advances against which the company has not given any security. The items included here are deposits, loans and advances from subsidiary companies, loans and advances from other sources. Short-term loans from banks and other are also shown in this category. Short-term loans include those which are due for not more than one year on the Balance Sheet. As regards loans from directors, managers, etc., these should be shown separately under different sub-headings.
 5. **Current Liabilities and Provisions:** These are divided into (A) Current Liabilities, and (B) Provisions. In this category following items are included –
 - (A) **Current Liabilities:** Following items are included under current Liabilities
 - (i) Acceptances
 - (ii) Sundry creditors
 - (iii) Subsidiary companies
 - (iv) Advance payments and unexpired discounts
 - (v) Unclaimed dividends
 - (vi) Other liabilities, if any
 - (vii) Interest accrued but not paid on loans.
 - (B) **Provisions:** Following items are included under provisions:
 - (viii) Provision for taxation
 - (ix) Proposed dividends
 - (x) Provision for contingencies
 - (xi) Provision for Provident Fund Scheme
 - (xii) Provision for insurance, pension and similar staff benefits schemes.
 - (xiii) Other provisions.

3.3.4 Assets and Liabilities Side

The assets are given under the following heads:

1. **Fixed Assets:** Fixed assets are those which are purchased for use over a long period. These assets are meant to increase production capacity of the business. They are not acquired for sale but are used for a considerable period of time. The balance sheet is prepared to show financial position of the concern. These assets should be shown in such a way that balance sheet depicts true financial position of the business. Fixed assets are shown distinctly from each other, e.g., goodwill, land building, leaseholds, plant and machinery, furniture, railways sidings, patents, live stock, vehicles, etc. These assets are shown at their original cost. Any additions and deductions during the year are

shown separately. The amount of depreciation up to the previous year and during the current year is separately deducted from the assets.

2. **Investments:** Investments are shown by giving their nature and mode of valuation. Investments under various sub-heads such as investments in government or trust securities, in shares, debentures, and bonds and in immovable properties are given separately in the inner column of the balance sheet.
3. **Current Assets:** According to Alexander Wall, “Current assets are such assets as in the ordinary and natural course of business move onward through the various processes of production, distribution and payment of goods, until they become cash or its equivalent by which debts may be readily and immediately paid.” Current assets are either cash in hand and at bank or shortly convertible into cash. The assets like debtors and bills receivables are one step away from cash. The stocks-in-trade is considered to be two steps away from sales will be made then collections will be undertaken. The commonly used method of valuation, i.e. cost price, is not strictly used while valuing stock. The stock is used at cost or market price whichever is low. This done to avoid anticipating profits during inflationary conditions and on the other hand taking into account losses, if there is a fall in prices of stock. The debtors are shown after making a provision for bad and doubtful debts. The debtors, if more than six months old, are separately given. The amounts owned by directors, etc., if included in debtors, are also separately mentioned.
4. **Miscellaneous Expenditures:** We show deferred expenditures under this heading. These are the expenses which are not debited fully to the profit and loss account of the year in which they have been incurred. These expenses are spread over a number of years and the years and unwritten balance is shown in the balance sheet. The items under this heading are preliminary expenses, discount allowed on issue of shares or debentures, interest paid out of capital during construction, etc.

Balance Sheet of (Name of the company)

As on (Date on which balance sheet is prepared)

| Liabilities | Rs. | Assets | Rs. |
|--|------------|---|------------|
| Share Capital Authorized: Shares of Rs...each Issued: Preference Shares of Rs...each Equity Shares of Rs...each Less Calls Unpaid Reserves and Surplus: Capital Reserve Capital Redemption Reserve Share premium Other Reserves Profit and Loss Account Secured Loans Debentures Loan and Advances from Banks Loans and Advances from Subsidiary Other Loans and Advances Unsecured Loans Fixed Deposits Short term Loans and Advances Other Loans and Advances Current Liabilities and Provisions | | Fixed Assets Goodwill Land Building Households Railway Sidings Plant and Machinery Furniture Patents & Trade Marks Livestock Vehicles Investments Govt. or Trust Securities Shares, Debentures, Bonds A. Current Assets Loans and Advances A. Current Assets Interest Accrued Stores and Spare parts Loose Tools Stock in trade Work in Progress Sundry Debtors Cash and Bank Balances B. Loans and Advances Advances and Loans to Subsidiary Bills Receivables | |
| A. Current Liabilities Acceptances Sundry Creditors Outstanding Expenses B. Provisions Provision for Taxation Proposed Dividends For Contingencies For Provident Funds Scheme Article II. For Insurances, pension and other benefits | | Advance Payments Miscellaneous Expenditure Preliminary Expenses Discount on Issue of shares and debentures Other Deferred Expenses Profit and Loss Account (Debit Balance) | |

Distinction between Profit & Loss and Balance Sheet

| Profit & Loss A/c | | Balance Sheet | |
|-------------------|--|---------------|--|
| 1. | Profit & Loss A/c is an Account | 1. | Balance Sheet is a statement of Assets and Liabilities. |
| 2. | Profit & Loss A/c shows the profit earned or losses incurred during the accounting period. | 2. | The Balance Sheet shows the financial position of the business. |
| 3. | It is prepared for the accounting period ended. | 3. | It is prepared as on the last date of the accounting period. |
| 4. | Accounts appearing in Profit & Loss A/c are completely closed. | 4. | Accounts appearing in the Balance Sheet are carrying forward balance, which become the opening balances for the next period. |

Relationship of Profit and Loss Account with Balance Sheet: Profit and Loss Account provides the vital link between the Balance Sheet at the beginning of a period and the Balance Sheet at the end of that period. Profit & Loss A/c deals with the costs incurred during the current period for the purpose of earning the related revenue and the impact of this is disclosed by the Balance sheet. The Balance sheet exhibits expenditure which are either outstanding or paid in advance i.e. the unexpired benefits. It also serves as a means of carrying forward unexpired acquisition costs of assets. The amount of net profit or loss reported by the Profit & Loss A/c is carried forward in the balance sheet; showing their impact on various other terms disclosed in the Balance sheet. Profit & Loss A/c explains the changes in the owner's capital or equity between the opening and closing balance sheet of the accounting period. Thus Balance sheet is but reflection of the transactions remaining for execution as a result of the revenue transactions of the Profit & Loss A/c.

The preparation of Profit & Loss precedes the working of the Balance Sheet and the Balance Sheet cannot be prepared without the preparation of Profit & Loss A/c. the Profit & Loss A/c can be prepared without Balance Sheet; however absence of balance sheet will fail to disclose the impact of the revenue terms on the balance sheet which is the final resulting financial position of the business.

The balance of accounts given in the Trial Balance is obtained after the double effects of the transactions concerned have been completed in the Ledger. Hence,

- (a) Nominal Account balances are transferred to and appear in either Trading Account or Profit and Loss Account and
- (b) Balance of other accounts is carried forward and appears in the Balance Sheet.

The same balance, from within the Trial Balance cannot therefore appear both in (1) the Trading or Profit and Loss account, and also (2) the Balance Sheet.

3.4 FINAL ACCOUNTS

Adjustments: All such transactions, which are pertaining to the period of the final account but are not considered while preparing the trial balance, are called adjustments. These transactions have been recorded and appear in Trial Balance but do not pertain to the period of final accounts.

Adjustments given outside the Trial Balance represents entries yet to be made in the Journal and the Ledger, with the result that both the effects of each of the adjustments have to be recorded. Hence,

- (1) The effect of Nominal Account appears in the trading or Profit and Loss Account, and at the same time.
- (2) The effect concerning an asset or liability appears in the Balance Sheet.

In short, all the adjustments given outside the Trial Balance will appear both in (1) the Trading or Profit and Loss Account as well as in (2) THE balance Sheet unless where an adjustment is such that it affects two nominal accounts only, when both the effects of the adjustment will have to be dealt with in the Trading and Profit & Loss Account.

The following chart gives the effects of adjustments in final accounts.

Common Adjustments

| Sr. No. | Adjustment for | Journal Entry | Effect to be given in Final A/c. |
|---------|-----------------------------|---|---|
| 1. | Depreciation | Depreciation A/c... Dr. To Asset A/c | (i) To be debited to profit and Loss A/c (ii) To be deducted from the value of an asset in the Balance Sheet. |
| 2. | Closing Stock | Stock A/c... Dr. To Trading A/c | (i) To be credited to Trading A/c and (ii) To be shown on the assets side of B/s |
| 3. | Bad debts to be written off | Bad Debts A/c ... Dr. To Sundry Debtors | (i) Amount of Bad Debts to be debited to Profit & Loss A/c and (ii) To be deducted from Sundry Debtors in the Balance Sheet. |
| 4. | Reserve for Doubtful debts | Profit & Loss A/c ... Dr. To R.D.D. | (i) To be debited to Profit & Loss A/c (ii) To be shown by way by deduction from sundry debtors in B/s. |
| 5. | Outstanding Expenses | Expenses (Name) A/c... Dr. To Outstanding creditors for expenses | (i) Amount to be added to particular item in the Trading Profit & Loss A/c. (ii) To be shown on the Liabilities side of B/s. |
| 6. | Outstanding income | Outstanding Income A/c... Dr. To Income (Name) A/c | (i) Amount to be deducted from particular item in the Trading/ Profit & Loss A/c. (ii) To be shown on asset side of B/s. |
| 7. | Pre-paid | Pre-paid Expenses... Dr. | (i) Amount to be deducted from |

| | | | |
|-----|--|---|--|
| | Expenses | To Expenses (Name) A/c | particular item in the Profit & Loss A/c and (ii) To be shown on the Liabilities side of B/s. |
| 8. | Income received in advance or Accrued | Income (Name) A/c ... Dr. To Income received in advance A/c <u>or</u> To Accrued Income | (i) To be debited to Profit & Loss and (ii) To be added to Capital in the balance sheet. |
| 9 | Interest on Capital | Interest A/c ... Dr. To Capital A/c | (i) To be debited to Profit & Loss A/c and (ii) To be added to Capital in the B/s. |
| 10. | Interest on Drawings | Capital A/c ... Dr. To Interest on Drawings A/c | (i) To be credited to Profit & Loss A/c and (ii) To be deducted from Capital in the B/s. |
| 11. | Net Profit | Profit & Loss A/c ... Dr. To Capital A/c | To be deducted from Capital in the Balance sheet. |
| 12. | Net Loss | Capital A/c... Dr. To Profit & Loss A/c | To be deducted from Capital in the Balance Sheet. |
| 13. | Goods used by Proprietor for Personal use. | Drawings A/c ... Dr. To Purchases A/c | (i) To be deducted from Purchases and (ii) To be added to drawings. |
| 14. | Reserve for Discount on creditors | Reserve doe Discount on Creditors A/c ... Dr. To Profit & Loss A/c | (i) To be credited to Profit & Loss A/c and (ii) To be deducted from Sundry Creditors in the Balance Sheet. |
| 15. | Distribution of Goods as free samples | Advertisement A/c ... Dr. To Purchases A/c | (i) To be debited to Profit & Loss A/c 'as to Advertisement.' (ii) To be deducted from Purchases in Trading A/c. |
| 16. | Goods lost by fire | Goods lost by fire A/c... Dr. To Trading A/c (Total cost value) Insurance claim A/c... Dr. Profit & Loss A/c ... Dr. To Goods lost by fire | (i) Trading A/c credit side (full cost value) (ii) Profit & Loss Debit side the loss amount/or the amount not recovered through insurance claim. (iii) Balance Asset side amount of insurance claim if received. |

3.5 PROBLEMS ON FINAL ACCOUNTS

Problem:

Prepare Trading, Profit & Loss A/c and Balance Sheet from the following Trial Balance of Mr. Kumar.

| | Debit (Rs.) | Credit (Rs.) |
|-------------------------------|------------------------|-------------------------|
| Stock at Commencement | 60,000 | |
| Kumar's Drawings | 22,000 | |
| Trade Expenses | 1,350 | |
| Salaries | 11,200 | |
| Advertising | 840 | |
| Discount | 600 | |
| Bad Debts | 800 | |
| Business Premises | 12,000 | |
| Furniture & Fixtures | 10,000 | |
| Cash in hand | 2,060 | |
| Kumar's Capital | | 70,000 |
| Purchase Returns | | 2,600 |
| Purchases | 1,50,000 | |
| Sales Returns | 5,400 | |
| Wages | 7,000 | |
| Conveyance Charges | 1,320 | |
| Rent, rates taxes & Insurance | 5,600 | |
| Interest | 430 | |
| Plant and Machinery | 20,000 | |
| Sundry Debtors | 92,000 | |
| Sales | | 2,50,000 |
| Sundry Creditors | | 60,000 |
| Bank Overdraft | | 20,000 |
| Total | 4,02,600 | 4,02,600 |

Adjustments:

- (1) Stock at end was Rs. 90,000.
- (2) Outstanding rent was Rs. 500.
- (3) Outstanding wages Rs. 400.
- (4) Prepaid insurance Rs. 300 and prepaid salaries Rs. 700.
- (5) Write off Rs. 800 as further bad debts.
- (6) Provide for doubtful debts at 5% on Sundry Debtors.
- (7) Provide depreciation on Premises at 2½%; Plant and Machinery at 7½% and Furniture at 10%.

Solution: Trading Account of Mr. Kumar

As on 31st March 1999.

| Particulars | Rs. | Particulars | Rs. |
|--------------------------|-----------------|------------------|-----------------|
| To Opening Stock | 60,000 | By Sales | 2,50,000 |
| To Purchases | 1,50,000 | Less: Returns | 5,400 |
| Less: Returns | 2,600 | By Closing Stock | 90,000 |
| To Wages | 7,000 | | |
| Add: Outstanding | 400 | | |
| To Gross Profit transfer | 1,19,800 | | |
| | 3,34,600 | | 3,34,600 |

Profit and Loss Account

For the year ended 31st March 1999.

| Particulars | Rs. | Particulars | Rs. |
|----------------------------------|-----------------|-----------------|-----------------|
| To Trade Expenses | 1,350 | By Gross Profit | 1,19,800 |
| To Salaries | 11,200 | | |
| Less: Prepaid | 700 | | |
| To Conveyance Charges | 1,320 | | |
| To Advertising | 840 | | |
| To Rent, rates taxes & Insurance | 5,600 | | |
| Add: Rent outstanding | 7,000 | | |
| | 6,100 | | |
| Less: Prepaid insurance | 400 | | |
| To Discount | 600 | | |
| To Interest | 430 | | |
| To Bad Debts | 800 | | |
| Add: Further | 800 | | |
| Add: New Bad Debts Reserve | 4,560 | | |
| To Depreciation | | | |
| Premises | 300 | | |
| Plant and Machinery | 1,500 | | |
| Furniture & Fixtures | 1,000 | | |
| To Net Profit | 90,000 | | |
| | 1,19,800 | | 1,19,800 |

Note:

The Bad Debts Reserve (New) is calculated at 5% on Sundry Debtors (i.e. Rs. 92,000) after deducting the bad debts of Rs. 800 written off this year (i.e. the adjustments) i.e. 5% of Rs. 92,000 – 800 = Rs. 91,200 (i.e. Rs. 4,560).

Balance Sheet of Mr. Kumar

As on 31st March 1999.

| Liabilities | | Rs. | Assets | | Rs. | |
|--------------------|---------------|-----------------|----------------------|--------------------|-----------------|--------------|
| Capital | 70,000 | 1,38,000 | Plant & Machinery | 20,000 | 18,500 | |
| Less: Drawings | <u>22,000</u> | | Less: Depreciation | <u>1,500</u> | | |
| | 48,000 | | Business Premises | 12,000 | | |
| Add Net Profit | <u>90,000</u> | | Less: Depreciation | <u>300</u> | | 11,700 |
| Outstanding: | | | Furniture & Fixtures | 10,000 | | 9,000 |
| Rent | 500 | | Less: Depreciation | <u>1,000</u> | | |
| Wages | <u>400</u> | | 900 | Sundry Debtors | | 92,000 |
| Bank Overdraft | 20,000 | | 20,000 | Less: Bad Debts | | <u>800</u> |
| Sundry Creditors | 60,000 | | 60,000 | | | 91,200 |
| | | | | Less: Bad Debts R. | | <u>4,560</u> |
| | | | Cash in Hand | | 2,000 | |
| | | | Stock at end | | 90,000 | |
| | | | Prepaid: | | | |
| | | | Insurance | 300 | | |
| | | | Salaries | <u>700</u> | 1,000 | |
| | | 3,34,600 | | | 3,34,600 | |

Problem:

From the following Trial Balance of Shri. Wani prepare final accounts for the year ended on 31st March 1999.

Trial Balance

| | Debit (Rs.) | Credit (Rs.) |
|-------------------------|-----------------|-----------------|
| Stock on 1.4.1999 | 30,000 | |
| Purchases | 75,000 | |
| Investments | 11,000 | |
| Returns Inwards | 2,700 | |
| Trade Expenses | 675 | |
| Wages | 3,500 | |
| Salaries | 5,600 | |
| Office expenses | 660 | |
| Advertisement | 420 | |
| Rent, Rates & Insurance | 2,800 | |
| Bad Debts | 400 | |
| Discount | 300 | |
| Interest & Commission | 215 | |
| Premises | 6,000 | |
| Plant & Machinery | 10,000 | |
| Fixtures & Fittings | 5,000 | |
| Sundry Debtors | 46,000 | |
| Cash in hand | 1,030 | |
| Capital | | 35,000 |
| Sales | | 1,25,000 |
| Returns Outwards | | 1,300 |
| Creditors | | 30,000 |
| Bank Overdraft | | 10,000 |
| Total | 2,01,300 | 2,01,300 |

Adjustments:

1. Stock on 31st March 1999 was Rs. 45,000.
2. There were outstanding liabilities in respect of Rent Rs. 550, wages Rs. 200.
3. Insurance paid in advance amounted to Rs. 150. Salaries were unpaid to the extent Rs. 350
4. Write off Rs. 400 as further bad debts and provide for Doubtful Debts at 5% on Debtors.
5. Depreciate Premises by 2 ½%; Machinery at 7 ½% and Fixture & fitting at 10%.
6. Accrued interest on investments Rs. 275.

Solution:
Shri. Wani

Trading and Profit & Loss Account of Shri. Wani

Dr. For the year ended 31st March 1999. Cr.

| Particulars | | Rs. | (i) Particulars | | Rs. |
|-------------------------|--------------|-----------------|------------------------|--------------|-----------------|
| To Opening Stock | 30,000 | | By Sales | 1,25,000 | |
| To Purchases | 75,000 | | Less: Ret. | | |
| Less: Ret. Outwards | <u>1,300</u> | 73,700 | Inwards | <u>2,700</u> | 1,22,300 |
| To Trade Expenses | | 675 | By Closing Stock | | 45,000 |
| To Wages | 3,500 | | | | |
| Add: Outstanding | <u>200</u> | 3,700 | | | |
| To Gross Profit c/d | | 59,225 | | | |
| | | 1,67,300 | By Gross Profit b/d | | 1,67,300 |
| To Salaries | 5,600 | | By Accrued Interest | | |
| Add: Outstanding | <u>350</u> | 5,950 | on Investments | | 59,225 |
| To Rent, Rates, | | | | | |
| Insurance | 2,800 | | | | |
| Add: Outstanding Rent | <u>250</u> | | | | |
| | 3,050 | 2,900 | | | 275 |
| Less: Prepaid Insurance | <u>150</u> | 660 | | | |
| To Office expenses | | 215 | | | |
| To Interest & Comm. | | 300 | | | |
| To Discount | | | | | |
| To Bad Debts | 400 | | | | |
| Additional | <u>400</u> | 800 | | | |
| To Res. for Doubtful | | | | | |
| Debts | | 2,280 | | | |
| To Advertisement | | 420 | | | |
| To Depreciation: | | | | | |
| Premises | 150 | | | | |
| Machinery | 750 | | | | |
| Fittings | <u>500</u> | 1,400 | | | |
| To Net Profit | | | | | |
| transferred to capital | | 44,575 | | | |
| | | 59,500 | | | 59,500 |

Shri. Wani

Balance Sheet as on 31st March 1999.

| Liabilities | | Rs. | Assets | | Rs. |
|----------------------|---------------|-----------------|---------------------|--------------|-----------------|
| Bank Overdraft | | 10,000 | Cash in Hand | | 1,030 |
| Creditors | | 30,000 | Stock | | 45,000 |
| Outstanding Expenses | | | Sundry Debtors | 46,000 | |
| Wages | | | Less: Bad Debts | | |
| Rent | 200 | | Written off | <u>400</u> | |
| Salaries | 250 | | | 45,600 | |
| Capital | <u>350</u> | 800 | Less: R.D.D. | <u>2,280</u> | 43,320 |
| Add: Net Profit | 35,000 | | Investments | | 11,000 |
| | <u>44,575</u> | 79,575 | Accrued Interest | | 275 |
| | | | Prepaid Insurance | | 150 |
| | | | Fixtures & Fittings | 5,000 | |
| | | | Less: Depreciation | <u>500</u> | 4,500 |
| | | | Plant & Machinery | 10,000 | |
| | | | Less: Depreciation | <u>750</u> | 9,250 |
| | | | Premises | 6,000 | |
| | | | Less: Depreciation | <u>150</u> | 5,850 |
| | | 3,34,600 | | | 3,34,600 |

Problem:

From the following Trial Balance of Shri. Dinesh, prepare Trading and Profit & Loss Account for the year ended 31st Oct. 1998 and a Balance Sheet as on the date.

Trial Balance as on 31st Oct. 1998.

| | Debit Rs. | Credit Rs. |
|-------------------|----------------------|-----------------------|
| Machinery | 90,000 | |
| Buildings | 40,000 | |
| Stock (1-11-1997) | 20,200 | |
| Purchases | 1,10,800 | |
| Wages & Salaries | 17,000 | |
| Carriage Outward | 3,000 | |
| Sundry Debtors | 35,000 | |
| General Expenses | 9,100 | |

| | | | | | |
|------------------------|--------------|---------------|---------------------|--------------|---------------|
| To Rent | | 9,100 | By Gross Profit b/d | | 64,900 |
| To Legal Charges | | 1,700 | By Interest & | | |
| To Carriage Outward | | 400 | Commission | | 900 |
| To Interest on Capital | | 3,000 | By Reserve for | | |
| To Depreciation: | | 5,760 | Discount on | | |
| Plant & Machinery | | | Creditors | | 900 |
| Building | 9,000 | | By Res. for D. | | |
| To Net Profit | <u>2,000</u> | 11,000 | Debts Balance | 2,500 | |
| transferred to | | | Less: Bad Debts | 650 | |
| capital | | | Less: New Reserve | | |
| | | 36,590 | | <u>1,000</u> | 850 |
| | | 59,500 | | | 59,500 |

Shri. Dinesh

Balance Sheet as on 31st Oct., 1998.

| Liabilities | | Rs. | Assets | | Rs. |
|----------------------|---------------|-----------------|--------------------|--------------|-----------------|
| Sundry Creditors | 45,000 | | Cash in Hand | | 1,350 |
| Less: Res. for Dis. | <u>900</u> | 44,100 | Cash at Bank | | 9,750 |
| Bills Payable | | 4,000 | Stock | | 20,900 |
| Outstanding Expenses | | 1,150 | Sundry Debtors | 35,000 | |
| Capital Balance | 1,15,200 | | Less: R.D.D. | <u>1,000</u> | 34,00 |
| Add: Interest | 5,760 | | Prepaid Rent | | 200 |
| Add: Net Profit | <u>36,590</u> | | Loan from | | |
| Less: Drawings | 1,57,550 | | Mukherjee | | 17,000 |
| Income Tax | 4,300 | | Machinery | 90,000 | |
| | <u>300</u> | 1,52,950 | Less: Depreciation | <u>9,000</u> | 81,000 |
| | | | Buildings | 40,000 | |
| | | | Less: Depreciation | <u>2,000</u> | 38,000 |
| | | 2,02,200 | | | 2,02,200 |

(Closing Stock in value at cost as it is less than Market Price.)

Problem:

From the following Trial Balance of Shri. Satish, prepare a Trading and Profit & Loss Account for the year ended on 31st March 1999 and a Balance Sheet as on Date:

Trial Balance

| | Debit Rs. | Credit Rs. |
|------------------|----------------------|-----------------------|
| Satish Capital | | 36,000 |
| Satish Drawings | 3,000 | |
| Purchases | 20,000 | |
| Returns Inwards | 500 | |
| Returns Outwards | | 800 |
| Furniture | 6,000 | |
| Buildings | 8,000 | |
| Office expenses | 1,200 | |
| Stock on 1-4-98 | 7,000 | |

| | | |
|---|---------------|---------------|
| Trade expenses | 400 | |
| Rent & Taxes | 600 | |
| Wages | 8,000 | |
| Sales-Cash | | 10,000 |
| Sales-Credit | | 20,000 |
| Carriage Outward | 200 | |
| Carriage Inward | 300 | |
| Bills Receivable | 1,200 | |
| Bills Payable | | 900 |
| Salaries | 750 | |
| Reserve for Doubtful debts as on 1-4-98 | | 1,200 |
| Bad Debts | 300 | |
| Sundry Debtors | 12,000 | |
| Insurance | 300 | |
| Cash in Hand | 500 | |
| Cash at Bank | 2,500 | |
| Depreciation of furniture | 300 | |
| Outstanding expenses | | 150 |
| Sundry Creditors | | 4,000 |
| Total | 73,050 | 73,050 |

Adjustments:

The following adjustments should be taken into consideration.

1. Closing stock as on 31-3-99 amounted to Rs. 14,000
2. Depreciate Building at 5%.
3. Rent outstanding Rs. 300.
4. Insurance prepaid amounted to Rs. 100.
5. Write off Rs. 2,000 as bad debts and keep the Reserve for Doubtful Debts at 5% on Sundry Debtors.
6. Commission accrued but not received up to 31st March, 1999 was Rs. 400.
7. Interest to be allowed on Capital at 5% p.a.

Solution:

Shri. Satish

Trading and Profit & Loss Account

| Dr. | | For the year ended 31 st March 1999. | | Cr. | |
|---------------------|------------|---|------------------|------------|---------------|
| Particulars | | Rs. | Particulars | | Rs. |
| To Stock | | 7,000 | By Sales | 30,000 | |
| To Purchases | 20,000 | | Less: Ret. | | |
| Less: Ret. Outwards | <u>800</u> | 19,200 | Inwards | <u>500</u> | 29,500 |
| To Wages | | 8,000 | By Closing Stock | | 14,000 |
| To Carriage Inward | | 200 | | | |
| To Trade Expenses | | 400 | | | |
| To Gross Profit c/d | | 8,700 | | | |
| | | 43,500 | | | 45,300 |

| | | | | | |
|------------------------|--------------|--------------|---------------------|--|--------------|
| To Salaries | | 750 | By Gross Profit b/d | | 8,700 |
| To Office expenses | | 1,200 | By Reserve for | | |
| To Rent & Taxes | 600 | | Doubtful Debts | | 700 |
| Add: Outstanding | | | By Commission | | 400 |
| Rent | <u>300</u> | 900 | (Outstanding) | | |
| To Insurance | 300 | | | | |
| Less: Prepaid | <u>100</u> | 200 | | | |
| To Carriage Outward | | 300 | | | |
| To Bad Debts | 300 | | | | |
| Addition | <u>2,000</u> | 2,300 | | | |
| To Interest on Capital | | 1,800 | | | |
| To Depreciation: | | | | | |
| Furniture | 300 | | | | |
| Building | <u>400</u> | 700 | | | |
| To Net Profit | | | | | |
| transferred to capital | | 1,650 | | | |
| | | 9,800 | | | 9,800 |

Note: Since there are two separate items as Trade Expenses & Office expenses, Trade Expenses are debited to Trading A/c & Office Expenses to Profit & Loss A/c.

Shri. Satish

Balance Sheet as on 31st March 1999.

| Liabilities | | Rs. | Assets | | Rs. |
|----------------------|--------------|---------------|--------------------|--------------|---------------|
| Sundry Creditors | | 4,000 | Cash in Hand | | 500 |
| Bills Payable | | 900 | Cash in Bank | | 2,500 |
| Outstanding Expenses | | 150 | Stock in trade | | 14,000 |
| Outstanding Rent | | 300 | Sundry Debtors | 12,000 | |
| Capital – Balance | 36,000 | | Less: Bad Debts | <u>2,000</u> | |
| Add: Interest | 1,800 | | | 10,000 | |
| Add: Net Profit | <u>1,680</u> | | Less: R.D.D. | <u>500</u> | 9,500 |
| | 39,450 | | Prepaid Insurance | | 100 |
| Less: Drawing | <u>3,000</u> | 36,450 | Bills Receivable | | 1,200 |
| | | | Outstanding | | |
| | | | Commission | | 400 |
| | | | Furniture | | 6,000 |
| | | | Building | 8,000 | |
| | | | Less: Depreciation | <u>400</u> | 7,600 |
| | | 41,800 | | | 41,800 |

Problem:

From the following Trial Balance extracted from the books of Shri. Mukund as on 31st March, 1999 prepare final accounts as on 31-03-1999 after taking into consideration the adjustments given below the Trial Balance.

Trial Balance

| | Debit Rs. | Credit Rs. |
|------------------------------|-----------------|-----------------|
| Sundry Creditors | | 46,000 |
| Rent | 1,200 | |
| Cash at Bank | 3,000 | |
| Cash in hand | 1,400 | |
| Stock on 1-4-1998 | 16,000 | |
| Bad Debts | 1,000 | |
| Discounts | 400 | 1,000 |
| Purchases & Sales | 1,10,000 | 1,68,000 |
| Carriage on Sale | 3,600 | |
| Plant & Machinery | 20,000 | |
| Sales Returns | 8,000 | |
| Purchases Returns | | 4,000 |
| Carriage on Purchases | 1,000 | |
| Furniture & Fixtures | 12,000 | |
| Insurance & Office expenses | 3,000 | |
| Salaries | 6,000 | |
| Bills Receivable | 12,000 | |
| Drawings | 12,000 | |
| Wages | 12,000 | |
| Provision for Doubtful Debts | | 2,000 |
| Capital | | 50,000 |
| Sundry Debtors | 40,000 | |
| Commission | 8,400 | |
| Total | 2,71,000 | 2,71,000 |

Adjustments:

1. Depreciate Plant & Machinery at 10% and Furniture & Fixtures at 5%.
2. Insurance prepaid Rs. 200.
3. Outstanding Salary Rs. 1,000 and Outstanding Rent Rs. 200.
4. Maintain R.D.D. at 6% on Debtors.
5. Closing Stock on Rs. 20,000.

Solution:

Shri. Mukund

Trading and Profit & Loss Account

Dr. For the year ended 31st March 1999. Cr.

| (ii) Particulars | | Rs. | (iii) Particulars | | Rs. |
|----------------------|--------------|-----------------|-------------------|--------------|-----------------|
| To Stock | | 16,000 | By Sales | 1,68,000 | |
| To Purchases | 1,10,000 | | Less: R. I. | <u>8,000</u> | 1,60,000 |
| Less: Return Outward | <u>4,000</u> | 1,06,000 | By Closing Stock | | 20,000 |
| To Carriage Inward | | 1,000 | | | |
| To Wages | | 12,000 | | | |
| To Gross Profit C/d | | 45,000 | | | |
| | | 1,80,000 | | | 1,80,000 |

| | | | | | |
|--------------------------------------|--------------|---------------|---------------------|--|---------------|
| To Salaries | 6,000 | | By Gross Profit b/d | | |
| Add: Outstanding | <u>1,000</u> | 7,000 | By Discount | | 45,000 |
| To Insurance & Office | 3,000 | | | | |
| Less: Prepaid Ins. | <u>200</u> | 2,800 | | | 1,000 |
| To Rent | 1,200 | | | | |
| Add: Outstanding | <u>200</u> | 1,400 | | | |
| To Commission | | 400 | | | |
| To Carriage Outwards | | | | | |
| To R.D.D. (New) | 2,400 | | | | |
| Add: Bad Debts | <u>1,000</u> | | | | |
| | 3,400 | | | | |
| Less: R.D.D. (old) | <u>2,000</u> | 1,400 | | | |
| To Discount | | | | | |
| To Depreciation | | | | | |
| Plant & Machinery | 2,000 | | | | |
| Furniture | <u>600</u> | 2,600 | | | |
| To Net Profit transferred to Capital | | 18,400 | | | |
| Total | | 46,000 | (iv) Total | | 46,000 |

Shri. Mukund

Balance Sheet as on 31st March 1999.

| Liabilities | | Rs. | Assets | | Rs. |
|----------------------|---------------|-----------------|---------------------|--------------|-----------------|
| Sundry Creditors | | 46,000 | Cash in Hand | | 1,400 |
| Outstanding Expenses | | | Cash at Bank | | 3,000 |
| Salaries | 1,000 | | Stock | | 20,000 |
| Rent | <u>200</u> | 1,200 | Prepaid Insurance | | 200 |
| Capital | 50,000 | | Sundry Debtors | 40,000 | |
| Add: Net Profit | <u>18,400</u> | | Less: R.D.D. | <u>2,400</u> | 37,600 |
| | 68,400 | | Bills Receivable | | 12,000 |
| Less: Drawings | <u>12,000</u> | 56,400 | Fittings & Fixtures | 12,000 | |
| | | | Less: Depreciation | <u>600</u> | 11,400 |
| | | | Plant & Machinery | 20,000 | |
| | | | Less: Depreciation | <u>600</u> | 18,000 |
| | | 1,03,600 | | | 3,34,600 |

Problem:

From the following particulars prepare Trading and Profit and Loss A/c for the year ended 31st March 1999 and a Balance Sheet as on that date.

| Particulars | Rs. |
|------------------------------------|----------|
| Sabhu Capital A/c | 88,000 |
| Sabhu Drawings A/c | 1,000 |
| Plant and Machinery | 50,000 |
| Furniture and Fixtures | 6,000 |
| Loose Tools | 10,000 |
| Motor Car (cost Rs. 15,000) | 5,000 |
| Stock (1-4-98) | 10,000 |
| Purchases | 1,51,000 |
| Returns Inwards | 4,000 |
| Returns Outwards | 2,000 |
| Sales | 2,04,000 |
| Discount Received | 3,000 |
| Wages | 5,000 |
| Carriage Outwards | 6,000 |
| Salaries | 20,800 |
| General Expenses and Insurance | 6,000 |
| Rent & Taxes | 7,200 |
| Postage and telegram | 2,000 |
| Packing and Selling Expenses | 4,000 |
| Sundry Debtors | 24,000 |
| Advertisement | 1,000 |
| Sundry Creditors | 12,000 |
| Reserve for Bad and Doubtful Debts | 1,000 |
| Cash in hand | 7,000 |
| Bank Overdraft | 10,000 |

Adjustments:

1. Depreciate motor car at 15% on original cost. Loose Tools are valued at Rs. 8,000.
2. Stock on 31st March, 1999 was valued at Rs. 12,400.
3. Reserve for Bad & Doubtful debts is to be maintained at 5% on debtors, maintain Reserve for Discounts on Creditors at 2%.
4. Unexpired Insurance Rs. 200.
5. Provide for interest on capital at 6%.

Solution:

Shri. Sabhu

**Trading and Profit & Loss Account
For the year ended 31st March 1999.**

| Dr. | | Rs. | (v) Particulars | | Cr. |
|-------------------------------|--------------|-----------------|---------------------|--------------|-----------------|
| Particulars | | | | | Rs. |
| To Stock (Opening) | | 10,000 | By Sales | 2,04,000 | |
| To Purchases | 1,51,000 | | Less: R. I. | <u>4,000</u> | 2,00,000 |
| Less: Return Outward | <u>2,000</u> | 1,49,000 | By Stock (Closing) | | 12,400 |
| To Wages | | 5,000 | | | |
| To Gross Profit C/d | | 48,400 | | | 2,12,400 |
| To Salaries | | 2,12,400 | By Gross Profit b/d | | |
| To Rent & Taxes | | 20,800 | By Reserve for | | |
| To Postage & Telegrams | | 7,200 | Discount on | | |
| To General Expenses | 6,000 | 2,000 | Creditors | | 48,400 |
| & Insurance | <u>200</u> | | By Discount | | |
| Less: Prepaid | | 5,800 | By Net Loss | | 240 |
| To Carriage Outwards | | 6,000 | | | 3,000 |
| To Reserve for Doubtful Debts | | 200 | | | 4,890 |
| To Advertisement | | 1,000 | | | |
| To Packing & Selling Exp | 2,250 | 4,000 | | | |
| To Interest on Capital | <u>2,000</u> | 5,280 | | | |
| To Depreciation Motor Car | | 4,250 | | | |
| Loose Tools | | 56,530 | | | 56,530 |

Shri. Sabhu

Balance Sheet as on 31st March 1999.

| Liabilities | | Rs. | Assets | | Rs. |
|----------------------------|--------------|-----------------|---------------------|--------------|-----------------|
| Creditors | 12,000 | | Cash in Hand | | 7,000 |
| Less: Reserve for Discount | <u>240</u> | 11,760 | Stock | | 12,400 |
| Bank Overdraft | | 10,000 | Sundry Debtors | 30,000 | |
| Capital | 88,000 | | Less: R.D.D. | <u>1,200</u> | 22,800 |
| Add: Interest | <u>5,280</u> | | Prepaid Insurance | | 200 |
| | 93,280 | | Loose Tools | 10,000 | |
| Less: Net Loss | 4,890 | | Less: Depreciation | <u>2,000</u> | 8,000 |
| Less: Drawings | <u>1,000</u> | 87,390 | Furniture & Fixture | | 6,000 |
| | | | Motor Car | 5,000 | |
| | | | Less: Depreciation | <u>2,250</u> | 2,750 |
| | | | Plant & Machinery | | 50,000 |
| | | 1,09,150 | | | 1,09,150 |

Note: Depreciation of Loose Tools: Value given in Trial Balance Rs. 10,000 Less revalued on 31-3 at 8,000 = 2,000.

Problem:

From the following Trial Balance of Shri Khanna prepare Trading and Profit and Loss Account for the year ended 31st March 1998 and a Balance Sheet as on that date.

| Particulars | Debit Rs. | Credit Rs. |
|-----------------------|-----------------|-----------------|
| Opening Stock | 1,20,000 | |
| Salaries & Wages | 12,000 | |
| Railway Freight | 5,000 | |
| Purchases | 1,20,000 | |
| Bills Receivable | 1,200 | |
| Rent | 7,500 | |
| Sales | | 2,53,000 |
| Reserve for Bad Debts | | 1,000 |
| Sundry Creditors | | 32,600 |
| Returns Outwards | | 1,500 |
| Bad Debts | 300 | |
| Plant & Machinery | 20,000 | |
| Traveling Expenses | 6,000 | |
| Commission | | 1,000 |
| Repairs to Plant | 1,200 | |
| Cash at Bank | 2,400 | |
| Buildings | 50,000 | |
| Returns Inwards | 1,000 | |
| Sundry Debtors | 35,000 | |
| Office Expenses | 5,000 | |
| Drawings | 6,500 | |
| Capital | | 50,000 |
| Maharashtra Bank Loan | | 54,000 |
| | 3,93,100 | 3,93,100 |

Adjustments:

1. Closing Stock Rs. 35,000.
2. Unexpired insurance amounting to Rs. 500 is included in office expenses.
3. Office expenses due but not paid Rs. 300.
4. Make provision for unpaid salaries Rs. 1,200.
5. Commission received but not earned Rs. 400.
6. Provide for interest on capital @ 5%.
7. Depreciate Plant & Machinery @ 5% and Building @ 2½% p.a.
8. Provide Reserve @ 5% for Bad Debts.

Solution:

Shri. Khanna

Trading and Profit & Loss Account

Dr. For the year ended 31st March 1998. Cr.

| Particulars | | Rs. | (vi) Particulars | | Rs. |
|--|--------------|-----------------|---------------------|--------------|-----------------|
| To Stock | | 1,20,000 | By Sales | 2,53,000 | |
| To Purchases | 1,20,000 | | Less: R. I. | <u>1,000</u> | 2,52,000 |
| Less: Return Outward | <u>1,500</u> | 1,18,500 | By Stock | | 35,000 |
| To Railway Freight | | 5,000 | | | |
| To Gross Profit C/d | | 43,500 | | | |
| | | 2,87,000 | | | 2,87,000 |
| To Salaries & Wages | 12,000 | | By Gross Profit b/d | | |
| Add: Outstanding | <u>1,200</u> | 13,200 | By Commission | | 43,500 |
| To Office expenses | 5,000 | | Less: Received in | 1,000 | |
| Add: Outstanding | 300 | | Advertisement | | |
| Less: Prepaid Ins. | <u>500</u> | 4,800 | | <u>400</u> | 600 |
| To Rent | | 7,500 | | | |
| To Traveling Exp. | | 6,000 | | | |
| To (New) Reserve for Doubtful Debts | 1,750 | | | | |
| Add: Bad Debts | <u>300</u> | | | | |
| | 2,050 | | | | |
| Less: Old Reserve | <u>1,000</u> | 1,050 | | | |
| To Repair to Plant | | 1,200 | | | |
| To Depreciation Plant & Machinery | 1,000 | | | | |
| Building | <u>1,250</u> | 2,250 | | | |
| To Interest on Capital | | 2,500 | | | |
| To N/P tr. to Capital | | 5,600 | | | |
| | | 44,100 | | | 44,100 |

**Balance Sheet of Shri. Khanna
as on 31st March 1998.**

| Liabilities | | Rs. | Assets | | Rs. |
|--------------------------------|--------------|-----------------|--------------------|--------------|-----------------|
| Sundry Creditors | | 32,600 | Cash at Bank | | 2,400 |
| Commission received in advance | | 400 | Sundry Debtors | 35,000 | |
| Outstanding Exp: | | | Less: R.D.D. | <u>1,750</u> | 33,250 |
| Salaries | 1,200 | | Stock | | 35,000 |
| Office expenses | <u>300</u> | 1,500 | Bills Receivable | | 1,200 |
| Maharashtra Bank Loan | | 54,000 | Prepaid Insurance | | 500 |
| Capital Balance | 50,000 | | Plant & Machinery | 20,000 | |
| Add: Interest | 2,500 | | Less: Depreciation | <u>1,000</u> | 19,000 |
| Net Profit | <u>5,600</u> | | Buildings | 50,000 | |
| | 58,100 | | Less: Depreciation | <u>1,250</u> | 48,750 |
| Less: Drawings | <u>6,500</u> | 51,600 | | | |
| | | 1,40,100 | | | 1,40,100 |

Problem:

From the following Trial Balance and additional information prepare Profit & Loss Account for the ended 30th June 1997 and a Balance Sheet as on that date of Shri Vinod.

| Particulars | Debit (Rs.) | Credit (Rs.) |
|--|--------------------|---------------------|
| Sundry Debtors | 52,200 | |
| Salaries | 13,677 | |
| Furniture (Bal.) on 1-7-96 | 6,750 | |
| Purchases on 30-6-97 | <u>700</u> | |
| Machinery | 7,450 | |
| Bad Debts | 7,500 | |
| Advertisement for 3 years w.e.f. 31 st December, 1997 | 315 | |
| Investments | 3,000 | |
| Insurance | 9,500 | |
| Drawings | 320 | |
| Cash & Bank Balance | 4,500 | |
| Closing Stock on 30-6-97 | 27,981 | |
| Capital | 15,000 | |
| Commission | | 62,000 |
| Creditors | | 245 |
| Dividend on investments | | 31,073 |
| Reserve for Bad & Doubtful Debts | | 825 |
| Gross Profit | | 500 |
| | | 44,800 |
| | 1,39,443 | 1,39,443 |

Adjustments:

1. Depreciate on Machinery at 5% and on furniture at 10% p.a.
2. Deduct Rs. 200 for Bad Debts and provide 2% Reserve for Bad and Doubtful debts.
3. Interest on capital at 5% and on drawings Rs. 240.
4. Manager is to get 1% commission on Gross Profit.
5. Outstanding Salary Rs. 2,000.

Solution:**Shri. Vinod**

Profit & Loss Account
For the year ended 30th June, 1997.

Dr.**Cr.**

| Particulars | | Rs. | Particulars | | Rs. |
|--|--------------|---------------|----------------------------|--|---------------|
| To Salaries | 13,677 | | By Gross Profit | | 44,800 |
| Add: Outstanding | <u>2,000</u> | 15,677 | By Commission | | 245 |
| To Commission to Manager (Outstanding) | | 448 | By Dividend | | 825 |
| To Insurance | | 320 | By Interest on Drawings | | 240 |
| To Advertisement | 3,000 | | | | |
| Less: Prepaid | <u>2,500</u> | 500 | | | |
| To Bad Debts | 315 | | | | |
| Additional | <u>200</u> | 515 | | | |
| To Reserve for Bad & Doubtful Debts | | 500 | | | |
| To Depreciation | | | | | |
| Furniture | 675 | | | | |
| Machinery | <u>375</u> | 1,050 | | | |
| To Interest on Capital | | 3,100 | | | |
| To Net Profit transferred to Capital | | 24,000 | | | |
| | | 46,110 | | | 46,110 |

Shri. Vinod

Balance Sheet as on 30th June, 1997.

| Liabilities | | Rs. | Assets | | Rs. |
|---|---------------|-----------------|--------------------|--------------|------------------|
| Sundry Creditors | | 31,073 | Cash at Bank | | 27,981 |
| Outstanding Expenses | | | Balance | | |
| Salaries | 2,000 | | Sundry Debtors | 50,200 | |
| Manager | | | Less: Bad Debts | 200 | |
| Commission | <u>448</u> | 2,448 | Reserve | <u>1,000</u> | 49,000 |
| Capital Balance | 62,000 | | Stock | | 15,000 |
| Add: Interest | 3,100 | | Advertisement | | |
| Net Profit | <u>24,000</u> | | Prepaid | | 2,500 |
| | 89,100 | | Investments | | 9,500 |
| Less: Drawings 4,500 | | | Furniture | 7,450 | |
| Int. on Drawing <u>240</u> | <u>4,780</u> | 84,360 | Less: Depreciation | <u>675</u> | 6,775 |
| | | | Machinery | 7,500 | |
| | | | Less: Depreciation | <u>375</u> | 7,125 |
| | | 1,17,881 | | | 1,17,881 |
| | | | Rs. | | Rs. |
| Salaries and Wages | | | 40,600 | | |
| Fright and Clearing charges | | | 6,725 | | |
| Commission | | | 12,750 | | |
| Printing and Stationery | | | 6,400 | | |
| Furniture and Fixtures | | | 12,000 | | |
| Rent, Rates and Taxes | | | 35,250 | | |
| Telephone Charge | | | 3,715 | | |
| Postage and Telegrams | | | 6,280 | | |
| Office Expenses | | | 9,655 | | |
| Shah's Capital Account | | | | 3,08,860 | |
| Shah's Drawings Account | | | 28,000 | | |
| Insurance Charges | | | 1,200 | | |
| Purchases | | | 7,92,000 | | |
| Sales | | | | 6,40,000 | |
| Returns Inwards | | | 3,400 | | |
| Returns Outwards | | | | 12,000 | |
| Stock on 1 st April 1995 | | | 45,000 | | |
| Sundry Debtors | | | 1,00,000 | | |
| Sundry Creditors | | | | 1,80,000 | |
| Bad Debts | | | 6,000 | | |
| Doubtful Debts Reserve (1 st April 1995) | | | | 12,000 | |
| Cash at Bank | | | 16,935 | | |
| Cash in hand | | | 1,275 | | |
| Motor Car expenses | | | 7,675 | | |
| Motor Car | | | 18,000 | | |
| Total | | | 11,52,860 | | 11,52,860 |

Adjustments:

- (1) Depreciation to be provided on furniture and Fixtures at 10% and Motor Car at 20%.
- (2) Insurance is paid for the year ended 30th June, 1996.
- (3) Rent outstanding was Rs. 750.
- (4) Commission due to Salesman was Rs. 3,250.
- (5) Closing Stock was valued at Rs. 3, 08,400.
- (6) It was decided to bring Doubtful Debts Reserve to Rs. 5,000.

(Ans.: Gross Profit: Rs. 1, 13,275; Net Loss: Rs. 17,000; Balance Sheet total Rs. 4, 47,110)

From the following Trial Balance of Shri Jain, prepare Trading and Profit and Loss Account for the year ended 31st December 1995 and a Balance Sheet as on that date after making the necessary adjustments.

| | Dr. Rs. | Cr. Rs. |
|---|--------------------|--------------------|
| Jain Capital Account | | |
| Jain Drawings | 3,000 | |
| Purchases | 20,000 | |
| Returns Inwards | 500 | |
| Returns Outwards | | 800 |
| Office Furniture | 6,000 | |
| Buildings | 8,000 | |
| Office Expenses | 1,200 | |
| Stock on 1 st January 1995 | 7,000 | |
| Sundry Expenses | 400 | |
| Rent, Rates and taxes | 600 | |
| Wages and Salaries | 8,000 | |
| Sales – Cash | | 10,000 |
| Sales – Credit | | 20,000 |
| Carriage Inwards | 200 | |
| Carriage Outwards | 300 | |
| Bills Receivable | 1,200 | |
| Bills Payable | | 900 |
| Traveling and Conveyance | 750 | |
| Reserve for Bad Debts as on 1 st Jan, 1995 | | 1,200 |
| Bad Debts | 300 | |
| Sundry Debtors | 12,000 | |
| Insurance Premium | 300 | |
| Cash in hand | 500 | |
| Cash at Bank | 2,500 | |
| Sundry Creditors | | 3,850 |
| Total | 72,750 | 72,750 |

Adjustments:

- (1) Closing Stock as on 31st December 1995 amounted to Rs. 10,800.
- (2) Depreciation on office Furniture and Building at 10%.
- (3) Rent Outstanding Rs. 150.
- (4) Insurance Prepaid amounted to Rs. 100.
- (5) Maintain Reserve for Doubtful Debts at 5% on Sundry Debtors.

(Ans.: Gross Profit: Rs. 5,900; Net Profit: Rs. 1,200; Balance Sheet total Rs. 39,100)

The following Trial Balance of Mr. Shevade as at 31st December 1996.

| | Rs. | Rs. |
|----------------------------------|-----------------|-----------------|
| Trade expenses | 2,025 | |
| Discount Received | | 1,370 |
| Salaries | 9,287 | |
| Traveling Expenses | 1,430 | |
| Discount Allowed | 400 | |
| Capital Account | | 60,100 |
| Drawings | 6,500 | |
| Leasehold Premises | 40,000 | |
| Furniture | 5,000 | |
| Stock on 1 st January | 15,000 | |
| Cash at Bank | 4,650 | |
| Reserve for Doubtful Debts | | 720 |
| Purchases | 66,235 | |
| Sales | | 94,000 |
| Carriage Inwards | 2,100 | |
| Bad Debts written off | 1,350 | |
| Sundry Debtors | 16,000 | |
| Sundry Creditors | | 15,421 |
| Bank Charges | 134 | |
| Rent | 1,500 | |
| Total | 1,71,611 | 1,71,611 |

Prepare Trading and Profit and Loss account for the year ended 31st December, 1995 and Balance Sheet as on that date.

The following matter is to be take into account:

- (1) Mr. Shevade's wife works in the business and is allowed a salary of Rs. 2,400 per annum. This amount has been included in Drawings account.
- (2) Write Rs. 2,000 off Premises and Rs. 500 off Furniture.
- (3) Of the Sundry Debtors due on 31st December 1995, 4% are irrecoverable and should be written off. The Reserve for Doubtful Debts should be maintained at 5%.
- (4) Rent due but not paid is Rs. 500 and the Salaries include Rs. 250 paid as advance to staff.
- (5) Stock as at 31st December, 1995 is valued at Rs. 15,500.

(Ans.: Gross Profit: Rs. 26,165; Net Profit: Rs. 5,481; Balance Sheet total Rs. 77,402)

Mr. Mohan carried on business under the name of Mohan & Co. From the following information prepare the final accounts for the year ended 31st December 1992.

| | Dr. Rs. | Cr. Rs. |
|---|--------------------|--------------------|
| Mohan's Capital Account | | 1,19,400 |
| Mohan's Drawings Account | 10,550 | |
| Bills Receivable | 9,500 | |
| Plant and Machinery | 28,800 | |
| Sundry Debtors (including B for dishonored bill of Rs. 1,000) | 62,000 | |
| Loan Account at 6% (interest paid upto October 1992) | | 20,000 |
| Wages | 40,970 | |
| Returns Inwards | 2,780 | |
| Purchases | 2,56,590 | |
| Sales | | 3,56,430 |
| Commission received | | 5,640 |
| Rent and Taxes | 5,620 | |
| Stock | 89,680 | |
| Salaries | 11,000 | |
| Traveling Expenses | 1,880 | |
| Insurance (including premium of Rs. 300 p.a.) | 400 | |
| Cash | 530 | |
| Bank | 18,970 | |
| Repairs and Renewals | 3,370 | |
| Interest and Discounts | 5,870 | |
| Bad Debts | 3,620 | |
| Sundry Creditors | | 59,630 |
| Furniture and Fixtures | 8,970 | |
| Total Rs. | 5,61,100 | 5,61,100 |

Adjustments:

- (1) Stock on hand 31st December 1992 was Rs. 1, 28,960.
- (2) Write off half B's dishonored Bill.
- (3) Create a Reserve for doubtful debts at 5%.
- (4) Allow 5% interest on capital.
- (5) Wages include Rs. 1,200 for erection of Machinery purchased last year.
- (6) Depreciate Plant and machinery by 10%.
- (7) Furniture is revalued at the end of the year at Rs. 8,073.
- (8) Provide for commission not received Rs. 600.

(Ans.: Gross Profit: Rs. 96,570; Net Profit: Rs. 59,118; Balance Sheet total Rs. 2, 53,768)

From the following Trail Balance of Mr. Bhagwandas as on 31st March 1990. Prepare a Trading and Profit and Loss Account for the year ended 31st March 1990 and a Balance Sheet as at that date after making the necessary adjustments.

Trial Balance

| | Dr. (Rs.) | Cr. (Rs.) |
|---|----------------------|----------------------|
| Cash at Bank | 8,800 | |
| Cash in hand | 2,930 | |
| Sundry expenses | 300 | |
| Traveling expenses | 500 | |
| Insurance charges | 800 | |
| Interest on loan from Mehta | 150 | |
| Conveyance expenses | 200 | |
| Discount | | 600 |
| Bad Debts | 400 | |
| Rent, Rates & Taxes | 3,620 | |
| Postage & Telegrams | 1,500 | |
| Loan @ 6% p.a. taken from Mr. Mehta on 1 st October 1990 | | 10,000 |
| Returns Inward | 5,000 | |
| Sundry Creditors | 12,000 | |
| Sales | 1,30,000 | |
| Sundry Debtors | 21,900 | |
| Salaries | 22,400 | |
| Returns Outward | | 2,000 |
| Purchases | 80,000 | |
| Stock on 1-4-89 | 20,000 | |
| Prepaid Insurance | 100 | |
| Plant & Machinery | 30,000 | |
| Furniture | 4,000 | |
| Bhagwandas's Drawings Account | 12,000 | |
| Bhagwandas's Capital Account | | 60,000 |
| Total Rs. | 2,14,600 | 2,14,600 |

Adjustment:

1. Stock on 31st March 1990 was valued at Rs. 21,000.
2. Goods worth Rs. 1,500 sold but returned on 28th March 1990 were taken in closing stock but entry in the returns inwards book was made on 4th April 1990.
3. Of the Sundry debtors Rs. 400 are bad and should be written off. Create a reserve for Bad and Doubtful debts @ 5% on sundry debtors and a Reserve for discounts on Debtors @ 2 ½%.
4. Salaries Rs. 700 for March 1990 were not paid.
5. Interest on Capital is to be calculated @ 6% per annum and on drawings Rs. 330.
6. Depreciation furniture by 5% and plant and machinery by 10%.

(Ans.: Gross Profit Rs. 46,300; Net Profit Rs. 7,955; B/S Rs. 82,175)

From the following Trial Balance of Chandu Prepare the final accounts for the year ended 31st March 1994 and the Balance Sheet as at that date.

| | Dr. Rs. | Cr. Rs. |
|-------------------------|--------------------|--------------------|
| Land and Buildings | 50,000 | |
| Purchases | 1,10,000 | |
| Stock | 40,000 | |
| Returns | 1,500 | 2,500 |
| Wages | 10,000 | |
| Salaries | 9,000 | |
| Office Expenses | 2,400 | |
| (vii) Carriage Expenses | 1,200 | |
| Carriage Outwards | 2,000 | |
| Discounts | 750 | 1,200 |
| Bad Debts | 1,200 | |
| Sales | | 2,05,000 |
| Capital A/c | | 1,15,000 |
| Smt. Chandu's Loan | | 15,000 |
| Insurance | 1,500 | |
| Commission | | 1,500 |
| Plant and Machinery | 50,000 | |
| Furniture & Fixtures | 10,000 | |
| Bills Receivable | 20,000 | |
| Sundry Debtors | 40,000 | |
| Sundry Creditors | | 25,000 |
| Cash in hand | 1,500 | |
| Cash at Bank | 4,500 | |
| Office Equipment | 12,000 | |
| Bills payable | | 2,350 |
| Total Rs. | 3,67,550 | 3,67,550 |

The following adjustments are required:

- (1) Closing Stock amounted to Rs. 60,000.
- (2) Outstanding liabilities: Wages Rs. 2,000, Rent Rs. 3,000.
- (3) Depreciate Land and Buildings at 5%, Plant and Machinery at 10%, Office equipment and Furniture and Fixtures at 10%.
- (4) Rs. 6,000 worth Office equipment was added on 1st October 1993.
- (5) Provide a Bad and Doubtful Debts reserve at 2 ½% on Sundry Debtors.
- (6) Insurance Premium prepaid Rs. 200.
- (7) Provide interest on capital at 5% and interest on Smt. Chandu loan at 8% loan has been taken from her on 1st January, 1994.

(Ans.: Gross Profit Rs. 1, 02,800; Net Profit Rs. 69,400; B/S Rs. 2, 37,800)

3.6 REVIEW QUESTIONS

1. What is Capital Expenditure?
2. What is Revenue Expenditure?
3. What is Deferred Revenue Expenditure?
4. What do you mean by Capital Receipts?
5. What do you mean by Revenue Receipts?
6. What is Capital Profit?
7. What is Capital Loss?
8. State with reasons whether following items are capital, revenue or deferred revenue:
 - (a) Expenditure incurred in overhauling machinery.
 - (b) Amount brought by proprietor as capital.
 - (c) Building costing Rs. 2, 00,000 sold for Rs. 1, 50,000
 - (d) White washing of office building.
 - (e) Expenditure incurred for training employees.
 - (f) Received a gift from parents introduced the amount in business.
 - (g) Insurance of godown.
 - (h) Renewal of license.
 - (i) Expenses incurred on research of a product not resulting in success.
 - (j) Bad Debts recovered.
 - (k) Depreciation on assets.
 - (l) Shares purchased and brokerage paid on purchase.
 - (m) Loss on sale of plant.
 - (n) Preliminary expenses.
 - (o) Cost of dismantling, removing and reinstalling the old plant.
 - (p) Machinery of value Rs. 10,000 sold for Rs. 10,500.
 - (q) Erection charges paid to workers for erecting new machinery.
 - (r) Rs. 2, 00,000 received from issue of shares, Rs. 10,000 being issue expenses.

CONCEPT OF MANAGEMENT ACCOUNTING

Structure

4.1 Introduction

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4.3 Management Accounting Principles

- 4.3.1 Management Accounting and Financial Accounting
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4.4 Basic Cost Concepts

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4.1 INTRODUCTION

Dear students this subject is so young as a branch of knowledge that it is still growing. Who knows, some day even someone among you might come up with some innovative idea which will lead to the further growth of this specialized subject. The term management accounting refers to accounting for the management, *i.e.*, accounting which provides necessary information to the management for discharging its functions. The functions of the management are planning, organizing, directing and controlling. Thus, management accounting provides information to management so that planning, organizing, directing and controlling of business operations can be done in an orderly manner. However, the above is a very general definition of management accounting. Most specific definitions have been given by different authorities. Some of the important definitions are given below:

The Chartered Institute of Management Accountants, London, defines Management Accounting as follows: The application of professional knowledge and skill in the preparation of accounting information in such a way as to assist management in the formation of policies and in the planning and control of the operations of the undertaking. The definition given by

the American Accounting Association is as follows: Management Accounting is the application of appropriate techniques and concepts in processing historical and projected economic data of an entity to assist management in establishing plans for reasonable economic objectives in the making of rational decisions with a view towards achieving these objectives. The definition given by the Management Accounting Team of the Anglo-American Council of Productivity seems to be most precise. It reads, Management Accounting is the presentation of accounting information in such a way as to assist management in the creation of policy and in the day-to-day operations of an undertaking.

The above definitions clearly indicate that management accounting is concerned with accounting information which is useful to the management. Efficiency of the various phases of management is, as a matter of fact, the common thread, which underlies all these definitions. However, it should be clearly understood that it does not supplant financial accounting but rather it supplements it in order to serve the diverse requirements of modern management. Management Accounting rearranges for management control to a great extent the accounting information provided by the financial accounting. It, therefore, lies between the following two activities:

- Completing the accounting results on the one hand, and
- Controlling the business by the management, on the other.

Management accounting, therefore, covers all rearrangement, combination or adjustment of the orthodox accounting figures which may be required to provide the Chief Executive with the information from which he can control the business. It comprises accounting methods, systems and techniques which coupled with special knowledge and ability, assist management in its task of maximizing profits or minimizing losses.

4.1.1 Functions of Management Accounting

The basic function of management accounting is to assist the management in performing its function effectively. The functions of the management are planning, organizing, directing and controlling. Management accounting helps in the performance of each of these functions in the following ways:

- **Provides Data.** Management accounting serves as a vital source of data for management planning. The accounts and documents are a repository of a vast quantity of data about the past progress of the enterprise, which are a must for making forecasts for the future.
- **Modifies Data.** The accounting data required for managerial decisions is properly compiled and classified. For example, purchase figures for different months may be classified to know total purchases made during each period product-wise, supplier-wise and territory-wise.
- **Analyses and Interprets Data.** The accounting data is analyzed meaningfully for effective planning and decision-making. For this purpose, the data is presented in a comparative form. Ratios are calculated and likely trends are projected.
- **Serves as a Means of Communicating.** Management accounting provides a means of communicating management plans upward, downward and outward through the organization. Initially, it means identifying the feasibility and consistency of the

various segments of the plan. At later stages; it keeps all parties informed about the plans that have been agreed upon and their roles in these plans.

- **Facilitates Control.** Management accounting helps in translating given objectives and strategy into specified goals for attainment by a specified time and secures effective accomplishment of these goals in an efficient manner. All this is made possible through budgetary control and standard costing which is an integral part of management accounting.
- **Uses also Qualitative Information.** Management accounting does not restrict itself to financial data for helping the management in decision-making but also uses such information, which may not be capable of being measured in monetary terms. Such information may be collected from special surveys, statistical compilations, engineering records, *etc.*

4.1.2 Scope of Management Accounting

Management accounting is concerned with presentation of accounting information in the most useful way for the management. Its scope is, therefore, quite vast. It includes within its fold almost all aspects of business operations. However, the following areas can rightly be identified as falling within the ambit of management accounting:

- **Financial Accounting:** Management accounting is mainly concerned with the rearrangement of the information provided by financial accounting. Hence, management cannot obtain full control and coordination of operations without a properly designed financial accounting system.
- **Cost Accounting:** Standard costing, marginal costing, opportunity cost analysis, differential costing and other cost techniques plays useful role in operation and control of the business undertaking.
- **Revaluation Accounting:** This is concerned with ensuring that capital is maintained intact in real terms and profit is calculated with this fact in mind.
- **Budgetary Control:** This includes framing of budgets, comparison of actual performance with the budgeted performance, computation of variances, finding of their causes, *etc.*
- **Inventory Control:** It includes control over inventory from the time it is acquired till its final disposal.
- **Statistical Methods:** Graphs, charts, pictorial presentation, index numbers and other statistical methods make the information more impressive and intelligible.
- **Interim Reporting:** This includes preparation of monthly, quarterly, half-yearly income statements and other related reports, cash flow and funds flow statements, scrap reports, *etc.*
- **Taxation:** This includes computation of income in accordance with the tax laws, filing of returns and making tax payments.

- **Office Services:** This includes maintenance of proper data processing and other office management services, reporting on best use of mechanical and electronic devices.
- **Internal Audit:** Development of a suitable internal audit system for internal control.

4.1.3 Utility of Management Accounting

Management accounting provides invaluable services to management in all of its functions. The basic functions of management are: (i) Planning, (ii) Controlling, (iii) Coordinating, (iv) Organizing, (v) Motivating, and (vi) Communicating. Management accounting helps in performance of each of these functions effectively as explained below:

- **Planning:** It involves formulation of policies, setting up of goals and initiating necessary programmes for achievement of the goals. Management accounting makes an important contribution in performance of this function. It makes available the relevant data after pruning and analyzing them suitably for effective planning and decision-making.
- **Controlling:** It involves evaluation of performance keeping in view that the actual performance coincides with the planned one, and remedial measures are taken in the event of variation between the two. The techniques of budgetary control, standard costing and departmental operating statements greatly help in performing this function. As a matter of fact, the entire system of control is designed and operated by the management accountant designated as Controller.
- **Coordinating:** It involves interlinking of different divisions of the business enterprise in a way so as to achieve the objectives of the organization as a whole. Thus, perfect coordination is required among production, purchase, finance, personnel, sales, departments, etc. Effective coordination is achieved through departmental budgets and reports, which form the nucleus of management accounting.
- **Organizing:** It involves grouping of operative action in a way as to identify the authority and responsibility within the organization. Management accounting here also plays a prominent role. The whole organization is divided into suitable profit or cost centers. A sound system of internal control and internal audit for each of the cost or profit centers helps in organizing and establishing a sound business structure.
- **Motivating:** It involves maintenance of a high degree of morale in the organization. Conditions should be such that each person gives his best to realize the goals of the enterprise. The superiors should be in a position to find out whom to demote or promote and to reward or penalize. Periodical departmental profit and loss accounts, budgets and reports go a long way in achieving this objective.
- **Communicating:** It involves transmission of data, results, etc. both to the insiders as well as outsider. The orders of the superiors should be communicated to the subordinates while the results achieved by the subordinates should be reported to the superiors. Moreover, the management owes a duty to the creditors, prospective investors, shareholders, *etc.*, to communicate to them about the progress, financial position, *etc.*, of the enterprise. Management accounting helps the management in performance of this function by developing a suitable system of reporting which emphasizes and highlights the relevant facts. Management accounting is thus helpful

to the management in every field of activity. This is the reason why management accountant is considered not only a service arm to management but also a part of management.

4.1.4 Limitations of Management Accounting

Management accounting being comparatively a new discipline, it suffers from certain limitations which limit its effectiveness. These limitations are as follows:

- **Limitations of Basic Records:** Management accounting derives its information from financial accounting and other records. The strength and weakness of the management accounting, therefore, depends upon the strength and weakness of these basic records. In other words, their limitations are also the limitations of management accounting.
- **Persistent Efforts:** The conclusions drawn by the management accountant are not executed automatically. He has to convince people at all levels. In other words, he must be an efficient salesman in selling his ideas.
- **Management Accounting is only a Tool:** Management accounting cannot replace the management. Management accountant is only an adviser to the management. The decision regarding implementing his advice is to be taken by the management. There is always a temptation to take an easy course of arriving at decision by intuition rather than going by the advice of the management accountant.
- **Wide Scope:** Management accounting has a very wide scope incorporating many disciplines. It considers both monetary as well as non-monetary factors. This all brings inexactness and subjectivity in the conclusions obtained through it.
- **Top-heavy Structure:** The installation of management accounting system requires heavy costs on account of an elaborate organization and numerous rules and regulations. It can, therefore, be adopted only by big concerns.
- **Opposition to Change:** Management accounting demands a breakaway from traditional accounting practices. It calls for a rearrangement of the personnel and their activities, which is generally not liked by the people involved.
- **Evolutionary Stage:** Management accounting is still in its initial stage. It has, therefore, the same impediments as a new discipline will have, e.g., fluidity of concepts, raw techniques and imperfect analyzing tools. This all creates doubt about the very utility of management accounting.

4.2 INSTALLATION OF MANAGEMENT ACCOUNTING SYSTEM

The following steps will have to be taken for installation of an efficient and effective management accounting system:

- An appropriate Organizational Manual should be prepared and adopted. The Manual defines and confines explicitly the scope of authority of each executive in the organization. This prevents overlapping of functions, powers and responsibilities. It also depicts the line of communication.
- The requisite staff will have to be recruited, trained and developed.
- Appropriate forms, returns, *etc.*, should be designed, prepared and made available.
- Classification and codification of accounts.
- Developing a suitable system for the integration of cost and financial data.
- Setting up a suitable system of budgetary control.
- Setting up of standards, introducing standard costing techniques.
- Setting up of cost, budget and profit centers and introduction of operational research techniques.

4.2.1 Tools of Management Accounting

Management accounting uses the following tools or techniques to faithfully discharge its duty towards management:

- Financial Statement Analysis.
- Funds Flow Analysis.
- Cash Flow Analysis.
- Costing techniques including Marginal, Differential, Standard and Opportunity Costing.
- Budgetary Control.
- Management Reporting.

4.2.2 The Management Accountant

Management accounting provides significant economic and financial data to the management and the Management Accountant is the channel through which this information efficiently and effectively flows to the Management. The Management Accountant has a very significant role to perform in the installation, development and functioning of an efficient and effective management accounting system. He designs the framework of the financial and cost control reports that provide each managerial, level with the most useful data at the most appropriate time. He educates executives in the need for control information and ways of using it. This is because his position is unique with respect to information about the organization. Apart from top management no one in the organization perhaps knows more about the various functions of the organization than him. He is, therefore, sometimes described as the Chief Intelligence Officer of the management. He gathers information, breaks it down, sifts it out and organizes it into meaningful categories. He separates relevant and irrelevant information and then ranks relevant information according to degree of importance to management. He reports relevant information in an intelligible form to the management and sometimes also to those who are interested in the information outside the company. He also compares the actual performance with the planned one and reports and interprets the results of operations to all levels of

management and to the owners of the business. Thus, in brief, management accountant or controller is the person who designs the management information system for the organization, operates it by means of interlocked budgets, computes variances and exhorts others to institute corrective measures.

Mr. P.L. Tandon has explained beautifully the position of the management accountant in the following words: "The management accountant is exactly like the spokes in a wheel, connecting the rim of the wheel and the hub receiving the information. He processes the information and then returns the processed information back to where it came from. Dr. Don Barker sees a very bright future for the management accountants. According to him Management Accountants will be presented with many opportunities for innovative actions in the global economic environment. In addition to their role of providing accurate, timely and relevant information, management accountants will be expected to participate as business consultants and partners with management in the strategic planning process. Thus, there are tremendous possibilities for management accountants to shine as a professional group in the years to come. To fit in this role, it is necessary that the management accountants develop effective communication abilities, adopt a structured approach, a flexible accommodation and keep themselves aware with the latest evolving technologies in the profession.

4.2.3 Functions of the Management Accountant

It is the duty of the management accountant to keep all levels of management informed of their real position. He has, therefore, varied functions to perform. His important functions can be summarized as follows:

- **Planning:** He has to establish, coordinate and administer as an integral part of management, an adequate plan for the control of the operations. Such a plan would include profit planning, programmes of capital investment and financing, sales forecasts, expense budgets and cost standards.
- **Controlling:** He has to compare actual performance with operating plans and standards and to report and interpret the results of operations to all levels of management and the owners of the business. This is done through the compilation of appropriate accounting and statistical records and reports.
- **Coordinating:** He consults all segments of management responsible for policy or action. Such consultation might concern any phase of the operation of the business having to do with attainment of objectives and the effectiveness of the organization structures and policies.
- **Other Functions:** He administers tax policies and procedures. He supervises and coordinates the preparation of reports to government agencies. He ensures fiscal protection for the assets of the business through adequate internal control and proper insurance coverage. He carries out continuous appraisal of economic and social forces, and the government influences, and interprets their effect on the business.

It should be noted that the functions of a Management Accountant are more of those of a 'staff official'. He, in addition to processing of historical data, supplies a good deal of information concerning the future operations in line with the management's needs. Besides serving top management with information concerning the company as a whole, he supplies detailed information to the line officers regarding alternative plans and their profitability,

which help them in decision-making. As a matter of fact, the Management Accountant should not bother himself regarding the decision taken by the line officials after tendering advice unless he has reasonable grounds to believe that such a decision is going to affect the interests of the corporation adversely. In such an event' also, he should report it to the concerned level of management with tact, patience, firmness combined with politeness.

4.2.4 Requisites for a Successful Management Accountant

The following are the basic requisites for a Management Accountant to be successful in his job:

- **Direct Contact with the Top Management:** The goal of the management accountant is to channel for use in the processing of data that will have a vital influence on company policy. Technicalities and red-tape cause delay which may prove very costly to the business. He should, therefore, report directly to the President or the Chief Executive of the company.
- **Freedom from Detail:** The most likely title of the Management Accountant is that of the controller. He is the principal officer in charge of accounts and performs such additional duties which the Board of Directors, the executive committee or the President of the company may assign to him from time to time. He cannot possibly measure up to this status if he is immersed in accounting routine or is a 'slave' to the operation of balancing.
- **Personal Qualities:** The Management Accountant has perhaps the maximum chances of going up high in the management hierarchy. He can make best use of the opportunities if he possesses the following personal qualities: A personality acceptable to all types of individuals that may make up the management group in a company. The ability to receive the views of management with comprehension and to appreciate the type of information management requires. An understanding of how to fill the role of specialist and adviser. A know ledge of theory as well as practice of management. A balanced outlook on functioning of the business. The capacity to think and confer with top management about matters central to the profitability and progress of the company.

4.2.5 The Controller and the Functions of Controllorship

The term 'Controller' or 'Comptroller' is used in the United States of America for the top management accountant executive in a firm. He is considered to be the figure partner in the management team since he has the responsibility for collection of figures (statistical information) both from within and outside the company. He has also to safeguard the accuracy of such figures and also develop devices needed for their meaningful presentation and interpretation. The general functions and duties of the controller have been laid down by the Controllers Institute of America, as follows:

- To establish, coordinate, and maintain through authorized management an integrated plan for the control of operations. Such a plan would provide to the extent required in the business cost standards, expense budgets, sales forecasts, profit planning, and programme for capital investment and financing together with the necessary procedures to effectuate the plan.
- To measure performance against approved operating plans and standards, and to report and interpret the results of operations to all levels of management. This

function includes the design, installation and maintenance of accounting and cost systems and records, the determination of accounting policy, and the compilation of statistical records as required.

- To measure and report on the validity of the objectives of the business and on the effectiveness of its policies, organization structure, and procedures in attaining those objectives. This includes consulting with segments of management responsible for policy or action concerning any phase of the operation of the business as it relates to the performance of this function.
- To report to government agencies, as required, and to supervise all matters relating to taxes.
- To interpret and report on the effect of external influences on the attainment of the objectives of the business. This function includes the continuous appraisal of economic and social forces and of governmental influence as they affect the operations of the business.
- To provide protection for the assets of the business. This function includes establishing and maintaining adequate internal control and auditing, and assuring proper insurance coverage.

As defined by the Controllers Institute of America the duties of Controller are as follows:

- The installation and supervision of all accounting records of the corporation.
- The preparation and interpretation of the financial statements and reports of the corporation.
- The continuous audit of all accounts and records of the corporation wherever located.
- The compilation of costs of distribution.
- The compilation of production costs.
- The taking and costing of all physical inventories.
- The preparation and filing of tax returns and the supervision of all matters relating to taxes.
- The preparation and interpretation of all statistical records and reports of the corporation.
- The preparation as budget director, in conjunction with other officers and departmental heads, of an annual budget covering all activities of the corporation for submission to the Board of Directors prior to the beginning of the fiscal year. The authority of the controller with respect to the veto of commitments of expenditures not authorized by the budget, shall, from time to time, be fixed by the Board of Directors.
- The ascertainment currently that the properties of the corporation are properly and adequately insured.
- The initiation, preparation and issuance of standard practices relating to all accounting matters and procedures and the coordination of system throughout the corporation including clerical and office methods, records, and procedures.
- The maintenance of adequate records of authorized appropriations and the determination that all sums expended pursuant thereto are properly accounted for.
- The ascertainment currently that financial transactions covered by minutes of the Board of Directors and/or the Executive Committee are properly executed and recorded.
- The maintenance of adequate records of all contracts and leases.
- The approval for payment (and / or countersigning) of all cheques, promissory notes and other negotiable instruments of the corporation which have been signed by the

- Treasurer or such other officers as shall have been authorized by the by-laws of the corporation or from time to time designated by the Board of Directors.
- The examination of all warrants for the withdrawal of securities from the values of the corporation and the determination that such withdrawals are made in conformity with the by-laws and/or regulations established from time to time by the Board of Directors.
 - The preparation or approval of the regulations or standard practices, required to assure compliance with order or regulations issued by duly constituted governmental agencies.

The Treasurer: Many people confuse the offices of controller or management accountant and treasurer. As a matter of fact, both these officers generally work under the direct control and supervision of Finance Manager who is the overall in charge of both finance and accounting activities. The controller or the management accountant is the chief accountant officer. His functions have already been explained in the preceding pages. The treasurer is the person who has to manage the funds of the firm. His duties include forecasting and planning the firm's financial needs, managing credit, raising funds by floating securities, administering the flow of cash and safeguarding securities and funds *etc.*, the functions and status of the Controller and the Treasurer can be shown by means of the following organization chart.

4.3 MANAGEMENT ACCOUNTING PRINCIPLES

Besides the basic accounting principles which are accepted generally throughout the accounting profession, the following are the additional conventions/principles which are now generally regarded as essential part of management accounting:

- **Designing and Compiling:** Accounting information, records, reports, statements, and other evidence of past, present, or future results should be designed and compiled to meet the needs of the particular business and/ or specific problem. This implies a certain flexibility of system. When a particular problem is to be solved the system should be capable of producing the relevant data. If necessary, there must be departure from double-entry principles. Accounting and operational research principles should be linked together. Information should be accumulated and then presented to solve problems. The accounting information should be modified and adapted to meet each need whenever possible. However, it is important to remember that if this principle is carried too far, the cost of the management accountancy system may become excessive. It is partly for this reason that a systematic rather than an *ad hoc* method is used for accumulating costing data.
- **Management by Exception:** The "principle of management by exception" is followed when presenting information to management. This assumes that plans are predetermined and then actual results are compared with expected results. If there are no deviations there is no necessity to report. When there are variations from predetermined plans, management is informed precisely of what is going wrong. In this way, the information presented to management is kept to the minimum, yet at the same time all-important facts are being revealed. What is more, management has less to read and study and, therefore, should have more time to take action.
- **Control at Source Accounting:** Costs are best controlled at the points at which they are incurred-"Control-at-source accounting." Recognition of this convention is

acknowledged through the preparation of departmental operating statements and the design of costing system, which control individual workers, material issues, and the usage of services. The inculcation of cost consciousness is also an essential part of this convention.

- **Accounting for Inflation:** A profit cannot be said to be earned unless capital is maintained intact in real terms. This convention recognizes that the monetary unit is not stable. Attempts to overcome the effects of changes in the value of money have been made via revaluation accounting, but as yet there is no general acceptance of the theory. However, there is strong evidence that more and more accountants are modifying their views to meet the dynamic state of business and the economy.
- **Use of ROI:** Return on capital employed is used as the criterion for measuring the efficiency of the business. For this purpose, the capital employed should be calculated by reference to current replacement values.
- **Utility:** Management accounting systems and related forms should be used only as long as they serve a useful purpose.
- **Integration:** There should be integration of all management information so that fullest use is made of the facts available and at the same time, the accounting service should be provided at minimum cost.
- **Absorption of Overhead Costs:** Overhead cost should be apportioned to cost centers and absorbed to products on the basis of benefits received for fixed costs or responsibilities incurred for variable costs. The method or methods selected should bring about the desired results of recovering the overheads in the most equitable manner. However, this is subject to what is stated on this matter later in the chapter on "Marginal Costing and Profit Planning".
- **Utilization of Resources:** Management accountancy should endeavor to show whether or not the resources of the business are being utilized in the most effective manner.
- **Controllable and Uncontrollable Cost:** When tracing responsibility a clear distinction should be made between those costs, which are controllable, and those, which are uncontrollable, by the management of the business or department concerned.
- **Forward-Looking Approach:** Management accountant should seek to anticipate problems and prevent them. There should be a forward-looking approach, and actual costs should be employed only as measures of achievements realized. This principle recognizes the importance of budgetary control and standard costing.
- **Appropriate Means:** The most appropriate means of accumulating, recording and presenting the accountancy information should be selected. This normally implies that mechanization should be adopted as much as possible. It does not mean that every business should employ a computer. The machines selected should be of a size and type that can economically be employed by the particular concern to deal with its own

problems. If there is insufficient work for a computer, then clearly this should not be acquired.

- **Personal Contact:** Personal contact with departmental managers, foremen, and others cannot be replaced entirely by reports and statements. The above list of conventions is fairly long. However, it is not exhaustive on account of the subject of management accounting being growing one. It may be possible that in the times to come many more suitable conventions may be developed by the management accountants all over the world which may take the form of universally acceptable management accounting principles.

4.3.1 Management Accounting and Financial Accounting

Financial accounting and management accounting are closely interrelated since management accounting is to a large extent rearrangement of the data provided by financial accounting. Moreover, all accounting is financial in the sense that all accounting systems are in monetary terms and management is responsible for the contents of the financial accounting statements. In spite of such a close relationship between the two, there are certain fundamental differences. These differences can be laid down as follows:

- **Objectives:** Financial accounting is designed to supply information in the form of Profit and Loss Account and Balance Sheet to external parties like shareholders, creditors, banks, investors and Government. Information is supplied periodically and is usually of such type in which management is not much interested. Management accounting is designed principally for providing accounting information for internal use by the management. Thus, financial accounting is primarily an external reporting process while management accounting is primarily an internal reporting process.
- **Analyzing Performance:** Financial accounting portrays the position of business as a whole. The financial statements like income statement and balance sheet report on overall performance or status of the business. On the other hand, management accounting directs its attention to the various divisions, departments of the business and reports about the profitability, performance, *etc.*, of each of them. Financial accounting deals with the aggregates and, therefore, cannot reveal what part of the management action is going wrong and why. Management accounting provides detailed analytical data for these purposes.
- **Data Used:** Financial accounting is concerned with the monetary record of past events. It is a post-mortem analysis of past activity and, therefore, out of date for management action. Management accounting is accounting for future and therefore it supplies data both for present and future duly analyzed and in detail in the 'management' language so that it becomes a base for management action.
- **Monetary Management:** In financial accounting only such economic events find place which can be described in money. However, the management is equally interested in non-monetary economic events, *viz.*, technical innovations, personnel in the organization, changes in the value of money, *etc.* These events affect management's decisions and therefore management accounting cannot afford to ignore them. For example, change in the value of money may not find a place in financial accounting on account of "going concern concept". But, while affecting an

insurance policy on an asset or providing for replacement of an asset, the management will have to take into account this factor.

- **Periodicity of Reporting:** The period of reporting is much longer in financial accounting as compared to management accounting. The Income Statement and the Balance Sheet are usually prepared yearly or in some cases half-yearly. Management requires information at frequent intervals and therefore financial accounting fails to cater to the needs of the management. In management accounting there is more emphasis on furnishing information quickly and at comparatively short intervals as per the requirements of the management.
- **Precision:** There is less emphasis on precision in case of management accounting as compared to financial accounting since the information is meant for internal consumption.
- **Nature:** Financial accounting is more objective while management accounting is more subjective. This is because management accounting is fundamentally based on judgment rather than on measurement.
- **Legal Compulsion:** Financial accounting has more or less become compulsory for every business on account of the legal provisions of one or the other Act. However, a business is free to install, or not to install, a system of management accounting. The above points of difference between Financial Accounting and Management Accounting prove that Management Accounting has flexible approach as compared to rigid approach in the case of Financial Accounting. In brief, Financial Accounting simply shows how the business has moved in the past while management accounting shows how the business has to move in the future.

4.3.2 Cost Accounting and Management Accounting

Cost Accounting is the process of accounting for costs. It embraces the accounting procedures relating to recording of all income and expenditure and the preparation of periodical statements and reports with the object of ascertaining and controlling costs. It is, thus, the formal mechanism by means of which the costs of products or services are ascertained and controlled. On the other hand, management accounting involves collecting, analyzing, interpreting and presenting all accounting information, which is useful to the management. It is closely associated with management control which comprises planning, executing, measuring and evaluating the performance of an organization. Thus, management accounting draws heavily on cost data and other information derived from cost accounting. Today cost accounting is generally indistinguishable from the so-called management accounting or internal accounting because it serves multiple purposes. However, management accounting can be distinguished from cost accounting in one important respect.

Management accounting has a wider scope as compared to cost accounting. Cost accounting deals primarily with cost data while management accounting involves the considerations of both cost and revenue. Management accounting is an all-inclusive accounting information system, which covers financial accounting, cost accounting and all aspects of financial management. But it is not a substitute for other accounting functions. It involves a continuous process of reporting cost, financial and other relevant data in an analytical and informative way to management. We should not be very much concerned with the boundaries of cost accounting and management accounting since they are complementary in nature. In the

absence of a suitable system of cost accounting, management will not be in a position to have detailed cost information and their function is bound to lose significance. On the other hand, the management cannot effectively use the cost data unless it has been reported to them in a meaningful and informative form.

4.4 BASIC COST CONCEPTS

You have seen how Management Accounting is different from other branches of accounting. Now you will be introduced to some of the important terms and concepts of Cost Accounting. We would be using these terms throughout the session. So, please study this with utmost care. You should also know that Management Accounting as a subject stands on Financial Accounting and Cost Accounting. So a sound basic knowledge of the same will help you to Understand Management Accounting better.

In order to determine and take a dispassionate view about what lies beneath the surface of accounting figures, a financial analyst has to make use of different management accounting techniques. Cost techniques have a precedence over the other techniques since accounting treatment of cost is often both complex and financially significant. For example, if a firm proposes to increase its output by 10%, is it reasonable to expect total cost to increase by less than 10%, exactly 10% or more than 10%? Such questions are concerned with the cost behavior, i.e., the way costs change with the levels of activity. Answers to these questions are very much pertinent for the management accountant or financial analyst since they are basic for the firm's projections and profits which ultimately become the basis of all financial decisions. It is, therefore, necessary for a financial analyst to have a reasonably good working knowledge about basic cost concepts and patterns of cost behavior. All these come within the ambit of cost accounting.

4.4.1 Objectives of Cost Accounting

In the initial stages cost accounting was merely considered to be a technique for ascertainment of costs of products or services on the basis of historical data. In course of time due to competitive nature of the market it was realized that ascertaining of cost is not as important as controlling costs. Hence, cost accounting started to be considered more as a technique for cost control as compared to cost ascertainment. Due to technological developments in all fields, now cost reduction has also come within the ambit of cost accounting. Cost accounting is, thus, concerned with recording, classifying and summarizing costs for determination of costs of products or services, planning, controlling and reducing such costs and furnishing of information to management for decision making.

According to Charles T. Horngren cost accounting is "a quantitative method that accumulates, classifies, summarizes, and interprets information for three major purposes:

- Operational planning and control
- Special decisions,
- Product decisions.

According to the Chartered Institute of Management Accountants, London, cost accounting is the process of accounting for costs from the point at which its expenditure is incurred or committed to the establishment of the ultimate relationship with cost units. In its widest sense, it embraces the preparation of statistical data, the application of cost control methods

and the ascertainment of the profitability of the activities carried out or planned. Cost accounting, thus, provides information to the management for decisions of all sorts. It serves multiple purposes on account of which it is generally indistinguishable from management accounting or so-called internal accounting. Wilmot has summarized the nature of cost accounting as "the analyzing, recording, standardizing, forecasting, comparing, reporting and recommending", and the role of a cost accountant as that of "a historian, news agent and prophet." As a historian he must be meticulously accurate and sedulously impartial. As a news agent he must be up to date, selective and pithy. As a prophet he must combine "knowledge and experience with foresight and courage.

The main objectives of cost accounting can be summarized as follows:

- **Determining Selling Price:** Business enterprises are run on a profit-making basis. It is thus necessary that the revenue should be greater than the cost incurred in producing goods and services from which the revenue is to be derived. Cost accounting provides information regarding the cost to make and sell such products or services. Of course, many other factors, such as the condition of the market, the area of distribution, the quantity which can be supplied, etc., are also given due consideration by the management before deciding upon the price, but the cost plays a dominating role.
- **Determining and Controlling Efficiency:** Cost accounting involves a study of the various operations used in manufacturing a product or providing a service. The study facilitates measuring of the efficiency of the organization as a whole or departmentally as well as devising means of increasing the efficiency. Cost accounting also uses a number of methods, e.g., budgetary control, standard costing etc., for controlling costs. Each item of cost (viz., materials, labor and expenses) is budgeted at the beginning of the period and actual expenses incurred are compared with the budget. This greatly increases the operating efficiency of the enterprise.
- **Facilitating Preparation of Financial and Other Statements:** The third objective of cost accounting is to produce statements at such short intervals as the management may require. The financial statements, prepared under financial accounting generally once a year or half-year, are spaced too far apart in time to meet the needs of the management. In order to operate the business at a high level of efficiency, it is essential for the management to have a frequent review of production, sales and operating results. Cost accounting provides daily, weekly or monthly volumes of units produced, accumulated costs together with appropriate analysis. A developed cost accounting system provides immediate information regarding stock of raw materials, work-in-progress and finished goods. This helps in speedy preparation of financial statements.
- **Providing Basis for Operating Policy:** Cost accounting helps the management in formulating operating policies. These policies may relate to any of the following matters: Determination of cost-volume-profit relationship; Shutting down or operating at a loss; Making or buying from outside suppliers; Continuing with the existing plant and machinery or replacing them by improved and economic ones.

4.4.2 Concept of Cost

Cost Accounting is concerned with cost and, therefore, it is but appropriate to understand the meaning of the term cost in a proper perspective. In general, "cost" means "the amount of expenditure (actual or notional) incurred on or attributable to a given thing. However, the term cost cannot be exactly defined. Its interpretation depends upon:

- The nature of the business, or industry, and
- The context in which it is used.

In a business where selling and distribution expenses are quite nominal, the cost of the article may be calculated without considering the selling and distribution overheads. While in a business where the nature of the product requires heavy selling and distribution expenses calculation of cost without taking into account selling and distribution expenses may prove very costly to the business. Then cost may be factory cost, office cost, cost of sales and even an item of expense is also termed as cost. For example, prime cost includes expenditure on direct materials, direct labor and direct expenses. Money spent on materials is termed as cost of materials that spent on labor as cost of labor and so on. Thus, the use of term 'cost' without qualification is also quite misleading. Again different costs are found out for different purposes. The work-in-progress is valued at factory cost while stock of finished goods is valued at office cost. Numerous other examples can be given to show that the term 'cost' does not mean the same thing under all circumstances and for all purposes. Many items of cost of production are handled in an optional manner which may give different costs for the same product or job without in any way going against the accepted principles of cost accounting. Depreciation is one of such items. Its amount varies in accordance with the method of depreciation being used. However, endeavor should be to obtain as far as possible accurate cost of a product or service.

4.4.3 Elements of Cost and Cost Sheet

There are three broad elements of cost:

- **Material:** The substance from which the product is made is known as material. It may be in a raw or a manufactured state. It can be direct as well as indirect.

Direct Material: All material which becomes an integral part of the finished product and which can be conveniently assigned to specific physical units is termed as Direct Material. Following are some of the examples of direct material: All material or components specifically purchased, produced or requisitioned from stores. Primary packing material (e.g., carton, wrapping, cardboard, boxes, etc.) Purchased or partly produced components. Direct material is also described as process material, prime cost material, production material, stores material, constructional material, etc.

Indirect Material: All material which is used for purposes ancillary to the business and which cannot be conveniently assigned to specific physical units is termed as "Indirect Material". Consumable stores, oil and waste, printing and stationery material, etc., are a few examples of indirect material. Indirect material may be used in the factory, the office or the selling and distribution divisions.

- **Labour:** For conversion of materials into finished goods, human effort is needed; such human effort is called labour. Labor can be direct as well as indirect.

Direct Labour: Labour which plays an active and direct part in the production of a particular commodity is called direct labour. Direct labour costs are, therefore, specifically and conveniently traceable to specific products. Direct labour is also described as process labour, productive labour, operating labour, etc.

Indirect Labour: Labour employed for the purpose of carrying out tasks incidental to goods produced or services provided, is indirect labour. Such labour does not alter the construction, composition or condition of the product. It cannot be practically traced to specific units of output. Wages of store-keepers, foremen, time-keepers, director's fees, salaries of salesmen etc. are all examples of indirect labour costs. Indirect labour may relate to the factory, the office or the selling and distribution divisions.

- **Expenses:** Expenses may be direct or indirect.

Direct Expenses: These are expenses which can be directly, conveniently and wholly allocated to specific cost centers or cost units. Examples of such expenses are: hire of some special machinery required for a particular contract, cost of defective work incurred in connection with a particular job or contract, etc. Direct expenses are sometimes also described as "chargeable expenses."

Indirect Expenses: These are expenses which cannot be directly, conveniently and wholly allocated to cost centers or cost units. Examples of such expenses are rent, lighting, insurance charges, etc.

- **Overhead:** The term overhead includes indirect material, indirect labour and indirect expenses. Thus, all indirect costs are overheads. A manufacturing organization can broadly be divided into three divisions: (i) Factory or Works where production is done; Factory Overheads. They include: Indirect material used in the factory such as lubricants, oil, consumable stores, etc. Indirect labour such as gate-keeper's salary, time-keeper's salary, works manager's salary, etc. Indirect expenses such as factory rent, factory insurance, factory lighting, etc. (ii) Office and Administration, where routine as well as policy matters are decided; Office and Administration Overheads. They include: Indirect material used in the office such as printing and stationery material, brooms and dusters, etc. Indirect labour such as salaries payable to office manager, office accountant, clerks, etc. Indirect expenses such as rent, insurance, lighting of the office. (iii) Selling and Distribution where products are sold and finally dispatched to the customer. Overheads may be incurred in the factory or office or selling and distribution divisions. Thus, overheads may be of three types: Selling and Distribution Overheads. They include: Indirect material used such as packing material, printing and stationery material, etc. Indirect labour such as salaries of salesmen and sales manager etc. Indirect expenses such as rent, insurance, advertising expenses, etc.

Cost Sheet: It is a document which provides for the assembly of the estimated detailed cost in respect of cost centers and cost units. It analyses and classifies in a tabular form the expenses on different items for a particular period. Additional columns may also be provided to show the cost of a particular unit pertaining to each item of expenditure and the total per unit cost. Cost Sheet may be prepared on the basis of actual data (Historical Cost Sheet), on the basis of estimated data (Estimated Cost Sheet) depending on the technique employed and the purpose to be achieved. The techniques of preparing cost sheet can be understood with the help of the following illustrations mentioned below:

Illustration 4.1: The following information has been obtained from the records of left center corporation for the period form June 1 to June 30 1998.

| | |
|---|-----------|
| Cost of raw materials on June 1.1998 | Rs. 30000 |
| Purchase of raw materials during the month | Rs.450000 |
| Wages paid | Rs.230000 |
| Factory overheads | Rs.92000 |
| Cost of work in progress on June 1. 1998 | Rs.12000 |
| Cost of raw materials on June 30, 1998 | Rs.15000 |
| Cost of stock of finished goods on June 1, 1998 | Rs.60000 |
| Cost of stock of finished goods on June 30 1998 | Rs.55000 |
| Selling and distribution overheads | Rs.20000 |
| Sales | Rs.900000 |
| Administration overheads | Rs.30000 |

Solution:

**Statement of Cost of Production of Goods Manufactured
For the period ending on June 30, 1998**

| | | |
|--|-----------|---------------|
| Opening stock of raw materials | Rs. 30000 | Rs. |
| Add: purchase | 450000 | |
| | ----- | |
| | 480000 | |
| | 15000 | |
| Less: closing stock of raw material | | 465000 |
| Value of raw materials consumed | | 230000 |
| Wages | | <u>659000</u> |
| Prime cost | | 92000 |
| Factory overheads | | <u>787000</u> |
| | | 12000 |
| Add: opening stock of work in progress | | <u>799000</u> |
| | | --- |
| Less: closing stock of work in progress | | <u>799000</u> |
| Factory Cost | | 30000 |
| Add: Administration overhead | | <u>829000</u> |
| Cost of production of goods manufactured | | 60000 |
| Add: opening stock of finished goods | | <u>889000</u> |
| | | 55000 |
| Less: closing stock of finished goods | | <u>834000</u> |
| Cost of production of goods sold | | 20000 |
| Add; selling and distribution overheads | | <u>854000</u> |
| Cost of sales | | 46000 |
| Profit | | <u>900000</u> |
| sales | | |

Illustration 4.2:

From the following particulars prepare a cost sheet showing the total cost per tone for the period ended 31st December 1998

| | | | |
|--|----------|-----------------------------|---------|
| Raw materials | Rs.33000 | Rent and taxes (office) | Rs.500 |
| Productive wages | Rs.35000 | Water supply | Rs.1200 |
| Direct expenses | Rs.3000 | Factory insurance | Rs.1100 |
| Unproductive wages | Rs.10500 | Office insurance | Rs.500 |
| Factory rent and taxes | Rs.2200 | Legal expenses | Rs.400 |
| Factory lighting | Rs.1500 | Rent of warehouse | Rs.300 |
| Factory heating | Rs.4400 | Depreciation: | |
| Motive power | Rs.3000 | Plant and machinery | Rs.2000 |
| Haulage | Rs.1000 | Office building | Rs.1000 |
| Directory's fees (works) | Rs.2000 | Delivery vans | Rs.200 |
| Directors fees(office) | Rs.500 | Bad debt | Rs.100 |
| Factory cleaning | Rs.200 | Advertising | Rs.300 |
| Sundry office expenses | Rs.800 | Sales department salaries | Rs.1500 |
| Expenses | Rs.750 | Up keeping of delivery vans | Rs.700 |
| Factory stationery | Rs.900 | Bank charges | Rs.50 |
| Office stationery Loose tools written off | Rs.600 | Commission on sales | Rs.1500 |

The total output for the period has been 10000 tones.

Solution:

**Cost sheet
For the period ended 31st December 1998**

| | | |
|--|------------|--------|
| | Rs. | |
| Raw materials | 33000 | |
| Production wages | 35000 | |
| Direct expenses | 3000 | |
| Prime cost | <hr/> | 71000 |
| Add: works overheads: | 10500 | |
| Unproductive wages | 7500 | |
| Factory rent and taxes | 2200 | |
| Factory lighting | 1500 | |
| Factory heating | 4400 | |
| Motive power | 3000 | |
| Haulage | 1000 | |
| Directory fees(works) | 500 | |
| Factory cleaning | 800 | |
| Estimating expenses | 750 | |
| Factory stationery | 600 | |
| Loses tools written off | 1200 | |
| Water supply | 1100 | |
| Factory insurance | 2000 | |
| Depreciation of plant and machinery | <hr/> | 37050 |
| Works cost | | <hr/> |
| | | 108050 |
| Add: office overhead: Directors fees)office) | 2000 | |
| Sundry office expenses | 200 | |
| Office stationery | 900 | |
| Rent and taxes (office) | 500 | |
| Office insurance | 500 | |
| Legal expenses | 400 | |
| Depreciation of office building | 1000 | |
| Bank charges | 50 | |
| Office cost | <hr/> | 5550 |
| | | <hr/> |
| | | 113600 |
| Add: selling and distribution overheads: | 300 | |
| Rent of warehouse | 200 | |
| Depreciation on delivery vans | 100 | |
| Bad debts | 300 | |
| Advertising | 1500 | |
| Sales department salaries | 1500 | |
| Commission on sales | 700 | |
| Upkeep of delivery vans | <hr/> | 4600 |
| Total cost | | <hr/> |
| | | 118200 |
| Cost per tone Rs. 118200/10000= Rs. 11.82 | | |

4.4.4 Classification of Cost

Cost may be classified into different categories depending upon the purpose of classification. Some of the important categories in which the costs are classified are as follows:

Fixed, Variable and Semi-variable Costs: The cost which varies directly in proportion to every increase or decrease in the volume of output or production is known as variable cost. The cost which does not vary but remains constant within a given period of time and range of activity in spite of the fluctuations in production, is known as fixed cost. The cost which does not vary proportionately but simultaneously cannot remain stationary at all times is known as semi-variable cost. It can also be named as semi-fixed cost. Example: - Fixed Costs: Rent or rates, Insurance charges; Management salary, etc. Variable Cost: Wages of laborers Cost of direct material, power, etc. Semi-variable Costs: Depreciation, repairs, etc. Fixed costs are sometimes referred to as "period costs" and variable costs as "direct costs" in system of direct costing. Fixed costs can be further basified into committed fixed costs and Discretionary fixed costs. Committed; Fixed Costs consist largely of those fixed costs that arise from the possession of plant, equipment and a basic organization structure. For example, once building is erected and plant is installed, nothing much can be done to reduce the costs such as of depreciation, property taxes, insurance and salaries of the key personnel, etc., without impairing the organization's competence to meet the long-term goals. Discretionary Fixed Costs are those which are set at fixed amount for specific time periods by the management in the budgeting process. These costs directly reflect top management policies and have no particular relationship with volume of output. These costs can therefore be reduced or entirely eliminated, if the circumstances so require. Examples of such costs are research and development costs, advertising and sales promotion costs, donations, management consulting fees, etc. These costs are also termed as managed or programmed costs. In rare circumstances, the variable costs are classified into discretionary and engineered costs the term discretionary costs is generally linked with a class of fixed costs. However, in those circumstances where the management has predetermined that the organization would spend a certain percentage of its sales for the items like research, donations, sales promotion, etc., discretionary costs will be of a variable character. Engineered variable costs are those variable costs which are directly related to the production or sales level. These costs exist in those circumstances where specific relationship exists between input and output. For example, in an automobile industry there may be exact specifications: one radiator, two fan belts, one battery etc., would be required for one car. In case more than one car is to be produced, the various inputs will have to be increased in the direct proportion of the output. Thus, an increase in discretionary variable costs is due to management's authorization while 'increase in engineered variable costs is due to volume of output or sales.

Product Costs and Period Costs: Costs which become parts of the cost of the product rather than an expense of the period in which they are incurred are called as "Product costs." They are included in inventory values. In financial statements such costs are treated as assets until the goods they are assigned to, are sold. They become an expense at that time. These costs may be fixed as well as variable, e.g., cost of raw materials and direct wages, depreciation on plant and equipment, etc. Costs which are not associated with production are called "Period Costs". They are treated as an expense of the period in which they are interred. They may also be fixed as well as variable. Such costs include general administration costs, salesmen salaries and commission, depreciation on office facilities, etc. They are charged against the revenue of the relevant period. Differences of opinion exist regarding whether certain costs should be considered as product or period costs. Some accountants are of the opinion that

fixed manufacturing costs are more closely related to the passage of time than to the manufacturing of the product. Thus, according to them variable manufacturing costs are product costs, while fixed manufacturing and other costs are period costs. However, their view does not seem to have been yet widely accepted.

Direct and Indirect Costs: The expenses on material and labour economically and easily traceable to a product, service or job are considered as direct costs. In the process of manufacture or production of articles, materials are purchased, laborers are employed and the wages are paid to them, certain other expenses are also incurred directly. All of these take an active and direct part in the manufacture of a particular commodity, hence are called direct costs. The expenses incurred on those items which are not directly- chargeable to production are known as indirect costs. For example, in production, salaries of timekeepers, storekeepers, foremen are paid; certain expenses for running the administration are incurred. All, of these cannot be conveniently allocated to production and hence are called 'indirect costs.

Decision-making Costs and Accounting Costs: Decision-making costs are special purpose costs that are applicable only in the situation in which they are compiled. They have no universal application. "They need not tie into routine- financial accounts. They do not and should not conform to the accounting rules accounting costs are compiled primarily from financial statements. They have to be altered before they can be used for decision-making. Moreover, they are historical costs and show what has happened under an existing set of circumstances. While decision-making costs are future costs, they represent what is expected to happen under an assumed set of conditions. For example, accounting costs may show the cost of the product when the operations are manual, while decision-making cost might be calculated to show the costs when the operations are mechanized.

Relevant and Irrelevant Costs: Relevant costs are those, which would be changed by the managerial decision. While irrelevant costs are those, which would not be affected by the decision. For example, if a manufacturer is considering closing down of an unprofitable retail sales shop, wages payable to the workers -of the shop are relevant in this connection since they will disappear on closing down of the shop. But prepaid rent for the shop or un recovered costs of any equipment which will have to be scrapped will be irrelevant costs which must be ignored.

Shutdown and Sunk Costs: A manufacturer or an organization rendering service may have to suspend its operations for a period on account of some temporary difficulties, e.g., shortage of raw material, non-availability of requisite labour etc. During this period though no work is done yet certain fixed costs, such as, rent and insurance of buildings, depreciation, maintenance, etc., for the entire plant will have to be incurred. Such costs of the idle plant are known as shutdown costs. Sunk costs are historical or past costs. These are costs which have been created by a decision that was made in the past that cannot be changed by any decision that will be made in the future. Investments in plant and machinery, buildings, etc., are prime examples of such costs. Since sunk costs cannot be altered by later decisions, they are irrelevant for decision-making. An individual may regret having made a purchase or constructing an asset but having purchased or constructed it, cannot avoid it by taking any subsequent action. Of course, the asset can be sold, in which case the cost of the asset will be matched against the proceeds from sale of the asset for the purpose of determining gain or loss. The person may decide to continue to own the asset in which case the cost of the asset will be matched against the revenue realized over its effective life. However, he cannot avoid that cost which has already been incurred by him for the acquisition of the asset. It is, as a

matter of fact, the sunk cost for all present and future decisions. Example Jolly Ltd. purchased a machine for Rs. 30,000. The machine has an operating life of five years without any scrap value. Soon after making the purchase, the management of Jolly Ltd., feels that the machine should not have been purchased since it cannot yield the operating advantage originally contemplated. Of course, it is expected to result in savings in operating costs of Rs. 18,000 over a period of five years. The machine can be sold immediately for a sum of Rs. 22,000. In taking the decision whether the machine should be sold or be used, the relevant amounts to be compared are Rs. 18,000 in cost savings over five years and Rs.22,1000 that can be realized in case it is immediately disposed of. Rs. 30,000 invested in the asset is not relevant since it is the same in both cases. The amount is the sunk cost. Jolly Ltd., shuttled, therefore, sell the machinery for Rs. 22,000 since it will result in an extra profit of Rs. 4,000 as compared to keeping "and using it.

Controllable and Uncontrollable Costs: Controllable costs are those costs which can be influenced by the ratio or a specified member of the undertaking. Costs which cannot be so influenced are termed as uncontrollable costs. A factory is usually divided into a number of responsibility centers, each of which is in charge of a specified level of management. The officer-in-charge of a particular department or cost centre can control costs only of those matters which come directly under his control, but not of other matters. For example the expenditure incurred by the Tool Room is controllable by the foreman-in-charge of that section but the share of the tool room expenditure which is apportioned to a machine shop cannot be controlled by a machine' shop foreman. Thus, the difference between controllable and uncontrollable costs is only in relation to a particular individual or level of management. An expenditure which is controllable by one individual may be uncontrollable so far as another individual is concerned.

Avoidable or Escapable Costs and Unavoidable or Inescapable Costs: Avoidable costs are those which will be eliminated, if a segment of the business (e.g., a product or department) with which they are directly related is discontinued. Unavoidable costs are those which will not be eliminated with the segment. Such costs are merely reallocated if the segment is discontinued. For example, in case a product is discontinued, the salary of the factory manager or factory rent cannot be eliminated. It will simply mean that certain other products will have to absorb a large amount of such overheads. However, salary of colorless attached to the product or bad debts traceable to the product would be eliminated. Certain costs are partly avoidable and partly unavoidable, e.g., closing- of one department of a store might result in decrease in delivery expenses but not in their altogether elimination. It is to be noted that only avoidable costs are relevant for deciding whether to continue or eliminate a segment of the business.

Imputed or Hypothetical Costs: These are costs which do not involve cash outlay. They are not included in cost accounts but are important for taking into consideration while making management decisions. For example, interest on capital is ignored in cost accounts though it is considered in financial accounts. In case two projects require unequal outlays of cash, the management must take into consideration interact on capital to judge the relative profitability of the projects.

Differentials, Incremental or Decrement Cost: The difference in total cost between two alternatives is termed as differential cost. In case the choice of an alternative results in increase in total cost, such increased costs are' known as incremental costs. While assessing the profitability of a proposed change, the incremental costs are matched with incremental revenue. This is illustrated with the following illustration.

Illustration 4.3

A company is manufacturing 1,000 units of -a product. The present costs and sales data are as follows: Selling price per unit Rs.10; Variable cost per unit Rs.5; Fixed costs Rs. 4,000. The management is considering the following two alternatives. To accept an export order for another 200 units at Rs. 8 per unit the expenditure of the export order will increase the fixed costs by Rs. 500. To reduce the production from present 1,000 units to 600 units and buy another 400 units from the market at Rs. 6 per unit. This will result in reducing the present fixed costs from Rs. 4,000 to Rs. 3,000. Which alternative the management should accept? Advice.

Solution:

Statement Showing Profitability under Different Alternatives

| Particulars | Present Situation | | Rs. | Proposed Situations (Rs.) | | |
|-------------------------------|-------------------|--------|------|---------------------------|------|-------|
| | Rs. | Rs. | | | | |
| Sales | | 10,000 | | 11600 | | 10000 |
| Less: Variable purchase costs | 5,000 | | 6000 | | 5400 | |
| Less Fixed cost | 4000 | | 4500 | | 3000 | |
| | | 9000 | | 10500 | | 8400 |
| Profit | | 1000 | | 1100 | | 1600 |

Observations: In the present situation, the company is making a profit of Rs. 1,000.

- In the proposed situation I, the company makes a profit of Rs. 1,100.
- The incremental costs are Rs. 1,500 (e.g. Rs. 10,500 - Rs. 9,000) while the incremental revenue (sales) amounts to Rs. 1,600. Hence, there is net gain of Rs. 100 under the proposed situation compared to the existing situation.
- In the proposed situation II, as the detrimental costs are Rs. 600 (i.e. Rs. 9,000 Rs. 8,400) while there is no decrease in sales revenue as compared to the present situation. Hence, there is a net gain of Rs. 600 as compared to the present situation.

Thus, under proposal II, the company makes the maximum profit and therefore it may adopt alternative II. The technique of differential costing, which is based on differential cost, is useful in planning and decision-making and helps in selecting the best alternative. This aspect has been discussed in detail later in a separate chapter. In case the choice results in decrease in total costs, such decreased costs are termed as detrimental costs.

Out-of-Pocket Costs: Out-of-pocket cost means the present or future cash expenditure regarding a certain decision, which will vary depending upon the nature of the decision made. For example, a company has its own trucks for transporting raw materials and finished products from one place to another. It seeks to replace these trucks by employment of public carriers of goods. In making this decision, of course, the depreciation of the trucks is not to be

considered, but the management must take into account the present expenditure on fuel, salary to drivers and maintenance. Such costs are termed as out-of-pocket costs.

Opportunity Cost: Opportunity cost refers to the advantage, in measurable terms, which has been foregone on account of not using the facilities in the manner originally planned. For example, if an owned building is proposed to be utilized for housing a new project plant, the likely revenue which the building could fetch if rented out, is the opportunity cost which should be taken into account while evaluating the profitability of the project. Similarly, if a manufacturer is confronted with the problem of selecting anyone of the following alternatives: (a) selling a semi-finished product at Rs. 2 per unit, and (b) introducing it into a further process to make it more refined and valuable Alternative (b) will prove to be remunerative only when after paying the cost of further processing the amount realized by the sale of the product is more than Rs. 2 per unit-their revenue which could have been otherwise realized. The revenue of Rs. 2 per unit is foregone in case alternative (b) is adopted. The term 'opportunity cost' refers to this alternative revenue foregone.

Traceable, Untraceable or Common Costs: Costs which can be easily identified with a department, process or product are termed as traceable costs, e.g., the cost of direct material, direct labour, etc. Costs which cannot be so identified are termed as untraceable or common costs. In other words, common costs are costs incurred collectively for a number of cost centers and are to be suitably apportioned for determining the cost of individual cost centers, e.g., overheads incurred for a factory as a whole, combined purchase cost for purchasing several materials in one consignment, etc. Joint costs are a sort of common costs. When two or more products are produced out of one and the same material or process, the costs of such material or process are called that costs. For example when cotton seed and cotton fiber are produced from the same materials the cost incurred till the split-off or separation point will be "joint costs".

Production, Administration and Selling and Distribution Costs A business organization performs a number of functions, e.g., production, illustration, selling and distribution, research and development. Costs are to be incurred for each of these functions. The Chartered Institute of Management accountants, London, have defined each of the above costs as follows: (i) **Production Cost:** The cost of the sequence of operations which begin with supplying materials, labour and services and ends with the primary packing of the product. Thus, it includes the cost of direct material, direct labour, direct expenses and factory overheads. (ii) **Administration Cost:** The cost of formulating the policy, directing the organization and controlling the operations of an undertaking, which is not related directly to a production, selling, distribution, research or development activity or function. (iii) **Selling Cost:** The cost of seeking to create and stimulate demand (sometimes termed as marketing) and of securing orders. (iv) **Distribution Cost:** The cost of sequence of operations which begins with making the packed product available for dispatch and ends with making the reconditioned returned empty package; if any, available for re-use. (v) **Research Cost:** The cost of searching for new or improved products, new application of materials, or new or improved methods. (vi) **Development Cost:** The cost of the process which begins with the implementation of the decision to produce a new or improved product or employ a new or improved method and ends with the commencement of formal production of that product or by the method. (vii) **Pre-production Cost:** That part of development cost incurred in making a trial production run preliminary to formal production.

Conversion Cost: The cost of transforming direct materials into finished products, exclusive of direct material cost, is known as the conversion cost. It is usually taken as the aggregate of the cost of direct labour, direct expenses and factory overheads.

Illustration 4.4

ZED Ltd. operates two shops. Product A is manufactured in Shop 1 and customer's job against specific orders are, being carried out in Shop 2. Its annual statement of income is:

| Particulars | Shop 1 (Product A) Rs. | Shop 2 (Job Works) Rs. | Total Rs. |
|----------------|---------------------------|---------------------------|-----------|
| Sales/Income | 1,25,000 | 2,50,000 | 3,75,000 |
| Material | 40,000 | 50,000 | 90,000 |
| Wages | 45,000 | 1,00,000 | 1,45,000 |
| Depreciation | 18,000 | 31,500 | 49,500 |
| Power | 2,000 | 3,500 | 5,500 |
| Rent | 5,000 | 30,000 | 35,000 |
| Heat and Light | 500 | 3,000 | 3,500 |
| Other Expenses | 4,500 | 2,000 | 6,500 |
| Total Costs | 1,15,000 | 2,20,000 | 3,35,000 |
| Net Income | 10,000 | 30,000 | 40,000 |

The depreciation charges are for machines used in the shops. The rent and heat and light are apportioned between the shops on the basis of floor area occupied. All other costs are current expenses identified with the output in a particular shop.

A valued customer has given a job to manufacture 5,000 units of X for shop 2. As the company is already working at its full capacity, it will have to reduce the output of product A by 50%, to accept the said job. The customer is willing to pay Rs. 35 per unit of X. The material and labour will cost Rs. 10 and Rs. 18 respectively per unit. Power will be consumed on the job just equal to the power saved on account of- reduction of output of A. In addition the company will have to incur additional overheads of Rs. 10,000.

You are required to compute the following in respect of this job:

(a) Differential cost; (b) Full Cost; (c) Opportunity Cost; and (d) Sunk Cost. Advise whether the company should accept the job.

Solution

Computation of Differential Cost of the Job

| Particulars | Increase Rs. | Decrease Rs. |
|----------------------|--------------|--------------|
| Material Cost | 50,000 | 20,000 |
| Labour Cost | 90,000 | 22,500 |
| Additional Overheads | 10,000 | ----- |
| Other Expenses | ----- | 2,250 |
| Total | 50,000 | 44,750 |

Net differential cost of the jobs: (Rs. 1, 50,000 - Rs. 44,750) = Rs. 1, 05,250

Note: Depreciation, rent, heat and light and power are not going to affect the costs.

Computation of Full Cost of the Job

| | |
|--|-----------------|
| Cost calculated as above under (a) (i.e., increased costs) | Rs.1, 50,000 |
| Depreciation | 9,000 |
| Power | 1,000 |
| Rent | 2,500 |
| Heat & Light | 250 |
| Total | 1,62,750 |

Computation of Opportunity Cost of Taking the Order

| | | |
|--------------------|------------|---------------|
| Sales of Product A | Rs. | Rs. |
| Less: | | 62,500 |
| Material | 20,000 | |
| Labour | 22,500 | |
| Power | 1,000 | |
| Other Expenses | 2,250 | |
| | ----- | |
| | | 45,750 |
| Total | | 16,750 |

Computation of Sunk Cost of the Job

| | |
|--------------|---------------|
| | Rs. |
| Depreciation | 9,000 |
| Power* | 1,000 |
| Rent | 2,500 |
| Heat & light | 250 |
| Total | 12,750 |

Advice: ZED Ltd. should not accept the job since there will be a cash loss of Rs. 42,750 as computed below:

| | | |
|---|-----------|--------|
| Incremental Revenue 5,000 units @ Rs. 25 | 1, 25,000 | |
| LESS: Sale of product A | 62,500 | 62,500 |
| Differential Cost as computed under (A) above | 1, 05,250 | |
| Cash Loss | 42,750 | |

4.4.5 Cost Unit and Cost Centre

The technique of costing involves: (i) collection and classification of expenditure according to cost elements and (ii) allocation and apportionment of the expenditure to the cost centers or cost units, or both. The elements of costs have already been discussed in the previous pages. The meaning of the terms 'cost unit' and 'cost center' are as follows:

Cost Unit: In preparing cost accounts it becomes necessary to select a unit with which expenditure may be identified. The quantity upon which cost can be conveniently allocated is known as a unit of cost or cost unit. The Chartered Institute of management Accountants, London, defines a unit, of cost as a unit of quantity of product, service or time in relation to which costs may be ascertained or expressed.

Unit selected should be unambiguous, simple and commonly used. Following are examples of units of cost:

| | |
|-----------------------|---|
| Brick Works | per 1000 bricks made |
| Collieries | per tonne of coal raised |
| Textile Mills | per yard or per lb. of cloth manufactured |
| Electricity companies | per unit of electricity generated |
| Transport companies | per passenger km. per tonne km. |
| Steel mills | per tonne of steel made. |

Cost Centre: According to the Chartered Institute of Management Accountants, London, cost centre means "a location, person or item of equipment (or group of these) for which costs may be ascertained and used for the purpose of cost control". Thus, cost centre refers to one of the convenient units into which the whole factory/organization has been appropriately divided for costing purposes. Each such unit consists of a department or a sub-department or item or equipment or machinery or a person or a group of persons. Sometimes, closely associated departments are combined together and considered as one unit for costing purposes. For example, in a laundry, activities such as collecting, sorting, marking and washing of clothes are performed. Each activity may be considered as a separate cost centre and all costs relating to a particular cost centre may be found out separately. Cost centers may be classified as follows:

- Productive, unproductive and mixed cost centers.
- Personal and impersonal cost centers.
- Operation and process cost centers.

Productive cost centres are those, which are actually engaged in making the products. Service or unproductive cost centres do not make the products but are essential aids to the productive centres. Examples of such service centres are those of administration, repairs and maintenance, stores and drawing office departments. Mixed costs centres are those, which are engaged sometimes on productive and other times on service works. For example, a tool shop serves as a productive cost centre when it manufactures dies and jigs to be charged to specific jobs or orders but serves as servicing cost centre when it does repairs for the factory. Impersonal cost centre is one, which consists of a department, plant or item of equipment. While a personal cost centre is one, which consists of a person or group of persons. In case a cost centre consists of those machines and/or persons which carry out the same operation it is termed as operation cost centre. If a cost centre consists of a continuous sequence of operations, it is called process cost centre.

In case of an operation cost centre all machines or operators performing the same operation are brought together under one centre. The objective of such an analysis is to ascertain the cost of each operation irrespective of its location inside the factory. In the process type cost centre the cost is analyzed and related to a series of operations in sequence, such as in chemical industries, oil refineries and other process industries.

Cost Estimation and Cost Ascertainment: Cost estimation is the process of pre-determining the costs of a certain product job or order. Such pre-determination may be required for several purposes such as budgeting, measurement of performance efficiency, preparation of financial statements (valuation of stocks, etc.), make or buy decisions, fixation of the sale prices of the products etc. Cost ascertainment is the process of determining costs on the basis of actual data. Hence, computation of historical costs is cost ascertainment while computation of future costs is cost estimation. Cost estimation as well cost ascertainment

both are interrelated and are of immense use to the management. In case a concern has a sound costing system, the ascertained costs will greatly help the management in the process of estimation of rational accurate costs which are so necessary for a variety of purposes stated above. Moreover, the ascertained cost may be compared with the pre-determined costs on a continuing basis and proper and timely steps be taken for controlling costs and maximizing profits.

Cost Allocation and Cost Apportionment: Cost allocation and cost apportionment are the two procedures which describe the identification and allotment of costs to cost centres or cost units. Cost allocation refers to the allotment of whole items of cost to cost centres or cost units while cost apportionment refers to the allotment of proportions of items of cost to cost centres or cost units. Thus, the former involves the process of charging direct expenditure to Cost centres or cost units while the latter involves the process of charging indirect expenditure to cost centres or cost units. For example, the cost of labour engaged in a service department can be charged wholly and directly to it but the canteen expenses of the factory cannot be charged directly and wholly to it. Its proportionate share will have to be found out. Charging of costs in the former case will be termed as "allocation of costs" while in the latter as "apportionment of costs"

Cost Reduction and Cost Control: Cost reduction and cost control are two different concepts. Cost control is achieving the cost target as its objective while cost reduction is directed to explore the possibilities of improving the targets themselves. Thus, cost control ends when targets are achieved while cost reduction has no visible end. It is a continuous process. The difference between the two can be summarized as follows: (i) Cost control aims at maintaining the costs in accordance with established standards, while cost reduction is concerned with reducing costs. It changes all standards and endeavors to better them continuously. (ii) Cost control seeks to attain lowest possible cost under existing conditions. While cost reduction recognizes no condition as permanent, since a change will result in lower cost (iii) In case of cost control, emphasis is on past and present, while in case of cost reduction. It is on the present and future. (iv) Cost control is a preventive function, while cost reduction is a correlative function. It operates even when an efficient cost control system exists.

4.4.6 Installation of Costing System

The installation of a costing system requires careful consideration of the following two interrelated aspects:

- Overcoming of the practical difficulties, in introducing the system.
- Main considerations that should govern the installation of such a system.

Practical Difficulties: The important difficulties in the installation of a costing system and the suggestions to overcome them are listed below:

- **Lack of Support from Top Management:** Many a time the costing system is introduced at the behest of the managing director or the other director without first preparing the other members of the top management team. This results in opposition from the various managers as they consider it an interference as well as an uncalled for check on their activities. They therefore, resist the additional work involved in the cost accounting system. This difficulty can be overcome by taking the top

management into confidence before installing the system. A sense of cost consciousness has to be instilled in their minds.

- **Resistance from the Existing Staff:** The existing financial accounting staff may offer resistance to the system because of a feeling of their being declared redundant under the new system. This fear can be done away with by explaining to the staff that the costing system would not replace but strengthen the existing system. It shall open for them new areas for development.
- **Non-co-operation at Other Levels:** The foreman and other supervisory staff may resent the additional paper work and may not co-operate in providing the basic data which is so essential for the success of the system. This needs re-orientation and education of employees. They have to be told of the advantages that will accrue to them and to the organization as a whole on account of efficient working of the system.
- **Shortage of Trained Staff:** Costing is a specialized job in itself. In the beginning, therefore, qualified staff may not be available. However, this difficulty can be overcome by giving the existing staff requisite training and recruiting additional staff, if required.
- **Heavy Costs:** The costing system will involve heavy costs unless it has been suitably designed to suit specific requirements. Unnecessary sophistication and formalities should be avoided. The costing office should serve as a useful service department.

Main Considerations: In view of the above difficulties and suggestions to overcome them, the following should be the main considerations to be kept in mind while introducing a costing system in a manufacturing organization:

- **The Product:** The nature of the product determines to a great extent the type of costing system to be adopted. A product requiring high value of material content requires an elaborate system of materials control. Similarly, a product requiring high value of labour content requires an efficient time-keeping and wage systems. The same is true in case of overheads.
- **The Organization:** The existing organization should be disturbed as little as possible it becomes, therefore, necessary to ascertain the size and type of organization before introducing the costing system. The scope of authority of each executive the sources from which the cost accountant has to derive information and reports to be submitted at various managerial levels should be carefully gone through.
- **The Objective.** The objectives and information which the management wants to achieve and acquire are also to be cared for. For example, if the concern wants to expand its operations, the system of costing should be designed in a way so as to give maximum attention to production aspect. On the other hand, in case of a concern, which is not in a position to sell its products, the selling aspect would require greater attention.
- **The Technical Details:** The system should be introduced after a detailed study of the technical aspects of the business. Efforts should be made to secure the sympathetic

assistance and support of the principal members of the supervisory staff and workmen.

- **Informative and Simple:** The system should be informative and simple. In this connection the following points may be noted: (i) it should be capable of furnishing fullest information required regularly and systematically, so that continuous study check-up of the progress of business is possible. (ii) Standard printed forms can be used so as to make the information detailed, clear and intelligible. Over-elaboration, which will only complicate matters, should be avoided. (iii) Full information about departmental outputs, processes and operations must be clearly presented and every item of expenditure must be properly classified. (iv) Data, complete and reliable in all respects, should be provided in a lucid form so that measurement of the variations between actual and standard costs is possible.
- **Method of Maintenance of Cost Records:** A choice has to be made between integral and non-integral accounting systems. In case of integral accounting system no separate set of books are maintained for costing transactions but they are interlocked with financial transactions into one set of books. In case of non-integral system separate books are maintained for cost and financial transactions. At the end of the accounting period the results shown by the two sets of books are reconciled. In case of a big business it will be appropriate to maintain a separate set of books for cost transactions.
- **Elasticity:** The costing system should be elastic and capable of adapting to the changing requirements of the business. It may, therefore, be concluded from the above discussion that costing system introduced in any business will not be a success if it is unduly complicated and expensive; if cost accountant does not get the co-operation of the staff; if cost statements cannot be reconciled with financial statements; and if the results actually achieved are not compared with the expected ones.

4.4.7 Methods, Techniques and Systems of Costing

Costing has been defined as "the technique and process of ascertaining costs. The principles in every method of costing are the same but the methods of analyzing and presenting the costs differ with the nature of business.

- **Job Costing:** Where production is not highly repetitive and, in addition, consists of distinct jobs or lots so that material and labour costs can be identified by order number, the system of job costing is used. This method of costing is very common in commercial foundries and drop forging shops and in plants making specialized industrial equipments. In all these cases an account is opened for each job and all appropriate expenditure is charged thereto.
- **Contract Costing:** Contract costing does not in principle differ from job costing. A contract is a big job while a job is a small contract. The term is usually applied where at different sites large-scale contracts are carried out. In case of ship-builders, printers, building contractors etc., this system of costing is used. Job or contract is also termed as 'Terminal Costing'.

- **Cost plus Costing:** In contracts where besides 'cost' an agreed sum or percentage to cover overheads and fit is paid to the contractor, the system is termed as cost plus costing. The term cost here includes materials, labour, and expenses incurred directly in the process of production. The system is used generally in cases where Government happens to be the contracted.
- **Batch Costing:** Where orders or jobs are arranged in different batches after taking into account the convenience of producing articles, batch costing is employed. The unit of cost is a batch or group of identical products, instead of a single job order or contract. The method is particularly suitable for general engineering factories, which produce components in convenient economic batches and pharmaceutical industries.
- **Process Costing:** If a product passes through different stages, each distinct and well defined, it is desired to know the cost of production at each stage. In order to ascertain the same, process costing is employed under which separate account is opened for each process. This system of costing is suitable for the extractive industries, e.g., chemical manufacture, paints, foods, explosives, soap making, etc.
- **Operation Costing:** Operation costing is a further refinement of process costing. The system is employed in industries where mass or repetitive production is carried out or where articles or components have to be stocked in semi-finished stage, to facilitate the execution of special orders, or for convenience of issue for later operations. The procedure of costing is broadly the same as for process costing except that cost unit is an operation instead of a process. For example, the manufacturing of handles for bicycles involves a number of operations such as those of cutting steel sheets into proper strips molding, machining and finally polishing. The cost of each of these operations, may be found out separately.
- **Unit Costing (Output Costing or Single Costing):** In this method, cost per unit of output or production is ascertained and the amount of each element constituting such cost is determined. Where the products can be expressed in identical quantitative units and where manufacture is continuous, this type of costing is applied. Cost statements or cost sheets are prepared under which the various items of expense are classified and the total expenditure is divided by total quantity produced in order to arrive at per unit cost of production. The method is suitable in industries, such as brick-making, collieries, flour mills, paper mills, cement manufacturing, etc.
- **Operating Costing:** This system is employed where expenses are incurred for provision of services such as those rendered by bus companies, electricity companies, or railway companies. The total expenses regarding operation are divided by the units as may be appropriate (e.g., in case of bus company, total number of passenger-kms) and cost per unit of service is calculated.
- **Departmental Costing:** Ascertainment of the cost of output of each department separately is the objective of departmental costing. Where a factory is divided into a number of departments, this method is adopted.
- **Multiple Costing (Composite Costing):** Under this system the costs of different sections of production are combined after finding out the cost of each and every part manufactured. The system of ascertaining cost in this way is applicable where a

product comprises many assailable parts, e.g., motor cars, engines/machine tools, typewriters, radios, cycles, etc. As various components differ from each other in a variety of ways such as price, materials used and manufacturing processes, a separate method of costing is employed in respect of each component. It is multiple costing in the sense that more than one method of costing is employed. It is to be noted that basically there are only two methods of costing, viz., Job costing and Process costing. Job costing is employed in cases where expenses are traceable to specific jobs or orders, e.g., house building, ship-building, etc. But where it is impossible to trace the items of prime cost to a particular order because their identity is lost in manufacturing operations, process costing is used. For example, in a refinery where several tones of oil are being produced at the same time, the prime cost of a specific order of 10 tones cannot be traced. The cost can be found out only by finding out the cost per tonne of total oil produced then multiplying it by ten. It may therefore be concluded that the methods of batch contract and cost plus costing are only the variants of 'job costing', while the methods of unit, operation and operating costing are only the variants of 'process costing',

Techniques of Costing: Besides the above methods of costing, the following types of costing techniques are used by management only for controlling costs and making some important managerial decisions. As a matter of fact, they are not independent methods of cost finding such as job or process costing but are basically costing techniques which can be used with advantage with any of the methods discussed above.

- **Marginal Costing:** It is a technique of costing in which allocation of expenditure to production is restricted to those expenses which arise as a result of production, i.e., materials, labour, and direct expenses and variable overheads. Fixed overheads are excluded on the ground that in cases where production varies, the inclusion of fixed overheads may give misleading results. The technique is useful in manufacturing industries with varying levels of output.
- **Direct Costing:** The practice of charging all direct costs to operations, processes or products, leaving all indirect costs to be written off against profits in the period in which they arise, is termed as direct costing. The technique differs from marginal costing because some fixed costs can be considered as direct costs in appropriate circumstances.
- **Absorption or Full Costing:** The practice of charging all costs both variable and fixed to operations, products or processes, is termed as absorption costing.
- **Uniform Costing:** A technique, where standardized principles and methods of cost accounting are employed by a number of different companies and firms, is termed as uniform costing. Standardization may extend to methods of costing, accounting classification including codes, methods of defining costs and charging depreciation, methods of allocating or apportioning overheads to cost centres or cost units. The system thus facilitates inter-firm comparisons, establishment of realistic pricing policies, etc.

Systems of Costing: It has already been stated that there are two main methods used to determine costs:

- The Job Cost Method,
- The Process Cost Method.

It is possible to ascertain the costs under each of the above methods by two different ways:

- **Historical Costing:** Historical costing (conventional or orthodox costing) is the determination of cost by actual. It may be in the nature of (i) Post costing or (ii) Continuous costing. (i) **Post Costing:** It means ascertainment of cost after the production is completed. This is done by analyzing the financial accounts at the end of the period in such a way so as to disclose the cost of the units, which have been produced. For instance if the cost of product A is to be calculated on this basis then one must wait till the materials are actually purchased and used, labour actually paid and overhead expenditure actually incurred. This system is used only for ascertaining. The costs but not useful for exercising any control over costs, as one comes to know of things after they had taken place. It can serve as guidance for future production only when conditions in future continue to be the same. (ii) **Continuous Costing:** In case of this method, cost is ascertained as soon as the job is completed or even when the job is in progress. This is done usually by coming to the job or product actual expenditure on materials and wages and estimated. Share of overheads. Hence, the figure of cost ascertained in this case is not exact. But it has an advantage of providing cost information to the management promptly thereby enabling it to take the necessary corrective action in time. However, it neither provides any standard for judging current efficiency nor does it disclose what the cost of the job ought to have been.
- **Standard Costing:** Standard costing is a system under which the cost of the product is determined in advance on certain pre-determined standards. Taking the above example, the cost of product A can be calculated in advance if one is in a position to estimate in advance the material labour and overheads that should be incurred over the product. All this requires an efficient system of cost accounting. However, this system will not be useful if a vigorous system of controlling costs and keeping it up to standard cost is not in force. Standard costing is becoming more and more popular now-a-days.

COST ACCOUNTING

Structure

5.1 Marginal Accounting

- 5.1.1 Theory of Marginal Costing
- 5.1.2 Features of Marginal Costing
- 5.1.3 Advantages and Disadvantages of Marginal Costing Technique
- 5.1.4 Presentation of Cost Data
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5.2 Break Even Analysis

- 5.2.1 Cost Volume profit (CVP) Relationship
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5.3 Numerical on BEP and CVP

5.4. Decision Making using Marginal Costing

5.5 Decision Making Using Limiting Factors

5.6 Decision Making and Pricing

5.1 MARGINAL ACCOUNTING

Please cast your mind back to the earlier unit's. You will surely recall that we concluded that only costs which vary with the decision should be included in the decision analysis. For many decisions which involve relatively small variations from existing practice and/or are for relatively limited periods of time, fixed costs are not relevant to the decision. This is because either: Fixed costs tend to be impossible to alter in the short term; or Managers are reluctant to alter them in the short term. Suppose that a business occupies premises which it owns to carry out its activities there is a downturn in demand for the service which the business provides and it would be possible to carry on the business from smaller, cheaper premises. Does this mean that the business will sell its old premises and move to new ones overnight? Clearly it cannot mean this. This is partly because it is not usually possible to find a buyer for premises at very short notice and it may be difficult to move premises quickly where there is, say, delicate equipment to be moved. Apart from external constraints on the speed of the move, management many feel that the downturn might not be permanent and would thus be reluctant to take such a dramatic step as to deny itself the opportunity to benefit from a possible revival of trade. The business's premises may provide an example of an area of one of the more inflexible types of cost, but most fixed costs tend to be broadly similar in this context. So, what we really see is that, more than the fixed cost, what really influences

decision making in the short-run is the variable cost which is actually synonymous with marginal cost. In this lesson, we shall study marginal costing, as a technique quite distinct from Absorption costing. We shall look upon marginal costing as an important aid to decision making.

5.1.1 Theory of Marginal Costing

The theory of marginal costing as set out in ‘A report on Marginal Costing’ published by CIMA, London is that in relation to a given volume of output, additional output can normally be obtained at less than proportionate cost because within limits the aggregate of certain items of cost will tend to remain fixed and only the aggregate of the remainder will tend to rise proportionately with the increase in output. Conversely, a decrease in the volume of output will normally be accompanied by less than proportionate fall in the aggregate cost. The theory of marginal costing may therefore be understood by you in three steps:

- If the volume of output increases, the cost per unit will, in the normal circumstances, be reduced. Conversely, if the output is reduced the cost per unit will go up. If the factory produces 1,000 units at a total cost of Rs.3, 000 and if by increasing the output by one unit, the cost goes upto Rs.3, 002, the marginal cost of the additional output is Rs.2.
- If the increase in output is more than one, the total increase in cost divided by the total increase in output will give the average marginal cost per unit. If, for example, the output is increased to 1,020 units from 1,000 units and the total cost to produce these units is Rs.1, 045 the average marginal cost per unit is Rs.2.25 as under:

$$\frac{\text{Additional cost}}{\text{Additional units}} = \frac{\text{Rs.45}}{20} = \text{Rs.2.25}$$

The ascertainment of marginal cost is based on the classification and segregation of cost into fixed and variable cost. In order to understand the Marginal costing technique, it is essential for you to clearly understand the meaning of marginal cost. Marginal cost means the cost of the marginal or last unit produced. It is also defined as the cost of one more or one less unit produced besides existing level of production. In this connection, a unit may mean a single commodity, one dozen, a gross or any other measure of goods. Let us take an example to understand this better if a manufacturing firm produces X unit at a cost of Rs 300 and the production of X+1 units cost Rs 320 then the cost of the additional one unit is Rs 20 which is the marginal cost. Similarly if the production of X-1 units comes down to Rs 280, then cost of the marginal unit which was being produced is Rs 20 (300 – 280).

You may observe that marginal cost varies directly with the volume of production and marginal cost per unit remains the same. Marginal cost consists of prime cost i.e. cost of direct materials, direct labor and all variable overheads. It does not contain any element of fixed cost which is kept separate under marginal cost technique. Marginal costing may be defined as the technique of presenting cost data wherein variable costs and fixed costs are shown separately for managerial decision-making. It should be clearly understood that marginal costing is not a method of costing like process costing or job costing but it is simply a method or technique of the analysis of cost information for the guidance of the management which try to find out the effect on profit due to changes in the volume of output.

In this connection let me give a simile that the management accountant is the navigator and the chief executive officer (CEO) is the captain of the ship. Management accountant provides

necessary relevant information through various periodical reports to the management from which management is able to feel the financial and operational rules of the organization. You should be aware that there are different phrases being used for this technique of costing. In U.K Marginal costing is a popular phrase, in U.S.A this is known as Direct Costing and is used in place of marginal costing. Variable costing is another name of marginal costing. Marginal costing technique has given the birth to a very useful concept of Contribution.

You are being introduced to new term which is Contribution, which represents the difference between sales and marginal cost. Contribution may be defined as the profit before the recovery of fixed costs. Thus contribution goes towards the recovery of fixed cost and profit and is equal to fixed cost plus profit ($C = F + P$). In case a firm neither make nor suffer loss, the Contribution will be just equal to fixed cost ($C = F$). The concept of Contribution is very useful in marginal costing. It has a fixed relation with sales. The proportion of contribution to sales known as P/V ratio remains the same under given conditions of production and sales.

5.1.2 Features of Marginal Costing:

We are now in a position to bring out the distinctive features of marginal costing. The main features of marginal costing are as follows:

- **Cost Classification:** The marginal costing technique makes a sharp distinction between variable costs and fixed costs. It is the variable cost on the basis of which production and sales policies are designed by the firms following the marginal costing technique.
- **Inventory Valuation:** Under marginal costing, inventory for profit measurement is valued at marginal cost in sharp contrast to total unit cost under absorption costing method.
- **Marginal Contribution:** Marginal costing techniques make use of marginal contribution for marking various decisions. Marginal contribution which is the difference between sales and marginal cost forms the basis for judging the profitability of different products or departments.

5.1.3 Advantages and Disadvantages of Marginal Costing Technique

After knowing the concepts and objectives of marginal costing let's also go through advantages and disadvantages of marginal costing technique.

Advantages:

- Marginal costing is simple to understand.
- By not charging fixed overhead to cost of production, the effect of varying charges per unit is avoided.
- It prevents the illogical carry forward in stock valuation of some proportion of current years fixed overhead.
- The effects of alternative sales or production policies can be more readily available and assessed, and decisions taken would yield the maximum return to the business.
- It eliminates large balances left in overhead control accounts, which indicates the difficulty of ascertaining an accurate overhead recovery rate.
- Practical cost control is greatly facilitated. By avoiding arbitrary allocation of fixed overhead, efforts can be concentrated on maintaining a uniform and consistent marginal cost useful to various level s of management.

- It helps in short term profit planning by break even and profitability analysis both in terms of quantity and graphs. Comparative profitability and performance between two or more products and divisions can easily be assessed and brought to the notice of management for decision making.

Disadvantages:

- The separation of costs into fixed and variable is difficult and some times gives misleading results
- Normal costing systems also apply overhead under normal operating volume and this shows that no advantage is gained by marginal costing. Under Marginal costing stocks and work in progress are understated.
- (iii) The exclusion of fixed costs from inventories affect profit and true and fair view of the financial affairs of organization may not be clearly transparent.
- Volume variance in standard costing also discloses the effect of fluctuating output on fixed overhead. Marginal cost data becomes unrealistic in case of highly fluctuating levels of production e.g. in case of seasonal factories.
- Application of fixed overhead depends on estimates and not on actual, as such there may be under or over absorption of the same. Control affected by means of budgetary control is also accepted by many. In order to know the ‘net profit’ we must not be satisfied with contribution and hence fixed overhead is also a valuable item.
- A system which ignores fixed costs is less effective as a major portion of fixed cost is not taken care of under marginal costing.
- In Practice, the sales price, fixed cost, and variable cost per unit may vary and thus the assumptions underling the theory of marginal costing some times becomes unrealistic. For long term profit planning, absorption costing is the only answer.

5.1.4 Presentation of Cost Data under Marginal Costing and Absorption Costing

As mentioned earlier, marginal costing is not a method of costing but it is a technique of presentation of sales and cost data with a view to guide the management in decision-making. The traditional technique popularly known as total cost or absorption costing technique does not make any difference between variable and fixed cost in the calculation of profits but marginal cost statement very clearly indicates this difference in arriving at the net operational results of a firm. The difference in the presentation of information according to absorption and marginal costing techniques will be clear from the following presentation of hypothetical case.

Absorption Cost Statement

| | (Production =100 units) | (Cost/ Selling price per Unit) |
|---|-------------------------|--------------------------------|
| Direct Materials | 2,500 | 25 |
| Direct Wages | 1,800 | 18 |
| Direct chargeable expenses | 400 | 4 |
| Prime Cost | 4,700 | 47 |
| Add: Factory overheads | 1,100 | 11 |
| Factory Cost | 5,800 | 58 |
| Add: Administrative | 1,000 | 10 |
| Cost of production | 6,800 | 68 |
| Add: Selling and Distribution Overheads | 1,160 | 11.60 |

| | | |
|---------------|--------|--------|
| Cost of Sales | 7,960 | 79.60 |
| Profit | 2,840 | 28.40 |
| Selling Price | 10,800 | 108.00 |

There fore selling price per unit is $10,800 / 100 = 108$ Rs. For the same example Marginal cost statement:

**Marginal Cost Statement
(Production = 100 units)**

| Particulars | Variable cost | Fixed cost |
|---|---------------|------------|
| Sales (A) | 10,800 | - |
| Direct Materials | 2,500 | - |
| Direct Wages | 1,800 | - |
| Direct Chargeable expenses | 400 | - |
| Prime Cost | 4,700 | 330 |
| Factory Overheads (70% variables) | 770 | 330 |
| Factory Cost | 5,470 | 232 |
| Administration, (80% variable) | 928 | 562 |
| Cost of production | 6,398 | 200 |
| Selling and distribution On cost (80% variable) | 800 | 762 |
| Total Variable Cost (B) | 7,198 | - |
| Contribution (A-B) | 3,602 | - |
| Less Fixed Cost | 762 | - |
| Profit | 2,840 | - |

You can observe that since the marginal cost varies directly with production, the marginal cost per unit of output remains the same for all levels of output. It means the variations in the levels of output do not affect the variable cost per unit of output. The similar simple example:

Absorption Cost Statement (Production = 100 units)

| | |
|---|-------|
| Direct Materials | 2,500 |
| Direct Wages | 1,800 |
| Direct chargeable expenses | 400 |
| Add: Factory overheads | 1,100 |
| Factory Cost | 5,800 |
| Add: Administrative, selling and Distribution overheads | 1,160 |
| Total Cost | 6,960 |
| Profit | 1,740 |
| Selling Price | 8,700 |

**Marginal Cost Statement
(Production = 100 units Sales = 8,700)**

| Particulars | Variable cost | Fixed cost |
|--|----------------------|-------------------|
| Direct Materials | 2,500 | - |
| Direct Wages | 1,800 | - |
| Direct Chargeable expenses | 400 | - |
| Prime Cost | 4,700 | - |
| Factory Overheads(7% variables) | 770 | 330 |
| Factory Cost | 5,470 | 330 |
| Administration, Selling and distribution On cost (80% variable) | 928 | 232 |
| Total Cost | 6,398 | 562 |
| Contribution (S - V) | 2,302 | |
| Less Fixed Cost | 562 | |
| Profit | 1,740 | |

The total marginal cost for a volume of output can be calculated simply by multiplying the volume of output with the marginal cost per unit. On the hand, the fixed cost per unit decreases along with increase in volume of production within the existing scale of production. This can be understood with the help of the following cost data:

| Particulars | Volume of Production | | |
|---|-----------------------------|-----------|-----------|
| | 100 Units | 125 Units | 150 Units |
| | Rs. | Rs. | Rs. |
| Materials | 2,500 | 3,125 | 3,750 |
| Labor | 1,800 | 2,250 | 2,700 |
| Direct Charges | 400 | 500 | 600 |
| Variable factory overheads | 770 | 962.50 | 1,155 |
| Variable administration selling and distribution expenses | 928 | 1,160 | 1,392 |
| Total Variable cost | 6,398 | 7,997.50 | 9,597 |
| Variable cost per unit | 63.98 | 63.98 | 63.98 |
| Fixed cost | 562 | 562 | 562 |
| Fixed cost per unit | 5.62 | 4.50 | 3.75 |
| Total cost (V+F) | 6,960 | 8559.50 | 10,159 |
| Cost per unit | 69.60 | 68.48 | 67.73 |

So you again find that the cost data contained in the above table clearly shows that the variable cost per unit remains constant i.e. Rs 63.98, whether the firm produces 100 units, 125 units or 150 units. But the fixed cost per unit decreases with every increase in production.

For an initial production of 100 units, the fixed cost per unit is Rs 5.62 but it has gone down to Rs. 4.50 and Rs. 3.75 for a production of 125 and 150 units respectively. As worked out in the above table the total cost per unit also decreases with an increase in production simply because of the existence of fixed cost which gets spread over more number of units on an increase in the volume of output.

5.1.5 Marginal Costing Versus Absorption Costing

After knowing the two techniques of Marginal Costing and Absorption Costing we have seen that the net profit are not the same because of the following reasons:-

- **Over and under Absorbed Overheads:** In absorption costing, fixed overheads can never be absorbed exactly because of the difficulty in forecasting costs and volume of output. If these balances of under or over recovery are not written off to costing profit and loss account, the actual amount incurred is not shown in it. In marginal costing, however the actual fixed overhead incurred is wholly charged against contribution and hence, there will be some difference in net profits.
- **Difference in Stock Valuation:** In marginal costing, work in progress and finished stocks are valued at marginal cost but in absorption costing they are valued at total production cost and hence profit will differ as different amounts of fixed overheads are considered. The profit difference due to difference in stock valuation is summarized as follows: - (i) when there is no opening and closing stocks, there will be no difference in profit. (ii) When the opening and closing stocks are the same, there will be no difference in profit provided the fixed cost element in opening and closing stocks are of same amount. (iii) When closing stock is more than the opening stock, the profit under absorption costing will be higher as comparatively a greater portion of fixed cost is included in the closing stock and carried over to the next period. (iv) When closing stock is less than the opening stock, the profit under absorption costing will be less as comparatively higher amount of fixed cost contained in opening stock is debited during the current period.

Limitations of Absorption Costing: The following are the criticisms against Absorption Costing: You might have observed that in absorption costing, a portion of fixed cost is carried over to the subsequent accounting period as part of closing stock. This is an unsound practice because costs pertaining to a period should not be allowed to be vitiated by the inclusion of costs pertaining to the previous period and vice versa. Further, Absorption costing is dependent on levels of output which may vary from period to period and consequently cost per unit changes due to the existence of fixed overhead.

Unless fixed overhead rate is based on normal capacity, such changed costs are not helpful for purposes of comparison and control. The cost to produce an extra unit is the variable production cost. It is realistic to value closing stock items at this directly attributable cost. As we have seen, the size of total contribution varies directly with sales volume at a constant rate per unit. For the decision making purpose of the management, better information about expected profit is obtained from the use of variable costs and contribution approach in the accounting system. Let us take an illustration to clarify the concept explained above:

Illustration 5.1

From the following data compute the profit under (a) Marginal costing and (b) Absorption costing and reconcile the difference in profit.

Rs.

Selling price (per unit) 10
Variable cost 5
Fixed cost 2
Normal volume of production is 26000 units per quarter.

The opening and closing stocks consisting of both finished goods and equivalent units of work in progress are as follows:

| | Qr. I | Qr. II | Qr. III | Qr. IV | Total |
|-----------------------|--------|--------|---------|--------|-----------|
| Opening Stock (units) | - | - | 6,000 | 2,000 | - |
| Production | 26,000 | 30,000 | 24,000 | 30,000 | 1, 10,000 |
| Sales | 26,000 | 24,000 | 28,000 | 32,000 | 1, 10,000 |
| Closing stock | - | 6,000 | 2,000 | - | - |

Solution

Statement of Profit under Absorption Costing

| | Qr. I | Qr. II | Qr. III | Qr. IV | Total |
|---|-----------|------------|-----------|-----------|-----------|
| | Rs | Rs | Rs | Rs | Rs |
| Sales (@ 10Rs.) | 2,60,000 | 2,40,000 | 2,80,000 | 3,20,000 | 11,00,000 |
| Opening stock @ 7 Rs. | - | - | 42,000 | 14,000 | - |
| Production @ 7 Rs | 1, 82,000 | 2, 10,000 | 1, 68,000 | 2, 10,000 | - |
| Total | 1,82,000 | 2,10,000 | 2,10,000 | 2,24,000 | 8,26,000 |
| Less Closing Stock @7 Rs. | - | 42,000 | 14,000 | - | - |
| Cost of goods sold | 1, 82,000 | 1, 68, 000 | 1, 96,000 | 2, 24,000 | 7, 70,000 |
| Profit (before adjustment of under or over absorbed fixed cost) | 78,000 | 72,000 | 84,000 | 96,000 | 3,30,000 |
| Add: Over absorbed fixed cost (Production above normal capacity x Rs.2) | - | 8000 | - | 8000 | 16,000 |
| Less: Under absorbed fixed cost (26000 – 24000) x 2 | - | - | 4000 | - | 4000 |
| Profit | 78,000 | 72,000 | 84,000 | 96,000 | 3,30,000 |

Statement of Profit under Marginal costing

| | Qr. I | Qr. II | Qr. III | Qr. IV | Total |
|----------------------------|--------------|---------------|----------------|---------------|--------------|
| | Rs | Rs | Rs | Rs | Rs |
| Sales (@ 10Rs.) | 2,60,000 | 2,40,000 | 2,80,000 | 3,20,000 | 11,00,000 |
| Opening stock @ 5 Rs. | - | - | 30,000 | 10,000 | - |
| Production @ 5 Rs | 1,30,000 | 1,50,000 | 1,20,000 | 1,50,000 | 5,50,000 |
| Total | 1, 30,000 | 1, 50,000 | 1, 50,000 | 1, 60,000 | 5, 50,000 |
| Less Closing Stock @ 5 Rs. | - | 30,000 | 10,000 | - | - |
| Cost of goods sold | 1, 30,000 | 1, 20,000 | 1, 40,000 | 1, 60,000 | 5, 50,000 |
| Contribution | 1,30,000 | 1,20,000 | 1,40,000 | 1,60,000 | 5,50,000 |
| Less Fixed Cost | 52,000 | 52,000 | 52,000 | 52,000 | 2, 08,000 |
| Profit | 78,000 | 68,000 | 88,000 | 1, 08,000 | 1, 08,000 |

Reconciliation of Profit

| | Qr. I | Qr. II | Qr. III | Qr. IV | Total |
|---|--------------|---------------|----------------|---------------|--------------|
| | Rs. | Rs. | Rs. | Rs. | Rs. |
| Profit as per absorption Costing | 78,000 | 80,000 | 80,000 | 1, 04,000 | 3, 42,000 |
| Less: Higher fixed cost in closing stock (6000 x 2) | - | 12,000 | - | - | 12,000 |
| Add: Higher fixed cost in opening Qr. III (6000 – 2000) x 2 Qr. IV 2000 x 2 | - | - | 8000 | 4000 | 12,000 |
| Profit as per Marginal Costing | 78,000 | 68,000 | 88,000 | 1, 08,000 | 3,42,000 |

Summary: Marginal cost is simply a cost management technique for the analysis of cost and revenue information for the guidance of the management. The Presentation of information through marginal costing statement is easily understood by all the managers even that do not have preliminary knowledge and implications of the subjects of cost and management accounting. Absorption costing and Marginal costing are two different techniques of cost accounting. Absorption costing is widely used for cost control purpose and marginal costing is used for managerial decision making and control.

5.2 BREAK EVEN ANALYSIS

Previously we have gone through concept of cost and different types of costs like Historical cost, differential cost, standard cost, fixed cost, variable cost, notional cost, out of pocket cost, relevant cost, sunk cost and of course irrelevant cost. So we think that we are now ready to discuss detail highlights associated with cost function and cost relations with the production and distribution system of an economic entity. Please note that CVP analysis is broadly known as cost volume profit analysis and specifically speaking we are all concern in depth analysis and application of CVP in practical world of industry management. You know what cost is. Let us discuss what is volume? And what is profit?

5.2.1 Cost-Volume Profit (CVP) Relationship

We have observed that in marginal costing, marginal cost varies directly with volume of production or volume of output. Whereas fixed cost remain unaltered regardless of the volume of output with in the scale of production already fixed by the management. When cost behavior is related to sales income it shows the cost volume profit relationship, which is in net effect if volume is changed, variable cost varies as per change in volume, selling price remains fixed, fixed remains of course fixed then there is change profit. Being Manager you constantly strive to relate these elements so that maximum profit can be achieved. Apart from profit projection, the concept of cost volume profit (C V P) is relevant to virtually all decision making areas particularly in short run.

The relationship between costs and revenue and therefore profits at different levels may be expressed in graphs such as, break-even charts or profit volume graphs or in various statement forms. You may note that profit depends on a large number of factors, most important of which are the cost of manufacture and the volume of sales. Both these factors are interdependent. Volume of sales depends upon the volume of production and market forces, which in turn is related to costs. Please note that management has no control over the market but in order to achieve certain levels of profitability it has to exercise control and management of cost mainly variable cost because fixed cost is non- controllable cost. Cost, again is based on the following factors:

- Volume of production
- Product Mix
- Internal efficiency and productivity of the factors of production
- Methods of production and technology
- Size of batches, size of plant

Thus we can say Cost volume profit analysis furnishes complete picture of the profit structure which enables management to distinguish between the effect of sales, fluctuations in volume and the results of changes in price of product / services. In other words CVP is a management accounting tool that expresses relationships among sales volume, costs and profits. CVP can be used in the form of a graph or an equation. Cost-volume-profit analysis can answer a number of analytical questions, such as: What is the breakeven revenue of an organization? How much revenue does an organization need to achieve a budgeted profit? What level of price change effects the achievement of budgeted profit? What is the effect of cost changes on the profitability of an operation? Many other "what if" type of questions.

Cost volume profit analysis is one of the important techniques of cost and management accounting. It is a simple but powerful tool for planning of profits and therefore commercial operations provides answer to “What if” theme – telling the volume required to produce. There are three approaches to CVP Analysis:

- Cost and revenue equations
- Contribution margin
- Profit graph

Objectives of Cost Volume Profit Analysis: Let us briefly go through the main objectives of cost volume profit analysis:

- In order to forecast profit accurately, it is essential to ascertain the relationship between costs and profits on the one hand and volume on the other.
- Cost volume profit analysis is helpful in setting up flexible budget which indicate costs at various levels of activities.
- Cost volume profit analysis is of assistance in evaluation of performance for purposes of control.
- Such analysis may assist the management in formulating pricing policies by projecting the effect of different price structure on cost and profits.

5.2.2 Assumptions and Terminology

Friends, please be familiar with assumption on which the theory of CVP is based upon:

- Changes in the level of revenues and costs arise only because of changes in the number of product (or service) units produced and sold-for example, the number of television sets produced and sold by Sigma Corporation. The number of output (units) to be sold is the only *revenue* and *cost driver*. Just as a cost driver is any factor that affects costs, a revenue driver is any factor that affects revenues.
- Total costs can be divided into a fixed component and a component that is variable with respect to the level of output. You may recall from previous sessions that variable costs includes direct materials, direct labor, direct chargeable expenses and variable overheads which include variable part of factory overheads, administration overheads and selling and distribution overhead.
- There is linear relationship between revenue and cost.
- When graphed, the behavior of total revenues and total costs is linear (straight line) i.e. $Y = mx + C$ holds good which is the equation of straight line.
- The unit selling price, unit variable costs, and fixed costs are constant.
- It is based on production of single product. However recently the management accountants are functioning to give a theoretical and practical approach to multi product CVP analysis.
- The analysis either covers a single product or assumes that the sales mix when multiple products are sold will remain constant as the level of total units sold changes. (This assumption is also discussed later in the chapter.)
- All revenues and costs can be added and compared without taking into account the time value of money.
- It is also based on that technology remains constant.
- The theory of price elasticity is not taken into consideration.

Friends I may also draw your attention that many companies (and divisions and sub divisions of companies) in industries such as airlines, automobiles, chemicals, plastics, and semiconductors have found the simple CVP relationships to be helpful in strategic and long-range planning decisions as well as decisions about product features and pricing. In other real world the simple assumptions described above may not hold good. The theory of CVP can be tailor made for individual industries depending upon nature and peculiarities of the same.

For example, predicting total revenues and total costs may require multiple revenue drivers (such as number of output units, number of customer visits made for sales, and number of advertisements placed), and multiple cost drivers (such as number of units produced and number of batches in which units are produced).

Managers and management accountant, however, must always assess whether the simplified CVP relationships generate sufficiently accurate information for predictions of how total revenues and total costs would behave. However we may come across different complex situations to which the theory of CVP can rightly be applicable in order to help managers to take appropriate decisions under different situations.

5.2.3 Limitations of Cost Volume Profit Analysis

I would mention here that CVP analysis is generally made under certain limitation and with certain assumed conditions some of which may not occur in practice. We will discuss here the main limitations and assumptions in the cost volume profit analysis:

- It is assumed that the production facilities anticipated for the purpose of cost volume profit analysis do not undergo any change. Such analysis gives misleading results if expansion or reduction of capacity takes place.
- Where a variety of products with varying margins of profit are manufactured it is difficult to forecast with reasonable accuracy the volume of sales mix which would optimize the profit.
- The analysis will be correct only if input price and selling prices remain fairly constant. This in reality is hardly found. Thus if cost reduction program is undertaken or selling price are changed, the relationship between Cost and Profit will not be accurately depicted.
- In cost volume profit analysis it is assumed that variable costs are perfectly and completely variable at all levels of activity and the fixed cost remains constant throughout the range of volume being considered. However, such situations may not arise in practical situations.
- It is assumed that changes in the opening and closing inventories are not significant; sometimes the changes may be significant.
- Inventories are valued at variable cost and fixed cost is treated as period cost. Therefore closing stock carried over to the next financial year does not contain any component of fixed cost. We feel inventory should be valued at full cost in reality.

5.2.4 Sensitivity Analysis

Your manager before choosing among alternatives may ask you to undertake sensitivity analysis. So you should be familiar with the implication and application of the relevance of sensitivity analysis in the field of cost volume profit analysis. You must be thinking - What the Sensitivity Analysis is? You are being introduced to this new term today. Here is the answer to your question. Sensitivity Analysis is relatively new term in Management Accounting. Sensitivity analysis is a 'what if' technique that managers use to examine how a

result will change if the original predicted data are not achieved or if an underlying assumption changes.

In the context of CVP analysis, sensitivity analysis answers such questions as, what will operating income be if units sold decreases by 15% from original prediction? And what will operating income be if variable cost per unit increase by 20% percent? The sensitivity of operating income to various possible outcomes broadens managements' perspectives as to what might actually occur before they make cost commitments.

You can make use of spread sheet to conduct CVP based sensitivity analyses in a systematic and efficient way. Using spread sheet you can easily conduct this analysis to examine the effect and interaction of changes in selling prices, variable cost per unit, fixed costs and target operating incomes. Let's take an example of following spread sheet of Dolphy Software ltd, Chennai.

Statement Showing CVP Analysis for Dolphy Software Ltd.

| | | Revenue Required at 200 Rs. Selling price to earn Operating income of | | | |
|-----------------------|--------------------------------------|--|-------------|-------------|-------------|
| Fixed Cost (In Rs) | Variable cost per unit (In Rs) | 0 Level | 1,000 Level | 1,500 Level | 2,000 Level |
| 2,000 | 100 | 4,000 | 6,000 | 7,000 | 8,000 |
| | 120 | 5,000 | 7,500 | 8,750 | 10,000 |
| | 140 | 6,667 | 10,000 | 11,667 | 13,333 |
| 2,500 | 100 | 5,000 | 7,000 | 8,000 | 9,000 |
| | 120 | 6,250 | 8,750 | 10,000 | 11,250 |
| | 140 | 8,333 | 11,667 | 13,333 | 15,000 |
| 3,000 | 100 | 6,000 | 8,000 | 9,000 | 10,000 |
| | 120 | 7,500 | 10,000 | 11,250 | 12,500 |

From the above you can immediately see the revenues that need to be generated to reach particular operating income level, given alternative levels of fixed costs and variable costs per unit. For example revenue of Rs 6000 (30 units @ 200 each) are required to earn an operating income of Rs 1,000 if fixed costs are Rs 2000 and variable costs per unit is Rs 100.

As aspect of sensitivity analysis is margin of safety, which is the amount of budgeted revenues over and above break even revenues. Expressed in units, margin of safety is the sales quantity minus the break even quantity. The margin of safety answers the ‘What if’ question: If budgeted revenues are above breakeven and drop how far can they fall below budget before the break even point is reached? Such a fall could be due to a competitor which has a better product, poorly executed marketing programs, and so on. Assume you have fixed cost of Rs. 2,000, a selling price of Rs 200 and variable costs per unit of Rs 120. For 40 units sold the budgeted point fro this set of assumptions is 25 units (Rs. 2,000 ÷ Rs 80) or Rs 5000 (Rs 200 x 25). Hence the margin of safety is Rs 3,000 (Rs 8,000 – 5,000) or 15 (40 –25) units. Sensitivity analysis is one approach to recognizing uncertainty, which is the possibility that an actual amount will deviate from an expected amount.

Summary: In the aforesaid sections, you have come across the Cost Volume and Profit relationship. Fixed and Variable cost classification helps in CVP analysis. Marginal cost is useful for such analysis.

5.2.5 Marginal Cost Equations and Break Even Analysis

We have already discussed about Marginal Cost statements. You have observed from the marginal cost statements that –

$$\text{Sales} - \text{Marginal Cost} = \text{Contribution} \quad \dots\dots (1)$$

$$\text{Fixed cost} + \text{Profit} = \text{Contribution} \quad \dots\dots (2)$$

Now from combining these two equations, we get the fundamental marginal cost equation–

$$\text{Sales} - \text{Marginal cost} = \text{Fixed cost} + \text{Profit} \quad \dots\dots (3)$$

This fundamental marginal cost equation plays a vital role in profit projection and has wider application in managerial decision making problems. You may observe now that the sales and marginal costs vary directly with the number of units sold or produced. So the difference the sales and marginal cost i.e., contribution will bears a relation to sales and the ratio of contribution to sales remains constant at all levels. This is Profit volume or P/ V Ratio. Thus

$$\text{P/V ratio (or C/S ratio)} = \frac{\text{Contribution (c)}}{\text{Sales (s)}} \dots\dots (4)$$

It is expressed in terms of percentage i.e. P / V Ratio is equal to (C / S) x 100.

$$\text{Or, Contribution} = \text{Sales} \times \text{P/V ratio} \dots\dots (5)$$

$$\text{Or, Sales} = \frac{\text{Contribution}}{\text{P/V ratio}} \dots\dots (6)$$

We may now apply the above mentioned marginal cost equations under the following heads:

- **Contribution:** Contribution is the difference between the sales and marginal or variable costs and it contributes towards fixed cost and profit. The concept of contribution helps in deciding break even point, profitability of products, departments etc, to select product mix or sales mix for profit maximization and to fix selling prices under different circumstance such as trade depression, export sales, price discrimination etc.
- **Profit Volume Ratio (PV ratio) its Improvement and Application:** The ratio of contribution to sales is the P/V ratio or C/S ratio. It is the contribution per rupee of sales and since the fixed cost remains constant in the short term period, the P/V ratio will also measure, the rate of change of profit due to change in volume of sales. The P/V ratio may be expressed as:

$$\begin{aligned} \text{P/V ratio} &= \frac{\text{Sales} - \text{Marginal cost of sales}}{\text{Sales}} = \frac{\text{Contribution}}{\text{Sales}} \\ &= \frac{\text{Changes in contribution}}{\text{Changes in sales}} = \frac{\text{Change in profit}}{\text{Change in sales}} \end{aligned}$$

So we can now conclude that one fundamental property under marginal costing system is that P/V ratio remains constant at different levels of activity. A change in fixed cost does not affect the P/V ratio The concept of P/V ratio helps in determining break even point, profit at any volume of sales, sales volume required to earn a desired quantum of profit, profitability of products, processes or departments, etc. Contribution can be increased by increasing sales price or by reduction of variable costs. Thus P/V ratio can be improved by: (i) Increasing selling price (ii) Reducing marginal costs by effectively utilizing men, machines, materials and other services(iii) Selling more profitable products, thereby increasing the overall P/V ratio.

- **Break even point:** A break even point is that volume of sales or production where there is neither profit nor loss. Thus we can say that

Contribution = Fixed cost

We can now easily calculate break even point with the help of fundamental marginal cost equation, P/V ratio or contribution per unit.

a. Using Marginal Costing Equation:

$$S \text{ (sales)} - V \text{ (variable cost)} = F \text{ (fixed cost)} + P \text{ (profit)}$$

$$\text{at BEP } P = 0, \text{ BEP } S - V = F$$

Now after Multiplying both sides by S and re arranging gives,

$$S_{\text{BEP}} = F.S / S - V$$

b. Using P/V ratio:

$$\text{Sales } S_{\text{BEP}} = \frac{\text{Contribution at B.E.P}}{\text{P/ V ratio}} = \frac{\text{Fixed Cost}}{\text{P/ V ratio}}$$

Thus, if sales is Rs.2, 000;

Marginal cost Rs. 1,200;

Fixed cost Rs 400

$$\text{Break even point} = \frac{400 \times 2000}{2000 - 1200} = \text{Rs. 1000}$$

$$\text{Similarly P/V ratio} = \frac{2000 - 1200}{2000 - 1200} = 40\%$$

$$\text{So, break even sales} = \frac{400}{.4} = \text{Rs. 1000}$$

c. Using Contribution per Unit :

$$\text{Break even point} = \frac{\text{Fixed Cost}}{\text{Contribution per unit}} = 100 \text{ units or Rs. 1000}$$

- **Margin of Safety (MOS):** You know All enterprises try to know how much they are above the break even point. This is technically called margin of safety and is calculated by the difference between the sales or production units at the selected activity and the break even sales or production.

The margin of safety is the difference between the total sales (actual or projected) and the break even sales. It may be expressed in monetary terms (value) or as a number of units (volume). It can be expressed as profit / P V ratio. A large margin of safety indicates the soundness and financial strength of the business. You may now note that, Margin of safety can be improved by lowering fixed and variable costs, increasing volume of sales or selling price and changing product mix so as to improve contribution and overall P/V ratio.

Margin of Safety = Sales at Selected Activity – Sales at B.E.P

$$= \frac{\text{Profit at selected activity}}{\text{P/V ratio}}$$

Margin of safety is also presented in Ratio or Percentage as

$$= \frac{\text{Margin of safety (sales)}}{\text{Sales at selected activity}} \times 100 \%$$

The size of the margin of safety is an extremely valuable guide to the strength of a business. In large, this means that there can be substantial falling off sales and yet a profit can be made. On the other hand, if the margin is small, any loss of sales may be a serious matter. If the margin of safety is unsatisfactory, possible steps to rectify the causes of mismanagement of commercial activities as listed below: (i) by increase in the selling price, this may be possible for the company to have higher margin of safety in order strengthen the financial health of the business. It should be able to influence the price provided the demand inelastic, otherwise the same quantity will not be sold. (ii) Reduce fixed costs (iii) Reduce variable costs (iv) Substitution of existing product(s) by more profitable lines (v) Increase the volume of output. (vi) By modernization of production facilities and introduction of most cost effective technology.

Let us take a simple example to make you understand the concept stated above:

Illustration 5.2

A company earned a profit of Rs. 30,000 during the year 2000-01 marginal cost and selling price of a product are Rs. 8 and Rs. 10 per unit respectively, find out the of 'Margin of Safety'

$$\text{Margin of Safety} = \frac{\text{Profit}}{\text{P/V ratio}}$$

$$\begin{aligned} \text{P/V Ratio} &= \text{Contribution/ Sales} \times 100 \\ &= \frac{\text{Rs. 2}}{\text{Rs. 10}} \times 100 = 20\% \end{aligned}$$

$$\text{Margin of safety} = \frac{\text{Rs. 30000}}{20\%} = \text{Rs. 1, 50,000}$$

Let us take another example:

Illustration 5.3

A company producing a single article sells it at Rs 10 each, the marginal cost of production is Rs 6 each and fixed cost is Rs 400 per annum. You are required to calculate

- the profits for annual sales of 1 unit, 50 units, 100 units and 400 units;
- the P/V ration;
- the break even sales;
- the sales to earn a profit Rs 500;
- profit at sales Rs 3000;
- New break even point if sales price is reduced by 10%.
- Margin of safety at sales 400 units

Solution:

Marginal Cost Statement

| Particulars | Amount (Rs) | Amount (Rs) | Amount (Rs) | Amount (Rs) |
|-----------------------------|----------------|----------------|----------------|----------------|
| Units Produced | 1 | 50 | 100 | 400 |
| Sales (units * 10) | 10 | 500 | 1000 | 4000 |
| Variable cost | 6 | 300 | 600 | 2400 |
| Contribution (sales- V.C) | 4 | 200 | 400 | 1600 |
| Fixed cost | 400 | 400 | 400 | 400 |
| Profit (Contribution – F.C) | -396 | -200 | 0 | 1200 |

Profit Volume Ratio (PVR) = Contribution / Sales * 100 = 0.4 or 40%

Break Even Sales (Rs) = Fixed Cost / PVR = 400/ 40 * 100 = 1,000 Rs

Sales at BEP = Contribution at BEP/ PVR = 100 units

Sales at profit Rs 500

Contribution at profit Rs. 500 = Fixed Cost + Profit = 900

Sales = Contribution / PVR = 900/ .4 = Rs. 2,250 (or 225 units)

Profit at sales Rs. 3,000

Contribution at sale Rs. 3,000 = Sales x P/V ratio = 3000 x 0.4 = Rs. 1200

Profit = Contribution – Fixed cost = Rs. 1200 – Rs. 400 = Rs. 800

New P/V ratio = Rs. 9 – Rs. 6 / Rs. 9 = 1/3

Sales at BEP = Fixed cost / PV ratio = Rs. 400 = $\frac{Rs. 1,200}{1/3}$

Margin of Safety (at 400 units) = $\frac{4000-1000}{4000} * 100 = 75 \%$
(Actual Sales – BEP Sales / Actual Sales * 100)

5.2.6 Break-Even Analysis - Graphical Presentation

After understanding Marginal costing equation now you may note that apart from marginal cost equations, it is found that break-even chart and profit graphs are useful graphic presentations of this cost-volume-profit relationship. You are coming across a new concept of Break even.

A break-even chart is a device which shows the relationship between sales volume, marginal costs and fixed costs and profit or loss at different levels of activity. Such a chart also shows the effect of change of one factor on other factors and exhibits the rate of profit and margin of safety at different levels. A break-even chart contains interlaid total sales line, total cost line, and the point of intersection called the "break-even point". It is popularly called the break-even chart because it shows clearly the break-even point (a point where there is no profit or no loss) on the chart.

A profit graph is a development of simple break-even chart and shows clearly the profit at different volumes of sales.

Construction of Break-Even Charts: Construction of break-even chart involves the drawing of fixed cost line, total cost line, and sales line as follows:

- Select a scale for production on the horizontal axis and a scale for costs and sales on the vertical axis.

- Plot the fixed cost on the vertical axis and draw fixed cost line passing through this point parallel to horizontal axis.
- Plot the variable costs for some activity levels starting from the fixed cost line and join these points. This will give the total cost line. Alternatively, obtain total cost at different levels, plot the points starting from horizontal axis and draw the total cost line.
- Plot the maximum or any other sales volume and draw the sales line by joining zero and the point so obtained.

Uses of Break-even Chart: The break-even chart can be used to show the effect of changes in any of the profit factors namely:

- Change in the volume of sales,
- Change in variable expenses,
- Change in the fixed expenses,
- Change in selling price

Illustration 5.4

A company produces a single article and sells at Rs. 10 each. The marginal cost of production is Rs. 6 each and total fixed cost of the concern is Rs. 400 per annum. Construct a break-even chart and show (a) break-even point; (b) margin of safety at sales Rs. 1, 500; (c) angle of incidence; (d) increase in selling price if the break-even point is reduced to 80 units.

Solution: A break-even chart can be prepared by obtaining the information at these levels:

Fixed cost line, total cost line, and sales- line are drawn one after another following the usual procedure described here below:

| | Output Units | | | |
|---------------|--------------|--------|----------|----------|
| | 40 | 80 | 120 | 200 |
| Sales | Rs.400 | Rs.800 | Rs.1,200 | Rs.2,000 |
| Fixed cost | Rs.400 | Rs.400 | Rs.400 | Rs.400 |
| Variable cost | Rs.240 | Rs.480 | Rs.400 | Rs.720 |
| Total cost | Rs.640 | Rs.880 | Rs.1,120 | Rs.1,600 |

This figure 5.1 below shows clearly the break even point, margin of safety and angle of incidence

- **Break-Even Point:** This is the point at which the sales line and the total cost line intersect. Here B is the break-even point equivalent to a sale of Rs. 1,000 or 100 units.
- **Margin of Safety:** This is the difference in sales or units of production from the break-even point. Thus margin of safety at M is sales of (Rs. 1,500 - Rs. 1,000) i.e., Rs. 500 or 50 units of Angle of incidence
- **Angle of Incidence:** This is the angle formed by the sales line and the total cost line at the break -even point. A large angle of incidence shows a high rate of profit being made. Please note that the Angle of Incidence is universally denoted by theta.

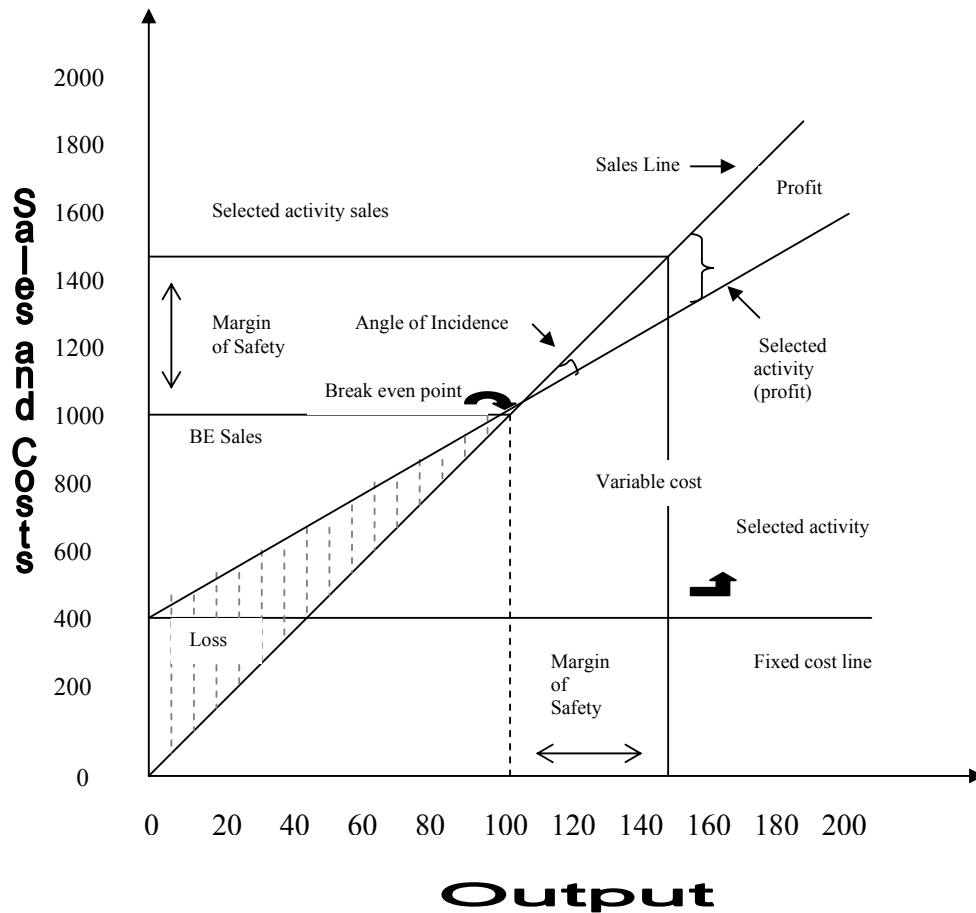


Figure 5.1 Break Even Point

Larger the angle, higher the profitability indicated by the angle of incidence. At 80 units the total cost (from the table) = Rs. 880; Sales value of 80 units. Hence, selling price for break-even at 80 units = $\text{Rs. } 880/80 = \text{Rs. } 11$ per unit. Increase in selling price is Re. 1 or 10% over the original selling price of Rs. 10 per unit.' Fixed cost line, total cost line, and sales-line are drawn one after another following the usual procedure described here in before.

5.2.7 Limitations & uses of Break – Even charts.

To mention, that this technique also suffers with certain limitation. A simple break-even chart gives a correct result as long as variable cost per unit, total fixed cost and sales price remain constant. In practice, all these factors may change and the original break-even chart gives misleading results. Again, if a company sells different products having different percentages of profit to turnover, the original combined break-even chart fails to give a clear picture when the sales mix changes. In that case it may be necessary to draw up break-even chart for each product or group of products. The break-even chart does not take into account capital employed, which is a very important factor to measure the overall efficiency of the business. Fixed costs may increase at some level, while variable costs may sometimes start to decline, e.g., quantity discount on materials purchased and the sales price may be reduced to sell the additional units produced. These changes may result in more than one break-even point or may indicate higher profit at lower volume whereas lower profit at still higher levels of sales.

Nevertheless, a break-even chart is used by management as an efficient tool in marginal costing, i.e., in forecasting, decision making, long term Profit planning and maintaining profitability: The margin of safety shows The soundness of the business, the fixed cost line shows the degree of mechanization and the angle of incidence is an indicator of plant efficiency and profitability of the product or divisions under considerations. It also helps a monopolist to make price discrimination for maximization of profit.

Multiple Product Situations: So far we have discussed BE point for a firm producing single product. In real life most of the firms turn out many products. Here also there is no problem with regard to the calculation of BE point. However the assumption has to be made that the sales mix remains constant. This is defined as the relative proportion of each products sale to total sales. It could be expressed as a ratio such as 2:4:6 or as a percentage i.e. 20%, 40%, and 60%.The calculation of the break even point follows the same pattern as in single product firm. While the numerator is the same fixed costs, the denominator now will be weighted average contribution margin. The modified formula is:

$$\text{Break Even Point (in units)} = \frac{\text{Fixed Costs}}{\text{Weighted average contribution margin per unit}}$$

Here you must remember that weights are assigned in proportion to the relative sales of all products. Here it will be contribution margin of each product multiplied by its quantity. Break Even point in Sales Revenue Again, the numerator is the same fixed costs. The denominator now will be weighted average contribution margin ratio, also called weighted average P/V ratio. The modified formula is:

$$\text{B.E. Point (in revenue)} = \frac{\text{Fixed Cost}}{\text{Weighted average P/V ratio}}$$

Let us take an example to understand multi product BEP better:

Illustration 5.5

Ahmedabad company Ltd. Manufactures and sells four types of products under the brand name AMBIENCE, LUXURY, COMFORT, LAVISH. The sales mix in value comprises.

| Brand Name | Percentage |
|------------|------------|
| AMBIENCE | 33 1/3 |
| LUXURY | 41 2/3 |
| COMFORT | 16 2/3 |
| LAVISH | 8 1/3 |
| | 100 |

The total budgeted sales (100%) are Rs. 6, 00,000 per month.

The operating cost is:

| | |
|----------|----------------------|
| AMBIENCE | 60% of selling price |
| LUXURY | 68% of selling price |
| COMFORT | 80% of selling price |
| LAVISH | 40% of selling price |

The fixed costs are Rs. 1, 59,000 per month.

Calculate the break even point for the products on an overall basis. It has been proposed to change the sales mix as follows, the sales per month remaining Rs. 6, 00,000.

| Brand Name | Percentage |
|------------|------------|
|------------|------------|

| | |
|----------|-----------|
| AMBIENCE | 25 |
| LUXURY | 40 |
| COMFORT | 30 |
| LAVISH | <u>05</u> |
| | 100 |

Assuming that this proposal is implemented, calculate the new break even point.

Solution:

Computation of the Break Even Point on Overall Basis

| | Ambience | Luxury | Comfort | Lavish | Total |
|--------------------------------------|----------|----------|----------|---------|----------|
| Sales Mix | 33 1/3 % | 41 2/3 % | 16 2/3 % | 8 1/3 % | 100 |
| Sales (Rs) | 2,00,000 | 2,50,000 | 1,00,000 | 50,000 | 6,00,000 |
| Less: Variable (operating) cost (Rs) | 1,20,000 | 1,70,000 | 80,000 | 20,000 | 3,90,000 |
| Contribution (Rs) | 80,000 | 80,000 | 20,000 | 30,000 | 2,10,000 |

$$\begin{aligned} \text{Overall P/V ratio} &= \frac{\text{Contribution}}{\text{Sales}} \times 100 \\ &= \frac{\text{Rs. 2, 10,000}}{6, 00,000} \times 100 \\ &= 35\% \end{aligned}$$

$$\begin{aligned} \text{Break even point (sales value)} &= \frac{\text{Fixed Costs}}{\text{P/V ratio}} \times 100 \\ &= \frac{\text{Rs. 1, 59,000}}{35\%} \times 100 \\ &= 4, 54,286 \end{aligned}$$

Computation of New Break Even: The revised contribution after new sales mix:

| | Ambience | Luxury | Comfort | Lavish | Total |
|-------------------------------------|----------|----------|----------|--------|----------|
| Sales Mix | 25 % | 40% | 30% | 5% | 100 |
| Sales (Rs) | 1,50,000 | 2,40,000 | 1,80,000 | 30,000 | 6,00,000 |
| Less: Variable (operating) cost(Rs) | 90,000 | 1,63,200 | 1,44,000 | 12,000 | 4,09,200 |
| Contribution(Rs) | 80,000 | 80,000 | 20,000 | 30,000 | 2,10,000 |

$$\text{New P/V ratio} = \frac{\text{Rs. } 1,90,800}{\text{Rs. } 6,00,000} \times 100 = 31.8\%$$

$$\text{New Break even point (sales value)} = \frac{\text{Rs. } 1,59,000}{31.8\%} = \text{Rs. } 5,00,000$$

Profit Graph: Profit graph is an improvement over the simple break-even chart and clearly exhibits the relationship of profit to volume of sales. Construction of profit graph is relatively easy and the procedure involves:

- Selecting a scale for sales on horizontal axis and another scale for profit and fixed costs or loss on the vertical axis. The area above the horizontal axis is the "profit area" and the below it is the "loss area".
- Plotting the profits of corresponding sales and joining them. This is the profit line.

Summary: In this unit we understood about marginal costing equations and how they are useful for CVP analysis. Break-even point is incidental study of CVP. It is the point of no profit and no loss. At this specific level of operations, it covers total costs, including variable and fixed overheads. A break-even (B-E) chart is a graphical representation cost structure of a business. Profit/Volume (P/V) ratio shows the relationship between contribution and value / volume of sales. It is usually expressed as terms of percentage, and is a valuable tool for the profitability of a business. The margin of safety is the difference between the total of the break-even sales. The size of the margin of safety is an extremely valuable guide financial strength of a business.

5.3 NUMERICALS ON BEP AND CVP

Well, by now you must be quite well-versed with the basics of BEP and CVP. Let us now see how we can apply our knowledge in solving these simple problems.

Problems to Practice:

Problem

Profit/Volume ratio of a company is 50%, while its margin of safety is 4/1 sales volume of the company is Rs. 50 lakhs, find out its break-even point and net profit.

Solution

| | |
|---|--|
| | Rs. |
| Sales | 50,00,000 |
| Less: Margin of Safety (40% of Rs. 50,00,000) | <u>20,00,000</u> |
| Break-even Sales | <u>30,00,000</u> |
| Margin of Safety | = $\frac{\text{Profit}}{\text{P/V ratio}}$ |
| Rs. 20,00,000 | = $\frac{\text{Profit}}{50\%}$ |
| Rs. 20,00,000 x 50% | = Profit |
| Profit | = 10,00,000 |

Alternatively,

| | |
|----------------------|--|
| Break even Sales | = $\frac{\text{Fixed Cost}}{\text{P/V ratio}}$ |
| Rs. 30, 00,000 | = $\frac{\text{Fixed Cost}}{50\%}$ |
| Rs. 30, 00,000 x 50% | = Fixed Cost |
| Fixed Cost | = 50% x 5, 00,000 |
| | = Rs. 25, 00,000 |
| Profit | = Contribution – Fixed Cost |
| | = Rs. 25, 00,000 – 15, 0,000 |
| | = Rs. 10, 00,000 |

Problem

From the following information, calculate the break even point and turnover required to earn a profit of Rs. 36,000

| | |
|------------------------|---------------|
| Fixed Overheads | Rs. 1, 80,000 |
| Selling Price | Rs. 20 |
| Variable cost per unit | 2 |

If the company is earning a profit of Rs. 36,000, express the margin of safety available to it.

Solution:

1. Break even Point:

| | |
|-------------------------------|-----------|
| Contribution per unit (s – v) | Rs. |
| Selling price per unit | 20 |
| Variable cost per unit | <u>2</u> |
| Contribution | <u>18</u> |
| Fixed Overheads | 1, 80,000 |

$$\begin{aligned} \text{Break even point} &= \frac{\text{Fixed Overheads}}{\text{Contribution per unit}} \\ &= \frac{1, 80,000}{18} \\ &= 10,000 \text{ units} \end{aligned}$$

or sales of Rs. 2, 00,000

2. Turnover required earning profit of Rs. 36,000:

$$\begin{aligned} &= \frac{\text{Fixed Overheads}}{\text{Contribution per unit}} \\ &= \frac{\text{Rs. } 1, 80,000 + \text{Rs. } 36,000}{18} \\ &= \frac{2, 16,000}{18} \\ &= 12,000 \text{ units or sales of Rs. } 2, 40,000 \end{aligned}$$

3. Margin of Safety:

| | Units | Rs. |
|---------------------------|---------------|------------------|
| Actual sales | 12,000 | 2, 40,000 |
| Sales at break even point | <u>10,000</u> | <u>2, 00,000</u> |
| Margin of safety | <u>2,000</u> | <u>40,000</u> |

Margin of safety may also be calculated as follows:

$$\text{Margin of safety} = \text{Net Profit}$$

Illustration 5.6

The profit volume (P/V) ratio of a pharmaceutical company is 50% and the margin of safety is 40%. You are required to work out the break –even point and the net profit if the sales volume is Rs.50 lakhs.

Solution:

| B.E.P | Rs. in lakhs |
|----------------------|--------------|
| Sales | 50 |
| Margin of safety 40% | <u>20</u> |
| B.E.P | 30 |

Contribution at B.E.P

Sales at B.E.P x P/V ratio
30x50% i.e. Rs.15 lakhs

| | |
|-----------------------------|-----------|
| Sales at B.E.P | 30 |
| Less: Contribution at B.E.P | <u>15</u> |
| Fixed Overheads | 15 |

Net Profit if the Sales Volume is Rs. 50 lakhs

$$\begin{aligned} \text{Profit} &= (\text{Sales} \times \text{P/V ratio}) - \text{Fixed cost} \\ &= (50 \times 50\%) - 15 \\ &= 25 - 15 = \text{Rs.10 lakhs} \end{aligned}$$

Alternatively:

$$\begin{aligned} \text{Profit} &= \text{P/V ratio} \times \text{M/S ratio} \times \text{Sales} \\ &= 50\% \times 40\% \times \text{Rs.50 lakhs} = \text{Rs.10 lakhs.} \end{aligned}$$

Illustration: 5.7

The sales of Rubber industries in the first half of 2003 amounted to Rs. 2, 70,000 and the profit earned was Rs. 7200. The sales in the second half of 2003 amounted to Rs.3, 42,000 and profit earned was Rs. 20700 for that half year.

Assuming no change in fixed cost, calculate:

- The amount of profit when sales are Rs. 2, 16,000.
- The amount of sales required to earn a profit of Rs.36000.

Solution:

Calculation of P/V ratio

$$\text{P/V ratio} = \frac{\text{Change in profit}}{\text{Change in sales}}$$

$$\text{Change in profit} = 20700 - 7200 = \text{Rs. 13500}$$

$$\text{Change in sales} = 342000 - 270000 = \text{Rs.72000}$$

$$\text{P/V ratio} = 18.75\%$$

Calculation of fixed expenses

$$\begin{aligned} (\text{Second half}) \text{ Fixed cost} &= \text{P/V ratio of sales} - \text{profit} \\ &= 18.75\% \text{ of } 3, 42,000 - 20700 = \text{Rs. 43,425} \end{aligned}$$

$$(\text{First half}) \text{ Fixed cost @ } 18.75\% \text{ of } 2, 70,000 - 7200 = \text{Rs.43, 425}$$

Calculation of profit when sales are Rs. 2, 16,000

$$\text{P/V ratio} \times 2, 16,000 - \text{Fixed cost} = 18.75\% \text{ of } 2, 16,000 - 43,425 = \text{Rs.40500}$$

Sales to earn a profit of Rs.36, 000

$$= \frac{\text{Fixed cost} + \text{Desired Profit}}{\text{P/V ratio}}$$

$$= \frac{43,425 + 36,000}{18.75\%} \quad \text{or Rs. } 423,600$$

Additional Practical Problems to Practice

Problem

A multi product company furnishes the following data relating to the year 2002.

| | 1 st half of the year | 2 nd half of the year |
|------------|----------------------------------|----------------------------------|
| (Rs.) | (Rs.) | (Rs.) |
| Sales | 45000 | 50000 |
| Total Cost | 40000 | 43000 |

Assuming that there is no change in prices and variable cost and the fixed expenses are incurred equally in the two half years, calculate for the year 2002:

- The P/V ratio.
- The fixed expenses.
- The break even sales.
- The percentage of margin of safety to total sales.

Solution

| Period | Sales | Total Cost | Profit |
|----------------------------------|-------------|-------------|-------------|
| 2 nd half of the year | 50000 | 43000 | 7000 |
| 1 st half of the year | 45000 | 40000 | 5000 |
| Change | <u>5000</u> | <u>3000</u> | <u>2000</u> |

$$\text{P/V ratio} = \frac{\text{Change in profit}}{\text{Change in sales}} \times 100 \text{ i.e. } \frac{2000}{5000} \times 100 = 40\%$$

Fixed expenses

$$\text{Sales for the year} = 45000 + 50000 = 95000$$

$$\text{Contribution for the year} = \text{Rs. } \frac{95000 \times 40}{100} = 38000$$

$$\text{Less: Profit for the year Rs. } 5000 + \text{Rs. } 7000 = 12000$$

$$\text{Fixed expenses for the year} = \underline{26000}$$

$$\text{Break even sales} = \frac{\text{Fixed Cost}}{\text{P/V ratio}} \text{ i.e. } \frac{26000 \times 100}{40} = \text{Rs. } 65000$$

$$\text{Margin of Safety} = \text{Total Sales} - \text{Break even sales} = 95000 - 65000 = \text{Rs. } 30000$$

$$\% \text{ of margin of safety to total sales} = \frac{30000}{95000} \times 100 = 31.58\%$$

Problem

Alpha Ltd. & Beta Ltd., two competing companies produce and sell the same type of product in the same market for the year ended March 2002. Their forecasted Profit & Loss accounts are as follows:

| | Alpha Ltd. | | Beta Ltd. | |
|----------------------------------|------------|--------|-----------|--------|
| | Rs. | Rs. | Rs. | Rs. |
| Sales | 250000 | | | 250000 |
| <i>Less: Variable</i> | | | | |
| Cost of sales | 200000 | | | 150000 |
| Fixed Costs | 25000 | 225000 | 75000 | 225000 |
| Forecasted Net Profit before tax | 25000 | | | 25000 |

You are required to compute:

- P/V ratio
- Break even sales volume.

You are also required to state which company is likely to earn greater profit in conditions of:

- Low Demand.
- High Demand.

Solution

| | Alpha Ltd. | Beta Ltd. |
|--------------------|--|---|
| Sales | 250000 | 250000 |
| Contribution (F+P) | | |
| P/V ratio | $\frac{50000}{250000} \times 100$ = 20% | $\frac{100000}{250000} \times 100$ = 40% |
| Break even sales | $\frac{25000}{20\%} = 125000$ | $\frac{75000}{40\%} = 187500$ |

Profit situation for Alpha Ltd. Will be greater than that of Beta in case of low demand since even if sales are halved Alpha Ltd. Will still not incur a loss, whereas Beta Ltd. has a Safety margin of only Rs.62500. If sales drop to Rs.200000, in both the cases, the profit position would be as follows:

| | Alpha Ltd. | Beta Ltd. |
|----------------|--------------|--------------|
| Contribution | Rs.40000 | Rs.80000 |
| Fixed expenses | <u>25000</u> | <u>75000</u> |
| | <u>15000</u> | <u>5000</u> |

In case of high demand Beta Ltd. will do better than Alpha ltd. since additional sales will produce profit at the rate of 40% of sales as against only 20% in the case of other company. If sales improve to Rs.300000 the profit position will be as follows:

| | | |
|----------------|--------------|--------------|
| | Alpha Ltd. | Beta Ltd. |
| Contribution | Rs.60000 | Rs.120000 |
| Fixed expenses | <u>25000</u> | <u>75000</u> |
| | <u>35000</u> | <u>45000</u> |

5.4 DECISION MAKING USING MARGINAL COSTING

Friends, previously we have tried to understand about CVP analysis .We will be solving some practical problems and cases relating to CVP and multi product situations. We will now discuss some situations to understand decision making for Multi product firm.

Ascertaining Relative Profitability of Products: We know that a manufacturing concern engaged in the production of various products is interested in the study of the relative profitability of its products so that it may suitably change its production and sales policies in case of those products which it considers less profitable or unproductive. This is where the concept of PV Ratio provided by the marginal costing technique is much helpful in understanding the relative profitability of products. It is always profitable to encourage the production of that product which shows a higher PV ratio.

You can also take case when sometimes, the management is confronted with a problem of loss and it has to decide whether to continue or abandon the production of a particular product which has resulted in, a net loss. Marginal costing technique properly guides the management in such a situation. If a product or department shows loss, the Absorption Costing method would hastily conclude that it is of no use to produce and run the department and it should be closed down. Or sometimes this type of conclusion will mislead the management. The marginal costing technique would suggest that it would be profitable to continue the production of a product if it is able to recover the full marginal cost and a part of the fixed cost. Let us take an example to understand this:

Example:

A company manufactures three products X, Y and Z. The company has prepared the following budget for the year 2003:

| | Total | Product X | Product Y | Product Z |
|----------------------------------|----------|-----------|-----------|-----------|
| Sales | 4,20,000 | 80,000 | 2,50,000 | 90,000 |
| Factory Cost: | | | | |
| Variable | 2,90,500 | 40,000 | 1,74,000 | 76,500 |
| Fixed | 29,500 | 5,000 | 16,000 | 8,000 |
| Production Cost | 3,20,000 | 45,000 | 1,90,000 | 85,000 |
| Selling and Administration Cost: | | | | |

| | | | | |
|------------|----------|--------|----------|----------------|
| Variable | 35,000 | 14,000 | 14,000 | 7,000 |
| Fixed | 8,000 | 3,500 | 3,200 | 1,300 |
| Total Cost | 3,63,000 | 62,500 | 2,07,200 | 93,300 |
| Profit | 57,000 | 17,500 | 42,800 | - 3,300 (less) |

Now on the basis of the above information, we understand that the company management is thinking to discontinue with the production of Product Z which has shown loss. The management seeks your expert opinion on the issue before they take a final decision. You are required to comment on the relative profitability of the products.

Solution

The information contained in the budget may be re-arranged in the form of a Marginal Cost Statement as shown below:

| Marginal Cost Statement | | | | |
|--------------------------------|--------------|------------------|------------------|------------------|
| Particulars | Total | Product X | Product Y | Product Z |
| Sales | 4,20,000 | 80,000 | 2,50,000 | 90,000 |
| Variable Cost: - | | | | |
| Factory Cost | 2,90,500 | 40,000 | 1,74,000 | 76,500 |
| Selling and Admn. Cost | 35,000 | 14,000 | 14,000 | 7,000 |
| Total Marginal Cost | 3,25,500 | 54,000 | 1,88,000 | 83,500 |
| Contribution | 94,500 | 26,000 | 62,000 | 6,500 |
| Fixed Costs | 37,500 | 8,500 | 19,200 | 9,800 |
| Profit | 57,000 | 17,500 | 42,800 | -3,300 (less) |
| Profit-volume Ratio. | 22.5% | 32.5% | 24.8% | 7.2% |

Profit volume ratio is the ratio of Contribution to Sales. It is expressed in terms of percentage. After preparing above statements and analysis we can make following recommendations:-As discussed in the marginal cost statement, the contribution of Product Z is Rs. 6500 which goes towards the recovery of fixed cost of Rs. 9,800. If the production of Z is discontinued, the company will loose the marginal contribution of Rs.6, 500 whereas it will have to incur fixed cost of Rs. 9,800. The total profit of Rs. 57,000 will be reduced to Rs. 50,500 (57,000 - 6,500). Thus it is advisable that the production of Z should not be discontinued. As regards the relative profitability, Product X is more profitable than Y and Z as the Profit-Volume Ratio in this case is highest. The production and sales of Product X should, therefore, be encouraged.

Determining Profitability of Alternative Product-Mix: You all know that objective of an enterprise is to maximize profits, the management of Business enterprise would prefer that product mix which is ideal one in the sense that it yields maximum profits. Products-mix means combination of products which is intended for production and sales. A firm producing more than one product has to ascertain the profitability of alternative combinations of units or values of products and select the one which maximizes profits. How marginal cost analysis helps the management in this regard is illustrated with the help of the following example:

Example

A manufacturing firm supplies you the following information:

| | Product P | Product Q |
|-----------------------------------|------------------|------------------|
| | (Rs.) | (Rs.) |
| Direct Material per unit | 16 | 14 |
| Direct wages paid | 5 | 4 |
| Variable Expenses (100% of Wages) | 5 | 4 |
| Fixed Expense Rs. 1,300 | 32 | 26 |
| Sales price per unit | | |

Sales-Mixtures

1. 400 units of Product P and 400 units of Product Q
2. 500 units of Product P and 300 units of Product Q
3. 600 units of Product P and 200 units of Product Q.

You are required to prepare the marginal cost statement to show contribution per unit and suggest the sales-mix which optimizes profits.

Solution**Marginal Cost Statement**

| | Product A | Product B |
|---------------------------------|------------------|------------------|
| | (Rs.) | (Rs.) |
| Sales per unit | 32 | 26 |
| Direct material per unit | 16 | 14 |
| Direct wages per unit | 5 | 5 |
| Variable Expenses Cost per unit | 5 | 4 |
| Marginal | 26 | 22 |
| Contribution Per Unit | 6 | 4 |

Profit from different sales-mix

1. 400 units of P and 400 units of Q
Total contribution-Fixed cost = Profit
 $(400 \times 6) + (400 \times 4) - 1,300 = 2,700$
2. 500 units of A and 300 units of B
 $(500 \times 4) + (300 \times 4) - 1,300 = 2,900$
3. 600 units of A and 200 units of B

$$(600 \times 6) + (200 \times 4) - 1,300 = 3,100$$

Based on the above analysis you can suggest that the firm should, produce and sell 600 units of P and 200 units of Q. This combination yields maximum and 200 units of Q. This combination yields maximum profit of Rs. 3,100.

Determination of Sales Mix: Now we will discuss another condition where Marginal cost helps in decision making in determining Sales Mix. Presuming that fixed costs will remain unaffected decision regarding sales/production mix is taken on the basis of the contribution per unit of each product. The product which gives the highest contribution should be given the highest priority and the product whose contribution is the least, should be given the least priority. A product, giving a negative contribution, should be discontinued or given up unless there are other reasons to continue its production.

Illustration 5.7

Following information has been made available from the cost records of Nike Automotives Ltd. manufacturing spare parts:

| Direct Materials | Per unit |
|-------------------------|------------------------------|
| X | Rs.8 |
| Y | 6 |
| Direct wages | |
| X | 24 hours @ 25 paise per hour |
| Y | 16 hours @ 25 paise per hour |
| Variable overheads | 150% of direct wages |
| Fixed overheads (total) | Rs. 750 |
| Selling price | |
| X | Rs. 25 |
| Y | Rs. 20 |

The directors want to be acquainted with the desirability of adopting any of the following alternative sales mixes in the budget for the next period.

- (a) 250 units of X and 250 units of Y
- (b) 400 units of Y only
- (c) 400 units of X and 100 units of Y
- (d) 150 units of X and 50 units of Y.

State which of the alternative sales mixes you would recommend to the management.

Solution**Marginal Cost Statement (Per Unit)**

| | Products | |
|--------------------|----------|----|
| | X | Y |
| Direct materials | 8 | 6 |
| Direct wages | 6 | 4 |
| Variable overheads | 9 | 6 |
| Marginal cost | 23 | 16 |
| Contribution | 2 | 4 |
| Selling price | 25 | 20 |

Selection of Sales Alternative**Situation a)** 250 units of X and 250 units of Y

| | |
|---------------------------------------|---------|
| Contribution: Product X 250 units X 2 | Rs. 500 |
| Product Y 250 units X 4 | 1000 |
| | 1500 |
| Less: Fixed overheads | 750 |
| Profit | 750 |

Situation b) 400 units of product Y only

| | |
|-----------------------|----------|
| Contribution: 400 x 4 | Rs. 1600 |
| Less: Fixed overheads | 750 |
| Profit | 850 |

Situation c) 400 units of X and 100 units of Y Contribution

| | |
|-----------------------|--------|
| Product X 400 X 2 | Rs 800 |
| Product Y 100 X 4 | Rs 400 |
| | 1,200 |
| Less: Fixed overheads | 750 |
| Profit | 450 |

Situation d) 150 units of X and 350 units of Y Contribution:

| | |
|-----------------------|------|
| Product X 150 X 2 | 300 |
| Product Y 350 X 4 | 1400 |
| | 1700 |
| Less: Fixed overheads | 750 |
| Profit | 950 |

Now after we have done above calculations we find that the alternative (d) is most profitable

since it gives the maximum profit of Rs. 950. So we recommend the same to the company.

Illustration: 5.8

The budgeted results for Associate company Ltd. included the following: ~

| | Rs. in lakhs | Variable cost as % of sales value |
|-------------------|--------------|-----------------------------------|
| Sales: Product P1 | 50.00 | 60% |
| P2 | 40.00 | 50% |
| P3 | 80.00 | 65% |
| P4 | 30.00 | 80% |
| P5 | 44.00 | 75% |
| | 244.00 | 65.77% |

Fixed overheads for the period is Rs.90 lakhs.

You are asked to (a) prepare a statement showing the amount of loss expected. (b) Recommend a change in the sales volume of each product which will eliminate the expected loss. Assume that the sale of only one product can be increased at a time.

Solution

Statement Showing the Estimated Loss and the Increased Sales required to set off the Loss

| | | Products | | | | | Total Rs in Lakhs |
|-------|-----------------------|----------|-------|-------|-------|-------|-------------------|
| | Particulars | P1 | P2 | P3 | P4 | P5 | |
| (i) | Sales | 50.00 | 40.00 | 80.00 | 30.00 | 44.00 | 244.00 |
| (ii) | Variable cost | 30.00 | 20.00 | 52.00 | 24.00 | 33.00 | 159.00 |
| (iii) | Contribution (i)-(ii) | 20.00 | 20.00 | 28.00 | 6.00 | 11.00 | 85.00 |

| | | Products | | | | | Total Rs in Lakhs |
|--|--|----------|-------|-------|-------|-------|-------------------|
| | Particulars | P1 | P2 | P3 | P4 | P5 | |
| | Fixed overheads | | | | | | 90.00 |
| | Loss | | | | | | 5.00 |
| | P/V Ratio (iii)/(i) | 40% | 50% | 35% | 20% | 25% | |
| | Increased sales required to set off the loss | 12.50 | 10.00 | 14.29 | 25.00 | 20.00 | |

As you observe there is a budgeted loss of Rs 5.00 lakhs and the sales of only one product can be increased, this loss has to be set off by additional contribution. As the fixed overheads are constant additional contribution has been calculated by dividing the budgeted loss of Rs.

5 lakhs by the P/V Ratios of respective products. The sales of any one of the products to the extent of the amount stated in the table would be sufficient to set off the loss.

Discontinuance of Product Line: Now you will again come across another type of condition of decision making in Multi product firm regarding discontinuance of a product line. The following factors should be considered before taking a decision about the discontinuance of a product line:

- The contribution given by the product i.e., whether the contribution is different from profit. Profit is arrived at after deducting fixed cost from contribution. Fixed costs are apportioned over different products on some reasonable basis which may not be very much correct. Hence contribution gives a better idea about the, profitability of a product as compared to profit.
- The capacity utilization i.e., whether the firm is working to full capacity or below normal capacity. In case a firm is having idle capacity, the production of any product which can contribute towards the recovery of fixed costs can be justified.
- The availability of product to replace the product which the firm wants to discontinue and which is already accounting for a significant proportion of total capacity.
- The long-term prospects in the market for the product.
- The effect on sale of other products. In some cases the discontinuance of one product may result in heavy decline in sales of other products affecting the overall profitability of the firm.

Illustration 5.9

A manufacturer is thinking whether he can drop one item from his product line and replace it with another are given his present cost and output data:

| Product | Price | Variable cost per unit | Percentage of sales |
|----------------------------|----------------|------------------------|---------------------|
| Chairs | 60 | 40 | 30% |
| Cupboard | 100 | 60 | 20% |
| Tables | 200 | 120 | 50% |
| Total fixed costs per year | Rs. 7, 50,000 | | |
| Sales last year | Rs. 25, 00,000 | | |

The change under consideration consists in dropping the line of cupboards in favour of cabinets. If this dropping and change is made the manufacturer forecasts the following cost and output data:

| Product | Price | Variable cost per unit | Percentage of sales |
|---------|-------|------------------------|---------------------|
|---------|-------|------------------------|---------------------|

| | | | |
|----------------------------|----------------|-----|-----|
| | | | |
| Chairs | 60 | 40 | 50% |
| Cabinet | 160 | 60 | 10% |
| Tables | 200 | 120 | 40% |
| Total fixed costs per year | Rs. 7, 50,000 | | |
| Sales this year | Rs. 26, 00,000 | | |

Is this proposal to be accepted? Comment.

Solution

| COMPARATIVE PROFIT STATEMENT | | | | | | | | |
|------------------------------|----------|-----------|-----------|-----------|-----------|----------|-----------|-----------|
| | Chairs | Cupboards | Table | Total | Chairs | Cabinet | Table | Total |
| Sales | 7,50,000 | 5,00,000 | 12,50,000 | 25,00,000 | 13,00,000 | 2,60,000 | 10,40,000 | 26,00,000 |
| Less: Variable costs | 5,00,000 | 3,00,000 | 7,50,000 | 15,50,000 | 8,66,666 | 97,500 | 6,24,000 | 15,88,166 |
| | 2,50,000 | 2,00,000 | 5,00,000 | 9,50,000 | 4,33 333 | 1,62,500 | 4,16,000 | 10,11,833 |
| Less: Fixed Cost | | | | | | | | 7,50,000 |
| | | | | | | | | 2,61,833 |

The above analysis shows that the manufacturer will stand to gain case he drops the production of cupboards in preference to cabinets. However, the demand for cabinets should be of a permanent nature.

Working Notes:

Existing situation:

Computation of sales and variables costs

Sales

Chairs 25, 00,000 X 30/100

=Rs.7, 50,000

Cupboards 25, 00,000 X 20/100

=Rs. 5, 00,000

Tables 25, 00,000 X 50/100

=Rs. 12, 50,000

Variable Costs

7; 50,000 X 40/ 100

=Rs. 5, 00,000

5, 00,000 X 60/ 100

= Rs 3, 00,000

12, 50,000 X 120/ 100

= Rs. 7, 50,000

Proposed situation:

Computation of sales and variable costs

Sales

Chairs 26, 00,000 X 10/100

=Rs.13, 50,000

Cabinets 26, 00,000 X 10/100

=Rs. 2, 60,000

Tables 25, 00,000 X 40/100

=Rs. 10, 40,000

Variable Costs

13, 50,000 X 40/ 60

=Rs. 8, 66,667

26, 00,000 X 60/ 160

= Rs 97,500

10, 40,000 X 120/ 200

= Rs. 6, 24,000

Let us go through some more problems for better clarity of concept

Problem Solving**Illustration 5.10**

A company manufactures 3 products X, Y and Z. There are no common processes and the sale of one product does not affect prices or volume of sale of any other. The Company's budgeted profit/loss for 2000 has been abstracted thus:

| | Total (Rs.) | X (Rs.) | Y (Rs.) | Z(Rs.) |
|---------------------------------|-------------|---------|-----------|---------|
| Sales | 3, 00,000 | 45,000 | 2, 25,000 | 30,000 |
| Production cost: | | | | |
| Variable | 1, 80,000 | 24,000 | 1, 44,000 | 12,000 |
| Fixed | 60,000 | 3,000 | 48,000 | 9,000 |
| Factory cost | 2, 40,000 | 27,000 | 1, 92,000 | 21,000 |
| Selling & Administration Costs: | | | | |
| Variable | 24,000 | 8,100 | 8,100 | 7,800 |
| Fixed | 6,000 | 2,100 | 1,800 | 2,100 |
| Total cost | 2, 70,000 | 37,200 | 2, 01,000 | 30,900 |
| Profit | 30,000 | 7,800 | 23,100 | (-) 900 |

On the basis of above, the board had almost decided to eliminate product C, on which a loss was budgeted. Meanwhile, they have sought your opinion. As the Company's, Cost Accountant, what would you advise? Give reasons for your answer.

Solution

In order to comment upon the profitability' of different presentation of costs according to Marginal Costing system is we have also to compute *P/V* Ratios.

| | X | Y | Z | Total |
|------------------------------------|-----------|-----------|-----------|--------------|
| | Rs | Rs | Rs | Rs. |
| Sales | 45,000 | 2,25,000 | 30,000 | 3,00,000 |
| Production Cost (Variable) | 24,000 | 1, 44,000 | 12,000 | 1, 80,000 |
| Selling & Adm. (Variable) | 8,100 | 8,100 | 7,800 | 24,000 |
| Total Variable Costs | 32,100 | 1,52,100 | 19,800 | 2,04,000 |
| Contribution(Sales-Variable Costs) | 12,900 | 72,900 | 10,200 | 96,000 |
| Less: Total Fixed Cost | 5100 | 49,800 | 11,100 | 66,000 |
| Profit | 7,800 | 23,100 | (-) 900 | 30000 |
| <i>P/V</i> Ratio | | 28.7% | 32.4% | 34.0% |

If product Z is discontinued, the fixed cost of Rs. 10,200 being recovered now cannot be recovered since product Z is making a contribution of Rs. 10,200 towards fixed cost. Considering the *P/V* Ratio, product Z doesn't seem to be unprofitable, as it is 34.10 being maximum as compared to other two products, Therefore, if the heavy burden of fixed cost which has been apportioned to product Z, being 39% of the total such burden, is not taken into account, product Z is most profitable. Its profit/volume ratio is higher as compared to the other two products. This leads us to conclude that total profit will increase if Z's output and sales can be increased.

Illustration 5.11

As a prelude to finalizing the plans for the coming year, the executives thought it advisable to have a look at the product-wise performance during the current year just completed. The Following information is furnished;

| | Product X | Product Y | Product Z |
|--------------------|------------------|------------------|------------------|
| | Rs | Rs | Rs |
| Unit Selling Price | 80 | 60 | 16 |
| Direct Material | 28 | 24 | 16 |
| Direct Labor | 20 | 12 | 12 |
| Factory Overhead | 8 | 6 | 4 |

| | | | |
|--|--------|--------|----------|
| | | | |
| Fixed | 8 | 6 | 1.28 |
| Cost of Production | 64 | 48 | 33.28 |
| Selling, Distribution and General Administration Expenses: | | | |
| Variable | 4 | 2 | 2 |
| Fixed | 4 | 6 | 1.52 |
| Unit Cost(ii) | 72 | 56 | 36.80 |
| Unit Profit (Loss) (ii) | 8 | 4 | (0.80) |
| Sales Volume: (Units) | 10,000 | 15,000 | 15,000 |
| Profit (Loss) | 80,000 | 60,000 | (12,000) |

For the coming period, the selling prices and the cost of the three products are expected to remain unchanged. There will be an increase in sales of Product X by 1000 units and the increase in sales of Product Z is expected to be 8,000 units. The sales of Product Y will remain unchanged. Sufficient additional capacity exists to enable the increased demands to be met without incurring additional fixed costs. Some among the executives contend that it will be unwise to go for additional production and sale of Product Z, since it is already losing at Rs. 0.80 per unit. The suggestion is that Product Z should be eliminated altogether. Do you agree? Substantiate with necessary analysis and determine the product-wise and over-all profits for the coming year.

Solution

XYZ CO. LTD.

Statement Showing Product-Wise Contribution and Total Profit

| Particulars | Product X | | Product Y | | Product Z | | Total |
|---------------------|-----------|----------|-----------|----------|-----------|----------|-----------|
| | Per Unit | Total | Per Unit | Total | Per Unit | Total | |
| Sales Volume(Units) | 10,000 | | 15,000 | | 15,000 | | |
| Selling Price (Rs.) | 80 | 8,00,000 | 60 | 9,00,000 | 36 | 5,40,000 | 22,40,000 |
| Direct Material | 28 | 2,80,000 | 24 | 3,60,000 | 16 | 2,40,000 | 8,80,000 |
| Direct Labor | 20 | 2,00,000 | 12 | 1,80,000 | 12 | 1,80,000 | 5,60,000 |
| Variable factory | 8 | 80,000 | 6 | 90,000 | 4 | 60,000 | 2,30,000 |

| | | | | | | | |
|--|--------|-----------|--------|-----------|--------|-----------|------------|
| Overheads | | | | | | | |
| Variable Selling Distribution and General Admn. Overhead | 4 | 40,000 | 2 | 30,000 | 2 | 30,000 | 1, 00,000 |
| Total variable cost | 60 | 6, 00,000 | 44 | 6, 60,000 | 34 | 5, 10,000 | 17, 70,000 |
| Contribution | 20 | 2, 00,000 | 16 | 2, 40,000 | 2 | 30,000 | 4, 70,000 |
| Fixed factory Overhead | 80,000 | | 90,000 | | 19,200 | | 1, 89,200 |
| Fixed Selling, Distribution and General Admn. | 40,000 | | 90,000 | | 22,800 | | 1, 52, 800 |
| Total Fixed Overheads | | | | | | | 3, 42,000 |
| Total profit | | | | | | | 1, 28,000 |

The above analysis shows that Product Z makes a contribution of Rs. 2 per unit and the loss sustained in previous year is because of its sales volume falling below break-even level.

| ABC CO. LTD | | | |
|---------------------------------------|-----------|-----------|-----------|
| .BUDGETED PERFORMANCE FOR COMING YEAR | | | |
| | Product X | Product Y | Product Z |
| Unit contribution (Rs.) | 20 | 16 | 2 |
| Sales volume (units) | 11,000 | 15,000 | 23,000 |
| Total contribution (Rs.) | 2,20,000 | 2,40,000 | 46,000 |
| Less: Fixed cost (Rs.) | 1,20,000. | 1,80,000 | 42,000 |
| Profit (Rs.) | 1,00,000 | 60,000 | 4,000 |

The company makes a total profit of Rs. 1, 64,000 if all the products are continued. However, if Product Z is discontinued there will be an adverse effect on overall profit of the Company since the Product; also contributes towards meeting the fixed costs of the company.

5.5 DECISION MAKING USING LIMITING FACTOR

Previously we discussed about some conditions of marginal costing and decision making of multi product firm. In this topic we are going to discuss how Marginal costing technique helps in decision making for scarce resources and limiting factor. Now we will be discussing certain cases relating to scarce resources and limiting factor and how does marginal costing techniques helps in decision making. To start with we will take case of Limiting factor. To understand production limiting factor, Let us first discuss what is limiting factor? A Key factor (also called limiting factor or principal budget factor) is that factor the extent of whose influence must first be assessed in order to ensure maximization of resources with the help of managerial decision making. In simple words a limiting factor is the factor the supply of which is not unlimited or freely available to the manufacturing enterprise. Let's say in case of labor shortages, the labor becomes limiting factor. Raw material or plant capacity may be a limiting factor during budget period. The limiting factor is also called by the name of 'scarce

factor' or 'key factor,' 'principal budget factor' or 'governing factor.' In order to maximize profit a concern should employ all its resources to manufacture and sell maximum quantities of products which yield the highest contribution under the particular circumstance. Key factors are of one or more of factors of production and sales such as capital, labor of suitable skill, efficient staff and executive, plant and machinery, raw materials, Consumer demand and sales personnel.

When contribution and key factor are known, we can assess the relative profitability as follows –

$$\text{Profitability} = \frac{\text{Contribution}}{\text{Key or Limiting factor}}$$

When rupee sales becomes the key factor, profitability is determined by contribution sales ratio or P/V ratio; when material is in short supply, profitability is determined by contribution per kg of raw material, and so on. Now it may be noted that some times there are more than one key factor. In case of one key factor the marginal costing approach may be sufficient to quantify the problem and its solution, but in case of multiple key factors operational research approach of problem solving has to be applied. You are aware of that sometimes; production has to be carried with certain limiting factor. The consideration of limiting factors is essential for the success of any production plan because the manufacturing firm cannot increase the production to the level it desire when a limiting factor is combined with other factors of production.

So, the commodity which contributes maximum contribution per unit or which yields maximum PV ratio is the most profitable commodity. This is true when there is no limitation or production. In case different products are manufactured with a particular limiting factor, it is not the contribution per unit or PV ratio which rightly guides in fixing production priorities but the profitability per unit of limiting factor is the proper guiding star. Supposing labor is the limiting factor, the relative profitability will be calculated as under:

$$\text{Profitability} = \frac{\text{Contribution per unit}}{\text{Time required producing one unit}}$$

Let us take simple example to understand this

Illustration 5.12

The following information in respect of Product X and Product Y of ABC co. Ltd is obtained:

| | Product X | Product Y |
|---|-----------|-----------|
| | Rs. | Rs. |
| Selling Price | 105 | 68 |
| Direct Material | 40 | 40 |
| Direct labor hour (Re 0.50 per hour) | 20 hours | 4 hours |

Variable overhead – 100 % of direct wages

Fixed overhead - Rs. 3000

Present the above information to show the profitability of products during labor shortage.

Solution

We can prepare a statement of profitability and contribution under marginal costing method as follows:

Statement of Contribution and Profitability

| | Product X (Rs.) | Product Y (Rs.) |
|---|---|--|
| Sales | 105 | 68 |
| Less: Variable cost Direct Material | 40 | 40 |
| Direct Wages | 10 | 2 |
| Variable overhead | 10 | 2 |
| | 60 | 44 |
| Contribution per unit | 45 | 24 |
| Profitability = $\frac{\text{Contribution}}{\text{Labour hours}}$ | $\frac{45}{20 \text{ hrs}}$ = Rs. 2.25 per hr. | $\frac{24}{4 \text{ hrs}}$ = Rs. 6 per hr |

Therefore during labor shortage, Product Y is more profitable than Product X.

You may also solve similar example as below:

Illustration: 5.13

The following information in respect of Product X and Product Y of ABC co. Ltd is obtained:

| | Product X | Product Y |
|---|-----------|-----------|
| | Rs | Rs. |
| Selling Price | 105 | 68 |
| Direct Material | 40 | 40 |
| Direct labor hour (Re 0.50 per hour) | 20 hours | 4 hours |

Variable overhead – 100 % of direct wages

Fixed overhead - Rs. 3000

Present the above information to show the profitability of products during labor shortage.

Solution:

We can prepare a statement of profitability and contribution under marginal costing method as follows:

Statement of contribution and profitability

| | Product X (Rs.) | Product Y (Rs.) |
|--|---|--|
| Sales | 105 | 68 |
| Less: Variable cost | | |
| Direct Material | 40 | 40 |
| Direct Wages | 10 | 2 |
| Variable overhead | 10 | 2 |
| | 60 | 44 |
| Contribution per unit | 45 | 24 |
| Profitability = $\frac{\text{Contribution}}{\text{Labor hours}}$ | $\frac{45}{20 \text{ hrs}}$ = Rs. 2.25 per hr. | $\frac{24}{4 \text{ hrs}}$ = Rs. 6 per hr |

Therefore during labor shortage, Product Y is more profitable than Product X.

Another Illustration for you with different sales mix.

Illustration: 5.14

From the above illustration recommend which of the following sales mix should be adopted:

- i. 100 units X, and 50 units of Y
- ii. 50 units X and 100 units of Y
- iii. 150 units X and
- iv. 150 units Y

What recommended would you make if due to labor shortage, the direct labor hours available are 1200 hours only. Assess that the maximum production capacity otherwise available for each of the products X and Y is 200 units.

Solution:

From the above discussed example we have observed contribution per unit of X is Rs 45/- while that of Y is Rs. 24.

Let us now calculate the profit in each use

| | X | Y | Total |
|-------------------------------|------|------|-------|
| | Rs. | Rs. | Rs. |
| 100 units X and 50 units of Y | | | |
| Contribution | 4500 | 1200 | 5700 |
| Fixed Overheads | | | 3000 |
| Profit | | | 2700 |
| 50 units X and 100 units of Y | | | |
| Contribution | 2250 | 2400 | 4650 |
| Fixed Overheads | | | 3000 |
| Profit | | | 1650 |
| 150 units X | 6750 | 0 | 6750 |
| Contribution | | | 3000 |
| Fixed Overheads | | | 3750 |
| Profit | | | |
| 150 units Y | | | |
| Contribution | 0 | 3600 | 3600 |
| Fixed Overheads | | | 3000 |
| Profit | | | 0600 |

Therefore it can be observed that case iii is more profitable. In times of labor shortage we have already seen that product Y is more profitable. Therefore production of maximum of Y i.e. 200 units is recommended. 200 units of Y will consume 800 hours and the balance hours will be utilized in producing X, i.e. $400/20 \text{ hrs} = 20 \text{ units}$.

| | | | |
|-------------------------------|------|----|------------|
| Contribution from 200 units Y | 4800 | Rs | (200 x 24) |
| Contribution from 20 units X | 900 | Rs | (20 x 45) |
| Total contribution | 5700 | Rs | |
| Less Fixed cost | 3000 | Rs | |
| Profit | 2700 | Rs | |

In any other sales mix profit will be less than Rs 2700 provided labor hours remain the key factor. We will solve one more illustration to understand this better.

Illustration 5.15

From the following data which product would you recommend to be manufactured in a factory, time being the Key factor?

| | Per unit of product M | Per unit of product N |
|------------------------------------|-----------------------|-----------------------|
| Direct material | 24 | 14 |
| Direct labor (Re 1 per hour) | 2 | 3 |
| Variable overhead (Rs. 2 per hour) | 4 | 6 |
| Selling price | 100 | 110 |
| Standard time to produce | 2 hours | 3 hours. |

Solution

Marginal Cost Statement

| | Product M (Per unit) | Product N (Per unit) |
|--|----------------------|----------------------|
| Sales (s) | 100 | 110 |
| Materials | 24 | 14 |
| Direct Labor | 2 | 3 |
| Variable overheads | 4 | 6 |
| Marginal Cost (vc) | 30 | 23 |
| Contribution (s-vc) | 70 | 87 |
| PV Ratio | 70% | 79% |
| Contribution or profitability per hour | $70/2=35$ | $87/3=29$ |

Now you have the prepared Marginal cost statement, based on which you have to give your recommendation as: Product N is more profitable if there is no limiting factor. Since labor is the limiting factor, the Product M should be manufactured in the factory as its profitability per hour is Rs. 35 which is more than the profitability of N. If sales are not the limiting factor, all the available labour should be diverted for the production of product M.

Illustration 5.16

On the basis of following information's in respect of an engineering company, determine the product-mix which will give the highest profit attainable. Do you recommend overtime working?

Per unit details.

| Product | Selling price | Materials | Labour Overhead | Standard time |
|---------|---------------|-----------|-----------------|---------------|
| A | 100 | 24 | 24 | 2 hours |
| B | 110 | 14 | 36 | 3 hours |

Solution

Marginal Cost Statement

| | Product A (Per unit) | Product B (Per unit) |
|--------------------|----------------------|----------------------|
| Sales | 100 | 110 |
| Materials | 24 | 14 |
| Direct Labor | 2 | 3 |
| Variable overheads | 4 | 6 |

| | | |
|--|-----------|-----------|
| Marginal Cost | 30 | 23 |
| Contribution | 70 | 87 |
| PV Ratio | 70% | 79% |
| Contribution or profitability per hour | $70/2=35$ | $87/3=29$ |

You have prepared the Marginal costing statement like this. Based on this statement we can recommend that Product B is more profitable if there is no limiting factor. Since labor is the limiting factor the Product A should be manufactured in the factory as its profitability per hour is Rs. 35 which is more than the profitability of B. If sales is not the limiting factor, all the available labour should be diverted for the production of product A.

A Case of Two Limiting Factors: Now let us also take a case of two limiting factor. It is possible that the production is limited by two or more limiting factors. Labor and raw material may be in short supply. The amount of availability of one factor affects the utilization of other factor. Under such a condition the best product mix is one which optimizes over-all profits but is achievable under the given constraints.

Illustration 5.17

On the basis of following information's in respect of an engineering company, determine the product-mix which will give the highest profit attainable. Do you recommend overtime working upto maximum of 15,000 hours at twice the normal wages (overheads are ignored for the purpose of this question?)

| | Products | | |
|-------------------------------------|----------|-------|-------|
| | P | Q | R |
| Raw material per unit (Kg) | 10 | 6 | 15 |
| Labor hours per unit(Re 1 per hour) | 15 | 25 | 20 |
| Maximum production possible | 6,000 | 4,000 | 4,000 |
| Selling price per unit (Rs.) | 125 | 100 | 200 |

1, 00,000 Kg. of raw materials are available @ Rs.10 per kg. Maximum production hours are 1, 84,000 with a facility for further 15,000 hours on overtime basis at twice the normal wage rate.

Solution
Marginal Cost Statement

| Particulars | Product P | | Product Q | | Product R | |
|--|---------------|----------|--------------|----------|--------------|----------|
| | (6,000 units) | | (4000 units) | | (3000 units) | |
| | Per unit | Total | Per unit | Total | Per unit | Total |
| Sales | 125 | 7,50,000 | 100 | 4,00,000 | 200 | 6,00,000 |
| Raw Materials | 100 | 6,00,000 | 60 | 2,40,000 | 150 | 4,50,000 |
| Labor | 15 | 90,000 | 25 | 1,00,000 | 20 | 60,000 |
| Marginal Cost | 115 | 6,90,000 | 85 | 3,40,000 | 170 | 5,10,000 |
| Contribution | 10 | 60,000 | 15 | 60,000 | 30 | 90,000 |
| Contribution per Kg. of raw material (Contribution per unit) (- raw material per unit) | 1 | | 2.50 | | 2.00 | |
| Contribution per (hours per unit) | 0.06 | | 0.60 | | 1.50 | |

From this statement we can say that since raw material and labour are the limiting factors, the production of Q and R should be encouraged to the maximum level as these products show maximum profitability both per Kg of raw material and per labour hour. Any raw material and labour hours remaining after their use in Q and R products should be utilized for the production of P. The consumption of inputs in Q and R and the balance available for P is calculated below:

| Product | Unit | Raw Material required | Labour required |
|------------------------|--------|-----------------------|-----------------|
| | | (No. of Kgs.) | (No. of Hrs.) |
| Q | 4,000 | 24,000 | 1,00,000 |
| Q | 4,000 | 24,000 | 1,00,000 |
| R | 3,000 | 45,000 | 60,000 |
| Total | 70,000 | 69,000 | 1,60,000 |
| Balancing figure for P | | 31,000 | 24,000 |
| Total Available | | 1,00,000 | 1,84,000 |

With 31,000 Kg. of raw materials and 24,000 labour hours, how many units of P can be produced? 31,000 Kg of raw material is sufficient to produce 31,000 Kg of P but the labour available to produce 31,000 units is not sufficient. 24,000 labour hours are sufficient just to produce 1,600 units (15 hrs. are required to produce one unit). Therefore, 1,600 units of P can be produced working at current normal conditions. The contribution from the production of 1,600 units of P @ Rs. 10 per unit will be Rs. 16,000. If the work is done for additional 15,000 hours for which facility exist, the additional 1,000 units can be produced, but at the twice the normal wage rates. The contribution form the total 2,600 units of A will be,

Sales of 2,600 units @ Rs. 125 per unit 3, 25,000 Marginal cost of 2,600 units:

| | | |
|-----------------------|--|-----------|
| • Raw material: | | |
| 26, 00 units % Rs 10 | | 2, 60,000 |
| • Wages : | | |
| 1,600 units @ Rs. 15 | | 24,000 |
| • Wages : | | |
| 1,000 units @ Rs. 30 | | 30,000 |
| | | 3, 14,000 |
| Marginal Contribution | | 11,000 |

You can clearly understand from the above cost analysis that the production of 1,600 units of a yields of contribution of 16,000 whereas 2600 units of A generates a contribution of Rs. 11,000. Thus the contribution is reduced if additional 1,000 units by working over-time are produced. Therefore, over time work is not recommended. The best product-mix will be,

| Products | Units |
|----------|-------|
| A | 1,600 |
| B | 4,000 |
| C | 3,000 |

Illustration: 5.18

The following particulars are obtained from records of a company engaged in manufacturing two Product X and Y from a certain raw material.

| | Product X | Product Y |
|---------------------------------|-------------|-------------|
| | (per units) | (per units) |
| | Rs. | Rs. |
| Sales | 100 | 200 |
| Materials cost (Rs. 10 per kg.) | 20 | 50 |
| Direct Wages(Rs. 6 per hour) | 30 | 60 |
| Variable overhead | 10 | 20 |

Total fixed overhead – Rs. 10,000

Comment on the profitability on each product when:

- total sales potential in units is limited
- total sales potential in value is limited
- raw material is in short supply
- production capacity is the limiting factor
- When total availability of raw material is 4,000 kg.
- If total material available is 3000 kg and it is decided to produce at least 200 unit of each product, calculate the optimum profit.

Solution:

Statement showing comparative profitability

| | | | Product X | Product Y |
|------------------------------|-----|----|------------|------------|
| | | | (per unit) | (per unit) |
| | Rs. | Rs | Rs. | Rs. |
| Sales | 100 | - | - | 200 |
| Less: Marginal cost Material | 20 | | | 50 |
| Direct Wages | 30 | | | 60 |

| | | | | |
|-----------------------------|-------------------------|-----|-----|-------------------------|
| Variable overhead | 10 | 60 | 130 | 20 |
| (i) Contribution | | 45 | 80 | |
| (ii) P/V ratio = C/S | | 40% | 35% | |
| (iii) Contribution per k.g. | Rs. 40/2 kg. =Rs. 20 | | | Rs. 70/5 kg= Rs. 14 |
| (iv) Contribution per hour | Rs 40/3 hr= Rs. 8 | | | Rs. 70/10 hrs = Rs.7 |

Thus, when sales potential in units is limited, Product Y is more profitable as is revealed by contribution per unit. When total sales potential in value is limited, the P/V ratio of Product X is higher and hence more profitable. When raw material is in short supply, contribution per kg of raw material for Product X is more and hence more profitable. When capacity is limited, contribution per hour of product X is more and hence more profitable. It is a case of two limiting factors. When raw material is in short supply, Product X is more profitable. So, maximum i.e. 1000 units of Product X should be produced consuming 2000 kg of raw material and with the balance quantity i.e. 4000 kg – 2000 kg, 400 units (2000 kg / 5 kg) of product Y will be produced. This can be shown as follows –

| Rank | Product | Material Per unit | Production Unit | Total Material required | Contribution Per unit | Total Contribution |
|------|---------|-------------------|------------------|-------------------------|-----------------------|--------------------|
| | | Kg. | Units | Kg. | Rs. | Rs. |
| I | X | 2 | 1000 | 2000 | 40 | 40000 |
| II | Y | 5 | 400 | 2000 | 70 | 28000 |
| | | Total | 2000/5 | 4000 | | 68000 |
| | | Less: | Fixed Overheads | | | 10000 |
| | | | Profit (maximum) | | | 58000 |

In case, minimum 200 units of Y (less profitable) should be produced and the balance to be allocated to X as follows:

| Rank | Product | Material Per unit | Production | Total Material | Contribution Per unit | Total Contribution |
|------|---------|-------------------|------------|----------------|-----------------------|--------------------|
| | | Kg. | Units | Kg. | Rs. | Rs. |
| II | Y | 5 | 200 | 1000 | 70 | 14,000 |
| I | X | 2 | 1,000 | 2000 | 40 | 40,000 |
| | | Total | | 3000 | | 54,000 |
| | | Less: Fix | | | | 10,000 |

| | | | | | | |
|--|--|---------------------|--|--|--|--------|
| | | ed overhead | | | | |
| | | Profit (maximum) | | | | 44,000 |

5.6 DECISION MAKING USING PRICING

In this topic we are going to discuss how Marginal costing technique helps in decision making regarding pricing. In fact pricing is the most crucial and complicated decision with which the company is dealing, because on this depends the market strategies, competition, survival and many long as well as short term decisions.

Pricing in Home and Foreign Markets: To understand the pricing in different markets we will first discuss pricing. Pricing of a product is governed primarily by its cost of production and the nature of competition being faced by the production unit. Once market forces fix the price, it remains stable at least in the short period. During short period when selling period, marginal cost and fixed costs remain the same, an entrepreneur is in a position to establish relationship between them. On the basis of such a relationship, it is very easy to fix the volume of sales and selling price during normal and abnormal times in the home market. Just think how far the prices can be cut in case of foreign buyer to effect additional sales is a problem which is realistically answered by the marginal costing technique. Let's go through an example for this problem.

Illustration 5.19

A firm is currently producing 20,000 units annually of a product. The cost structure is as under:

| | Per unit (Rs.) |
|------------------------|-------------------|
| Materials | 4.50 |
| Labor: | 3.25 |
| Variable Expenses | 1.25 |
| Variable cost per unit | 9.00 |
| Fixed Expenses | 6,600 |
| Selling Price | Rs. 12/- per unit |

The firm is thinking to reduce the selling price due to severe competition to Rs.10.80 per unit (10% decreases). How much extra should it produce and sell if the previous level of profit is to be maintained?

Solution:

Marginal Cost Statement (20,000 Unit)

| | Per unit | Amount | Per unit | Cost Reduction Amount |
|-------------------|----------|----------|----------|--------------------------|
| Selling Price | 12.00 | 2,40,000 | 10.80 | 2,16,000 |
| Materials | 4.50 | 90,000 | 4.50 | 90,000 |
| Labor | 3.25 | 65,000 | 3,25 | 65,000 |
| Variable Expenses | 1.25 | 25,000 | 1.25 | 25,000 |
| Marginal Cost | 9.00 | 1,80,000 | 9.00 | 1', 80,000 |

| | | | | |
|--------------|--------|--------|------|--------|
| Contribution | 3.00 | 60,000 | 1.80 | 36,000 |
| Fixed Costs | | 6,600 | | 6,600 |
| | Profit | 53,400 | | 29800 |

As a result of decrease in selling price by 10% the profits of the firm will be decreased to Rs. 29,400 if no effort for additional sales is made. Since the firm has decided to maintain the present level of profit, i.e. Rs. 53,400 it will need additional sales to counterbalance the loss due to price reduction. The number of units required to be sold to maintain the existing level of profit is calculated as under:

$$\begin{aligned} \text{Number of units to be sold} &= \frac{\text{Total Contribution required}}{\text{Contribution per unit}} \\ &= \frac{60,000}{1.80} = 33,333 \text{ units} \end{aligned}$$

Therefore extra sales required = 33,333 - 20,000 = 13,333 units Note: The present level of profit can be maintained only if the present contribution could be attained by the price change

Pricing in Foreign Markets: A foreign market can be kept separate from the domestic market due to many legal and other restrictions imposed on imports and exports and such a different price can be charged from foreign buyers. Any company, which enjoys surplus production capacity, can increase its production to sell in the foreign market at lower price if its full fixed cost already stands recovered from the production from home market. Any price in excess of the marginal cost is -advisable from the foreign market as shown in the following example.

Illustration 5.20

Light lamp Ltd. is operating at 60% of its installed capacity and producing 27,000 units, which are sold in the domestic market at a price of Rs. 15 per unit. The marginal cost of production is Rs. 12 per unit and the fixed cost amount to Rs. 15,000. The company has received a foreign offer to purchase 9,000 units of its product at a price of Rs. 13.50 per unit. The company has received a foreign offer to purchase 9,000 units of its product at a price of Rs. 13.50 per unit. The Company will have to incur nothing on additional fixed cost. However, it will have to bear Rs. 0.75 per unit as distribution cost in respect of foreign buyer. You are required to suggest to the management-- (a) whether or not the order should be accepted and (b) what will be your recommendations if the buyer is a local one?

Solution

| Particulars | Production and Sales at 60% capacity(27,000 units) | Production and sales at 80% capacity(36,000 units) |
|---------------|--|--|
| Sales | 4,05,000 | 5,26,500 |
| Marginal cost | 3,24,000 | 4,32,000 |
| Contribution | 81,000 | 94,500 |

| | | |
|------------|--------|--------|
| | | |
| Fixed cost | 15,000 | 15,000 |
| Profit | 66,000 | 79,500 |

Less distribution cost of exports 9,000 units
 @ Rs. 0.75 per unit 6,750
 Net Profit 66,000 72,750

Excess Profit from exports = 72,750 - 66,000 = 6,750

The above cost statement clearly shows that the company should accept the foreign offer, as it will generate an excess profit of Rs. 6,750. If the buyer is a local one, the company will have to keep this buyer separate from other buyers for additional supplies of 9000 units @ Rs. 13.50 otherwise other customers will also ask for price reduction and the company will be put to difficulties. Another pricing problem will be discussed now.

Price under Recession/ Depression: You all know, recession is an economic condition under which demand is declining. During depression the demand is at its lowest ebb, and the firms are confronted with the problem of price reduction and closure of production. Under such conditions, the marginal costing technique suggests that prices can be reduced to a level of marginal cost. In that case, the firm will loose profits and also suffer loss to the extent of fixed costs. This loss will also be borne even if the production is suspended altogether. Selling below marginal cost is advisable only under very special circumstances.

Illustration 5.21

Solar Ltd. is experiencing conditions of depression; the demand is declining and the company is 'forced every time to reduce the selling price. On the basis of following cost information, you are required to suggest to the management the minimum price that they can fix in order to continue production in the short period.

| | Existing cost structure | Estimated cost structure |
|--------------------|-------------------------|--------------------------|
| Raw materials | 4.50 per unit | 3.85 per unit |
| Labor | 3.25 | 3.25 |
| Variable Expenses | 1.25 | 1.25 |
| Overheads: | 9.00 | 8.35 |
| Variable overheads | 0.50 | 0.50 |
| Fixed overheads | 1.00 | 1.00 |
| Total Cost | 10.50 | 9.85 |
| | | |

Selling Price .10.25
 Budgeted Production - 1,000 units for half year.

Solution

Marginal Cost Statement

| Particulars | Existing cost Structure (per unit) | New cost structure (per unit) |
|--------------------|------------------------------------|-------------------------------|
| Sales | 10.25 | 3.25 |
| Raw Materials | 4.50 | 3.85 |
| Labor | 3.25 | 3.25 |
| Variable Expenses | 1.25 | 1.25 |
| Variable overheads | 0.50 | 0.50 |
| Marginal Cost | 9.50 | 8.85 |
| Contribution | 0.75 | |
| Fixed Cost | 1.00 | |
| Loss | 0.25 | |

Since the company is under pressure to reduce selling price, it can reduce its price to the level of marginal cost, which is Rs. 8.85. By charging this price, it will recover only the variable cost and suffer loss to the tune of fixed cost. Thus the company can fix Rs. 8.85 per unit for its product if it is interested to continue production in the short-run. In the long run, this price will not work because no firm can afford to operate with zero profits and losses in the long run.

Exploring New Markets: Decision regarding selling goods in a new market (whether Indian or foreign) should be taken after considering the following factors:

- Whether the firm has surplus capacity to meet the new demand?
- What price is being offered by the new market? In any case, it should be higher than the variable cost of the product plus any additional expenditure to be incurred to meet the specific requirements of the new market.
- Whether the sale of goods in the new market will affect the present market affect the goods? It is particularly true in case of sale of goods in a foreign market at a price lower than the domestic market price. Before accepting such an order from a foreign buyer, it must be seen that the goods sold are not dumped in the domestic market itself.

Illustration 5.22

A company annually manufactures 10,000 units of a product at a cost of Rs. 4 per unit and there is home market for consuming the entire volume of production at the sale price of Rs. 4.25 per unit. In the year 2002, there is a fall in the demand for home market, which can consume 10,000 units only at a sale price of Rs. 3.72 per unit. The analysis of the cost per 10,000 units is:

| | |
|--------------------|------------|
| Materials | Rs, 15,000 |
| Wages | 11,000 |
| Fixed overheads | 8,000 |
| Variable overheads | 6,000 |

The foreign market is explored and if is found that this market can consume 20,000 units of the product if offered at a sale price of Rs. 3.55 per unit. It is also discovered that for additional 10,000 units' of the product (over initial 10,000 units) the fixed overheads will increase by 10 per cent. Is it worthwhile to try to capture the foreign market?

Solution**Statement Showing the Advisability of Selling Goods in Foreign Market.**

| | Year 2001 | Year 2002 | | |
|------------|--------------|--------------|----------------|--------------|
| | Home market | Home market | Foreign market | Total |
| | 10,000 units | 10,000 units | 20,000 units | 30,000 units |
| Materials | 15,000 | 15,000 | 30,000 | 45,000 |
| Wages | 11,000 | 11,000 | 22,000 | 33,000 |
| Overheads: | | | | |
| Fixed | 8,000 | 8,000 | 1,600 | 9,000 |
| Variable | 6,000 | 6,000 | 12,000 | 18,000 |
| Total cost | 40,000 | 40,000 | 65,600 | 1, 05,600 |
| Profit | 2,500 (Loss) | 2,800 | 5,400 | 2,000 |
| Sales | 42,500 | 37,200 | 71,000 | 1,08,200 |

From the above it is clear that it is advisable to sell goods in the foreign market. It will compensate not only for the loss on account of sale in domestic market but will also result in overall profit of Rs. 2,600.

Illustration: 5.23

A machine tool manufacturing company sells its lathes at Rs. 36,500 each made up as follows:

| | | |
|----------------------------|------------|--------|
| Direct materials | Rs. 16,000 | |
| Direct labor | 2,000 | |
| Variable overheads | 5,000 | |
| Fixed overheads | 3,000 | |
| Variable selling overheads | 500 | |
| Royalty | 1,000 | |
| Profit | 5,000 | 32,500 |
| Central excise duty | | 1000 |
| Sales tax | | 3000 |
| | | 36,500 |

There is enough idle capacity.

- A firm in Arabia has offered to buy to company's lathes at Rs. 28,500 each. Should the company be interested in the business?

- It has been decided to sell 5 such lathes to an engineering company under the same management at bare cost. What price should you charge?

Solution

Computation of the Marginal Cost and Contribution per Lathe

| | |
|------------------------------|-----------|
| Direct materials | Rs. 16000 |
| Direct labor | Rs. 2000 |
| Variable overhead | Rs. 5000 |
| Variable selling overhead | Rs. 500 |
| Royalty | Rs. 1000 |
| Marginal cost | Rs. 24500 |
| Price offered (export) | Rs. 28000 |
| Gross contribution as margin | Rs. 4000 |

The contribution per lathe is Rs. 4,000, out of which about Rs. 2,500 will go for sales tax. There will be saving of about Rs. 1,500 per lathe in case the export order is executed. This is on the presumption that the Central Government may exempt the company from payment of, central excise duty in order to encourage exports and earn foreign exchange. There will be no increase in fixed costs since there is already surplus capacity. The company may, therefore, accept the export order.

The company may charge a price of Rs. 31,000 i.e., Rs. 36,500 - Rs. 5,500 (Profit and, selling overhead)] as the bare cost, subject to any variation in the Sales Tax and Central Excise Duty payable by the company on such sales.

Marginal Costing and Decision Making: We are now going to discuss how Marginal costing technique helps in decision making and also the decision making process. You must be thinking how this technique of costing helps in decision-making and in the effort of the management on an enterprise is to optimize profits or minimize cost and / or losses. Yes, Marginal costing contributes in decision-making as it reviews the existing production, pricing and marketing policies from time to time and makes necessary adjustments, if needed. Marginal costing technique provides objective basis and facilitates the task of decision making in respect of the following:

- Determining relative profitability of products.
- Determining profitability of alternative product mix
- Make or Buy decisions
- Pricing in home and foreign markets
- Production with limiting factor.
- Profit planning
- Cost Planning
- Continue or Shut down
- Expand and contract

Decisions Involving Alternative Choices: We have already understood the technique of marginal costing. You must have noted that the major purpose of this technique is not to provide new concepts of income or inventory but rather to clarify the relationship between costs, volume and profits, particularly in the area of decision-making. Now we are going to deal with a group of specific operating decisions that require the decision-maker to be

selective in deciding which cost information you will use and how you will use them.

Concept of Decision-Making: To make use of marginal costing as tool to decision making you are required to know the concept of decision-making. Decision-making is the essence of management function since it may make or mar the success of the business as a whole. In general it means taking the final step in deliberations before acting. In management terms it has a specific meaning. It means the process of choosing among alternative courses of action. If there is no choice, there is no decision to make. Moreover, since business takes place in a probabilistic world, every management decision deals with the future and it is not concern with past since no past action can be altered in any way. As a decision maker you have to make prediction. The function of decision-maker is therefore to select among the alternative courses of action for the future. There is no opportunity to alter the past as mentioned earlier. We all know that the future is uncertain and associated with risk. Of course, routine decisions do not involve much of risk. However, most of the top management decisions are not of a routine nature. They are generally of a crucial and critical nature on account of their requiring huge investments and involving uncertainties. But they cannot be avoided. You as an Executive have to bear risk. It has been correctly observed: "Uncertainty is his (executive's) opponent, overcoming it his mission. Whether the outcome is a consequence of luck or wisdom, the moment of decision is without doubt the most creative event in the life of the executive."

Concept of Relevant Costs: Now you are aware that for managerial decision-making the decision-maker must make use of relevant costs. The term 'relevant', means 'pertinent to decision at hand.' Costs are relevant if they guide the executive towards the decision that harmonizes with top management's objectives. It will be ideal if the costs are not only relevant or pertinent but also accurate or precise. You may note that 'relevance' and 'accuracy' are not identical concepts. Costs may be accurate but irrelevant or inaccurate but relevant For example, the sales manager's salary may be precisely Rs. 60,500 per annum, however, this-fact has no relevance in deciding whether to add or drop a production line because it does alter any future action of the management. Relevant cost is future cost which is the cause of worry of the management. If fixed cost is altered in future, it also becomes relevant for the purpose of decision-making. Please be familiar to the following are the two fundamental characteristics of relevant costs.

- **They are Future Costs:** Of course as mentioned earlier all future costs are relevant to alternative choice decisions. This is because past costs are the result of past decisions and no current or future decision can change what has already, happened. For example, a company has to decide whether or not to accept an order for a particular product. In calculating the cost of this product to see if the order would benefit the company financially, the company uses the expected cost at the time when intends to produce the product. This could be quite different from tile latest historical cost or standard cost. Thus, in forward decision-making, data regarding historical or standard cost is useful only as a basis for estimating future costs.
- **They Differ Between Alternatives:** As stated above all future costs are relevant for decision-making. Only such future costs are relevant which may be expected to differ between alternatives. Those costs which will not change between different alternatives arc to be ignored. For example a company is considering the substitution of an automatic process in place of a manual process. The material consumption per unit would be Rs. 2 under both the processes but the convenient cost would be Rs. 3 per unit under the new process in place of Rs. 5 under the present process. In this case

relevant cost for decision-making is not the material cost, which will not change, but the conversion cost, which will change. The cost of material should therefore be ignored. Conversion cost should only be considered. The proposal for automatic process should therefore be accepted since it will result in saving of Rs. 2 per unit.

Concept of Differential Costs: Please be aware that the concept of differential cost also affects the decision making process of the management. The differential cost means difference in cost between two or more alternative levels of production or output. It satisfies both the conditions necessary for relevant costs, *i.e.*, it is a future cost as well as it changes between alternatives. Mr. J.M. Clark has described the concept of differential costs as follows:

"When a decision has to be made involving an increase or decrease of n - units of output, the difference in costs between two policies may be considered to be the cost really incurred on account of these n units of business, or of any similar units. This may be called the differential cost of a given amount of business. It represents the cost that must be incurred if that business is taken and which need not be incurred if that business is not taken."

Since the management's objective is to maximize the profit (or minimize the cost/ loss) of the firm, a comparison is made of differential costs with differential revenue under the available alternatives, to find out the most favorable alternative, which will give the maximum possible return on the incremental capital employed in the business.

The concept of differential cost is also known as the concept of incremental cost. Differential and incremental cost is used interchangeably in practical situation.

Steps in Decision-Making: Dear Students, Rational decision-making requires the taking of the following steps:

- **Defining the Problem:** The problem must be clearly and precisely defined so that quantitative amounts that are relevant to its solution can be determined. In fact many decisions could be improved by obtaining information.
- **Identifying Alternative:** The possible alternative solutions to the problem should be identified. Sometimes consideration of more alternative solutions may make the matters more complex. In order to do away with this difficulty, after having identified all alternatives, the analysts should eliminate on a Judgment basis those that are clearly unattractive. A detailed analysis of the remaining alternatives should then be done.
- **Evaluating Quantitative Factors:** Each alternative is usually associated with a number of advantages (relevant revenues) and disadvantages (relevant costs). The decision-maker should evaluate each of the relevant factors in quantitative terms to determine the largest net advantage.
- **Evaluating Qualitative Factors:** In most cases the advantages and disadvantages associated with each alternative are capable of being easily expressed in quantitative terms. However in certain cases there may be qualitative factors associated with certain alternatives, which may not be capable of being expressed easily and correctly in quantitative terms. Evaluating such qualitative factors against the quantitative -

factors against on the judgment of the decision-maker. Sometimes on account of a single qualitative factor, which though cannot be measured exactly and easily in monetary terms, the decision may just be reverse than what it was generally expected to be. To take example, we all know the fact that many persons can meet their transportation needs less expensively by using public conveyances rather than by operating their own automobiles. In spite of this people own and use their own automobiles for reasons of prestige, convenience, or other factors which cannot be measured in quantitative terms.

- **Obtaining the Necessary and Relevant Information:** In case the decision maker feels necessary, he may ask for relevant and additional information. As a matter of fact many decisions could be improved by obtaining additional information and it is usually possible to obtain such information.
- **Selection of an Alternative:** After having identifying, evaluating, weighing and obtaining additional information (if necessary), the decision maker can select the alternative and act on it.
- **Appraisal of the Results:** Having implemented his decision, the decision-maker should also from time to time carry out an appraisal of the results. This will help him *in* correcting his mistakes, revising his targets and making better predictions in the times to come.

In the following pages we shall explain how the above steps/rules are taken / applied in making decisions relating to each of the following matters as it has been enumerated and explained in earlier occasions.

- Determination of sales mix;
- Exploring new markets;
- Discontinuance of a production line;
- Make or buy decisions;
- Equipment replacement decision;
- Investment in asset;
- Change versus status quo
- Expand or contract;
- Shut down or continue.

Make or Buy Decisions: Now, we will be discussing certain problems to be solved for decision making with the help of Marginal costing technique. A firm may be manufacturing a product by itself. It may receive an offer from an outside supplier to supply that product. The decision in such a case will be made by comparing the price that has to be paid and the saving that can be affected on cost. The saving will be only in terms of marginal cost of the product since generally no savings can be affected in fixed costs. Similarly, a firm may consider to buy a product from outside or to manufacture that product in the firm itself. The decision in such a case will be made by comparing the price being paid to outsiders, and all additional costs that will have to be incurred for manufacturing the product. Such additional costs will comprise not only direct materials and direct labor but also salaries of additional supervisors engaged, rent for premises if required and interest on additional capital employed. Besides that the firm must also take into account the fact that the firm will be losing the opportunity of using surplus capacity for any other purpose in case it decides to manufacture the product

by itself.

In case a firm decides to get a product manufactured from outside, besides the savings in cost, it must also take into account the following factors:

- Whether the outside supplier would be in a position to maintain quality of the product.
- Whether the supplier would be regular in his supplies
- Whether the supplier is reliable? In other words, he is financially and technically sound.

In case the answer is "No" to any of these questions it will not be advisable for the firm to buy the product from outside.

Illustration 5.24

The CEO of ABC Pvt. Ltd. asks for your assistance in arriving at a decision as to whether to continue manufacturing a component 'X' or to buy it from an outside supplier. The component 'X' is used in the finished products of the company. The following data are supplied:

1. The annual requirement of component 'X' is 10,000 units. The lowest quotation from an outside supplier is Rs. 8'00 per unit.
2. The component 'X' is manufactured in the machine shop. If the component 'X' is bought out, certain machinery will be sold at its book value and the residual capacity of the machine shop will remain idle.
3. The total expenses-of the Machine Shop for the year ending 31-3-2002 is as-follows: During that year the Machine Shop manufactured 10,000 units of, X':

| | |
|----------------------------|-------------|
| Material | Rs 1,35,000 |
| Direct Labor | 1, 00,000 |
| Indirect Labor | 40,000 |
| Power and Fuel | 6,000 |
| Repairs and Maintenance | 11,000 |
| Rate, Taxes and- Insurance | 16,000 |
| Depreciation | 20,000 |
| Other Overhead Expenses | 29,600 |

4. The following expenses of the Machine Shop manufacturing of component ' X' ;

| | |
|-------------------------|--------------|
| Materials | Rs. , 35,000 |
| Direct Labor | 56,000 |
| Indirect Labor | 12,000 |
| Power and Fuel | 600 |
| Repairs and Maintenance | 1,000 |

The sale of machinery used for the manufacture of component X reduce: Depreciation by Rs. 4,000 and Insurance by Rs. 2,000

5. If the component 'X' were bought out, the ft.-wing additional expenses would be incurred: Freight Re.1.00 per unit Inspection Rs. 10,000 per annum.You are required to prepare a report to the Managing Director showing the comparison of expenses of Machine Shop (i) when the component 'X' is made, and (ii) when bought out.

Solution**Comparative Statement of Cost**

| | To make Component X | To buy Component X |
|----------------------------|---------------------|--------------------|
| Direct Material | Rs. 35,000 | Rs. |
| Direct Labor | 56,000 | |
| Indirect Labor | 12,000 | |
| Power and Fuel | 600 | |
| Repair and Maintenance | 1,000 | |
| Depreciation | 4,000 | |
| Insurance | 2,000 | |
| Total Variable Cost | 1,10,600 | |
| Variable cost per unit | 11.06 | |
| Purchase price per unit | | 8.00 |
| Freight charge per unit | | 1.00 |
| Inspection charge per unit | | 1.00 |
| Cost per unit | 11.06 | 10.00 |

It is preferable to buy component 'X' than to make it in the shop, because the variable cost per unit is less by Rs, 1.06. Only variable cost is to be considered, since fixed costs would remain the same under both the circumstances. Even if the production of component 'X' is discontinued, fixed cost cannot be saved. Moreover, the capacity, which would remain idle on account of buying this component from the market, can be utilized for some other purpose in the near future.

Make or Buy Decision (When plant is not fully utilized): If the similar product or component is available outside, then a manufacturing firm compares its unit cost of manufacture with the price at which it can be purchased from the market. The marginal cost analysis suggests that it is profitable to the total manufacturing cost. In other words the firm should prefer to buy if the marginal cost is more than the Bought out price and Make when the marginal cost is lesser than the purchase price. However, the available plant capacity will exert its own influence in such a decision-making. Let us take an example to understand this well:

Illustration 5.25

A radio manufacturing company finds that component No.1SP and 3SR, which are being manufactured internally, can be purchased from the market at a cost of Rs. 13.90 and Rs. 24.25 per unit respectively with an assured supply. The structure of cost of manufacture is as under:

| | Component No 1SP | Component No 3SR |
|----------------------------|------------------|------------------|
| Raw Material per unit | Rs. 8,50 | Rs. 11.25 |
| Wages per unit | 5.40 | 8.15 |
| Variable Expenses per unit | 1.10 | 2.10 |
| Fixed cost per unit | 2.75 | 9.75 |
| Total cost | 17.75 | 31.00 |

You are required to represent the data in an appropriate form and suggest the management whether they should Make or Buy the products.

Solution

| | Component No. 1SP (Rs. Per unit) | Component No. 3SR (Rs. Per unit) |
|-------------------|-------------------------------------|-------------------------------------|
| Purchase Price | 13.90 | 24.25 |
| Raw Materials | 8.50 | 11.25 |
| Wages | 5.40 | 8.15 |
| Variable Expenses | 1.10 | 2.10 |
| Marginal Cost | 15.00 | 21.50 |
| Fixed Cost | 2.75 | 9.50 |
| Total Cost | 17.75 | 31.00 |

If purchased - the cost involved will be purchase price plus fixed cost:

| | | |
|------------------|-------|-------|
| Purchase price | 13.90 | 24.25 |
| Fixed cost | 2.75 | 9.50 |
| Cost to be borne | 16.65 | 33.75 |

| | | |
|---------------------------------------|--------|----------------|
| Total cost if manufactured Internally | 17.75 | 31.00 |
| Decision Suggested | To Buy | To Manufacture |

Formula to Remember: Firm should buy when $PP + FC$ is lesser than total cost of manufacture. Firm should manufacture when $PP+FC$ is greater than total cost of manufacture.

Expand or Buy Decision: In case unused capacity is limited or does not exist, then an alternative to buying is to make by purchasing additional plant and other equipment. The firm should evaluate the capital expenditure proposal resulting out of expansion program in terms of cash flows and cost of capital. If the installed capacity of the existing plants partially being used, then it can be utilized by producing more internally. The additional production may necessitate purchase of some specialized equipment and thus involve interest and depreciation cost. It is advisable to expand and produce if the enterprise is able to save some costs by doing so.

Illustration 5.26

Part No. X-292 used in the assembly of product manufactured by your company has during the past three years been a bought-out item. The current price of this part is Rs. 120. Transportation and other delivery costs account for Rs. 15 per piece. Sales tax at 10% is added to the invoice price.

Your company had been manufacturing this part earlier but decided subsequently to discontinue its own manufacture. There is sufficient unutilized capacity, which can be used if it is decided to manufacture the part again in its own plant. Annual requirements of the part are 6,000 units. Prepare a study to enable the management to come to a decision on a proposal to manufacture the part within its own plant. The following estimates are available:

| | Part No. X-292 |
|----------------------------------|-------------------------------|
| | Estimated cost per unit (Rs.) |
| Raw Materials | 96 |
| Direct Wages | 8 |
| Overheads at 800% of wages | 64 |
| Total cost | 168 |
| Make up for return on investment | 12 |
| | 180 |

In addition, special tools, jigs and fixtures required to manufacture this part are needed to be acquired at a cost of Rs. 1, 50,000. These are to be amortized over 5 years. The overhead rate is the budgeted recovery rate for products manufactured by the company. The variable portion of this amounts to 100 percent of direct wages. Make your recommendations.

Solution:**Statement of Buying Cost**

| Part No X 292 (6000 unit) | | |
|--|---------------|--------------|
| Particulars | Rate per unit | Total amount |
| | (Rs.) | (Rs.) |
| Current Purchase Price | 120 | 7, 20,000 |
| Add sales Tax at 10% | 12 | 72,000 |
| Invoice Price | 132 | 7, 92,000 |
| Add Transportation and other delivery cost | 15 | 90,000 |
| Total cost of buying | 147 | 8, 82,000 |

Statement of Manufacturing Cost

| Part No X 292 (6000 unit) | | |
|--|---------------|--------------|
| Particulars | Rate per unit | Total amount |
| | (Rs.) | (Rs.) |
| Raw Materials | 96 | 5, 76,000 |
| Direct wages | 8 | 48,000 |
| Variable overhead (100% of wages) | 8 | 48,000 |
| Depreciation cost (1/5 x 1, 50,000) | 5 | 30,000 |
| Interest on additional capital Investment @ 12% (12/100 x 1, 50,000) | 3 | 18,000 |
| Total cost of manufacture | 120 | 7, 20,000 |

From the above statement it becomes clear that the company will save Rs. 1, 62,000 (Rs. 8, 82,000 – 7, 20,000) if the part is manufactured. The saving per unit is Rs. 147 – 120 = 27. Thus it is recommended that part no X 292 may be manufactured. You may further note that the rate of interest at 12% has been assumed. Fixed costs have not been taken into account because they will remain the same even if the part is not manufactured within the company. The most important decision is survival or shutdown, which requires proper and due thought process.

Here is the example for the same.

Shutdown or Continue: A business is sometimes confronted with the problem of 'suspending its business operations for a temporary period or permanently closing down.' Permanent closure of the business is a very drastic decision and should be carried out only in extreme circumstances.

Temporary shutdown: The following items of costs and benefits should be considered while deciding about the temporary shutdown of plant.

Items of cost

- Effect, on fixed overhead costs.
- Packing and storing of plant and equipment costs. .
- Setting-up costs.
- Loss of goodwill/market.
- Lay-off or retrenchment compensation to workers.

Items of benefits

- Saving in fixed costs.
- Avoiding operating losses.
- Saving in indirect costs such as repairs and maintenance; in direct labor, heat and light costs, etc.

Permanent Closing Down: A business is expected to earn a reasonable return on its investment. In case the business is not earning enough to compensate for the risk involved, it may be closed down permanently. In order to decide whether to continue operations or abandon the project altogether, a comparison should be made between the revenues from continued operations and revenues from complete closing down or sale of plant. The business should be closed down if the amount of revenue in the event of closing down is more than the amount of revenue from continued operations of the business.

Illustration 5.27

A Ltd. is experiencing reversionary difficulties and as a result its directors are considering whether or not the factory should be closed down till the recession has passed. A flexible budget is compiled giving the following details:

| | Fixed costs | | Production Capacity (Fixed Costs+ Variable Costs) | | | |
|------------------------------------|-------------|--------|--|--------|--------|--------|
| | Close down | Normal | 40% | 80% | 60% | 100% |
| | Rs. | Rs | Rs. | Rs. | Rs. | Rs. |
| Factory overheads | 6,000 | 8,000 | 10,000 | 11,000 | 12,000 | 13,000 |
| Administration overheads | 4,000 | 6,000 | 6,500 | 7,000 | 7,500 | 8,000 |
| Selling and distribution overheads | 4,000 | 6,000 | 7,000 | 8,000 | 9,000 | 10,000 |
| Miscellaneous | 1,000 | 1,000 | 1,500 | 2,000 | 2,500 | 3,000 |
| Direct Labor | | | 10,000 | 15,000 | 20,000 | 25,000 |
| Direct Material | | | 12,000 | 18,000 | 24,000 | 32,000 |

The following additional information has been supplied to you:

- Present sales at 50% capacity are estimated at Rs. 30,000 per annum.
- Estimated costs of closing down are Rs. 4,500. In addition maintenance of plant and machinery is expected to amount to Rs. 800 per annum.
- Costs of reopening after being closed down are estimated to be Rs.2000 for overhauling of machines and getting ready and Rs. 1,400 for training of personnel.
- Market research investigations reveal that sales should take an upward swing to around 70% capacity at prices, which would produce revenue of Rs. 1, 00,000 in approximately twelve months' time.

You are required to advise the directors whether to close down for twelve months or continue operations indefinitely.

Solution

Statement of Profit (Loss)

| | Percentage Capacity levels | | |
|--------------------------------------|----------------------------|--------|-----------|
| | 0 | 50 | 70 |
| (Close down) | Rs. | Rs. | Rs. |
| Sales (A) | Nil | 30,000 | 1, 00,000 |
| Variable Costs | Nil | 33,000 | 47,000 |
| Fixed Costs | 15,000 | 21,000 | 21,000 |
| Closing down | 4,500 | | |
| Plant Maintenance | 800 | | |
| Cost of reopening & Overhauling | 2,000 | | |
| Training | 1,400 | | |
| Total Cost of Special Shut down cost | 8,700 | | |
| Total costs (B) | 23,700 | 54,000 | 68,000 |
| Profit (loss) | -23,700 | 24,000 | 32,000 |

Working Note:**Computation of Variable Costs**

| For 50% Capacity | |
|-------------------------------------|------------|
| At 40% capacity the total costs are | Rs. 47,000 |
| At 60% capacity the total costs are | 61,000 |

Variable Costs for 1 % capacity level = $\frac{\text{Change in Cost}}{\text{Change in capacity' levels}}$

$$= \frac{14,000}{20} = \text{Rs. } 700$$

| | |
|--|--------|
| For 10% increase in capacity the variable costs will be | 7,000 |
| Total costs at 40% capacity | 47,000 |
| Total costs at 50% capacity (47,000+7,000) | 54,000 |
| Fixed costs as given are | 21,000 |
| Hence variable costs at 50% capacity are (Rs. 54,000 -Rs. 21,000) : | 33,000 |

| For 70% capacity | |
|---------------------------------|------------|
| Total costs at 60% capacity | Rs. 61,000 |
| Variable costs for 10% capacity | 7,000 |
| Total costs for 70% capacity | 68,000 |
| Fixed costs as given are | 21,000 |
| Variable costs for 70% capacity | 47,000 |

Profits Planning: The process of profit planning involves the calculation of expected costs and revenues arising out of operations at different levels of plant capacity for the production of different types of goods during a given period of time. The cost and revenues at different level of operating are different and a concern has to choose one level at which its profits are maximum. Marginal costing technique helps the management by suggesting a suitable product-mix or plant capacity, which optimizes profits. It also guides the management in selecting the best product mix for attaining a specified level of profit.

Illustration 5.28

A manufacturing company operating at its 40% installed capacity produced 12,500 units of a product in involving the following cost was sold at Rs. 28/- per unit.

| | Cost per unit (Rs.) |
|--------------------|---------------------|
| Raw materials | 12.00 |
| Labor | 4.50 |
| Variable overheads | 3.50 |
| Fixed overheads | 2.50 |

The company is planning for profit for 1993. It anticipates a decrease in the selling price by 5% and 10% if it operates a 60% and 90% plant capacity respectively. The supplier of raw materials are agreeing to reduce' the price of raw materials by 5% if the order for supplies needed to operate at 90% capacity is made. Wage-rate will remain the same but the fixed overhead per unit will decline according to increase in output. You are required to estimate the profits at different levels and make your recommendations.

Solution:

We need to prepare Marginal cost Statement for different levels of capacity.

Marginal Cost Statement For 1993

| Particulars | 40% capacity | 60% capacity | 90% capacity |
|-----------------------|--------------|--------------|--------------|
| | 12,500 unit | 18,750 unit | 28,125 unit |
| Sales | 28.00 | 26.60 | 25.20 |
| Raw materials | 12.00 | 12.00 | 11.40 |
| Labor | 4.50 | 4.50 | 4.50 |
| Variable overheads | 3.50 | 3.50 | 3.50 |
| Marginal Cost | 20.00 | 20.00 | 19.40 |
| Marginal Contribution | 8.00 | 6.60 | 5.80 |
| Fixed Cost | 2.50 | 1.67 | 1.16 |
| Profit per Unit | 5.50 | 4.93 | 4.69 |
| Total Profit | 68,750.00 | 92,437.50 | 1,31,906.25 |

Thus the profit at 40%,60% and 90% capacity is recommended that the company should operate at 90% capacity as the profits at this level is maximum provided there is no limiting factor.

Illustration: 5.29

Two manufacturing companies A & B, which have the following operating details, decided to merge.

| | Company A | Company B |
|---------------------------|-----------|-----------|
| Capacity utilization % | 90 | 60 |
| Sales (Rs. Lakhs) | 540 | 300 |
| Variable cost (Rs. Lakhs) | 396 | 225 |
| Fixed cost (Rs. Lakhs) | 80 | 50 |

Assuming that the proposal is implemented, calculate:

- Break even sales of the merged plant and the capacity utilization at that stage.
- Profitability of the merged plant at 80% capacity utilization.
- Sales turnover of the merged plant to earn a profit of Rs.75 lakhs.
- When the merged plant is working at a capacity to earn a profit of Rs.75 lakhs, what percentage increase in selling price is required to sustain an increase of 5% in fixed overhead.

Solution

Computation of Break Even Sales of the Merged Plant

| | Company A | Company B | Total |
|--------------------------------|-----------|-----------|-------|
| Capacity utilization % | 100% | 100% | 100% |
| Sales (Rs. Lakhs) | 600 | 500 | 1100 |
| Less: Variable cost(Rs. Lakhs) | 440 | 375 | 815 |
| Contribution(S-V) | 160 | 125 | 285 |
| Less: Fixed cost (Rs. Lakhs) | 80 | 50 | 130 |
| Profit | 80 | 75 | 155 |

$$\text{Composite P/V ratio} = \frac{\text{Total Contribution}}{\text{Total Sales}} \times 100 = 25.909\%$$

$$\text{Break even sales of the merged plant} = \frac{130}{25.909} \times 100 = \text{Rs.}501.67\text{lakhs.}$$

$$\text{Capacity utilization at break- even} = \frac{501.67}{1100} \times 100 = 45.61\%.$$

Profitability of the Merged Plant at 80% Capacity

| | Rs. in lakhs |
|----------------------------------|--------------|
| Sales | 880 |
| Less: Variable cost | 652 |
| Contribution(S-V) | 228 |
| Less: Fixed expenses (Rs. Lakhs) | 130 |
| Profit | 98 |

$$\text{Profitability} = \frac{98}{880} \times 100 = 11.14\%$$

Computation of Sales Turnover to Earn a Profit of Rs.75 Lakhs.

$$\text{Contribution required: } F + P = 130 + 75 = 205 \text{ lakhs.}$$

$$\text{P/V ratio} = 25.909\%.$$

$$\text{Sales} = \frac{205}{25.909} \times 100 = 791.23\text{lakhs.}$$

Computation of % increase in selling price to sustain 5% increase in fixed overheads.

5% of fixed overheads: $130 \times 5\% = \text{Rs.}6.5\text{lakhs}$.

$$\% \text{ increase in selling price} = \frac{6.5}{791.23} \times 100 = 0.8215\%$$

Summary: Now you have understood the Marginal costing and managerial decision-making. Also how marginal costing techniques is being applied to various decisions and the process that follows decision making.

TOOLS OF FINANCIAL ANALYSIS

Structure

- 6.1 Introduction to Budgets
 - 6.1.1 Advantages of Budgets
 - 6.1.2 Limitations of Budgets
 - 6.1.3 Essentials of Budgetary Control
 - 6.1.4 Budget Manual
 - 6.1.5 Budget Key Factors
- 6.2 Fixed and Flexible Budgets
- 6.3 Functional and Master Budgets
- 6.4 Numerical on Budgets: Sales and Cash Budgets
- 6.5 Zero Based and Incremental Budgets

6.1 INTRODUCTION TO BUDGETS

Now we are going to deal with the actual control over the costing part. Generally, the management forecast that how much has to be produced? What would be the requirement of raw materials at the verge of production? How much money is to be required? For answering all these questions the management prepares budgets? You might have heard about financial budget of the country which every year is been prepared and presented in the parliament. Generally it is in deficit? Here we would be talking about the budgets prepared by the company.

What is a Budget and how does it helps in Control? As a manager you may have many good ideas but implementation of those ideas requires proper planning. You would understand that it is not a one time exercise. The planning horizon varies from one day to many years, depending on the objectives of the organization and the uncertainties involved. An organization may be well equipped in advanced technology and resourceful for having a galaxy of intelligent managers but it may not achieve success unless it sets its objectives clearly and plans its activities accordingly. Even if the objectives are set, an organization may not be able to achieve them for want of a proper plan.

You should know that budget is the quantitative expression of plans - it expresses the plan in terms of physical units or monetary units. Budget gives the target to be achieved. Not only a big business entity or government of the country needs a budget, it is essential for a very small business unit or even for a family. In the context of a business organization, budget is the integral part of strategy and tactics. Strategies mean designing objectives and tactics are the ways of achieving the strategic goals.

The term 'Budget's defined as a financial and/or quantitative statement, prepared prior to a defined period of time, of the policy to be pursued during that period for the purpose of attaining a given objective. When you do the analysis of this definition it reveals the following characteristics of the budget.

- It may be prepared in terms of quantity or money or both.
- It is prepared for a fixed or set period of time.
- It is prepared before the defined period of time commences.
- It spells out the objects to be attained and the policies to be pursued to achieve that objective.

You can understand budgets and the term 'Budgetary Control' defined as the establishment of budgets, relating the responsibilities of executives to the requirements of a policy and the continuous comparison of actual with budgeted results, either to secure by individual action the objective of that policy or to provide the basis for its revision. The analysis of this definition reveals the following facts about budgetary control:

- It deals with the establishment of the budgets.
- It deals with the comparison of budgeted results with the actual results.
- It deals with computation of the variations and the actions to be taken for maintaining the favorable variations, removing the adverse variation or revising the Budgets themselves.

6.1.1 Advantages of Budgets

Budget fixes up the target in physical and financial terms. This helps the managers to understand the precise responsibilities by which they can take decisions to attain the set targets. This overcomes lack of objectives or direction by which the managers would have wasted resources and time.

- Budget helps to coordinate the efforts of various divisions and departments. It is possible to fix up the divisional or departmental targets and thus all divisions / departments may work harmoniously avoiding working for cross purposes.
- Budget fixes up control yardsticks. Performance of various managers, divisions/ departments is evaluated against the budget.
- It is a powerful tool available to the management for the purpose of cost control and maximization of profits through the same. It enables the management to utilize the available resources in the most profitable manner.
- A budget sets the plan of action. Plans in respect of various functional areas of operations are expressed in the form of the budgets. As such, the Budgetary Control systems act as a means of declaration of the policies of the management.
- It acts a means of communication. The plans and objects laid down by top level management are communicated to middle level and lower level management by way of the budgets. As such, each and every person working in the organization is aware of his duties and responsibilities in relation to those of the others. This maximizes the utilization of resources.
- It acts as a means of improving the co-ordination. The budgets prepared in the various functional areas of operations are prepared in such a way that the efforts are co-ordinate in the direction of achievement of common and defined objective.
- It develops the team spirit and help of various people can be sought to solve the common problem.

The comparison between the budgeted results and the actual results may reveal the areas where there are adverse variations which may be identified as weak areas or delicate areas. As such, efforts can be made to remove these adverse variations, keeping aside the areas where there are no variations. This enables the concentration of efforts of the management on a smaller portion of activities which facilitates 'Management by exception.' Budgetary control system enables the delegation of authority and makes possible the principles of Responsibility Accounting. It is a powerful tool available to the management for Performance Appraisal. The executives responsible for those functions where there is favorable variation may be rewarded, whereas the executives responsible for those functions where there is adverse variation may be punished. In this sense, budgetary control system provides a basis for establishment of the incentive systems.

6.1.2 Limitations of Budget

Now we shall discuss about the important limitations of budgets which are identified below.

- **Budget Plan is Based on Estimates:** As is known, budgets are prepared on the basis of forecasts and estimates about the future. Since they are based on estimates, successful accomplishment of the targets depends, to a greater extent, upon the degree of accuracy with which the estimates have been made. If there is any lapse in the estimates, the entire budget exercise will be futile.
- **Budgets are not Substitute for Management:** Mere preparation of budgets will not ensure the desired result. Because, the successful introduction and implementation of budgetary control system depends upon the effort put in by all the concerned. Because, budgeting is only a means to achieve the goal. Therefore, every individual (both the employees and management) has to work hard to achieve the budgeted result. Further, budgeting is normally an impersonal approach and therefore, the budgets are to be supported by the systematic management. Because, it is the management which prepares the budgets and which strives to achieve the targets. Therefore, management's effort - starting from the preparation to the execution cannot be disregarded
- **Budgets do not Ensure Result:** Budgets clearly specify the targets and ways through which the targets can be achieved. Mere preparation of budgets will not ensure the desired result. It is therefore necessary on the part of all the departmental heads to work sincerely to achieve the result. They have to extend full co-operation to others and they must obtain co-operation from others. Each employee must work for reaching the target set for him in the budget. Because, it is a group effort. For instance, let us assume that the production department of a company has succeeded to achieve its target. If the marketing department of the company is not able to sell the target volume at the budgeted price, the company will not be able to achieve its overall target.
- **Budgeting is a Costly Exercise:** In order to introduce budgetary control system, a huge amount of expenditure is to be incurred. Because, the introduction of budgetary control system involves the preparation of budgets, execution, obtaining the actual, comparison of actual with the budgets and finding out the deviations. In order to perform all these, a huge amount of expenditure is to be incurred. If the employees are not serious about their responsibilities, no benefit can be obtained from the system. Consequently, only the costs (without backed by substantial benefit) will have to be

incurred. Further, small scale organizations do not afford to spend this much for the introduction of budgetary control system. Therefore, one must compare the costs with the benefits expected to be generated by the system.

- **Rigidity:** As the budgets express quantitatively all the relevant facts and figures, an element of rigidity is attached to the budgetary control system. Because, once the budgets are finalized and approved, the next step will be to achieve the target result by all the concerned following the guidelines suggested in the budgets. Therefore, an element of rigidity or finality or static can be observed in the budgets. But, the budgets are to be revised properly in the light of the changes that are taking place. They should be revised and improved in the light of the changed conditions in the business. These are some of the important limitations of budgetary control system and the budget committee and execution agency must have complete knowledge about these limitations so that realistic budgets may be prepared and implemented successfully.

6.1.3 Essentials of Budgetary Control

Now you should know that if the organization decides to install the Budgetary Control system as a cost control technique, it will have to comply with the following preliminaries.

- **Deciding the Budget Centre:** A Budget Centre is that section of the organization with respect to which the budgets will be prepared. A Budget centre may be in the form of a product or a department or a branch of the company and so on. Budget centre should be clearly defined and established as the budgets will be prepared with respect to each and every Budget Centre.
- **Deciding the Budget Period:** A Budget Period is that period of time for which the budget will be prepared and operated. The selection of the Budget Period should be made very carefully- Too long a budget period makes the correct estimation more difficult while too short a budget period may prove to be more costly. The selection of Budget Period may depend upon the nature of operations and the purpose of preparing the budget. As such, in case of industries like the ones engaged in generation and distribution of electricity, transport operations etc. where capital expenditure is too high, budgets may be prepared even for a period of 5 to 10 years, while in case of industries like the ones engaged in manufacturing of motor vehicles or radios etc., where the customer demand may change more frequently, the budget period may be shorter. Similarly, a sales budget may be prepared for a period of 5 years, whereas the short term cash budget may be prepared on weekly or even daily basis.
- **Establishment of Accounting Records:** There should be efficient and proper system of accounting so that the information and data as required for the efficient implementation of the Budgetary Control system will be available in time.
- **Organization for Budgetary Control:** A properly prepared organization chart may make the duties and responsibilities of each level of executive very clear to himself. The budgetary control organization will be headed by a senior executive in the form of budget controller or budget officer. In small or medium sized organizations, he himself will be involved in all types of works involved with the budgetary control system.

However, in case of large organizations, he may have a budget committee under him which may consist of Chief Executive, budget officer himself and heads of main departments. The role of budget committee may be only advisory and its decision may become binding only if accepted by the Chief Executive. The functions performed by the budget committee can be broadly stated as below:

- To receive and scrutinize the functional budgets.
- To revise the functional budgets, if necessary.
- To approve the revised budgets.
- To receive the budget reports and comparative statements.
- To locate the responsibilities and recommend the corrective and remedial action.

6.1.4 Budget Manual

After knowing about the advantages, Limitations and essentials of a budget you should know about a budget manual. A budget manual is a document setting out the responsibilities of the persons engaged in and the forms and procedures required for the budgetary control. A budget manual enables the standardization of the methods and procedures in relation to the budgetary control. It should be well written, indexed and divided into the sections. It may be in bound book form or loose leaf form. A budget manual may contain the following particulars.

- Introduction of principles and objectives of budgetary control and the definitions and brief explanations.
- Duties and responsibilities of the various executives and the organization chart, Functions and duties of budget officer and budget committee.
- Scope of the budget and areas to be covered, whether budget will be a fixed budget or flexible budget, Accounts codes, budget center codes and other codes operated.

6.1.5 Budget Key Factor

A budget key factor is that the impact of which should be assessed first before other functional budgets are prepared to ensure that other functional budgets are capable of fulfillment. The key factor may take various forms e.g. Sales, Raw material, Labor, Production capacity, availability of funds and Government restrictions. Once the key factor is established, the budget with respect to that function will be prepared first and the other budgets will be prepared to conform to that e.g. If sales is the key factor, the sales manager will prepare and submit sales forecast first. The production manager will then decide whether it is possible to produce the quantity to meet sales demand. In case of the situations where there is more than one key factor, the importance of key factors themselves will be assessed first. The problem of multiplicity of key factors may be solved with the help of techniques like linear programming, operations research etc.

6.2 FIXED AND FLEXIBLE BUDGETS

Any budget in any functional area of operation can be established as a fixed budget or a flexible budget. A fixed budget is established for a specific level of activity and is not adjusted to the actual level of activity attained at the time of comparison between the budgeted and actual results.

Naturally, fixed budget is established only for a short period of time where the budgeted level of activity is expected to be attained to the maximum possible extent. Fixed budgets are more suitable for fixed expenses i.e. the expenses that have no relation with the level of activity.

The fixed budgets do not indicate that they cannot be changed at all. A fixed budget can be revised if the actual level of activity is likely to differ widely from the budgeted level of activity. The fixed budget cannot be used as an effective tool of cost control while computing the variations between the budgeted result and the actual result, the variance cannot be explained properly and it is not possible to say whether the variance is due to the changes in the level of activity or due to the efficiency or inefficiency of the executive responsible for the execution of the budget.

A flexible budget is designed to change with the fluctuations in the level of activity and provides a basis for comparison for any level of activity actually attained. A flexible budget is more elastic, and practical. It can be properly used as an effective tool for evaluation of performance and cost control.

It explains the variations between the budgeted results and actual results stating the variations which are due to changes in the level of activity (which is beyond the control of operating executive) and which are due to the operational efficiency or inefficiency (for which the operating executive is responsible.)

For the purpose of establishment of the flexible budgets, it is necessary to classify the costs as fixed costs, variable costs and semi-variable costs. The fixed costs remain the same at all the levels of activity whereas the variable costs change directly in proportion to the level of activity.

So far as the semi-variable costs are concerned, each item of cost is examined and classified into its fixed and variable elements and a trend is established regarding the nature and behavior of each item of cost.

Illustration 6.1

The manager of a Repairs and Maintenance Department has submitted the following budget estimates that are to be used to construct a flexible budget to be used during the coming budget year.

| Details of cost | Planned at 6000 direct repairs | Planned at 9000 direct repair |
|---------------------------|--------------------------------|-------------------------------|
| | hours | hours |
| Employee Salaries | 30,000 | 30,000 |
| Indirect Repair Materials | 40,200 | 60,300 |
| Miscellaneous Costs | 13,200 | 16,800 |

Prepare a flexible budget for the department up to activity level of 10,000 repair hours (Use increment of 1000)

What would be the budget allowance at 8,500 repair hours?

Solution:

| | 8500 Hours | 10000 Hours |
|---------------------------|------------|-------------|
| Employee Salaries | 30,000 | 30,000 |
| Indirect Repair Materials | 56,950 | 67,000 |
| Miscellaneous Costs | 16,200 | 18,000 |
| Total | 1,03,150 | 1,15,000 |

Working Notes: From the analysis of the costs, it is observed that:

- Employee salaries are fixed costs, as they remain constant for both 6000 repair hours and 9000 repair hours.
- An indirect repair material is a variable cost as it proportionately from 6000 hours to 9000 hours.

This cost neither remained constant nor increased proportionately the activity level of 6000 hours to 9000 hours. The cost increased by Rs. 3,600 for the increase of 3000 hours means that the variable portion of this cost is Rs. 1.20 hour. Hence, out of total miscellaneous cost of Rs. 13,200 6000 hours, Rs. 7,200 is variable portion and balance 6,000 is the fixed portion. Vivek Elementary School has a total of 150 students consisting of 5 sections with 30 students per section. The school plans for a picnic around the city during the weekend to places such as the zoo, the amusement park, the planetarium etc. A private transport operator has come forward to lease out the buses for taking the students. Each bus will have a maximum capacity of 50 (excluding 2 seats reserved for the teacher accompanying the students). The school will employ 2 teachers for each bus paying them an allowance of Rs. 50 per teacher. It will also lease out the required number of buses. The following are the other cost estimates

| | |
|---------------------------------------|------------------|
| Cost per student | Rs. |
| Breakfast | 5 |
| Lunch | 10 |
| Tea | 3 |
| Entrance fee at zoo | 2 |
| Rent | Rs. 650 per bus. |
| Special permit fee | Rs. 50 per bus |
| Block entrance fee of the planetarium | Rs. 250. |
| Prizes to the students for games | Rs. 250. |

No costs are incurred in respect of the accompanying teachers (except the allowance of Rs. 50 per teacher). You are required to prepare:

- A flexible budget estimating the total cost for the levels of 30, 60, 90, 120 and 150

students. Each item of cost is to be indicated separately.

- Compare the average cost per student of these levels.
- What will be your conclusions regarding the break even level of students if the school proposes to collect Rs. 45 per student?

Solution

| | No. of Students | 30 | 60 | 90 | 120 | 150 |
|---|------------------------------------|-------|-------|-------|-------|-------|
| a | Variable Cost | 600 | 1200 | 1800 | 2400 | 3000 |
| b | Semi-fixed costs : Rent of the bus | 650 | 1300 | 1300 | 1950 | 1950 |
| | Permit Fees | 50 | 100 | 100 | 150 | 150 |
| | Allowances to teachers | 100 | 200 | 200 | 300 | 300 |
| c | Fixed Costs: Entrance Fees | 250 | 250 | 250 | 250 | 250 |
| | Prizes to students | 250 | 250 | 50 | 250 | 250 |
| | Total Costs | 1900 | 3300 | 3900 | 5300 | 5900 |
| | Average Cost per student | 63.33 | 55.00 | 43.33 | 44.17 | 39.33 |

Prepare the flexible budget for overheads on the basis of data given below. Ascertain the Overheads rates at 50%, 60% and 70% capacity.

| Variable Overheads | At 60%Capacity |
|--|----------------|
| | Rs |
| Indirect Material | 6,000 |
| Indirect Labor | 18,000 |
| Semi Variable Overheads | |
| Electricity(40% fixed, 60% variable) | 30,000 |
| Repairs and Maintenance(80% fixed, 20% variable) | 3,000 |
| Fixed Overheads: Depreciation | 16,500 |
| Insurance | 4,500 |
| Salaries | 15,000 |
| Total Overheads | 93,000 |
| Estimated Direct labor Hours | 1, 86,000 |

Solution:**Calculation of Overheads Rates**

| | 50% Capacity | 60% Capacity | 70% Capacity |
|------------------------------------|--------------|--------------|--------------|
| | Rs | Rs. | Rs. |
| Variable Overheads | | | |
| Indirect Material | 5,000 | 6,000 | 7,000 |
| Indirect Labor | 15,000 | 18,000 | 21,000 |
| Semi Variable Overheads | | | |
| Electricity | 27,000 | 30,000 | 33,000 |
| Repairs and Maintenance | 2,900 | 3,000 | 3,100 |
| Fixed Overheads | | | |
| Depreciation | 16,500 | 16,500 | 16,500 |
| Insurance | 4,500 | 4,500 | 4,500 |
| Salaries | 15,000 | 15,000 | 15,000 |
| Total Overheads | 85,900 | 93,000 | 1,00,100 |
| Estimated Direct Labor Hours | 1,55,000 | 1, 86,000 | 2,17,000 |
| Overhead Rate (Labor Hour Rate) | Re.0.55 | Re.0.50 | Re.0.46 |

A Factory can produce 60,000 units per annum at its 100% capacity. The estimated costs of production are as under:

| | |
|--------------------------|--|
| Direct Materials | Rs. 3 per unit. |
| Direct Labor | Rs. 2 per unit |
| Indirect Expenses :Fixed | Rs. 1, 50,000 per annum |
| Variable | Rs. 5 per unit |
| Semi-Variable | Rs. 50,000 per annum up to50% capacity and extra expenses of Rs. 10,000 for every 20% increase in capacity or part thereof |

The factory produces only against *orders*. If the production programme of the factory is as indicated below, and the management desires to ensure a profit of Rs.1, 00,000 for the year, work out the average selling price at which each unit should be quoted. For three months of the year - 50% capacity Remaining nine months of the year - 80% capacity

Solution

Calculation of Total Cost

| | 50% capacity | 00% capacity | Total capacity |
|------------------------------|--------------|--------------|----------------|
| Number of units produced | 7,500 | 36,000 | 43,500 |
| Direct Material - Rs. | 22,500 | 1,08,000 | 1,30,500 |
| Direct Labor - Rs. | 15,000 | 72,000 | 87,000 |
| Variable Expenses - Rs. | 37,500 | 1,80,000 | 2,17,500 |
| Fixed Expenses | 37,500 | 1, 12,500 | 1,50,000 |
| Semi-Variable Expenses - Rs. | 12,500 | 32,50Q | 45,000 |
| Total Cost | 1, 25,000 | 5,05,000 | 6,30,000 |

Thus, the total cost during the year is likely to be Rs.6, 30,000. If it is desired to earn a profit of Rs. 1,00,000 the total amount to be covered by the units to be sold will have to be Rs. 7, 30,000 (Rs. 6,30,000 + Rs. 1,00,000) As the total units produced are estimated to be 43,500, the above amount will have to be covered by 43,500 units. Hence, the average selling price per unit will be

$$\begin{aligned} &= \frac{\text{Rs.7, 30,000}}{43,500} \\ &= \text{Rs, 16.78 per unit (approx)} \end{aligned}$$

Notes:

- It is assumed that whatever units are produced can be sold.
- It is assumed that the production and the incidence of all the indirect expenses are equally spread during the year.

From the following particulars, prepare a flexible budget for the three months ending 30th September showing the estimated sales, sales cost and profit for 60%, 80% and 100% activity. Assume that all items produced are sold.

| Fixed Expenses | Rs. |
|---|-----------|
| Management Salaries | 4, 20,000 |
| Rent and Taxes | 2, 80,000 |
| Depreciation on machinery | 3, 50,000 |
| Sundry office cost | 4,45,000 |
| | 14,95,000 |
| Semi-Variable Expenses at 50% capacity | |
| Plant Maintenance | 1, 25,000 |

| | |
|--|------------|
| | |
| Indirect Labor | 4, 95,000 |
| Salesmen's Salary & Expenses | 1, 45,000 |
| Sundry Expenses | 1, 30,000 |
| | 8, 95,000 |
| Variable Expenses at 50% capacity | |
| Materials | 12, 00,000 |
| Labor | 12, 80,000 |
| Sales men's Commission | 1, 90,000 |
| | 26, 70,000 |

Semi-variable expenses remain constant between 41 % and 70% activity, increase by 10% of the above figures between 71 % and 80% activity and increase by 15% of the above figures between 81 % and 100% activity. Fixed expenses remain constant whatever *may* be the level of activity. Sales at 60% activity are RS.51, 00,000, at 80% activity are Rs-68, 00,000 and at 100% activity is Rs.85, 00,000

Solution

Flexible Budget

| | 60% capacity | 00% capacity | 100% capacity |
|----------------------------|--------------|--------------|---------------|
| | Rs. | Rs. | Rs. |
| (A) Sales | 51,00,000 | 68,00,000 | 85,00,000 |
| (B) Sales Cost | | | |
| (1) Fixed Expenses | | | |
| Management Salaries | 4,20,000 | 4,20,000 | 4,20,000 |
| Rent and Taxes | 2,80,000 | 2,80,000 | 2,80,000 |
| Depreciation on Machinery | 3,50,000 | 3,50,000 | 3,50,000 |
| Sundry office cost | 4,45,000 | 4,45,000 | 4,45,000 |
| | 14,95,000 | 14,95,000 | 14,95,000 |
| (2) Semi Variable Expenses | | | |
| Plant Maintenance | 1,25,000 | 1,37,500 | 1, 43,750 |
| Indirect Labor | 4,95,000 | 5,44,500 | 5,69,250 |

| | | | |
|----------------------------------|------------|-----------|-----------|
| Sales men's' Salary and Expenses | 1,45,000 | 1, 59,500 | 1,66,750 |
| | 8,95,000 | 9,84,500 | 10,29,250 |
| (3) Variable Expenses | | | |
| Material | 14,40,009. | 19,20,000 | 24,00,000 |
| Labor | 15,36,000 | 20,48,000 | 25,60,000 |
| Salesman's Commission | 2,28,000 | 3,04,000 | 3,80,000 |
| | 32,04,000 | 42,72,000 | 53,40,000 |
| Total Sales Cost 1 + 2 + 3 | 55,94,000 | 67,51,500 | 78,64,250 |
| (C) Profit A - B | (4,94,000) | 48,500 | 6,35,750 |

Problems:

A Ltd. produces a standard product. The estimated cost per unit in given below:

| | |
|-------------------|-----|
| | Rs. |
| Raw materials | 10 |
| Direct wages | 8 |
| Direct Expenses | 2 |
| Variable Overhead | 5 |

Fixed overheads are estimated to Rs. 70,000 selling price per unit is Rs. 40. Prepare a flexible budget at 50%, 70% and 90% level of activity. Assume that output at 100% level of activity is 10,000 units.

The following expenses relate to a cost center operating at 80% of normal capacity (Sales are Rs.1, 20,000) Draw up flexible Administration, Selling and Distribution costs budget operating at 90%, 100% and 110% of normal capacity.

| | |
|-----------------------|---------------|
| Administration Costs | |
| Office Salaries | Rs. 3,000 |
| General Expenses | 1.5% of sales |
| Depreciation | Rs. 1,500 |
| Rates and Taxes | Rs. 1,750 |
| Selling Costs | |
| Salaries | 4 % of sales |
| Traveling Expenses | 1.5% of sales |
| Sales Office Expenses | 1 % of sales |
| General Expenses | 1 % of sales |
| Distribution Costs | |
| Wages | Rs.3, 000 |
| Rent | 0.5% of sales |
| Other Expenses | 2% of sales |

The expenses budgeted for productions of 10,000 units in a factory are furnished below:

| Per Unit | Rs |
|--|--------------|
| Materials | 70.25 |
| Labor | 20.10 |
| Variable Overheads | 5 |
| Fixed Overheads | 1, 00,000 |
| Variable Expenses (Direct) | 13.75 |
| Selling Expenses | (10% Fixed) |
| Distribution Expenses | (20% Fixed) |
| Administrative Expenses | (Rs.50, 000) |
| Total Cost of sale per unit (to make and sell) | 155 |

Prepare a budget for the production of a. 8,000 units and b. 6,000 units. (Assume that administrative expenses are rigid for all levels of production.) Following are the actual for the year 1985.

| | Rs. |
|------------------------------------|--------|
| Sales 20,000 units @ RS.3 per unit | 60,000 |
| Raw Material | 26,500 |
| Direct Labor Cost | 5,000 |
| Variable Overheads | 8,000 |
| Fixed Overheads | 10,000 |

The management expects following estimate in 1986. Sales to increase to 30,000 units, selling price remaining unchanged. Raw materials prices increase by 10%, wage rate to increase by 10% but labor productivity improves by 5%. Fixed overheads are expected to increase by Rs. 2,000. You are required to prepare the budget for 1986. Production costs of a factory for a year are as follows.

| | |
|-----------------------|---------------|
| Direct Wages | Rs. 90,000 |
| Direct Materials | Rs. 1, 20,000 |
| Production Overheads: | |
| Fixed | Rs.40, 000 |
| Variable | Rs. 60,000 |

During the forthcoming year, it is anticipated that:

- The average rate for direct labor remuneration will fall from 90 paisa to 75 paisa per hour.
- Production efficiency will be reduced by 5%
- Price per unit of direct material and other materials and services which comprise

- Overheads will remain unchanged and
- Direct labor hours will increase by 331/3

Draw up a budget and compute factory overhead rate, the overheads being absorbed on direct wages.

ABC Ltd. manufacturing a single product is facing a severe competition in selling at Rs. 50 per unit. The company is operating at 60% level of activity at which level sales are Rs. 12,00,000. Variable costs are RS.30 per unit. Semi variable costs may be considered as fixed at Rs. 90,000 when output is nil and variable element is RS.250 for each additional 1 % level of activity. Fixed costs are Rs, 1, 50,000 at the present level of activity, but at the level of activity of 80% or above if reached, these costs are expected to increase by Rs.5, 000.

To cope with the competition, the management of the company is considering a proposal to reduce the selling price by 5%. You are required to:

- Prepare a statement showing the operating profit at levels of activity of 60%, 70% and 80%. Assuming that the selling price remains at RS.50 per unit.
- If selling price is reduced by 5%, show the number of units which will be required to be sold to maintain the present profits.

A company, producing electronic watches, estimates the following factory overheads costs for producing 5,000 Units

| | |
|------------------------|------------|
| Indirect Materials | Rs. 16,000 |
| Indirect Labor | Rs. 30,000 |
| Inspection Cost | Rs. 16,000 |
| Heat, light & power | Rs. 8,000 |
| Expendable tools | Rs. 8,000 |
| Supervision Costs | Rs. 8,000 |
| Equipment depreciation | Rs. 4,000 |
| Factory Rent | Rs. 4,000 |

Indirect labour, indirect material and expendable tools are entirely variable. Heat, light and power and inspection costs are variable to the extent of 50% and 40% respectively. Other costs are fixed costs for a month. Prepare a flexible budget for overheads for production of 4,000 and 6,000 units per month. Also find out the average factory overheads per unit for these two production levels.

Anil and Avinash Enterprises is currently working at 50% capacity and produces 10,000 units. Estimate the profits of the company when it works at 60% and 70% capacity At 60% capacity, the raw materials cost increases by 2% and the selling price falls by 3%. At 70% capacity the raw materials cost increases by 4% and selling price falls by 5% At 50% capacity, the product costs Rs. 180 per unit and is sold for Rs.200 per unit

The unit cost of Rs. 180 is made up as below:

| | |
|--------------------------|--------------------|
| Materials cost | Rs. 100 |
| Wages RS.30 | |
| Factory overheads | Rs. 20 (40% Fixed) |
| Administration overheads | Rs. 30 (50% fixed) |

ABC Ltd. manufactures a single product for which market demand exists for additional quantity. Present sale of Rs. 60,000 per month utilities only 60% capacity of the plant. Sales Manager assures that with a reduction of 10% in the price, he would be in a position to increase the sale by about 25% to 30%. The following data are available.

| | | |
|-----|--------------------|---|
| (a) | Selling price | Rs. 10 per unit |
| (b) | Variable cost | Rs. 3 per unit |
| (c) | Semi-variable cost | Rs. 3 per unit |
| (d) | Fixed cost - | Rs. 6000 per unit Rs. 0.50 per unit Rs.20, 000 at present level, estimated to be Rs. 24,000 at 80% output |

You are required to submit the following statements to the Board showing:

- The operating profits at 60%, 70% and 80% levels at current selling price and at proposed selling price.
- The percentage increase in the present output which will be required to maintain the present profit margin at the proposed selling price.

A manufacturing company has an installed capacity of 1, 20,000 units filter annum. The cost structure of the products manufactured is as under:

- Variable Cost (Per Unit)

| | |
|--|------|
| Materials | Rs.8 |
| Labor | Rs.8 |
| (Subject to a minimum of RS.56, 000 per month) | |
| Overheads | Rs.3 |
- Fixed overheads are Rs. 1, 04,000 per annum.
- Semi variable overheads Rs.48, 000 per annum at 60% capacity, which increase by Rs.6000 per annum for increase of every 10% of the capacity utilization or any part thereof. The capacity utilization for the next year is estimated at 60% for 2 months, 75% for 6 months and 80% for the balance part of the year. If the company is planning to have a profit of 25% on the selling price, calculate the estimated selling price for each unit of production. Assume there is no opening or closing stock.

The monthly budgets for manufacturing overhead of a concern for two levels of activity were as follows :

| | | |
|-----------------------------|-------|--------|
| Capacity | 60% | 100% |
| Budgeted Production (units) | 600 | 1000 |
| Wages | 1,200 | 2,000 |
| Consumable Stores | 900 | 1,500 |
| Maintenance | 1,100 | 1,500 |
| Power and Fuel | 1,600 | 2,000 |
| Depreciation | 4,000 | 4,000 |
| Insurance | 1,000 | 1,000 |
| | 9,800 | 12,000 |

You are required to:

- Indicate which of the items are fixed, variable and semi- variable.
- Prepare a budget for 80% capacity.
- Find out the total cost, both fixed and variable, per unit of output at 60%, 80% and 100% capacity.

From the following data, prepare a flexible budget for the production of 40,000 units, 60,000 units and 75,000 units, distinctly showing variable and fixed costs as well as total costs. Also indicate element wise cost per unit

Budgeted Output and Budgeted Cost per Unit

| | |
|----------------------------------|------------------|
| Budgeted output | 100000 units |
| | Per unit cost Rs |
| Direct Material | 90 |
| Direct Labor | 45 |
| Direct Variable Expenses | 10 |
| Manufacturing Variable Overheads | 40 |
| Fixed Production Overheads | 5 |
| Administration Overheads (Fixed) | 5 |
| Selling Overheads | 10 (10% fixed) |
| Distribution Overheads | 15 (20% fixed) |

The budget manager of Progressive Electrical Limited is preparing a flexible budget for the accounting year commencing 1st April 1995. The company produces one product a component - Kaypee .Direct Material costs Rs. 7 per unit. Direct Labor averages Rs. 2.50 per hour and requires 1.60 hours to produce one unit of Kaypee. Salesmen are paid a commission of Re. 1 per unit sold. Fixed selling and administration expenses amount to Rs. 85,000 per year. Manufacturing overheads under specified conditions of volume have been estimated as follows:

| | | |
|----------------------|-----------|-----------|
| Volume of Production | 1, 20,000 | 1, 50,000 |
|----------------------|-----------|-----------|

| (units) | | |
|-------------------------------|-----------|-----------|
| | Rs. | Rs |
| Indirect Materials | 2, 64,000 | 3, 30,000 |
| Indirect Labor | 1, 50,000 | 1, 87,500 |
| Inspection | 90000 | 112500 |
| Supervision | 198000 | 234000 |
| Depreciation | 90000 | 90000 |
| Engineering Services | 94000 | 94000 |
| Total Manufacturing Overheads | 970000 | 1150000 |

Normal capacity of production of the company is 1, 25.000 units. Prepare a budget of total cost at 1, 40,000 units of output.

Excellent Manufacturers can produce 4000 units of a certain product at 100% capacity. The following information is obtained from the books:

| Units produced | June 94 | July 94 |
|-------------------------|---------|---------|
| | 2,800 | 3,600 |
| | Rs. | Rs. |
| Repairs and Maintenance | 500 | 560 |
| Power | 1,800 | 2,000 |
| Shop Labor | 700 | 900 |
| Consumable Stores | 1,400 | 1,800 |
| Salaries | 1,000 | 1,000 |
| Inspection | 200 | 240 |
| Depreciation | 1,400 | 1,400 |

The rate of production is 10 units per hour. Direct Materials cost is Re. 1 and Direct Wages per hour is Rs. 4. You are required to

- Compute the cost of production at 100%, 80% and 60% capacity showing the variable, fixed and semi-fixed items under the flexible budget.
- Find out the overhead absorption rate per unit at 80% capacity.

The following data are available for a manufacturing company for a yearly period

| | Rs. in Lakhs |
|--|--------------|
| Fixed Expenses | |
| Wages and Salaries | 9.5 |
| Rent, Rates and Taxes | 6.6 |
| Depreciation | 7.4 |
| Sundry Administrative Expenses | 6.5 |
| Semi-Variable Expenses (at 50% capacity) | 3.5 |
| Maintenance and Repairs | 7.9 |
| Indirect Labor | 3.8 |
| Sales Department Salaries | 2.8 |
| Sundry Administrative Salaries | |
| Variable Expenses (at 50% capacity) | |
| Material | 21.7 |
| Labor | 20.4 |
| Other Expenses | 7.9 |
| | 98.0 |

Assume that the fixed expenses remain constant at all levels of production, semi-variable expenses remain constant between 45% and 65% of capacity increasing by 10% between 65% and 80% capacity and by 20% between 80% and 100% capacity. Sales at various levels are:

| | Rs. in Lakhs |
|---------------|--------------|
| 50% capacity | 100 |
| 60% capacity | 120 |
| 75% capacity | 150 |
| 90% capacity | 180 |
| 100% capacity | 200 |

Prepare a flexible budget for the year at 60% and 90% capacities and estimate the profits at these levels of output.

A factory is currently running at 50% capacity and produces 5,000 units at a cost of Rs.90/- per unit as per details below:

| | |
|--------------------------|--------------------|
| | Rs. |
| Material | 50 |
| Labor | 15 |
| Factory overheads | 15 (Rs. 6/- fixed) |
| Administrative overheads | 10 (Rs. 5/- fixed) |

The current selling price is Rs. 100/- per unit. At 60% working, material cost per unit increases by 2% and selling price per unit falls by 2%. At 80% working, material cost per unit increases by 5% and selling price per unit falls by 5%. Estimate profits of the factory at 60% and 80% working and offer your comments.

6.3 FUNCTIONAL AND MASTER BUDGETS

There can be basically four areas in which management can function and the types of budgets can be studied with respect to these functional areas of management viz. Sales/Marketing, production, personnel, Finance, Miscellaneous and Master Budget

Sales/Marketing: The budgets in this area may be of following types:

- **Sales Budget:** It is a forecast of total sales expressed in terms of quantity and or money. It is inevitably the interplay between two factors i.e. Sales quantity and selling price. Sales quantity may be forecasted after taking into consideration various factors: (i) **Analysis of Past Trend:** Analysis of the past trend over the last 5-10 years, may reveal the long term trends, seasonal trends and the cyclical trends. With the help of this trend analysis, the future trend can be established. For this purpose, reference can be made to the reports published by trade organizations and Government publications. (ii) **Reports by Salesmen:** Being in the actual field, probably the sales staff may be best able to estimate the quantity which can be sold in the market. Before using this estimate as an official sales forecast, necessary adjustments may be made for error of judgment or to avoid the possibility of overestimation on the part of the salesmen. (iv) **Market Research and Market Survey:** This is a very specialized technique available to assess which of the company's products can be sold, in which market, in which quantity and at what selling price. Such an analysis will facilitate the preparation of sales forecast area wise, product wise, salesmen wise and channel of distribution wise. (v) **General Economic Conditions:** General Trade and Business conditions affect the sales forecast of the company. They may be in the form of competition from other companies, supply condition for material and labor, trade conditions of the customers of the company and so on.

Selling price at which products of the company can be sold may depend upon various factors viz. Cost price of the product, Selling price charged by the competitors, Expected amount of profits, Advertisement and other sales promotion efforts carried out by the company.

If the company envisages to sell higher quantity than the past sales or the existing production capacity, and if some capital investment proposal is involved to increase the production, then the feasibility of the proposal and the availability of funds may also be required to be considered. If the sales forecast is less than the past sales but the

top management insists upon a certain amount of additional profits, then the possibility of increasing the selling price or selling efforts and reduction in the cost price may be required to be considered.

- **Selling and Distribution Cost Budget:** It shows the selling and distribution cost for selling the quantities considered in sales budget. The sales manager, the distribution manager, the advertising manager and the finance manager will be the persons involved in the preparation of this budget. This budget may be prepared on the principles of flexible budgeting (as discussed later in this chapter) for each head of selling and distribution costs, on the basis of volume of sales to be achieved.
- **Advertising Cost Budget:** This cost is closely associated with sales. The intention of incurring this cost is to increase the sales. However, the result of incurring this cost Le increased sales may not be immediate and even if there is increase in sales, it is difficult to measure the portion of increased sales which is due to advertising cost. As such, normally, advertising cost budget is established in the form of a fixed amount for a specific period. The various ways in which the amount of budgeted advertising cost can be decided are as below: (i) **Percentage of Sales or Profits:** Here the advertising cost may be decided as a fixed percentage of sales or profits. However, the past data may not be suitable in view of recent business situations. (ii) **Funds Available:** Here the advertising cost depends upon the capability of the company to spend on advertising. This may be a hypothetical method and may not necessarily consider the relationship between advertising cost and benefits there from. (iii) **Competitor's Policy:** Here the advertising cost may depend upon the amount which the competitors are spending on advertising. This method may pose some difficulty as the amount spent by competitors may not be known and it may be wrong to assume that the company may be able to derive the same benefits from advertising as the competitors derive.

Production: The budgets in this area may be of following types:

- **Production Budget:** It is a forecast of production for the budget period. It may be prepared from two angles. Production Budget in terms of Quantity, Production Budget in terms of money i.e. the production Cost Budget further classified under each element of cost such as Direct Material Cost, Direct Labour Cost and Overheads Cost. The material cost can be estimated by preparing the materials budget which indicates the estimated quantities as well as costs of various materials required for carrying out production as per production budget. The labour cost can be estimated by preparing Direct Labor Cost budget which indicates the direct labour requirements required to produce the quantity as specified in the production budget. For the purpose of this budget, labour requirement in terms of number of workers of different grades will be decided first. Afterwards, the rates of pay and allowances will be considered to decide the labour cost. The production overheads can be estimated by preparing production overhead budget which indicates all items of production overheads classified as fixed, variable and semi-variable. The process of allocation and apportionment can be followed to decide the loading of overheads to each budget centre.

Following factors will have to be considered before preparing the production budget in terms of quantity'. (i) **Coordination with Sales Forecast:** Before the quantity to be produced is decided, it will be necessary to confirm whether it is possible to sell the

quantity which is produced during the budget period. If it is not possible to sell whatever can be produced, in spite of all the sales promotion efforts, then the production budget should be adjusted to conform to the sales forecast. If the expected sales exceed existing production capacity, possibility of overtime working or extra shift working should be considered. **(ii) Production Capacity:** Production Budget estimates the quantity to be produced. If it is not possible to produce the quantity with the existing capacity available, it will be necessary to increase the capacity by incurring additional capital expenditure. **(iii) Consideration of Stocks:** Whatever is to be sold need not be produced necessarily. The quantity to be produced, after giving due consideration to the sales forecast, may depend upon the opening and closing stock of finished goods. The quantity to be produced during the budget period may be decided as Estimated Closing stock of finished goods. Add: Quantity to be sold, Less: Opening Stock of Finished Goods. **(iv) Management Policy:** Sometimes, the policy decisions taken by the management are required to be considered before setting the production budget E.g. It will have to be considered whether certain components are decided to be produced instead of purchasing or vice versa.

- **Purchases Budget:** It is a forecast of quantity and value of materials, direct or indirect, required to be purchased during the budget period. It is needless to state that the purchases budget is closely connected to the production budget. Following factors are required to be considered before setting the purchases budget, Orders already placed for the purchases of materials, Material already purchased but reserved for some specific purposes, Opening and closing stocks, Storing facilities and economic order quantity, Availability of funds, Prices of the materials.

Personnel: In this functional area, the budget to be prepared takes the form of a personnel budget, which indicates the requirement of personnel or labour force, either direct or indirect, to conform to the sales forecast and the production budget. The labour requirement may be decided in terms of number and grade of workers, number of labour hours, rupee value etc. Consideration is also required to be made of the overtime working or shift working. This budget may also indicate the training plans for new workers.

Finance: The most important budget which is prepared under this functional area is the cash budget. It is an estimate of the expected cash receipts and cash payments during the budget period. Thus by preparing the cash budget, it is possible to predict whether at any point of time, there is likely to be excess or shortage of cash. If the shortage of cash is estimated, it may be required to arrange the cash from some other source. If the excess of cash is estimated, it may be possible to explore the investment opportunities. Before preparing the cash budget, following principles should be kept in mind. (i) The period for which cash budget is prepared should be selected very carefully. There is no fixed rule as to the period to be covered by the cash budget. It may vary from company to company depending upon the individual requirements. As a general rule, the period covered by the cash budget should neither be too long or too short. If it is too long, it is possible that the estimate will not be accurate. If it is too short, the factors which are beyond the control of management will not be given due consideration. (ii) The items which should appear in the cash budget should be carefully decided. Naturally, all those items which do not involve cash flow will not be considered while preparing the cash budget. E.g. As the cost of depreciation does not involve any cash outflow; it does not affect the cash budget, though the amount of depreciation affects the determination of tax liability which involves cash outflow.

A cash budget may be prepared in any of the following three methods. **Receipts and Payments Method:** This method is useful for short time estimations. It lists the various estimated sources of cash receipts on one hand and the various estimated applications of cash on the other. While preparing the cash budget by this method, the various items appearing on the same may be classified under the following two categories: (i) Operating Cash Flows: These are the items of cash flow which arise as a result of regular operations of the business. (ii) Non operating Cash Flows: These are the items of cash flow which arise as the result of other operations of the business. The standard items which may appear on the cash budget prepared by this method may be stated as below: Cash Inflow - Operating: Cash sales; Collection from debtors Interest/Dividend received Non-operating: Issue of shares/debentures; Receipt of loans/borrowings; Sales of Fixed Assets; Sales of Investments Cash Outflow - Operating: Payment to creditors; Cash Purchases of raw materials Wages/Salaries; Various kinds of overheads. (To the extent they are actually paid) Non-operating: Redemption of shares/debentures; Loan Installments; Purchases of Fixed Assets; Interest; Taxes; Dividends. Thus, finally cash budget appears in the form of opening cash balance, to which various estimated cash receipts are added, the estimated cash payments being deducted from this sum to arrive at the closing cash balance. **Balance Sheet Method:** This method is useful for long term estimates. According to this method, the budgeted Balance Sheet is prepared for the following budget period, after considering the various terms viz. Capital, Long Term Liabilities, Current liabilities, Fixed Assets, Current Assets, but except cash. After both the sides of Balance Sheet are balanced, the balancing figure indicates the estimated cash balance in hand at the end of that period. This method does not consider the expenses and assumes the regular pattern of inflow and outflow of cash. Further, it indicates the cash requirement only at the end of budget period, any excess or shortage of cash during the budget period is not considered. **Adjusted Profits/Losses Method:** This method also is useful for long term estimates. According to this method, the cash budget is prepared in the following way to show the estimated cash balance at the end of the budget period.

Opening cash balance.

Add: Profit before depreciation, provisions and other non-cash expenses.

Add: Decrease in Current Assets or Increase in Current Liabilities.

Add: Capital Receipts.

Add: Receipt of loans/borrowings

Less: Capital Expenditure

Less: Repayment of loan installments

Less: Payment of dividends/taxes

In other words, cash budget prepared as per this method is in the form of cash flow statement.

Miscellaneous Budgets: In addition to the various budgets as described above, which can be prepaid in prime functional areas of marketing, production, personnel and finance, some other types of budgets may also be prepared.

- **Overheads cost Budget:** It indicates the various types of overheads to be incurred during the budget period, for the correct establishment of overheads cost budget, it will be necessary to classify the various overheads. In order to exercise proper control on the overheads, it will be necessary to analyze the overheads as fixed, variable and semi-variable, the semi-variable overheads are further required to be split into fixed and variable elements.
- **Capital Expenditure Budget:** It is the plan of proposed investment in the fixed assets. It is closely related to the sales budget, production budget and cash budget. As such, capital expenditure budget should be properly coordinated with other functional budgets. The capital expenditure may be required to be incurred for the replacement purposes or expansion purposes. The requirements of capital expenditure may be basically received from the various functional executive's viz. production manager, sales manager, and finance manger and so on. If the investment in fixed assets is considered to be economically and financially feasible, then the arrangement is required to be made for the acquisition of the same. If the cash budget reveals the excess funds available, it may not be necessary to arrange the funds for acquiring the fixed assets from outside source. However, if no excess cash balance is available, then it may be necessary to borrow the funds from some outside source.

Master Budget: After all the functional budgets are prepared individually and are properly coordinated with each other, the master budget can be prepared by incorporating all the functional budgets. The ultimate incorporation of all the functional budgets takes the form of budgeted Profit and Loss Account and the Budgeted Balance Sheet. It may involve the presentation of current year's budgeted figures as well as those of the previous year showing clearly why there is a change. What are the Components of Master Budget: Usually a master budget of manufacturing companies is made up of the following components: Sales budget; Production budget; Purchases budget; Wages budget; Cost of goods sold budget; Administrative expenses budget; Selling and distribution expenses budget; Cost of sales budget; Profit and loss budget; Budgeted balance sheet; Cash budget

6.4 NUMERICALS ON BUDGETS: SALES AND CASH BUDGETS

An estimate shows that there is a market for 10, 00,000 units of an electric bell. Two big companies producing this electric bell will probably divide 80% of the market. Among other companies, producing the bell, Ghatanad Ltd. should get 15% of the total market. 60% of the Ghatanad sales will probably be evenly divided between the first and last calendar quarters, with twice as many sales being made in the second quarter as in the third. The bell sells for RS.30 a unit, with the manufacturing cost as follows. The cost is worked out with reference to normal working capacity for the production which is 1, 50,000 bells a year.

| | |
|-------------------------|-------------|
| Direct Materials Cost | Rs 15 |
| Direct Labor cost | Rs 7.50 |
| Variable overheads cost | Rs 2.5 |
| Fixed overhead cost | Rs 1,00,000 |

Prepare a sales budget for the year showing cost of production and gross profit by calendar quarters. Assume no change in the inventory levels during the year.

Solution: Sales Budget

| Particulars | Quarter I | Quarter II | Quarter III | Quarter IV | Total |
|------------------------------|-----------|------------|-------------|------------|-----------|
| (A) Sales - Units | 45,000 | 40,000 | 20,000 | 45,000 | 1,50,000 |
| Rs. | 13,50,000 | 12,00,000 | 6,00,000 | 13,50,000 | 45,00,000 |
| (B) Cost of Production | | | | | |
| Direct Materials Rs | 6,75,000 | 6,00,000 | 3,00,000 | 6,75,000 | 22,50,000 |
| Direct Labor Rs. | 3,37,500 | 3,00,000 | 1,50,000 | 3,37,500 | 11,25,000 |
| Variable Overheads Rs | 1,12,500 | 1,00,000 | 50,000 | 1,12,500 | 3,75,000 |
| Fixed Overhead Rs. | 25,000 | 25,000 | 25,000 | 25,000 | 1,00,000 |
| Total (B) | 11,50,000 | 10,25,000 | 5,25,000 | 11,50,000 | 38,50,000 |
| c) Gross Profit Le. A - B | 2,00,000 | 1,75,000 | 75,000 | 2,00,000 | 6,50,000 |

Look ahead Ltd. produces and sells a single product. Sales budget for the calendar year 1987 by quarter is as under :

| Quarter | No of Units to be sold |
|---------|------------------------|
| I | 12, 000 |
| II | 15, 000 |
| III | 16, 500 |
| IV | 18, 000 |

The year 1987 is expected to open with an inventory of 4,000 units of finished product and close with an inventory of 6,500 units. Production is customarily scheduled to provide for two third of the current quarter's sales demand plus one third of the following quarter's demand. Thus production anticipates sales volume by about one month.

The standard cost details for one unit of the product is as below Direct Materials 10 lbs @ 50 paise per lb.

Direct Labor 1 hour 30 minutes @ Rs. 4 per hour. Variable Overheads 1 hour 30 minutes @ Re. 1 per hour. Fixed Overheads 1 hour 30 minutes @ Rs. 2 per hour, based on a budgeted production volume of 90,000 direct labor hours for the year.

- Prepare a production budget for 1987, by quarters, showing the number of units to be produced and the total costs of direct material, direct labour, variable overheads and fixed overheads.
- If the budgeted selling price per unit is Rs. 17, what would be the budgeted profit for the year as a whole?
- In which quarter of the year is the company expected to break even?

Solution

Production Budget: We know that Opening Stock + Production - Sales = Closing Stock
Hence we know that Closing Stock + Sales - Opening Stock = Production

| | Quarter I | Quarter II | Quarter III | Quarter IV |
|---------------|-----------|------------|-------------|------------|
| Opening Stock | 4000 | 5000 | 5500 | 6000 |
| Production | 13000 | 15500 | 17000 | 18500 |
| Sales | 12000 | 15000 | 16500 | 18000 |
| Closing Stock | 5000 | 5500 | 6000 | 6500 |

Hence, the total production for all the quarters will be 64,000 units.

Production Cost Budget

| | | |
|---------------------|---------------------|-----------|
| Direct Materials | 64000 units x Rs. 5 | 3, 20,000 |
| Direct Labor | 96000 hours x Rs. 4 | 3, 84,000 |
| Variable Overheads | 96000 hours x Re. 1 | 96,000 |
| Total Variable Cost | | 8, 00,000 |
| Fixed Cost | | 1.80,000 |
| Total Cost | | 9, 80,000 |

Total Variable Cost for 64000 units is Rs. 8, 00,000. Hence, per unit variable cost is Rs.12.50

Calculation of Profit

| | |
|---|------------|
| Sales 61500 units @ Rs. 17 per unit | 10, 45,500 |
| Variable Cost of units sold 61500 units @Rs. 12.50 per unit | 7, 68,750 |
| Contribution | 2, 76,750 |
| Less: Fixed Cost | 1, 80,000 |
| Profit | 96,750 |

Break Even Point

Per Unit Selling Price is Rs. 17 and Per Unit Variable Cost is Rs. 12.50. Hence, Per Unit Contribution Rs. 4.50.

As Fixed Cost is Rs. 1, 80,000, Break Even Point in units will be $180000/4.50 = 40000$ units. This target is achieved by the company in Quarter 3; hence the company is expected to break even in Quarter Three.

A single product company estimated its sales for the next year quarter wise as under:

| Quarter | Sales units |
|---------|-------------|
| I | 30, 000 |
| II | 37, 500 |
| III | 41, 250 |
| IV | 45, 000 |

The opening stock of the finished goods is 10,000 units and the company expects to maintain the closing stock of finished goods at 16,250 units at the end of the year. The production pattern in each quarter is based on 80% of the sales of the current quarter and 20% of the sales of the next quarter. The opening stock of raw materials in the beginning of the year is 10,000 Kg. and the closing stock at the end of the year is required to be maintained at 5,000 Kg. Each unit of finished output requires 2 Kg. of raw material.

The company proposes to purchase the entire annual requirement of raw materials in the first three quarters in the proportion and at the prices given below:

| Quarter | Purchases of Raw Material % of Total required | Price per Kg Rs |
|---------|--|-----------------|
| I | 30 | 2 |
| II | 50 | 3 |
| III | 20 | 4 |

The value of the opening stock of raw materials in the beginning of the year is Rs. 20,000. You are required to present the following for the next year, quarter wise:

- Production Budget in units.
- Raw Materials consumption budget in quantity.
- Raw Materials purchase budget in quantity and value.

Solution:

Production Budget: We know that Opening Stock + Production - Sales = Closing Stock
Hence we know that Closing Stock + Sales - Opening Stock = Production

| | Quarter I | Quarter.II | Quarter III | Quarter. IV |
|---------------|-----------|------------|-------------|-------------|
| Opening Stock | 10000 | 11500 | 12250 | 13000 |
| Production | 31500 | 38250 | 42000 | 48250 |
| Sales | 30000 | 37500 | 41250 | 45000 |
| Closing Stock | 11500 | 12250 | 13000 | 16250 |

Hence, the total production for all the quarters will be 1, 60,000 units.

Raw Materials Consumption Budget: Production Budget is 1, 60,000 units. Each unit of the final product requires 2 Kg. of raw material. Hence, the raw material consumption budget in quantity will be 3, 20,000 Kg.

Raw Materials Purchase Budget: Total quantity of raw materials to be purchased will be Closing Stock + Consumption - Opening Stock $5000 + 320000 - 10000 = 315000$
The quarter wise purchases will be as below:

| | |
|---|------------|
| 01 30% of 315000 Kg. Le 94500 Kg @ Rs. 2 per Kg. | 1, 89, 000 |
| 0250% of 315000 Kg. i. e. 157500 Kg. @Rs. 3 per Kg. | 4, 72, 500 |
| 0320% of 315000 Kg. i.e. 63000 Kg. @Rs. 4 per Kg. | 2, 52,000 |
| | 9, 13, 500 |

Hence, total purchase budget in terms of value is Rs. 9, 13,500.

A private Limited company is formed to take over a running business. It has decided to raise Rs.55 Lakhs by issue of Equity shares and the balance of the capital required in the first six months is to be financed by a financial institution against an issue for Rs.5 Lakhs 8% Debentures (Interest payable annually) in its favour.

| | | | |
|--|-----|----|-------|
| Initial outlay consists of Freehold premises | Rs. | 25 | Lakhs |
| Plant & Machinery | Rs. | 10 | Lakhs |
| Stock | Rs. | 6 | Lakhs |
| Vehicle & Other items | Rs. | 5 | Lakhs |

Payments on the above items are to be made in the month of incorporation. Sales during the first 6 months ending on 30th June are estimated as under:

| | | | | | | | |
|----------|-----|-------|-------|-------|-----|-------|--------|
| January | Rs | 14 | Lakhs | April | Rs. | 25 | Lakhs. |
| February | Rs. | 15 | Lakhs | May | Rs. | 26.50 | Lakhs. |
| March | Rs. | 18.50 | Lakhs | June | Rs. | 28 | Lakhs. |

Lag in payment- Debtors 2 months
- Creditors 1 month

Other information:

- Preliminary expenses Rs.50, 000 (Payable in February)
- General Expenses Rs.50, 000 p.m. (Payable at the end of each month)
- Monthly wages (payable on 1 st day of next month) Rs. 80,000 p.m. for first 3 months and Rs. 95,000 p.m. there after.
- Gross Profit rate is expected to be 20% on sales.
- The shares and debentures are to be issued on 1 st January.
- The stock levels though out is to be the same as the outlay.

Prepare cash budget for the 6 months ended 30th June

Solution:

**Cash Budget
(For 6 month ending 30th June)**

| | | (Rs. in Lakhs) | | | | | |
|-----|-------------------------|----------------|---------|-------|--------|--------|-------|
| (A) | Cash Inflow | Jan | Feb. | Mar. | Apr. | May. | Jun. |
| | Issue of shares | 55.00 | - | - | - | - | - |
| | Issue of Debentures | 5.00 | - | - | - | - | - |
| | Collection from Debtors | - | - | 14.00 | 15.00 | 18.50 | 25.00 |
| | | 60.00 | - | 14.00 | 15.00 | 18.50 | 25.00 |
| (B) | Cash Outflow | | | | | | |
| | Fixed Assets | 40.00 | - | - | - | - | - |
| | Stock (Initial) | 6.00 | - | - | - | - | - |
| | Preliminary Expenses | - | 0.50 | - | - | - | - |
| | Sundry Creditors | - | 10.40 | 11.20 | 14.00 | 19.05 | 20.25 |
| | General Expenses | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| | Wages | - | 0.80 | 0.80 | 0.80 | 0.95 | 0.95 |
| | | 46.50 | 12.20 | 12.50 | 15.30 | 20.50 | 21.70 |
| (C) | Net cash Inflows | | | | | | |
| | (A-B) | 13.50 | (12.20) | 1.50 | (0.30) | (2.00) | 3.30 |
| | Opening Balance | - | 13.50 | 1.30 | 2.80 | 2.50 | 0.50 |
| | + Surplus for the month | 13.50 | (12.20) | 1.50 | (0.30) | (2.00) | 3.30 |
| | Closing Balance | 13.50 | 1.30 | 2.80 | 2.50 | 0.50 | 3.80 |

Working Notes: It is assumed that the company is incorporated in January. Assuming that

the company is carrying on manufacturing operations, the purchase say for the month of January are computed as below:

| | |
|----------------------------------|-------|
| Sales for January | 14.00 |
| Less Gross profit @ 20% | 2.80 |
| Cost of goods | 11.20 |
| Less wages for January Purchases | 0.80 |
| Purchases | 10.40 |

A newly started company "Green Co. Ltd." wishes to prepare cash budget from January. Prepare a cash budget for the first 6 months from the following estimated revenue and Expenditure.

| Month | Total Sales | Material | Wages | Overheads | |
|-------|-------------|----------|-------|------------|------------------------|
| | | | | Production | Selling & Distribution |
| | Rs. | Rs. | Rs. | Rs. | Rs. |
| Jan. | 20,000 | 20,000 | 4,000 | 3,200 | 800 |
| Feb. | 22,000 | 14,000 | 4,400 | 3,300 | 900 |
| Mar. | 24,000 | 14,000 | 4,600 | 3,300 | 800 |
| Apr. | 26,000 | 12,000 | 4,600 | 3,400 | 900 |
| May | 28,000 | 12,000 | 4,800 | 3,500 | 900 |
| June | 30,000 | 16,000 | 4800 | 3,600 | 1000 |

Cash balance on 1 st January was Rs.10, 000. A new machine is to be installed at Rs.30, 000 on credit, to be repaid by two equal installments in March and April. Sales commission @ 5% on total sales is to be paid within the month following actual sales. Rs. 10,000 being the amount of second call may be received in March. Share premium amounting to Rs. 2,000 is also obtainable with 2nd call.

| | |
|---------------------------------------|--------------|
| Period of credit allowed by suppliers | 2 months |
| Period of credit allowed to customers | 1 month |
| Delay in payment of overheads | 1 month |
| Delay in payment of wages | half a month |

Assume cash sales to be 50% of total sales.

Solution

Cash Budget of Green Co. Ltd.

| | | Jan | Feb | Mar | Apr | May | Jun |
|------------|-----------------------------------|--------|--------|--------|--------|--------|--------|
| (A) | Cash Inflows | | | | | | |
| | Cash sales | 10,000 | 11,000 | 12,000 | 13,000 | 14,000 | 15,000 |
| | Collection from debtors | - | 10,000 | 11,000 | 12,000 | 13,000 | 14,000 |
| | Share Capital (2nd call) | - | - | 10,000 | - | - | - |
| | Share Premium | | | 2,000 | | | |
| | | 10,000 | 21,000 | 35,000 | 25,000 | 27,000 | 29,000 |
| (B) | Cash Outflows | | | | | | |
| | Sundry Creditors | - | - | 20,000 | 14,000 | 14,000 | 12,000 |
| | Wages For current month | 2,000 | 2,200 | 2,300 | 2,300 | 2,400 | 2,400 |
| | For last month | - | 2,000 | 2,200 | 2,300 | 2,300 | 2,400 |
| | Production Overheads | - | 3,200 | 3,300 | 3,300 | 3,400 | 3,500 |
| | Selling & Distribution Overheads | - | 800 | 900 | 800 | 900 | 900 |
| | Installment for Machine purchased | - | - | 15,000 | 15,000 | - | - |
| | Sales commission | | 1,000 | 1,100 | 1,200 | 1,300 | 1,400 |

| | | | | | | | |
|-------|-------------------------------------|--------|--------|-----------|------------|--------|--------|
| | | 2,000 | 9,200 | 44,800 | 38,900 | 24,300 | 22,600 |
| (C) | Net Cash Inflows or outflows | | | | | | |
| (A-B) | | 8,000 | 11,800 | (-) 9800 | (-) 13,900 | 2,700 | 6,400 |
| | Opening cash balance | 10,000 | 18,000 | 29,800 | 20,000 | 6,100 | 8,800 |
| | + Surplus for month | 8,000 | 11,800 | (-) 9,800 | (-) 13,900 | 2,700 | 6,400 |
| | Closing cash balance | 18,000 | 29,800 | 20,000 | 6,100 | 8,800 | 15,200 |

Prepare a cash budget for the quarter ended 30th September 1987 based on the following information:

| | | |
|--------------------------------------|-----|--------|
| Cash at Bank on 1 st July 1987 | Rs. | 25,000 |
| Salaries and wages estimated monthly | Rs. | 10,000 |
| Interest Payable August 1987 | Rs. | 5,000 |

| | June | July | August | September |
|----------------------|----------|----------|----------|-----------|
| | Rs. | Rs. | Rs. | Rs. |
| Estimated Cash sales | - | 1,40,000 | 1,52,000 | 1,21,000 |
| Credit Sales | 1,00,000 | 80,000 | 1,40,000 | 1,20,000 |
| Purchases | 1,60,000 | 1,70,000 | 2,40,000 | 1,80,000 |
| Other Expenses | - | 20,000 | 22,000 | 21,000 |

Credit sales are collected 50% in the month of sales are made and 50% in the month following collection from credit sales are subject to 5% discount if payment is received in the month of sales and 2.5% if payment is received in the following month.

Creditors are paid either on a prompt or 30 days basis. It is estimated that 10% of the creditors are in the prompt category.

Solution:

Cash Budget
(For Quarter Ending September 1987)

| | | July | August | September |
|------------|------------------------------------|----------|----------|-----------|
| | | Rs. | Rs. | Rs. |
| (A) | Cash Inflows | | | |
| | Cash Sales | 1,40,000 | 1,52,000 | 1,21,000 |
| | Collection from Debtors Last month | 48,750 | 39,000 | 68,250 |
| | Current month | 38,000 | 66,500 | 57,000 |
| | | 2,26,750 | 2,57,500 | 2,46,250 |
| (B) | Cash Outflows | | | |
| | Sundry Creditors | | | |
| | Prompt Basis | 17,000 | 24,000 | 18,000 |
| | Others | 1,44,000 | 1,53,000 | 2,16,000 |
| | Salaries & wages | 10,000 | 10,000 | 10,000 |
| | Other Expenses | 20,000 | 22,000 | 21,000 |
| | Interest | - | 5,000 | - |
| | | 1,91,000 | 2,14,000 | 2,65,000 |
| (C) | Net Cash Inflow (A-B) | 35,750 | 43,500 | (18,750) |
| | Opening Balance | 25,000 | 60,750 | 1,04,250 |
| | + Surplus for the month | 35,750 | 43,500 | (18,750) |
| | Closing Balance | 60,750 | 1,04,250 | 85,500 |

ABC CO. Ltd. wishes to arrange overdraft facilities with its bankers during the period April to June 1987 when it will be manufacturing mostly for stock. Prepare a cash budget for the above period from the following data, indicating the extent of the bank facility the company will require at the end of each month.

| Month | Sales | Purchases | Wages |
|----------|----------|-----------|--------|
| | Rs. | Rs. | Rs. |
| February | 1,80,000 | 1,24,800 | 12,000 |
| March | 1,92,000 | 1,44,000 | 14,000 |
| April | 1,08,000 | 2,43,000 | 11,000 |
| May | 1,74,000 | 2,46,000 | 10,000 |
| June | 1,26,000 | 2,68,000 | 15,000 |

Additional Information

- All Sales are Credit Sales 50% of Credit Sales are realized in the month following the sales and the remaining 50% in the Second month following
- Creditors are paid in the month following the month of purchases.
- Cash at Bank of 1.4.87 (Estimated) Rs.25,000

Solution

Cash Budget of ABC Co. Ltd. Problems

| | | Apr. 87 | May 87 | June 87 |
|-----|------------------------------------|----------|--------------|--------------|
| (A) | Cash Inflows | | | |
| | Sundry Debtors | | | |
| | First 50% | 96,000 | 54,000 | 87,000 |
| | Second 50% | 90,000 | 96,000 | 54,000 |
| | | 1,86,000 | 1,50,000 | 1,41,000 |
| (B) | Cash Outflows | | | |
| | Sundry Creditors | 1,44,000 | 2,43,000 | 2,46,000 |
| | Wages | 11,000 | 10,000 | 15,000 |
| | | 1,55,000 | 2,53,000 | 2,61,000 |
| (C) | Net Cash Inflows or outflows (A-B) | 31,000 | (-) 1,03,000 | (-) 1,20,000 |
| (D) | Estimated Cash Surplus or shortage | | | |
| | Opening Cash Balance | 25,000 | 56,000 | - |
| | + Surplus/Deficit for the month | 31,000 | (-) 1,03,000 | (-) 1,20,000 |
| | Closing cash balance | 56,000 | (-) 47,000 | (-) 1,20,000 |

Problems

On 30th September 1990, the Balance Sheet of Melodies Pvt. Ltd. retailers of musical instruments, was as under:

| Liabilities | Rs. | Assets | Rs. |
|---|--------|---------------------|--------|
| Ordinary shares of Rs.1 0 each fully paid | 20,000 | Equipment (at cost) | 20,000 |
| Reserves and surplus | 10,000 | Less: Depreciation | 5,000 |
| Trade Creditors | 40,000 | Stock | 20,000 |
| Proposal Dividend | 15,000 | Trade Debtors | 15,000 |
| | | Balance at Bank | 35,000 |
| | 85,000 | | 85,000 |

The company is developing a system of forward planning and on 1 st October 1990, it supplies the following information:

| | Credit Sales | Cash Sales | Credit Purchases |
|-------------------|--------------|------------|------------------|
| | Rs. | Rs. | Rs. |
| Sept. 90 (Actual) | 15,000 | 14,000 | 40,000 |
| Oct. 90 (Budget) | 18,000 | 5,000 | 23,000 |
| Nov. 90 (Budget) | 20,000 | 6,000 | 27,000 |
| Dec. 90 (Budget) | 25,000 | 8,000 | 26,000 |

All trade debtors are allowed one month's credit and are expected to settle promptly. All trade creditors are paid in the month following delivery.

On 1 st October 1990, all the equipment was replaced at a cost of Rs 30,000. Rs. 14,000 was allowed in exchange for the old equipment and a net payment of Rs. 16,000 was made. Depreciation is to be allowed at the rate of 10% per annum. The proposed dividend will be paid in December 1990.

The following expenses will be paid:

| | |
|--------------------------------------|--|
| Wages | Rs. 3,000 per month |
| Administration | Rs. 1500 per month |
| Rent | Rs. 3600 for the year to 30th September 1991 (to be paid in October, 1990) |
| The gross profit percentage on sales | estimated at 25% |

You are required:

- To prepare cash budget for the months of October, November and December. (2)
To prepare Income Statement for the three months ended 31 st December 1990.
- Develop Performa income statement for the months of July, August and September for a company for the following information: (a) Sales are projected at Rs. 2,25,000, Rs. 2,40,000 and Rs. 2,15,000 for July, August and September respectively (b) Cost of goods sold is RS.50, 000 plus 30% of selling price per month.(c) Selling Expenses are 3% of sales.(d) Rent is Rs. 7,500 per month; administrative expenses for July are expected to be Rs. 60,000 but are expected to rise 1% per month over the previous month's expenses.(e) The company has Rs.3, 00,000 of 8% loan interest payable monthly. (f) Corporate Tax rate is 70%.

The projected sales and purchases of ABC Ltd. for the months July to November 1983 are:

| | Sales (Rs.) | Purchases (Rs.) |
|-----------|-------------|-----------------|
| July | 6, 20,000 | 3, 80,000 |
| August | 6, 40,000 | 3, 33,000 |
| September | 5, 80,000 | 3, 50,000 |
| October | 5, 60,000 | 3, 90,000 |
| November | 6, 00,000 | 3, 40,000 |

The wages are expected to be Rs.1 00,000 per month. The management is expected to pay two months wages as bonus during October 1983. The company is expected to pay advance income tax Rs.90, 000 before 15th September 1983. The company has ordered in June 1983 for a machine costing Rs. 16, 00,000. The Bank has agreed to finance the purchase of the machine which is expected to be delivered in January 1984. The company has advanced 5% in June 1983 and they have agreed to pay another 10% advance after 3 months. The company extends 2 months credit for the customers and enjoys one month credit from the suppliers. The general expenses for the company are Rs.60, 000 per month payable at the end of each month. The company anticipates receiving dividends of 10% for the investments of 90,000 shares of Rs. 10 each during October 1983. The company anticipates to have an overdraft of Rs. 40,000 on 1st September 1983 (limit sanctioned is Rs. 55,000). Draw a cash budget for September 83 to November 83.

6.5 ZERO-BASED AND INCREMENTAL BUDGETS

Now we are going to do a new concept that is called as Zero Based Budgeting. Does any body in the class know about Zero Based Budgeting?

Zero-base budgeting requires managers to start at zero budget levels every year and justify all costs as if all programs were being proposed for the first time. This process differs from traditional budgeting, in which changes in budgets from one year to the next are subject to the greatest scrutiny. In the absence of a financial crisis, there is a presumption in traditional budgeting that a manager is "entitled" to at least as much as was budgeted in the previous year. The benefits of an annual in-depth budgeting review must be weighed against the time and effort required for such a review. After some experimentation with zero-based budgeting in the late 1970s, few organizations now employ this approach to budgeting.

Zero-base budgeting, at present, is receiving great attention from business experts as a new approach to the budgeting process. The concept of zero-base budgeting was first put forward in a crude form by E. Hilton in 1924 when he emphasized to re justify budget programmes annually. Later, this technique of budgeting was used successfully in 1962 by the former President of America, Jimmy carter when he was the Governor of Georgia. Mr. Carter used it as a ground-up budgeting technique for controlling state expenditure. This techniques has come to be associated in the present form and named with P. *A.Phyrr ever* since he represented it" in a systematic manner in his article entitled:' Zero Base Budgeting" in 1970.

Zero-base budgeting is a technique where executives are required to start at zero budget levels every year and justify all C6sts of the 'existing programme in comparison with all present and future programmes. Thus, zero-base budgeting is a programmed budgeting where existing programme already instituted are again evaluated on an equal footing With newly proposed programmes each year. It attempts to review and defend all programmes and expenditures every year. The same evaluation process is used for both on going and newly proposed activities and programs. In traditional budgeting, the previous year's budget is considered a base for the future; only changes in the base are defended. The base year's figures are increased or decreased according to anticipated needs.

This approach is based on the philosophy "Where we are, where do we go from here?" Zero-base budgeting is quite reverse of traditional budgeting in the sense that in the latter every period is treated as new period and the previous period is not taken as a base. Every budget activity must justify its existence in the light of present situation. The budget begins with-the base zero and accordingly future programmes are chalked out. Zero-base budgeting is getting popular in India. The government of India has directed its public sector undertakings to introduce Zero-base budgeting in their budgeting programmes. *Joshi* and *Raja* reports that few steel plants and nationalized banks in India are in the process of implementing this budgeting technique. The Governments of Maharashtra and Karnataka have also implemented this technique in their respective state planning. The use of Zero-base budgeting has also been reported from Rajasthan and Gujarat by the State Governments.

6.5.1 Steps Involved In Zero-Base Budgeting

Now we are going to discuss about the steps involved in ZBB the zero base budgeting consists of the following steps:

- Organizational and budgeting objectives should be carefully laid down;
- The areas of business where zero base budgeting is to be applied should be identified;
- The organization must be divided in small segments i.e. budget units, for effective analysis and evaluation.
- The in charge executive of the budget unit must prepare alternative spending plans as decision packages.
- The decision packages should be evaluated on the basis of cost and benefit analyses and ranked 'in order of priorities.

The preceding discussion reveals that the process of Zero-base budgeting begins with the development of budget units followed by the formulation of "decision packages" and their evaluation and ranking in order of priority. The responsibility of preparing departmental decision packages lies with the budget unit in charge. The decision packages submitted by various budget units are properly evaluated by systematic analysis and then ranked according to relative importance, going from those that are considered essential to those that are considered of least importance. Presumably this allows top management to; evaluate each decision package, independently, and to pare back in those areas that appear less critical or which do not appear to be justified in terms of the cost involved. The ranking system helps management to allocate its limited resources effectively. The critics of the Zero base concept argue that an annual in-depth defense of all programmes may be too time consuming to be really feasible. They suggest that periodic reviews should be made only every two or three years. Such period review would ensure minimum assessment cost with maximum efficiency. However, the decision of frequency of Zero-base reviews is governed by number of factors such as nature of business, nature of activity. Time and cost involved in review, organizational structure etc.

6.5.2 Advantages and Limitations of Zero-Base Budgeting

The major purpose of zero-base budgeting is to improve efficiency of decisions. It provides a scientific and systematic approach to budgeting as it considers the alternative of a programme through benefits - cost analysis. The cost-effectiveness analysis provides the basis for efficient choice. Zero-base budgeting contributes in number of ways to the profitability and prosperity of the organization. The important among them are:

- It ensures efficient use of limited resources by allocating them according to the relative importance of the programmes.
 - The annual review of the programme indicates the relative worth of the programmes and thus ensures no programme continues beyond its productive life.
 - It helps management to design and develop cost effective techniques for improving operations.
 - The corporate objectives can be achieved more successfully under zero-base budgeting.
 - It ensures a proper financial and economic study of a programme and thereby reduces the element of the risk in the project.
 - The establishment of decision units makes the performance evaluation system more effective.
 - The submission of decision-packages directly from budget unit to top management
- Zero-base budgeting suffers from following serious limitations:

- Zero-base budgeting is a costly affair; therefore, small organization cannot afford it.
- The annual reviews of the programmes become mechanical with the passage of time which makes main objective of the zero-base concept lost.
- The identification of decision units and decision packages creates number of problems for the organization.
- The process of zero-base budgeting requires experience, intelligence, expertise, and continuous training on the part of executives. Thus it is not suitable for ordinary organization.
- It fails to find out a workable solution to a problem created by stopping funding on such current programmes that have turned unproductive. They may improve long-term, commitments or fixed investments that cannot easily be shifted to other areas.

6.5.3 Incremental Budgeting

Traditionally, much setting of budgets has tended to be on the basis of what happened last year, with some adjustment for any changes in any factors which are expected to affect the forthcoming budget period. This tends to be particularly the case with 'spending' budgets like research and development and training, where the 'budget holder' (manager responsible for the budget) is allocated a sum of money to be spent in the area of activity concerned. These spending budgets are very common in local and central government and in other public bodies. A feature of the type of activities for which such budgets exist is the lack of a clear relationship between inputs and outputs. Compare this with, say a raw materials usage budget in a manufacturing company, where the amount of material used and, therefore, the amount of funds taken by it is clearly related to the level of production. It is easy for spending budgets to eat up funds with no clear benefit being derived. Often it is only possible increases in budgets which are examined with any real rigor.

Zero-base budgeting (ZBB) is based on the philosophy that all spending needs to be justified annually. When establishing the training budget each Year, it is not automatically accepted that a particular training course should be financed next year simply because it was undertaken last year. With an increasing portion of the total costs of most businesses being in areas where the link between outputs and inputs is not always clear, and where commitment of resources is discretionary rather than demonstrably essential to production. ZBB is increasingly relevant.

The principal problems with ZBB are: It is time-consuming and therefore expensive to undertake. Managers whose sphere of responsibility is subjected to ZBB can feel threatened and insecure. The benefits of a ZBB approach can be gained to some extent, perhaps at not too great a cost, by using the approach on a selective basis. Perhaps a particular budget area could be subjected to a ZBB-type scrutiny every second or third year. It will almost certainly be the case, for the typical business, that some areas would benefit from ZBB more than others. ZBB could, in these circumstances be applied to those areas, but not to others. The areas which are most likely to benefit from ZBB, are discretionary spending ones, like training and research and development. If senior management is aware of the potentially threatening nature, care can be taken to apply ZBB with sensitivity.

TECHNIQUES OF COSTING I

Structure

- 7.1 Introduction to Target Costing
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7.1 INTRODUCTION TO TARGET COSTING

You will learn about the Target Costing in this unit. You please consider the situation where the management of a company has to decide whether to develop and market a *new product*. In evaluating the feasibility of the new product, management must determine both the price it can charge and the expected cost. As we have seen, both the price and cost of the new product are affected by market conditions and actions of management. The degree that price and cost can be affected by management actions determines the most effective approach to use for pricing and cost management purposes. Cost-plus pricing is used for products where management actions (for example, advertising) can influence the market price. Although cost management is important in this case, there is a strong focus on marketing and the revenue side of the profit equation.

But what you will do if the market conditions are such that management cannot influence prices? If management's desired profit is to be achieved, the company must then focus on the product's cost. What management needs is an effective tool to reduce costs without reducing value to the customer. Many companies faced with this situation are adopting *Target Costing*. You know that the target costing approach, a form of life cycle costing, has recently assumed importance due to the hyper competitive marketing environment. Marketing managers first estimate the performance characteristics and market price requirements in order to achieve a desired market share for a proposed product. A standard profit margin is then subtracted from the projected selling price to arrive at the target cost for the product. The product development team must then, through its product and process design decisions, attempt to reach the product's target cost.

You know that this procedure is just the opposite of that followed by many companies today in which the product is designed with little regard either to the manufacturing process or to its long-run manufacturing cost. With this traditional procedure of first designing the product and then giving the design to process engineers and cost analysts, the product cost is developed by applying standard cost factors to the materials and processes specified for the design. Frequently, this cost may be well above that which can be sustained by market prices and the product is either aborted or, if marketed, fails to achieve desired profitability levels. You will realize that with the target cost approach, the new product team, consisting of product designers, purchasing specialists, and manufacturing and process people, works together to jointly determine product and process characteristics that permit the target cost to be achieved. The target cost approach is especially powerful to apply at the design stage, since decisions made at this stage have high leverage to affect long-run costs.

You should understand that Target Costing is a cost management tool for making cost reduction a key focus throughout the life of a product. A desired, or target cost is set, before the product is created or even designed. Managers must then try to reduce and control costs so that the product's cost does not exceed its target cost. Target costing is most effective at reducing costs during the product design phase when the vast majority of costs are committed. For example, the costs of resources such as new machinery, materials, parts, and even future refinements are largely determined by the design of the product and the associated production processes. These costs are not easily reduced once production begins. So, the emphasis of target costing is on proactive, up-front planning throughout every activity of the new product *development* process. Once the product is released into production, it becomes much harder to achieve significant cost reductions. Figure 11-3 shows that the majority of costs become committed or locked in much earlier than the time at which the major cash expenditures are made.

7.1.1 Target Costing and New Product Development

Based on the existing technology and related cost structure, the product has three parts, requires direct labor, and has four types of indirect costs. The first step in the target costing process is the determination of market price. The market sets this price. Management sets the gross margin for the new product. The difference between the gross margin and the market price is the target cost for the new product. The existing cost structure for the product is determined by building up costs on an individual component level. This product has two components. Component 1 consists of parts A and B. Component 2 consists of part C. Direct labor is needed for both components and final assembly. The indirect costs are associated with activities necessary to plan and process the product.

You may sometimes think that marketing department may have a limited role in target costing because the price is set by competitive market conditions. Actually, market research from the marketing department at the beginning of the target costing activity guides the whole product development process by supplying information on customer demands and requirements. In fact, one of the key characteristics of successful target costing is a strong emphasis on understanding customer demands. Not necessarily. A cross-functional team consisting of engineers, sales personnel, and accountants now must determine if cost reductions can be implemented that will reduce the costs enough to meet the target cost

Design and process engineers were also able to eliminate the activity, generating the first type of indirect cost. These cost reductions resulted from *value engineering*—a cost-reduction technique, used primarily during the design stage, which uses information about all value-chain functions to satisfy customer needs while reducing costs. In total, the planned cost reductions were adequate to reduce costs to the target. However, not all the reductions in cost take place before production begins.

Have you heard of *Kaizen costing*, which is the Japanese word for continuous improvement during manufacturing? How is kaizen costing applied? Kaizen goals are established each year as part of the planning process. Examples include the continual reduction in setup times and processing times due to employee experience. In total, target costing during design and kaizen costing during manufacturing enables the achievement of the target cost over the product's life. You should appreciate that accurate cost information is critical to these cost-reduction methods. Activity-Based Costing (ABC) provides this information. Activity-Based Management (ABM) is then used to identify and eliminate non-value-added activities, waste, and their related costs. ABM is applied throughout both the design and manufacturing stages of the product's life.

7.1.2 Illustration of Target Costing

We may now consider the target-costing system used by ITT AUTOMOTIVE of USA -- One of the world's largest automotive suppliers. The company designs, develops, and manufactures a broad range of products, including brake systems, electric motors, and lamps. Also, the company is the worldwide market leader in anti-lock braking systems (ABS), producing 20,000 such systems a day. Because these ABS are computerized, ITT Automotive actually ships 30% more computers daily than does Compaq! You may wonder as to what pricing approach does ITT automotive use for the ABS? The pricing process starts when one of ITT's customers, says Mercedes-Benz, sends an invitation to bid. The market for brake systems is so competitive that very little variance exists in the prices that companies can ask (bid). A target costing group is formed and charged with determining whether the price and costs allow for enough of a profit margin. This group is made up of engineers, cost accountants, and sales personnel. Factors considered in determining the feasibility of earning the desired target profit margin include competitor pricing, inflation rates, interest rates, and potential cost reductions during both the design (target costing) and production stages (Kaizen Costing) of the ABS product life. ITT purchases many of the component parts that make up the ABS. Thus, the target costing group works closely with suppliers. After product and process design improvements are made and commitments from suppliers are received, the company has the cost information needed for deciding the price for the bid.

You would be glad to know that the Target Costing system has worked well at ITT Automotive. The company's bid for the ABS resulted in Mercedes-Benz U.S. International selecting ITT Automotive as the developer and supplier of ABS for the automaker's M-Class All-Activity Vehicle.

7.1.3 Target Costing, and Cost-Plus Pricing

You know that the successful companies understand the market in which they operate and use the most appropriate pricing approach. To see how target costing and cost-plus pricing can lead to different decisions, suppose that ITT Automotive receives an invitation to bid from Ford on the ABS to be used in a new model car. Let's us assume the following data apply:

- The specifications contained in Ford's invitation lead to an estimated current man-

ufacturing cost (component parts, direct labor, and manufacturing overhead) of Rs.154.

- ITT Automotive had a desired gross margin rate of 30% on sales, which means that actual cost should make up 70% of the price.
- Highly competitive market conditions exist and have established a sales price of Rs.200 per unit

If cost-plus pricing were used to bid on the ABS, the bid price would be Rs.220 ($\text{Rs.154} / 0.7$). Ford would most likely reject this bid because the market price is only Rs.200. ITT Automotive's pricing approach would lead to a lost opportunity.

Suppose that managers at ITT Automotive recognize that the market conditions dictate a set price of Rs.200. If a target-costing system were used, what would the pricing decision be? The target cost is Rs.140 (that is, $\text{Rs.200} \times .7$), so a required cost reduction of Rs.14 per unit is necessary. The target-costing *group* would work with product and process engineers and suppliers to determine if the average unit cost could be reduced by Rs.14 over the product's life. Note that it is not necessary to get costs down to the Rs.140 target cost before production begins. The initial unit cost will likely be higher, say Rs.145. Continuous improvement over the product's life will result in the final Rs.5 of cost reductions. If commitments for cost reductions are received, the managers will decide to bid Rs.200 per unit. Note that if the bid is accepted, ITT Automotive must carry through with its focus on cost management throughout the life of the product.

You may be aware that the Target Costing originated in Japan. However, many companies now use it worldwide, including Chrysler, Mercedes-Benz, Proctor & Gamble, Caterpillar, and ITT Automotive. Even some hospitals use target costing. Why the increasing popularity of target costing? With increased global competition in many industries, companies are more and more limited in influencing market prices. Cost management then becomes the key to profitability. Target costing forces managers to focus on costs to achieve the desired profits.

7.1.4 Target Costing, ABC, and Service Companies

You may please note that many companies use target costing together with an activity-based-costing (ABC) system. Target costing requires a company to first determine what a customer will pay for a product and then work backwards to design the product and production process that will generate a desired level of profit. ABC provides data on the costs of the various activities needed to produce the product. Knowing the costs of activities allows product and production process designers to be able to predict the effects of their designs on the product's cost. Target costing essentially takes activity-based costs and uses them for strategic product decisions.

For example, Culp Inc., a North Carolina textile manufacturer, uses target costing and ABC to elevate cost management into one of the most strategically important areas of the firm. Culp found that 80% of its product costs are predetermined at the design stage, but earlier cost control efforts had focused only on the other 20%. By shifting cost management efforts to the design stage and getting accurate costs of the various activities involved in production, cost management at Culp evolved into a process of cutting costs when a product is being designed, not identifying costs that are out of line after the production is complete.

You have just now learnt that the basic goal of target costing is to reduce costs before they occur. After all, once costs have been incurred they cannot be changed. Such a strategy is

especially important if product life cycles are short. Because most product life cycles are shrinking, use of target costing is expanding. Target costing focuses on reducing costs in the product design and development stages-when costs can really be affected. For example, Chrysler's design of the low-priced Neon was heavily influenced by the company's use of target costing, and Procter & Gamble's CEO credits target costing for helping eliminate costs that could cause products to be priced too high for the market.

As you would have guessed, the Target costing has generally been applied in manufacturing companies. However, its use in service and nonprofit companies is growing. For example, a process nearly identical to target costing is being used in some hospitals. Development of treatment protocols-the preferred treatment steps for a patient with a particular diagnosis-is the "product design" phase for a hospital. Treatment protocols have short life cycles because of rapid advances in medical technology and knowledge. Therefore, with increased attention to cost containment in health care, it is important to consider the costs of the various activities in a treatment protocol at the time of designing the protocol.

Measuring the costs of a particular treatment protocol after it is in use was the best that could be done until recently, even in the most cost-conscious hospitals. But identifying cost overruns after the fact, although better than never measuring them, did not lead to good cost control. By using target costing techniques, that is, identifying the maximum amount that would be paid for a treatment, protocols can be designed to avoid potential cost overruns before a treatment begins. Cost containment is then focused on the patient level, where most decisions are made, not at the department level, where identifying the causes of cost overruns is more difficult.

7.1.5 Summary Problems

Problem:

Manu Offset Press is a printing firm that bids on a wide variety of design and printing jobs. The Proprietor of the firm, Manu Sharma, prepares the bids for most jobs. His cost budget for the year 2004 is as follows:

| Factor | Rs. | Amount (Rs.) |
|--------------------------------------|---------|------------------|
| Materials | | 350,000 |
| Labor | | 250,000 |
| Prime Cost (Materials + Labor) | | 600,000 |
| Overhead | | |
| Variable | 300,000 | |
| Fixed | 150,000 | 450,000 |
| Total production cost of jobs | | 1,050,000 |
| Selling and administrative expenses* | | |
| Variable | 75,000 | |
| Fixed | 125,000 | 200,000 |
| Total costs | | 1,250,000 |

Manu Sharma has a target profit of Rs. 250,000 for the year 2004. You are required to compute the average target mark up percentage for setting prices as a percentage of:

1. Prime costs (materials plus labor)
2. Variable production cost of jobs
3. Total production cost of jobs
4. All variable costs
5. All costs

Solution

You should understand that the purpose of this problem is to emphasize that many different approaches to pricing might be used and when they are properly employed, would achieve the same target selling prices. To achieve a target profit of Rs. 250,000, after meeting the total costs of Rs. 1,250,000, the targeted Income for the year 2004 should be:

$$\text{Rs. } 1,250,000 + \text{Rs. } 250,000 = \text{Rs. } 1,500,000.$$

The target markup percentages are worked-out as follows:

$$1. \text{ Percent of prime cost} = \frac{(\text{Rs. } 1,500,000 - \text{Rs. } 600,000)}{\text{Rs. } 600,000} = 150\%$$

$$2. \text{ Percent of variable production cost of Jobs} = \frac{(\text{Rs. } 1,500,000 - \text{Rs. } 900,000)}{\text{Rs. } 900,000} = 66.7\%$$

$$3. \text{ Percent of total production cost of Jobs} = \frac{(\text{Rs. } 1,500,000 - \text{Rs. } 1,050,000)}{\text{Rs. } 1,050,000} = 42.9\%$$

$$4. \text{ Percent of all variable costs} = \frac{(\text{Rs. } 1,500,000 - \text{Rs. } 975,000)}{\text{Rs. } 975,000} = 53.8\%$$

$$5. \text{ Percent of all costs} = \frac{(\text{Rs. } 1,500,000 - \text{Rs. } 1,250,000)}{\text{Rs. } 1,250,000} = 20\%$$

Problem: Target Costing

Mehta Electrical Motors (MEM) makes small electric motors for a variety of home appliances. MEM sells the motors to appliance makers, who assemble and sell the appliances to retail outlets. MEM makes dozens of different motors. But MEM does not currently make the motor to be used in garage-door openers. The firm’s market research department has discovered a sizeable market for such a motor. The market research department has indicated that a motor for garage-door openers would likely to sell for Rs. 3200. A similar motor currently being produced has the following manufacturing costs:

| | |
|------------------|-------------|
| Direct Materials | 1800 |
| Direct Labor | 900 |
| Overheads | 800 |
| Total | 3500 |

MEM management desires a gross margin of 18% of the manufacturing cost.

You are required to work out the solutions for the following questions:

1. Suppose Memphis used cost-plus pricing, setting the price 15% above the manufacturing cost. What price would be charged for the motor? Would

- you produce such a motor if you were a manager at Memphis? Explain.
2. Suppose Memphis uses target costing. What price would the company charge for a garage-door-opener motor? What is the highest acceptable manufacturing cost for which Memphis would be willing to produce the motor?
 3. As a user of target costing, what steps would Memphis managers take to try to make production of this product feasible?

Problem: Target Costing Over Product Life Cycle

Sunder Utility Equipments (SUE) makes a variety of motor-driven products for the home and small businesses. The market research department recently identified power lawn mowers as a potentially lucrative market. As a first entry into this market, SUE is considering a riding lawn mower that is smaller and less expensive than those of most of the competition. Market research indicates that such a lawn mower would sell for about Rs. 9,950 at retail and Rs. 8,500 wholesale. At that price, SUE expects life cycle sales is shown below:

The production department has estimated that the variable cost of production will be Rs. 4,800 per lawn mower, and annual fixed costs will be Rs. 850,000 per year for each of the 7 years. Variable selling costs will be Rs. 450 per lawn mower and fixed selling costs will be Rs. 350,000 per year. In addition, the product development department estimates that Rs. 45,00,000 of development costs will be necessary to design the lawn mower and the production process for it.

1. Compute the expected profit over the entire product life cycle of the proposed riding lawn mower.
2. Suppose SUE expects pretax profits equal to 12% of sales on new products. Would SUE undertake production and selling of the riding lawn mower?
3. SUE uses a target costing approach to new products. What steps would management take to try to make a profitable product of the riding lawn?

| Year | Sales (Nos.) |
|------|--------------|
| 1 | 2,000 |
| 2 | 6,000 |
| 3 | 9,000 |
| 4 | 12,000 |
| 5 | 10,000 |
| 6 | 8,000 |
| 7 | 5,000 |

7.2 ACTIVITY BASED COSTING

We saw many of the aspects of what we called traditional overhead analysis and then went on to look at more modern aspects of overhead cost analysis. In this chapter we will look in detail at activity-based costing (ABC) and activity-based costing management (ABCM). We know ABC is not new. We see in that ABC has been discussed under different names for at least two decades now. We also appreciated that the -concepts on which ABC is based are probably centuries old. Nevertheless, ABC has led to a change of mindset for many management accountants. There are a few review points that are worthwhile looking at before moving forward with the ABC debate.

ABC does not solve all of the management accountant's overhead assignment problems: 'Costs may still require some element of arbitrary apportionment, for example, where they represent resources shared by more than one product and where joint ness exists in the use of cost drivers' (Mitchell 1994: 266). Mitchell goes on to discuss, however, why such assignments are not necessarily a bad thing allocation can provide a means of rationing shared resources. Overhead rates represent a set of taxes on the use of these resources . . . cost allocation can reduce prerequisite [sic; surely prerequisite?] consumption by managers. ABC can contribute directly here by strengthening the monitoring capacity of the costing system' through the visibility which it brings to the 'hidden factory' of overhead services. ABC also provides a direct control link between providers of activities and the users of their output. The existence of cost driver rates provides the mechanism for the cross charging of costs which will initiate the type of monitoring behavior described above.

This view, as given by Mitchell, probably clarifies many to the accusations that ABC is not wholly new. The assignment of overheads still takes place, first, because it is necessary for ABC to work, and secondly, because it does provide some useful functions, such as we see from Mitchell's work.

7.2.1 Background to ABC: The Generation of Reliable Cost Information

There are three key areas of ABC:

1. Product cost differentiation.
2. Activities and their cost drivers.
3. Identification of non-value added cost improvement opportunities

In the early days of the history to cost accounting, from the middle of the nineteenth century to the- mid-1970s, management accountants who needed to would happily allocate and apportion overhead costs on bases that were considered fair at the time. Studies of cost accounting techniques from this period will reveal that the kind of apportionment bases we discussed in Chapter 6 were widely applied. Several studies have shown that organizations were quite happy to recover their overheads by using a single plant-wide overhead absorption rate. A survey reported in 1988 the in the United States almost one-third of companies canvassed used a single plant-wide overhead absorption rate. A similar study of UK management accounting practice revealed that small business organizations tended to *use* a single plant-wide overhead absorption rate, as did some larger organizations with high overhead costs.

The product and service costs derived from traditional allocation and appointment methods were used, even though they may have been inappropriate, for a number of reasons:

- Overheads were relatively unimportant, as a proportion of total costs.
- When organizations were labor intensive, rather than capital intensive, the direct labor hour rate basis of apportionment of overheads was a sufficiently appropriate method to use.
- Before the advent of computerization and office automation, ABC could only have meant an even more massive bureaucracy than before.
- All organizations were behaving the same way, so it was unnecessary to develop such innovations as ABC.
- Competition, if it existed, was relatively regional, not global, so detailed cost knowledge was not vitally important.
- Organizations were much less diversified than they are now, so there was little impetus to increase management's cost awareness.

Whilst these reasons will not be applicable to all organizations, they do indicate the nature of the need for ABC. In an increasingly automated, globally competitive, environment an organization's management must have reliable cost information: 'Unreliable cost information is an open invitation to disaster.

Reliable cost information is now considered by many to help with an organization's competitive advantage. In the same way that the application of information and computer technology has given many organizations a competitive advantage, the reliability of cost information also gives an organization a leading edge over other organizations whose cost information is not so reliable. The organization that depends only on unreliable cost information must be in a weaker position than the organization that has reliable cost information. If cost information is unreliable, it is also difficult to control. There is evidence to suggest that, in the case of the automobile manufacturing industry, only 15% of direct costs are controllable by management; even variable costs are not controllable in the short term. However, comparable overhead costs amount to 27% of total product costs.

In the service sector of an economy, of course, the gains to be made can be significantly greater. This will be true when overhead costs account for as much as 60%, or more, of total costs. In the case of overheads, therefore, there is much more scope to influence total costs through monitoring and controlling overhead costs than there is in trying to control the direct costs. ABC is, rightly, concerned largely with monitoring and controlling overhead costs.

7.2.2 The Benefits of ABC: Diversity and Complexity

A simple example will show how ABC generates more accurate product and service costs. ABC recognizes that it is activities that cause costs to change, and that the cost of these activities should be based on such activities. For example, this means that if a forklift truck is being used to move raw materials from one area of a warehouse to another, the costs of using that forklift truck must be indemnified with such movement, and not simply calculated on an arbitrary basis. Identifying costs with their activity bases means more than ever that the management accountant has to understand the nature of the production and service process, whether his or her organization is a manufacturing or service organization.

Worked Example

Product Zed passes through a variety of stages when being converted from raw materials to finished product. Throughout the production process, 4 direct labour hours are needed to carry out the conversion process in making 50 units; and quality control will spend 30 minutes on attempting to ensure that the product meets the strict requirements of the organization’s customers. The quality control overheads are absorbed at the rate of either 50 per quality control hour or 65 per direct labor hour.

Required

Using the direct labour hour basis (conventional costing) and the ABC method, determine the overhead costs of the product. We need, first, to determine the activity from which the quality control overheads are derived. Under the conventional costing system, the *implication* here is that the direct labour hour basis would have been used to recover (absorb) the quality control overheads. Using ABC, we would say that the reason for the existence of the quality control overheads is the act of quality control: that is, the need to check to ensure that what the customer gets is what he or she wants. In this case, the activity base of quality control is the time spent on controlling quality. The solution to this problem is therefore as follows:

| Traditional Costing | ABC |
|--|---|
| Quality control | Direct labour |
| Hour basis | Hour basis |
| Over heads Absorbed | |
| $4 \text{ dlh} \times 65 \text{ per dlh}$ $= 260$ $260 \div 50 \text{ units}$ $= 0.5$ | $\frac{1}{2} \text{ qch} \times 50 \text{ per qch}$ $= 25$ $260 \div 50 \text{ units}$ $= 5.2$ |

Dlh = direct labour hours; a
qch = quality control hours.)

A simplified example, but it does illustrate the possible distortion that the conventional costing system can lead to. If an inappropriate overhead absorption basis is used to calculate product or service costs, the costs reported will be unreliable. Using ABC, we have an overhead cost of 0.50 per unit of output rather than the 5.20 per unit under the traditional cost accounting system. We should be able to agree that ABC is giving us the more realistic view of the costs. The realistic view comes from using the correct cost driver; that is, we have identified the reason behind the existence of the activity being undertaken (quality control). The activity is driving the cost. Without the cost driver, there would be no cost to worry about. A cost driver is 'An activity, which generates cost' (CIMA 1991). The conclusion drawn from a complex situation is that costs vary with the range of items produced, not with the volume of items produced. Cooper and Kaplan give the following example to illustrate this point:

Plant A
Makes 100,000 of A

Simple environment,
Few set-ups,
Stock movements, etc.

Plant B
Makes 1 million of A
+ 900,000 of 199 similar products
Complex: 200
products, frequent
Set-ups, stock movements, etc.

The reasoning here is quite straightforward, in that when 100,000 of the product are made, together with the other 199 products, the infrastructure required to manage this diverse range, will be more complex than in the situation where only one product is made. The diversity of 200 products will involve many machine setups and startups, stock movements, supervision and inspection problems, and so on. The problem however, is that a traditional cost accounting view does not appreciate the significance of diversity. For example, as Cooper and Kaplan point out, if a product with a production run of 800 units is made, it will be allocated 0.08% of the production overheads (assuming a units of output overhead absorption rate), whereas a run of 100,000 units of a product would be allocated the same *proportion* of production overheads, 100/0 in this example. Relatively, both the 800 units and the 100,000 units are being charged with the same overheads, but they are not driving the overheads equally. The benefits of ABC, then, are that it addresses the issues of where costs come from, any doing so, it also addresses the issue of diversity and complexity of the production/service structure.

When discussing complexity in the automobile industry the question was asked: 'how long would it take in the minimum efficient scale assembly plant to produce one of every possible end unit combinations for the automobile company?' The answers were:

| | |
|----------------|---|
| Honda | 45 minutes |
| Toyota | 1 day |
| Chrysler | 220,000 years |
| General Motors | 7,800,000,000,000,000 years |
| | 36 trillion years for anyone model. |
| | There were 200 different models under production at the time. |

Shank and Govindarajan (ibid.) record that: 'whatever advantages GM enjoyed in economies of scale, technology, experience and vertical scope, they more than lost in the. Diseconomies of product line complexity.' The minimum efficient scale assembly plant they refer to produces one car per minute for 16 hours a day, 250 days a year.

As a side issue, to some extent, an interesting debate took place over the period September 1990 to March 1991 between two British based academics, Eiper and Walleye, and Cooper, one of the leaders in ABC development. Although the debate became a little personalized at one stage, it did raise the issue of whether ABC does indeed succeed as a result of costs resulting from activities. Piper and Walley (1990) maintain. That it is decisions and not activities that cause costs. They opened the debate in September 1990 and Cooper (1990).

Replied in the following November. There and Walley (1991) had the final word in March of the following year. A reading of the three articles will help with the understanding of the usefulness of ABC and ABCM.

Why organizations use ABC systems

Bailey (1991) carried out a survey into the implementation of ABC by ten UK companies. This survey gives a reasonable insight into how ABC can or cannot help with the issues we have been discussing. Although Bailey did report problems with ABC implementation, he concluded that respondents felt the benefits outweighed the problems (see Table 7.1).

| Benefits | % of sample | Probably leading to: |
|--|-------------|--|
| Greater accuracy in product costing | 100 | Improved pricing, make –or-buy decision |
| Greater involvement of production managers | 90 | Improvement cost awareness, feeling of ownership, interaction. |
| Improved management | 70 | Greater awareness of departmental managers, better product design, strategy improved, management control, and quality management |

Table 7.1

Bailey also reported on the perceived benefits at ABC (see Table 7.2).

| | Motivation to consider ABC (%) | Resulting benefits reported (%) |
|-------------------------------|--------------------------------|---------------------------------|
| More accurate product costing | 80 | 100 |
| Better management information | 50 | 70 |

Table 7.2

7.2.3 ABC: Design and Implementation

Cooper (1990) outlined five steps that need to be identified for an ABC system:

1. Aggregate actions into activities.
2. Report the cost of activities.
3. Identify activity centers.
4. Select first-stage cost drivers.
5. Select second-stage cost drivers.

An action is any process that we might carry out - switching on machinery, securing a wheel to a car, programming a computer, are all actions. Actions become activities when we take a series of actions and make them into a complete whole, such as a complete job or a complete stage of a job. Similarly, the aggregation of activities leads to their being centers. An activity centre is a segment of an organization or production process for which management wants to report the cost of activities performed separately.

Cost drivers are, as we agreed above, the activities that determine, or help us to determine, why a cost arose. Most of the ABC literature shows that cost drivers are found in two stages of the ABC process:

- i. First-stage cost drivers trace the costs of inputs into cost pools in each activity centre. Each cost pool represents an activity performed in that centre
- ii. Second-stage cost drivers trace the costs of cost pools into product costs. Keys (1994: 34), however, advocates a three-stage ABC process:

Stage 1: assign the cost to the year in which the cost produces benefit.

Stage 2: assign the current year's cost to activities (ABC system) or departments (traditional system).

Stage 3: assign each activity cost or each department cost to products or customers.

He makes the indisputable argument that if this stage 1 procedure is not followed properly: 'inaccuracy of assigning in one stage tends to be cumulative in later stages' (ibid.).

The kinds of costs that Keys sees as often being attributed to the wrong year include management salaries, depreciation, planning and designing new products, start-up costs of new methods, and training costs. Given the concepts and conventions of financial accounting, we should realize that there is nothing new in what Keys is saying; the matching or accruals concept takes care of this assignment problem. However, Keys is probably the first writer to overtly link matching expenditure to benefit received in the context of ABC. Whether we accept that ABC is a two-stage or three-stage process, there are further fundamental questions that need resolution - problems facing designers of ABC systems.

Some of the problems facing the designers of an ABC system in an organization are:

- How many activity centres should there be?
- How many cost pools should there be?
- Which cost drivers should we use?

As we should expect with a system as product- and organization-specific as ABC, there are no ready solutions to these questions. General guidance, however, says that the solutions to these questions depend on such matters as:

- Product diversity
- The relative costs of the activities aggregated. Batch size diversity
- The ease of obtaining cost derived data
- The behavior induced by the cost driver.

Each of these matters will vary according to the organization being dealt with. The solution for my organization may well be entirely different to the solution for your organization.

There is no simple, general, guidance that can be given to answer the question of how many activity centers and cost pools an organization should install within its ABC system. However, as far as possible, common sense should prevail! Taking the definition of an activity centre literally might lead us to draw the conclusion that our organization has 200 activity centres. Imagine the bureaucracy surrounding 200 activity centres, with each centre subdivided into one or more cost pools. Most organizations installing an ABC system have to arrive at a compromise - the trade-off between accuracy and precision. Accuracy means providing information that is acceptably legitimate - it may be 900/0 of the truth. Precision means that the information is 100% legitimate.

Setting up a realistic ABC system and accepting the accuracy/precision trade-off, activity centres will often consist of several activity areas being added together or aggregated. Rather than 200 activity centres, therefore, there will only be, say, 30. Similarly with cost pools. There is no theoretical answer or formula that will allow us to derive how many cost pools an organization should have. The management accountant must have an eye for a sensible level of aggregation in his or her acceptance of the trade-off between accuracy and precision, in the same way that he or she has for activity centres. There is a problem with the aggregation of

activities into activity centres, of course, namely, that the number of activities is potentially infinitely large across an organization. To overcome this problem, many actions will need to be aggregated. Such aggregations may be so arbitrary that they tend to lead to the arbitrary allocation of overheads. If this becomes the case ABC may lose many of its benefits. These problems are common to both traditional and activity-based costing.

Cost drivers tell the management accountant why an activity has been carried out, and the level of effort required carrying out that activity. Examples of cost drivers include:

- The number of production runs;
- The number of goods received transactions;
- The number of quality control inspections;
- The number of patients admitted hospital;
- The number of punctures repairs

Although we know what a cost driver is, we still have the difficulty of agreeing precisely how to choose one. In some cases, a cost driver will suggest it very easily. In the case of a puncture repairing service, the number of punctured tires repaired will almost certainly be one of the cost drivers (if not the only one). In other cases, it may not be so obvious at all. In such circumstances, the management accountant will have to liaise with colleagues and collect perhaps several series of data for analysis in order to determine what the driver should be. This means that, in some cases, there will be instances where direct labour hours; view of cost accounting in any case still has, and will continue to have, a significant impact on a management accountant's view on life. The other aspect to traditional" cost accounting methods is that they will continue to be of direct relevance to non-financial managers too.

7.2.4 How ABC Works

We are now able to discuss the way that ABC works in reality. The best way to see how ABC works is to consider an example that compares the traditional cost accounting approach with the ABC approach. When the necessary calculations are completed, we will be able to make a much better judgment of the appropriateness of ABC in any given situation.

Worked Out Example

This example is very similar to the example in Drury's (1989) article. Although it is lengthy both to read and to work through, it does illustrate many of the points that need to be appreciated for the work of this unit and subject. There are some significant differences between Drury's explanations and the ones given here. The information in provides details of the costs, volume and transaction cost drivers for a period in respect of XYZ Ltd.

| Table Details of the costs, volume and transaction cost drivers for a period for XYZ Ltd. | | | | |
|--|----------|----------|----------|-----------|
| Product | A | B | 0 | C |
| Sales and Production (Units) | 90,000 | 30,000 | 15,000 | 135,000 |
| Raw materials Usage (unit) | 10.00 | 7.0 | 14.0 | 1,320,000 |
| Direct materials Cost (f) | 30.0 | 40.0 | 15.0 | 4,125,000 |
| Direct labour hour | 2.5 | 3.0 | 1.5 | 337,500 |
| Machine hours | 5.0 | 3.0 | 7.5 | 652,500 |
| Direct labour cost (f) | 20.0 | 30.0 | 10.0 | 2,850,000 |
| Number of production runs | 5.0 | 10.0 | 50.0 | 65 |
| Number of deliveries | 18.0 | 7.0 | 50.0 | 75 |
| Number of receipts | 50.0 | 70.0 | 700.0 | 820 |
| Number of production orders | 45.0 | 25.0 | 60.0 | 130 |
| Overhead costs | | | | £ |
| Setup | | | | 75,000 |
| Machines | | | | 1,000,000 |
| Receiving | | | | 900,000 |
| Packing | | | | 650,000 |
| Engineering | | | | 750,000 |

The implications of the ABC method: Most writers on ABC, when discussing the advantages of the system, record the following as the principal advantages:

- Product cost accuracy is enhanced.
- Cost data is more comprehensive.
- Greater information is provided for managerial decision-making.

These advantages should be appreciated when we consider that ABC attempts to address all to the shortfalls. Accountants are often accused of not knowing what is happening in their organizations in terms of materials flow, storage, production systems and so forth. This has to be one of the most important advantages of the implementation of systems such as ABC, namely, that the management accountant is working with his or her colleagues to. Provide them with what they need. Looking at the example we have just worked through in the

previous section, there are serious implications for the organization involved under each of the three advantages listed above. This is so because, for example, product A now seems to have a true unit cost of £62.89 per unit as opposed to the traditionally calculated £105 per unit; similarly, product C's cost has gone from £45 to £139.74 per unit. Similarly, King *ET al.*'S (1994: 149-50) study into ABC implementation in the NHS in the United Kingdom showed that information generated through ABC can help hospital management in a number of ways:

- Measuring and improving departmental efficiency.
- Promoting activity provider, activity receiver links.
- Managing costs and strategic planning decision making

ABC: Design and Implementation

Assuming that selling prices are based on costs, what does the organization in our example do now? Does it reduce the prices of product A and increase the price of product C? A simplistic view says that they should, of course, but the evidence coming out of research into ABC practice is that even though costs are being re-evaluated, prices sometimes do not change - not in the short to medium term at least. The reason why prices are not being changed can be complicated, and include such factors as marketing policies, competitors maintaining their prices at the 'old' levels, and so on. There is, perhaps, a more serious aspect to the resistance to changing selling prices that is discussed by Bhimani and Piggott (1992: 130):

Sales managers did not understand or appreciate the reasons for product cost changes since they had not taken part in developing the ABC system. Their resentment nevertheless tended to diminish once the logic of ABC was explained and the rationale for cost changes indicated. In order to convince one's colleagues to the worth of one's work, one needs to educate and involve him or her: that is, participation. Along the lines of much of modern management practice and thought, even the management accountant is not always and only concerned with things financial. Mitchell (1994: 272) states: In addition to new cost data, ABC generates sets of non-financial measures through the cost driver data, which is needed for its implementation in output costing. They typically represent activity output measures and so can provide an indication of throughput, which facilitates performance measurement and assessment particularly at an operational level. .

A theory of costs should always be built upon a corporate model of the physical and technical production relationships as the main design frame work . Any cost accounting model therefore should be designed in such a fashion that it can supply any cost information necessary for attaining an optimal situation. The management accountant needs to look to his engineering and technical colleagues to help him or her understand his or her environment. We have made this kind of comment at various stages throughout this text. Furthermore Boons *et al.* paint rather a cynical view of the management accountant: ABC starts with aggregating tasks into actions then activities and finally into activity centres. It does so without questioning the present methods of producing/servicing i.e., its design starts from the assumption that the status quo is perfect and contains no inefficiencies or structural flaws. This is rather a cynical view in that it presupposes that the management accountant simply translates his or her existing imperfect system into a more advanced inflexible system. This ABC is a developing idea - but it is not new. We have admitted that ABC is merely an extension of existing cost accounting techniques and methods. However, there is, with ABC, a mind-set that traditional cost accounting does not have. With ABC we have to be prepared to accept arguments and inputs from colleagues outside the accounting function. As we know already, in order to monitor and control costs effectively, we need to become Lillian with production processes, with the way that our organization's services are provided. More than

before, however, ABC is telling us that in order to monitor and control costs fully and effectively, we have to go a stage further: we need to know every aspect of every process, rather than, perhaps, just having a good overview of the whole organization. ABC can be applied in most organizations no matter what their size. The argument that applies to some management accounting techniques, such as capital budgeting - the argument which says my organization is just too small, or just too simple, to warrant applying that technique (it would be overkill) - does not apply to ABC. Applied with care and used properly, ABC has a lot to offer all organizations

The most important issue concerning the implementation and upkeep of the ABC system is the length of time it will take to set up and implement the system and, following on from that, the cost of setting up and implementing the system. Takes a relatively long time and it is relatively expensive. Hence many small organizations will probably not implement an ABC system. Nevertheless, many organizations have implemented an ABC system, concluding that the trade-off, between, on the one hand, the time and cost and, on the other, the benefits received, is beneficial. As Bailey (1991) found, in addition to the costs of setting up and implementing the ABC system, there can be significant savings, for example in terms of staff costs.

7.3 TRANSFER PRICING

Till now, you have learnt about the Responsibility Accounting and Responsibility Centres such as Expense Centre, Revenue Centre, Profit Centre and Investment Centres etc. One of the major contentious issues between various Responsibility Centres is the Transfer Pricing. In this session, you will learn about the Transfer Pricing, its various approaches, comparison of major approaches and also briefly, on the external monitoring and control of Transfer Pricing.

In decentralized organizations where all the segments / divisions are independent of one another, the inter-segmental transactions will be less and hence, a very few problems related thereto, are encountered. Segment managers can then focus only on their own segments without hurting the organization as a whole. In contrast, when segments interact greatly, there is an increased possibility that what is best for one segment hurts another segment badly enough to have a negative effect on the entire organization. Such a situation may occur when one segment provides products or services to another segment and charges that segment a Transfer Price.

Definition

A Transfer Price is: 'an administered (or notional, intra company charge at which goods or services are "sold" by one division to another in the same organization or by central management to a division' (Melham 1980: 240). Transfer prices are the amounts charged by one segment of an organization for a product or service that it supplies to another segment of the *same* organization. Most often, the term is associated with materials, parts, or finished goods. The Transfer Price is revenue to the segment producing the product or service, and it is a cost to the acquiring segment.

Nowhere is there greater potential for conflict in such interactions than when goods produced in one unit are transferred to a second unit. If both units are organized as profit centers, a price must be placed on such transfers; this price represents revenue to the producing division

and a cost to the buying division. Therefore, the transfer price affects the profitability of both divisions, so that the managers of both divisions have a keen interest in how this price is determined. Early applications of transfer pricing were designed to facilitate the evaluation of unit performance. Alfred Sloan and Donaldson Brown, the senior managers of General Motors in the 1920s, understood well the importance of transfer pricing in this role:

“The question of pricing product from one division to another is of great importance. Unless a true competitive situation is preserved, as to prices, there is no basis upon which the performance of the divisions can be measured. No division is required absolutely to purchase product from another division. In their interrelation they are encouraged to deal just as they would with outsiders. The independent purchaser buying products from any of our divisions is assured that prices to it are exactly in line with prices charged our own car divisions. Where there are no substantial sales outside, such as would establish a competitive basis, the buying division determines the competitive picture - at times partial requirements are actually purchased from outside sources so as to perfect the competitive situation.” (Donaldson Brown, "Centralized Control with Decentralized Responsibilities," Annual Convention Series No. 57 - American Management Association: New York, 1927., p. 8).

Why do transfer-pricing systems exist? The role of transfer prices frequently extends beyond that of being a passive bookkeeping device. In particular, the system may be intended to:

1. As prices, they guide local decision-making; they help the producing division decide how much of the product to supply and the purchasing division decide how much to acquire
2. The prices and subsequent profit measurement help the top management to evaluate the profit centres as separate entities.
3. Many MNCs use transfer pricing to minimize their worldwide taxes, duties and tariffs. But these goals of MNCs are difficult to achieve, due to stringent taxation laws on transfer pricing being enforced by many countries.

Many observers of the transfer pricing situation see transfer pricing as something of a battleground, with winners and losers amongst the many players: 'Transfer pricing systems function in decentralized firms and influence the balance between, on the one hand, the profit centre managers' room for maneuver and, on the other hand, the need for integration between the profit centre activities' (Meer-Kooistra 1980:129). But a set of transfer prices providing motivations that produce maximum profits to the firm may cause one division to operate at a loss. For example, the transfer price that motivates the optimal short-run economic decision is short-run marginal cost. If the supplier has excess capacity, this cost will equal variable cost. The supplier will fail to cover any of its fixed costs and will therefore report a loss. Conversely, a set of transfer prices that may be satisfactory for evaluating divisional performance may lead the divisions to make sub-optimal decisions when viewed from an overall corporate perspective. If division managers are encouraged to maximize their individual divisional profits, they may take actions with respect to other division managers that cause overall corporate profits to decline. The conflict between decision-making and evaluation of performance is the essence of the transfer-pricing conundrum. A further conflict occurs if managers emphasize short-term performance in their transfer-price negotiations at the expense of long-run profitability of their position and the firm.

One of the reasons why we might talk in terms of winners and losers is that the level at which

transfer prices are set often impinge upon a manager's annual remuneration package. If a manager is paid at least partly by results, he or she will be keen to ensure that his or her results are as good as possible. Hence a manager with profit centre responsibilities might be most keen to see the highest possible transfer price in order to ensure the highest possible divisional profit. It is a subject of continuous concern to top management. A manager in a large wood products firm called the transfer pricing as the most troublesome management control issue.

7.3.1 Various Approaches to Transfer Pricing

There are various approaches for transfer pricing, as indicated below:

1. Cost-based prices

- (a) Actual Absorption Cost;
- (b) Standard Absorption Cost;
- (c) Actual Marginal Cost
- (d) Standard Marginal Cost.

2. Cost-plus prices

- (a) Actual Absorption Cost Plus Profit;
- (b) Standard Absorption Cost Plus Profit;
- (c) Actual Marginal Cost Plus Profit;
- (d) Standard Marginal Cost plus Profit.

3. Market prices

- (a) Actual Market Price;
- (b) Modified Market Price.

- 4. Linear programming prices
- 5. Negotiated prices
- 6. Administered prices
- 7. Pricing based on equity considerations
- 8. Profit sharing-based prices
- 9. Dual-Rate Transfer Prices

We will discuss aforesaid transfer pricing approaches, one by one, in the following sections. Perhaps thousands of articles, books, monographs, and working papers and so on have been written and presented on the subject of transfer prices and how they might be set. However, there seems to be no single answer on how to set a transfer price. Every new paper and book discusses similar approaches and no one ever gets nearer to solving this problem.

Sizer (1989: 482-3) quotes Anthony and Dearden who have developed a set of guidelines for establishing transfer prices:

1. Use standard cost-plus-profit transfer prices for goods transferred between divisions that are likely never to be made outside the company.
2. Use estimated long-run competitive prices for goods that management might be willing to buy from outside but only on a relatively long-term basis because their manufacture requires a significant investment in facilities and skills.
3. Use market-based prices for goods that can be made outside the company without any significant disruption to present operations. Use actual competitive prices for those products that are:
 - (a) Sold to both the company and outside sources; or
 - (b) Produced from outside and within the company.

In a survey of transfer-pricing practice in large firms in Canada, 85% of the responding firms reported that they used transfer pricing. In the responding firms, the transfer price was determined by:

57% - cost
 30% - market
 7% - negotiated
 6% - other

The Rationale for using transfer pricing included:

47% - for profit evaluation
 21% - for cost determination
 23% - for control and accountability
 9% - other

Cost-based Transfer Pricing: It includes the following:

Standard Cost Pricing: Some companies may prefer standard cost-based prices, so that the inefficiencies of the transferring segments are not passed on to the receiving segment. This may be so because the selling division would have no incentive to control production costs, since any cost increases can be passed on to the buying division. Transfers at standard cost impose cost discipline on selling divisions and enable buying divisions to plan with the security of certain prices for transferred inputs.

Variable-Cost Pricing: Market prices have innate appeal in a profit-centre context, but they are not cure-all answers to transfer-pricing problems. Sometimes market prices do not exist, are inapplicable, or are impossible to determine. For example, no intermediate markets may exist for specialized parts, or markets may be too thin or scattered to permit the determination of a credible price. When market prices cannot be used, versions of "cost-plus-a-profit" are often used as a fair substitute. To illustrate, consider Outdoor Equipment Company again. Exhibit 10-1 shows its selling prices and variable costs per unit. In this example, the Fabric Division's variable costs of \$8 per yard are the only costs affected by producing the additional fabric for transfer to the Tent Division. On receiving five yards of fabric, the Tent Division spends an additional \$53 to process and sell each tent. Whether the fabric should be manufactured and transferred to the Tent Division depends on the existence of idle capacity in the Fabric Division (insufficient demand from outside customers).

If there were no idle capacity in the Fabric Division, the optimum action for the company as a whole would be for the Fabric Division to sell outside at \$50, because the Tent Division would incur \$53 of additional variable costs but add only \$50 of additional revenue (\$100 - \$50). Using market price would provide the correct motivation for such a decision because, if

the fabric were transferred, the Tent Division's cost would be \$50 + \$53 or \$103, which would be \$3 higher than its prospective revenue of \$100 per unit. So the Tent Division would choose not to buy from the Fabric Division at the \$50 market price. Of course, the Tent Division also would not buy from outside suppliers at a price of \$50. If fabric is not available at less than \$50 per tent, this particular tent will not be produced.

| Sell Fabric Outside | | Use Fabric to Make Tent | | |
|---|------------|--|----------|-----------|
| Market price per yard of finished fabric to outsiders | \$ 10 | Sales price of finished tent | | \$ 100 |
| Variable costs per yard of fabric | 8 | Variable Costs: | | |
| (Market price of fabric for one tent = 5 yards x \$ 10 = \$ 50, | | Fabric Division (5 yards x \$ 8, | 40 | |
| | | Tent Division – Processing | 41 12 | 93 |
| Contribution margin per yard | 2 | Selling | | 7 |
| Total contribution for 50,000 yards x \$ 2 | \$ 100,000 | Total Contribution for 10,000 tents x \$ 7 | | \$ 70,000 |

Table 7.3 Data for Analysis of Transfer Prices

What if the Fabric Division has idle capacity sufficient to meet all the Tent Division's requirements? The optimum action would be to produce the fabric and transfer it to the Tent Division. Idle capacity implies that the Fabric Division could not sell the fabric to external customers and therefore would have zero contribution. If there were no production and transfer, the Tent Division and the company as a whole would forgo a total contribution of \$70,000. In this situation, variable cost would be the better basis for transfer pricing and would lead to the optimum decision for the firm as a whole. To be more precise, the transfer price would be all additional costs that will be incurred by the production of the fabric to be transferred. For example, if a lump-sum set-up cost is required to produce the 50,000 square yards of fabric required, the set-up cost should be added to the variable cost in calculating the appropriate transfer price. (In the example there is no such cost).

The Case against Marginal-Cost Transfers: The incremental-cost rule for internal transfers (when no intermediate market exists) may be theoretically desirable, but few companies follow this guideline. This suggests that the rule has defects that we have not made explicit. One problem, already mentioned, is that the supplying division will typically record a loss while large profits are allocated to the acquiring division selling the product in final form. In this case, we are forcing the supplying division to operate at a loss, thereby reducing its autonomy. If the transferred product represents a small fraction of the total output of the supplying division, this may be only a minor annoyance. If, however, the great majority of the supplying division's output must be transferred internally, and no external reference prices for these products exist, then it is a fiction to treat the supplying division as a profit centre. The division should either be controlled as a standard cost centre or be combined into a larger profit centre with a division that processes the bulk of its output.

A second problem with incremental-cost transfers occurs if the marginal cost is not constant over the range of output. In this case, the supplying division must supply a marginal-cost

schedule to the acquiring division. The situation becomes even more complicated if there is more than one purchasing division, so that the level *of* output is jointly determined by the separate decisions of each purchasing division. This would require an iterative solution as the supplying division varied its marginal cost according to the shifting demands of the purchasing divisions, or else a combined decision among all divisions involved.

The marginal-cost rule also starts to break down when the supplying division is operating near a capacity constraint. In this case, the proper economic transfer price shifts suddenly from the short-run marginal cost when operating below capacity to the long-run marginal cost (or profits forgone) when the supplying division can no longer meet all the demands for the product. When demand is at or above the capacity *of* the supplying division, incremental costs are well below the opportunity costs of production and provide poor guidance for resource-allocation decisions.

Marginal-cost transfer prices also provide an incentive for the manager of the supplying division to misrepresent the cost function of producing the intermediate product. If the transfer is to occur at marginal cost, and if the manager of the producing division is evaluated on the basis of the profits of this division, the manager can overstate the marginal cost of production and thereby obtain a higher transfer price. All the deterministic models used to demonstrate the optimality of the marginal-cost procedure assume that all the organization participants know the cost function or that the manager will truthfully report it when asked. But strong incentives exist for the manager to overstate the marginal-cost function, since this will increase the transfer price and thereby increase divisional profits.

In our two-division example of the Nicosia Company, the manager of Division A may claim that all costs are variable and that at the previous output level of 2,000 units the incremental costs are \$0.35 per unit. (Recall that the actual costs of Division A at this output level are \$700, of which \$500 was fixed). At this price, a computation reveals that Division B would earn maximum profits of \$500 at a volume of either 2,000 units or 3,000 units. Assuming B decided to order 3,000 units. Division A would earn revenues of \$1,050 and incur fixed costs of \$500 and variable costs of \$300, for a profit of \$250. The manager of Division A is much happier with this transfer price of \$0.35, since the division now shows a profit of \$250 as opposed to the \$400 loss reported at the marginal-cost transfer price of \$0.10 per unit. The firm as a whole suffers, since it earns only \$750 in profit per day (\$250 for A, \$500 for B), at an output level of 3,000 units as opposed to the maximum profit of \$800 that could be earned at an output level of 4,000 units. Of course, the Division A manager may have to explain how a profit of \$250 was earned when transfers were supposedly made at incremental cost. An appeal to cost saving efficiencies or reduced incremental costs when increasing output from 2,000 to 3,000 units per day might serve to counter this accusation.

The incentive for misrepresenting local information was a possibility. When managers are asked to provide information for decision-making that will also be used to evaluate their performance, we should expect some strategic manipulation of information (lying). The distorted information will improve the local performance measure of the manager, but at the expense of overall firm profits. In summary, then, marginal-cost transfers (1) conflict with the divisional autonomy of profit centres, (2) are difficult to implement if the marginal cost varies over the range of demanded output, especially if there is more than one purchasing division, (3) may be indeterminate as the supplying division reaches capacity, and (4) provide incentives for the supplying division to misrepresent its cost function.

Problems with cost-based prices

You should know that cost behavior analysis, overhead apportionment, the non-use of activity-based costing, and so on, might distort product costs. Hence, if a cost basis has been used that is inaccurate, how can a fair transfer price be established. We know from the work on activity-based *costing* that the production manager often has a keener eye for his or her costs than the management accountant! Consequently, if the production manager is aware of his or her true costs and the management accountant is setting transfer prices based on his or her own notion of costs, there is bound to be conflict and a lack of motivation somewhere along the line. There is also the possibility that the divisional manager will be playing games with the cost schedules. In such a case, the *costs* that are being presented as being actual costs will be nothing of the sort. If the buying division has no choice but to pay the price demanded by the selling division, where is the incentive for the selling division to be efficient? The selling division has no incentive to keep costs under control and improve efficiency if it can merely pass on all cost increases to the next division in the chain. One way round the problem of inefficient supplying divisions is to treat them as real profit centres along the lines of the Weyerhaeuser organization we looked at in a previous chapter. If a selling division genuinely has to compete with external organizations that are keen to compete with it at every level, and if the buying division genuinely has the right to buy goods and/or services from outside its own organization, there will be an incentive for the selling division to perform well. As an end result, we must ensure that all managers are working together for the greater benefit of the entire organization: in other words that they are working goal congruent. One manager trying to optimize his or her own performance may do so at the expense of all other divisions in the organization. In a situation where the goals of the manager of division A are self-set and are in conflict with the goals of all other divisions, goal congruence is lacking.

Cost plus prices: By cost-plus prices, we mean exactly the same under the heading of transfer pricing as we did under the heading of pricing. The same problem faces the divisional manager as faced the marketing manager: What should be the profit margin?

Incremental Cost plus Fixed Fee: One variation of the marginal-cost transfer-price scheme that has some desirable properties is to price all transfers at incremental (short-run marginal) cost but charge the purchasing division a fixed fee for the privilege of obtaining these transfers at incremental cost. Under this scheme, the purchasing division pays incremental cost for additional units, so that when it chooses an output level to maximize profits by equating marginal cost to marginal revenue, it is using the appropriate marginal costs of the producing division. The producing division has the opportunity to recover its fixed costs and earn a profit through the fixed fee charged each period. The fixed fee represents a reservation price that the purchasing division is paying for the privilege of acquiring the intermediate product at marginal cost.

The fixed fee plus marginal cost has some interesting control and motivational properties. Suppose the fixed fee assigned to each user is based on that user's planned (or long-run average) use of that facility. For example, if a division uses 20% of the average capacity, the division is assigned 20% of the fixed costs of the facility. The prepaid capacity would be reserved for the user paying for that capacity. This scheme has two desirable economic traits. First, in the short run, transfers will take place at short-run marginal cost as economic theory dictates. Second, people will tend to be more honest in the capacity acquisition stage. If they overstate their expected requirements, perhaps to ensure adequate capacity for their own use, they will pay a higher fixed fee. If they understate their expected requirements, to avoid the fixed fee for capacity, they may not have sufficient capacity for their needs as capacity either

is not acquired or is reserved for others who are paying the fixed fee for that capacity.

Suppose, however, that expectations are not realized. Then the approach may not be best for the firm overall. The capacity may no longer be assigned to the most profitable current uses. This problem can be overcome by allowing divisions to subcontract with each other so that a division, facing better opportunities, could rent the capacity previously reserved by another division.

This dual-price system is perfectly generalizable. For example, suppose an automobile dealership is choosing the level of its service operations. After negotiations with the new-car and used-car departments, a level of capacity is chosen. The plan is for the new-car operation to use 20% of capacity, the used-car department to use 30% of capacity, and the service department's own use (for outside customers) to consume 50% of capacity. Now suppose that the used-car operation falls upon hard times but must still pay its share of the fixed costs of the service department. This is proper, since otherwise these fixed costs would be reallocated to the other two departments; in effect, causing them to bear the costs of the used car department's failure to use the capacity that it reserved. Therefore this scheme is consistent with responsibility accounting.

In the limit, the fixed-fee plus variable-cost scheme will yield either a pure market or a pure cost-plus operation. For example, suppose the service department did no outside work. In this case, it would be responsible for none of its fixed costs and would become a pure cost centre. Jobs would be priced at standard variable costs, and the only goal of the service department would be to provide quality service at below standard cost. On the other hand, suppose the service department did no internal work. Then it would be a pure profit centre and all transfers would be at market prices. Therefore, this scheme blurs the distinction between pure cost and pure profit centres by operating over a continuum. Also, the scheme provides a justification for performing the buying and selling activities within the firm, since it uses a dual-price scheme for internal transfers that would be difficult to implement and enforce if the division: did not operate under centralized control.

The approach of a budgeted fixed fee to cover period costs and provide a return to capital plus an incremental cost based on marginal cost per unit for each unit transferred, is desirable. It leads to efficient resource allocation among divisions while still letting purchasing divisions see the full cost of obtaining goods or services from other divisions. If this is such a great scheme, why is it not widely used? We can only speculate that the need to account for usage and to acquire capacity on a planned and systematic basis may have prevented a more widespread use of this approach to transfer pricing.

Full Costs: Perhaps the most popular transfer price in practice is the full-cost pricing scheme. But such a scheme distorts decision-making. Nor does the full-cost pricing scheme seem to be a good guide for evaluating divisional performance. It provides the wrong incentives for the supplying division by allowing it to accumulate all costs and add mark-ups to generate profits. Efficiency is certainly not rewarded nor inefficiency penalized on a full cost-plus transfer-pricing scheme.

As a simple illustration of the perverse effects of a full-cost transfer pricing scheme, consider the practice of a large industrial company that allocates all corporate G&A expenses to its operating divisions and imposes a transfer price based on cost plus profit mark-up for all internal transfers. Assume it is manufacturing a product that must be processed through three divisions before final sale. The company allocates \$12,000 of general and administrative expenses to the three divisions manufacturing this product. Transfers between each division are done at full cost plus 20% mark-up, which is also the procedure used to price the final product.

Suppose the G&A expenses are allocated equally to each division \$4,000 each. The first division takes the \$4,000 allocation, marks it up by 20%, and transfers these costs to the second division (along with all other product-related costs). The second division now has not just its own \$4,000 G&A expense allocation for the product but also the \$4,800 from the first division (\$4,000 + 20% mark-up). Division 2 takes the \$8,800 G&A allocation marks it up by 20%, and transfers a total of \$10,560 to Division 3. The third division accumulates its own \$4,000 allocation with the \$10,560, adds the 20% mark-up to this sum of \$14,560, and obtains a total of \$17,472 of corporate G&A that must be added to the final price of the product. Thus, the \$12,000 of G&A has been increased not by a standard 20% mark-up but by a 46% mark-up ($17,472 - 12,000 / 12,000$) because of the escalating effect as the product passes from one division to the next. When last heard from, the company was calling in a consultant to determine how competitors were able to price their products so much lower and why the company was steadily losing market share in its product lines. Poorly conceived transfer-pricing policies can be highly dysfunctional.

With all these problems, we must ask why the full-cost approach to transfer pricing is so widely practiced. We must distinguish between two situations. Where an external market price exists, there appears to be little justification for the use of a cost-based approach to pricing. Where there is no external market price, a full-cost price may be used as a surrogate for the long-run marginal cost to the firm of manufacturing the product. This raises the question of why short-run cost is not used to price transfers as economic theory dictates. One executive observed: "When we add a product to our product line, we expect to continue to offer it on a full-time basis. It is not practical to offer products only in the short-run when conditions seem right and then, in the longer-run, or periodically, say to our customers that we cannot produce this product this period because our costs are now too high." This executive believes that irrespective of the short-run cost, product decisions reflect long-run commitments and should therefore be based on long-run cost that includes a fixed-cost component. Product decisions imply commitments to product continuity and the integrity of the product line and therefore provide a justification for full-cost pricing.

Market prices: One surrogate for a transfer price is to look outside the organization and find the price at which the goods or services can be obtained on the open market. For example, if the goods, coming out of my division can be bought in the same state on the open market, my transfer price is the price at which the goods can be bought outside the organization: 'when the selling division is operating at capacity it should transfer goods at the external market price because this represents the opportunity cost of selling the goods' (Wilson and Chua 1993: 304).

The principal benefit of a market-based selling price is, of course, its inherent fairness. A market-based transfer price is an unbiased estimate of the worth of the goods. Secondly, if a market price exists for a good or service, there is no requirement for a sophisticated cost

accounting system to calculate the transfer price: it is a ready-made estimate. In some cases - monopolies, for, example - no ready market exists for a product since no one else is making and selling it. Alternatively, there is no open market for the goods or services because they are always intermediate goods and services. That is, they are always and only transferred between processes and are never brought to the open market. Thirdly, as Cats-Baril *et al.* (1988) point out, in the introduction phase in the product life cycle, the firm frequently has a near monopoly on its product; hence no market price will exist. If it is not possible to obtain quotations from outside suppliers, it may be possible to:

1. Adjust for differences in design the price of a similar product or service, for which a market price does exist. .
2. Adjust a past market price for changes in product group market levels since that price became effective.

If there is a competitive market for the product or service being transferred internally, using the market price as a transfer price will generally lead to the desired goal congruence and managerial effort? The market price may come from published price lists for similar products or services, or it may be the price charged by the producing division to its external customers. If the latter, the internal transfer price may be the external market price less the selling and delivery expenses that are not incurred on internal business. The major drawback to market-based prices is that market prices are not always available for items transferred internally.

Consider Outdoor Equipment Company, Inc. (OEC), a major outdoor equipment manufacturer that makes clothing and gear for all kinds of outdoor activities. One division of OEC makes fabrics that are used in many final products as well as being sold directly to external customers, and another division makes tents. A particular tent requires five square yards of a special waterproof fabric. Should the Tent Division obtain the fabric from the fabric Division of the company or purchase it from an external supplier?

Suppose the market price of the fabric is \$10 per square yard, or \$50 per tent, and assume for the moment that the Fabric Division can sell its entire production to external customers without incurring any marketing or shipping costs. The Tent Division manager will refuse to pay a transfer price greater than \$50 for the fabric for each tent. Why? If the transfer price is greater than \$50, she will purchase the fabric from the external supplier, in order to maximize her division's profit.

Furthermore, the manager of the Fabric Division will not sell five square yards of fabric for less than \$50. Why? Because he can sell it on the market for \$50, so any lower price will reduce his division's profit. The only transfer price that allows both managers to maximize their division's profit is \$50, the market price. If the managers had autonomy to make decisions, one of them would decline the internal production of fabric at any transfer price other than \$50.

Now suppose the fabric Division incurs a \$1 per square yard marketing and shipping cost that can be avoided by transferring the fabric to the Tent Division instead of marketing it to outside customers. Most companies would then use a transfer price of \$9 per square yard, or \$45 per tent, often called a "market-price-minus" transfer price. The Fabric Division would get the same net amount from the transfer (\$45 with no marketing or shipping costs) as from an external sale (\$50 less \$5 marketing and shipping costs), whereas the Tent Division saves \$5 per tent. Over all, GEC benefits.

Under a restrictive set of conditions, which are occasionally realized in practice, the choice of a transfer price is clear. If a highly competitive market for the intermediate product exists, then the market price (less certain adjustments) is recommended as the correct transfer price. The conditions of a highly competitive market imply that the producing division can sell as much of the product as it wishes to outside customers, and the purchasing division can acquire as much as it wishes from outside suppliers without affecting the price.

If the purchasing division cannot make a long-run profit at the outside market price (assuming that the market price is a reasonable approximation of the long-run price and not simply a short-run distress price), then the company is better off to not produce the product internally and go to the external market for its supply. Similarly, if the purchasing division cannot make a long-run profit when it must acquire the product at the external price, the division should cease acquiring and processing this product and should allow the producing division to sell all its output to the external market. With a competitive market for the intermediate product, the market price provides an excellent basis for allowing the decisions of the producing and purchasing divisions to be independent of each other.

Some modifications to the pure market-price rule facilitate its use in practice. The company will usually benefit if the transaction occurs internally rather than having a producing division sell a certain amount externally while the purchasing division is acquiring the same amount from its own outside suppliers. To encourage internal rather than external transfers} a discount from market price is offered to reflect savings on selling and collection expenses and the delivery, service, or warranty terms associated with external sales. This discount will encourage an internal transfer, all other factors being held equal. Offsetting the desire to coordinate transactions within the firm is the frequent difficulty that division managers have in negotiating the terms of transfers with other divisions in the company. Hidden costs can arise if the buying division makes unreasonable delivery demands on the selling division (which may not be imposed on external suppliers) or when the selling division manager has concerns that any foul-up in product quality or delivery will become publicized throughout the organization, as expressed by the following complaint from the manager of a supplying division:

It is more difficult to work inside than externally. In the smallest impasse, a person can go up the line. Nobody wants to have the boss coming and making accusations of not cooperating. It is always difficult, so you need a financial incentive or something else, such as recognition for being a good corporate citizen. Sometimes the transaction must occur internally, rather than externally, to maintain product quality or product confidentiality requirements. In this case, the market price may be adjusted to reflect the extra cost required to meet a more stringent quality standard or special feature available only from internal manufacture. The challenge is to keep an accumulation of such special charges from driving the price far above the prices of comparable products available externally. A profit-conscious manager of the purchasing division will usually provide the necessary discipline.

Additional problems arise from the conflict between short-run and long run considerations. An external supplier may quote a low price in an attempt to buy into the business, with the expectation of raising prices later'. The company ordinarily should not switch its source of supply from an internal division to an outside company unless it is confident that the outside company will maintain the quoted price for a substantial period. A similar conflict arises when the price for the intermediate product or service is quoted on both a long-term-contract and a spot-market basis. As more of these complicating factors intrude on the price-setting process, they begin to violate our basic assumption of a perfectly competitive market for the

intermediate product. When the market is not perfectly competitive, as it usually is not for most manufactured goods, the transfer-price problem becomes much more complicated.

As more of these complications intrude on the transfer-pricing mechanism, we get additional evidence of the difficulty of using market prices to coordinate transactions within the firm. If market prices existed that allowed optimal resource allocation and managerial evaluation decisions to be made within the firm, little reason would exist to keep the different divisions within a single corporate entity. The units could function as independent market entities, since no gain apparently arises from centralized control.

Linear programming prices: Linear programming is used in establishing transfer prices. However, there are problems with it! The problems largely stem from reconciling who sets the organization's objectives and who sets the transfer prices. If divisional managers set both objectives and prices, there will probably be few problems. Wilson and Chua (1993) provide a very simple example of the application of linear programming to the transfer pricing problem. With linear programming prices we examine all of the relevant variables of a situation, and set up a linear programming model, which we then solve. The outputs of the linear programming model are the number of units to be made.

- Goal congruence problems are, however, well illustrated when objective setting is divorced from pricing setting. Emmanuel *et al.* (1990) discuss examples to deal with these problems. Essentially, the issues surrounding the latter case, where objective and price setting are divorced are grouped under the heading of decomposition methodology. The essence of the situation is:
 - Divisions solve divisional LPs;
 - Solutions sent to HQ;
 - HQ sends out new transfer prices
 - When optimum is reached, divisions informed of quantities to produce. (Emmanuel *et al.* 1990: 147).

The arguments should be clear. In the divisional situation, management at headquarters is the ones with the final say in the setting of transfer prices and so on. Hence, whilst divisional managers can solve their problems using LP, they do so only as an interim measure; and their results are subject to revision. Otherwise, the problems of goal congruence may impact upon the rest of the organization. As Emmanuel *et al.* say: 'Note that step 4 is necessary because knowledge of the transfer prices alone does not give divisions enough information to calculate optimum production quantities' (ibid. 146).

As Emmanuel *et al.* also demonstrate, the solution to the LP solution of transfer pricing problems is to build an LP model with linking constraints. That is, we develop an LP for division A, a model for division B, a model for division C . . . then build in the constraints that link the requirements of the whole organization as they impact upon division A . . . B . . . C . . .

Although the development of LP models in the context of transfer pricing has helped considerably, there are still limitations associated with them. First, the models assume goal consensus: that is, managers from different divisions are working towards achieving the same goals. They also assume, of course, that everyone is trading openly and honestly in terms of the information they submit to head office! Secondly, uncertainty is usually left out - of

textbook models, at least; yet each manager will probably be faced with a probability distribution of transfer prices in many situations. Thirdly, there are organizational and behavioral issues to be faced in transfer pricing situations: for instance, when corporate and divisional optimality come into conflict, which makes the final sacrifice? As Emmanuel et al. say these arguments do not invalidate LP theory and practice. In cases of doubt or non-applicability of an LP model, remodeling may be all that is needed.

Negotiated Market-Based Price: Lacking a perfectly competitive market for the intermediate product and being aware of the limitations of cost-based pricing rules, perhaps the most practical method for establishing a transfer price is through negotiation between the managers of the two divisions. The negotiating process typically begins when the producing division provides a price quotation plus all relevant delivery conditions (timeliness, quality, and so on). The purchasing division may:

1. Accept the deal
2. Bargain to obtain a lower price or better conditions
3. Obtain outside bids and negotiate with external suppliers
4. Reject the bid and either purchase outside or not purchase at all

In a different sequence, the purchasing division may make an offer to the producing division for a portion of its current output or an increment to current output. The producing division can then bargain with the purchasing division over terms, talk to its existing customers, or decide not to accept the purchasing division's offer. In either case, a negotiated transfer price requires that the managers of both divisions be free to accept or reject a price at any stage of the negotiation. Otherwise we would have a dictated price rather than a negotiated price.

The conditions under which a negotiated transfer price will be successful include:

- Some form of outside market for the intermediate product. This avoids bilateral monopoly situation in which the final price could vary over too large a range, depending on the strength and skill of each negotiator.
- Sharing of all market information among the negotiators. This should enable the negotiated price to be close to the opportunity cost of one or preferably both divisions.
- Freedom to buy or sell outside. This provides the necessary discipline to the bargaining process.
- Support and occasional involvement of top management. The parties must be urged to settle most disputes by themselves; otherwise the benefits of decentralization will be lost. Top management must be available to mediate the occasional un-resolvable dispute or to intervene when it sees that the bargaining process is clearly leading to sub-optimal decisions. But such involvement must be done with restraint and tact if it is not to undermine the negotiating process.

A negotiated-price system has the following limitations:

- It is time consuming for the managers involved.
- It leads to conflict between divisions.
- It makes the measurement of divisional profitability sensitive to the negotiating skills of managers.
- It requires the time of top management to oversee the negotiating process and to mediate disputes.
- It may lead to a sub-optimal (too low, level of output if the negotiated price is above the opportunity cost of supplying the transferred goods.

The negotiated-price system depends also on the willingness of external suppliers or purchasers to supply legitimate bids to the company. If, each time these external bids are solicited, the transfer price is determined so that all transfers are eventually made internally} the external bidders will soon tire of participating in this exercise. Therefore, some amount of external purchase or sale should be a realistic expectation in order to keep the faith of these outside participants and thereby ensure a continuing source of legitimate external prices. Despite these limitations, however, a negotiated-transfer-price system seems to offer desirable mechanisms for permitting local managers to exploit the specialized information they possess about local opportunities.

Administered Transfer Price: An Arbitrator or a manager who applies some policy sets 'Administered Transfer Prices', for example, market price less 10% or full cost plus 5%. Organizations often used administered transfer prices when a particular transaction occurs frequently. However, such prices reflect neither pure economic consideration, as market-based or cost-based transfer prices do, nor accountability consideration, as negotiated transfer prices do. You may find the administered transfer prices, in many of the Public Sector Undertakings.

For example, the management of an automobile (car) manufacturing company may fix the transfer price for the Body Shop Workshop at 80% of the normal market rate, in respect of body shop work done for the New and Used car Divisions. This may seem reasonable and may reflect a practical approach to dealing with the issues associated with market-based and cost-based transfer prices; but this rule is arbitrary and, therefore, provides an arbitrary distribution of revenues and costs between the body shop and the Divisions with which it deals. Administered transfer prices inevitably create subsidies among responsibility centres. Subsidies obscure the normal economic interpretation of responsibility centre income and may provide a negative motivational effect if members of some responsibility centre believe that the application of such rules is unfair.

Transfer Prices Based on Equity Considerations: Administered transfer prices are usually based on cost; that is, the transfer price is cost plus some mark-up on cost or market. Thus, the transfer price is some function (e.g. 80%) of the market price. However, sometimes administered transfer prices are based on equity considerations that invariably are designed around some definition of a reasonable division of jointly earned revenue or a jointly incurred cost.

As an example, consider the situation in which three responsibility centre managers need warehouse space (in the same locality). Each manager has undertaken a study to determine

the cost for an independent separate warehouse that meets the responsibility center's needs. The costs are as follows: Manager A – Rs. 3 million; Manager B – Rs. 6 million; and Manager C – Rs. 5 million. A property developer has proposed that the managers combine their needs into a single large warehouse, which would cost Rs. 11 million. This represents a Rs. 3 million savings from the total cost of Rs. 14 million if each manager were to build a separate warehouse. The issue is how the managers should split the cost of this warehouse.

One alternative, sometimes called the 'relative cost method,' is for each manager to bear a share of the warehouse cost that is proportional to each manager's alternative opportunity. This would result in the following cost allocations:

$$\text{Manager A's share} = \text{Rs. } (11 \times 3 / 14) \text{ million} = \text{Rs. } 2,357,143$$

$$\text{Manager B's share} = \text{Rs. } (11 \times 6 / 14) \text{ million} = \text{Rs. } 4,714,286$$

$$\text{Manager C's share} = \text{Rs. } (11 \times 5 / 14) \text{ million} = \text{Rs. } 3,928,571$$

This process is fair in the sense of being symmetrical. All parties are treated equally and each allocation reflects what each individual faces. Another approach, which reflects the equity criterion of ability to pay, is to base the allocation of cost on the profits that each manager derives from using the warehouse. Still another approach, which reflects the equity criterion of equal division, is to assign each manager a one-third share of the warehouse cost. Thus, each of the many different approaches to cost allocation reflects a particular view of equity.

Profit sharing-based prices: We may need to develop such ideas as profit-sharing models in the situation where three departments or divisions exist within an organization, but only one of them sells the final product, with the other two divisions processing the ingredients to make it. The question is, how, if at all, can divisions 1 and 2 share in the profit that division 3 has apparently earned by selling the product? The Massachusetts formula is one model that allows us to apportion the profit earned by the group over the separate divisions at that group. Two possible issues might arise:

1. Need we bother with assigning profit anyway?
2. Is such a method the best one, given that profit must be assigned?

Whether the profit needs to be assigned will be a question that the management accountant and his or her management colleagues will have to resolve. We cannot really anticipate all of the arguments in general here for what will be a specific question on an organization-by-organization basis. If we feel we do have to assign profit across departments or divisions, we can possibly improve on the situation here by considering the use of non-financial indicators in helping us to sort out such assignments. If we take throughput times, productivity rates and soon, instead of trying to use what are essentially artificial methods of profit assignment, we would be better able both to assess management and to assign profits.

Dual-Rate Transfer Prices: In a dual-rate transfer-pricing scheme, the supplier receives the net realizable value (the market price less finishing costs) for the commodity that is transferred while the buyer pays the sum of any out-of-pocket and opportunity costs of producing the product. In this way, both the buyer and the seller are motivated to demand and supply the optimal amount of the quantity. The buyer pays opportunity cost, and the seller receives the net realizable value of what is produced. This scheme raises the issue of estimating opportunity costs, and as we discussed earlier, it can motivate suppliers to

misrepresent their opportunity costs. Possibly because of these problems, the dual-pricing scheme is implemented in practice by substituting an allocation of fixed cost as an estimate of the opportunity cost; that is, the selling division receives its full cost in the transfer, but the buying division is charged only for the marginal cost.

At first glance, the dual-pricing scheme seems very attractive, but several companies that have tried it have eventually abandoned the practice. (Robert G. Eccles, "Control with Fairness in Transfer Pricing," *Harvard Business Review* (November-December 1983), pp. 153-54). Senior management objected to having the sum of divisional profits exceed overall corporate profits. In an extreme situation, buying and selling divisions could all show profits while the corporation as a whole is losing money. Thus, divisions would report profits at or above budget, only for large write-downs to occur, to eliminate the double counting of profits among divisions, when the books were closed at the corporate level. One company president noted: Dual pricing sort of died of its own complexity and conflict. There were situations in which divisions could get something internally that didn't exactly fit their needs but went ahead and got it because actual full cost was so much less than market price.

The dual-price system encouraged divisions to shift more of their mix to internal sales and purchases at the highly favorable terms. Internal sales increased well beyond expected levels. When business was poor and the selling units could not meet their budget for external sales, they generated excessive internal sales. Similarly, since buying units received internal product at cost, they had little incentive to negotiate for more favorable prices from external or even internal suppliers. In general, neither division in a dual-pricing scheme has a high incentive to monitor the performance of the other division. Thus, the dual-pricing scheme, by lowering the incentives for buying and selling divisions to deal in the external market, could lower overall corporate profitability.

Multinational Transfer Pricing: Transfer-pricing policies of domestic companies focus on goal congruence and motivation. In multi-national companies, other factors may dominate. For example, multinational companies use transfer prices to minimize worldwide income taxes, import duties, and tariffs. Suppose a division in a high-income-tax-rate country produces a subcomponent for another division in a low-income-tax-rate country. By setting a low transfer price, most of the profit from the production can be recognized into low-income-tax-rate country, thereby minimizing taxes. Likewise, items produced by divisions in a low-income-tax-rate country and transferred to a division in a high-income-tax-rate country should have a high transfer price to minimize taxes.

Sometimes income tax effects are offset by import duties. Usually import duties are based on the price paid for an item, whether bought from an outside company or transferred from another division. Therefore low transfer prices generally lead to low import duties.

Of course, tax authorities recognize the incentive to set transfer prices to minimize taxes and import duties. Therefore most countries have restrictions on allowable transfer prices, U.S. multinationals must follow an Internal Revenue Code rule specifying that transfers be priced at "*arm's-length*" market values, or at the values that would be used if the divisions were independent companies. Even with this rule, companies have some latitude in deciding an appropriate "*arm's-length*" price. Consider an item produced by Division A in a country with a 25% income tax rate and transferred to Division B in a country with a 50% income tax rate. In addition, an import duty equal to 20% of the price of the item is assessed. Suppose the full unit cost of the item is \$100, and the variable cost is \$60. If tax authorities allow either variable- or full-cost transfer prices, which should be chosen? By transferring at \$100 rather

than \$60, the company gains \$2 per unit:

Effect of Transferring at \$100 Instead of at \$60

| | |
|--|---------|
| Income of A is \$40 higher; therefore A pays 25% X \$40 more Income taxes | \$ (10) |
| Income of B is \$40 lower; therefore B pays 50% X \$40 less income taxes | 20 |
| Import duty is paid by B on an additional \$100 - \$60 = \$40; therefore B pays 20% X \$40 more duty | (8) |
| Net savings from transferring at \$100 instead of \$60 | \$ 2 |

Companies may also use transfer prices to avoid financial restrictions imposed by some governments. For example, a country might restrict-the amount of dividends paid to foreign owners. It may be easier for a company to get cash from a foreign division as payment for items transferred than as cash dividends. In summary, transfer pricing is more complex in a multinational company than it is in a domestic company, Multinational companies have more objectives to be achieved through transfer-pricing policies, and some of the objectives often conflict with one another.

Strategic Decisions: Eccles, after an extensive field study of transfer-pricing practices, found it useful to link the transfer-pricing policy to two strategic decisions. (See Eccles. "Control with Fairness in Transfer Pricing"; Eccles, "Analyzing Your Company's Transfer Pricing Practices," *Journal of Cost Management for the Manufacturing Industry* (Summer 1987), pp. 21-83; and Eccles, *The Transfer Pricing Problem: A Theory for Practice* (Lexington, MA: Lexington Books, 1985).

Sourcing Decision: Some companies follow a deliberate strategy of vertical integration that mandates internal transfers between divisions. The vertical integration creates inter-dependencies among production, selling, and distribution profit centres, but the prices of the internal transfers are not factors in determining the sources of intermediate goods. When the firm has no explicit strategy of vertical integration, transfers are not mandatory and the price of the intermediate good determines whether' a transfer is made internally or sold and sourced externally.

Pricing Decision: The pricing decision determines whether the intermediate good contains a margin for profit (or loss). A margin for profit (or loss) is included in the transfer price when the selling division is regarded as a profit centre for the transferred product. Alternatively, the selling division could be viewed as a cost centre for internal transfers, and a profit centre only for products sold externally. In this case, the internal transfer could be made at some cost-based price, and the division making final sales to external customers would realize all profits or losses for this product. With this classification scheme, Eccles found that companies without an explicit vertical integration strategy relied on negotiated transfer prices between buying and selling divisions. In general, the resulting transfer price included a margin for profit (or loss) for the selling division.

For firms following a vertical integration strategy, with mandated internal transfers of certain

products between divisions, two possible transfer prices could occur. Market-based prices would be used when the selling division was to be viewed as a profit centre for all its transactions. Full-cost or occasionally dual-price, systems would be used when the selling division was treated as a cost centre for internal transfers.

Dysfunctional Behavior: Virtually any type of transfer pricing policy can lead to dysfunctional behavior-actions taken in conflict with organizational goals. Gulf Oil provides a clear example. Segments tried to make their results look good at each other's expense. One widespread result: inflated transfer payments among the Gulf segments as each one vied to boost its own bottom line. A top manager, recognizing the problem, was quoted in *Business Week*; "Gulf doesn't ring the cash register until we've made an outside sale."

What prompts such behavior? Reconsider the situation shown in Table 7.3. Suppose the Fabric Division has idle capacity. As we saw earlier, when there is idle capacity, the optimal transfer price is the variable cost of \$40 (that is, \$8 per yard). As long as the fabric is worth at least \$40 to the Tent Division, the company as a whole is better off with the transfer. Nevertheless, in a decentralized company the Fabric Division manager, working in the division's best interests, may argue that the transfer price should be based on the market price instead of variable cost. If the division is a profit centre, its objective is to obtain as high a price as possible because such a price maximizes the contribution to the division's profit. (This strategy assumes that the number of units transferred will be unaffected by the transfer price - an assumption that is often shaky).

If the company uses a market-based transfer-pricing policy when the Fabric Division has idle capacity, dysfunctional behavior can occur. At a \$50 transfer price, the Tent Division manager will not purchase the fabric and make the tent. Why? Because at a transfer price of \$50 and with additional processing costs of \$53, the division's cost of \$103 will exceed the tent's \$100 selling price. Because the true additional cost of the fabric to the company is \$40, the company forgoes a contribution of $\$100 - (\$40 + \$53) = \7 per tent. Now, suppose the Fabric Division has no idle capacity. A variable-cost transfer-pricing policy can lead to dysfunctional decisions. The Tent Division manager might argue for a variable-cost-based transfer price. After all, the lowest possible transfer price will maximize the Tent Division's profit. But such a policy will not motivate the Fabric Division to produce fabric for the Tent Division. As long as output can be sold on the outside market for any price above the variable cost, the Fabric Division will use its capacity to produce for the market, regardless of how valuable the fabric might be to the Tent Division. How are such dilemmas resolved? One possibility is for top management to impose a "fair" transfer price and insist that a transfer be made. But managers in a decentralized company often regard such orders as undermining their autonomy.

Alternatively, managers might be given the freedom to negotiate transfer prices on their own. The Tent Division manager might look at the selling price of the tent, \$100, less the additional cost the division incurs in making it, \$53, and decide to purchase fabric at any transfer price less than $\$100 - \$53 = \$47$. The Tent Division will add to its profit by making the tent if the transfer price is below \$47. Similarly, the Fabric Division manager will look at what it costs to produce and transfer the fabric. If there is idle capacity, any transfer price above \$40 will increase the Fabric Division's profit. However, if there is no idle capacity, so that transferring a unit causes the division to give up an external sale at \$50, the minimum transfer price acceptable to the Fabric Division is \$50.

Negotiation will result in a transfer if the maximum transfer price the Tent Division is willing

to pay is greater than the minimum transfer price the Fabric Division is willing to accept. When the Fabric Division has idle capacity, a transfer at a price between \$40 and \$47 will occur. The exact transfer price may depend on the negotiating ability of the two division managers. However, if the Fabric Division has no idle capacity, a transfer will not occur. Therefore, the manager's decisions are congruent with the company's best interests. What should top management of a decentralized organization do if it sees segment managers making dysfunctional decisions? As usual, the answer is, "It depends." Top management can step in and force transfers, but doing so undermines segment managers' autonomy and the overall notion of decentralization. Frequent intervention results in re-centralization. Indeed, if more centralization is desired, the organization could be re-structured by combining segments.

Top managers who wish to encourage decentralization will often make sure that both producing and purchasing division managers understand all the facts and then allow the managers to negotiate a transfer price. Even when top managers suspect that a dysfunctional decision might be made, they may swallow hard and accept the segment manager's judgment as a cost of decentralization. (Of course, repeated dysfunctional decision-making may be a reason to change the organizational design or to change managers). Well-trained and informed segment managers who understand opportunity costs and fixed and variable costs will often make better decisions than will top managers. The producing division manager knows best the various uses of its capacity, and the purchasing division manager knows best what profit can be made on the items to be transferred. In addition, negotiation allows segments to respond flexibly to changing market conditions when setting transfer prices. One transfer price may be appropriate in a time of idle capacity, and another when demand increases and operations approach full capacity. To increase segment managers' willingness to accommodate one another's needs and benefit the organization as a whole, top managers rely on both formal and informal communications. They may informally ask segment managers to be "good company citizens" and to sacrifice results for the good of the organization. They may also formalize this communication by basing performance evaluation and rewards on company-wide as well as segment results. In the case of our outdoor equipment maker, the contribution to the company as a whole, \$70,000 in the idle capacity case, could be split between the Fabric and Tent Divisions, perhaps equally, perhaps in proportion to the variable costs of each, or perhaps via negotiation.

7.3.2 The Need for Many Transfer Prices

As you can see, there is seldom a single transfer price that will ensure the desired decisions. The "correct" transfer price depends on the economic and legal circumstances and the decision at hand. Organizations may have to make trade-offs between pricing for congruence and pricing to spur managerial effort. Furthermore, the optimal price for either may differ from that employed for tax reporting or for other external needs. Income taxes, property taxes, and tariffs often influence the setting of transfer prices so that the firm as a whole will benefit, even though the performance of a segment may suffer. For example, to maximize tax deductions for percentage depletion allowances, which are based on revenue, a petroleum company may want to transfer crude oil to other segments at as high a price as legally possible.

Transfer pricing is also influenced in some situations by state fair-trade laws and national antitrust acts. Because of the differences in national tax structures around the world, or because of the differences in the incomes of various divisions and subsidiaries, the firm may wish to shift profits and "dump" goods, if legally possible. These considerations further

illustrate the limits of decentralization where heavy inter-dependencies exist and explain why the same company may use different transfer prices for different purposes.

Summary of various Approaches to Transfer Pricing: We have covered much ground in our discussion of transfer pricing. We have obtained some results under fairly restrictive conditions, and we have discussed some pitfalls from using transfer prices inappropriately. We can summarize our current recommendations as follows:

- Where a competitive market exists for the intermediate product, the market price, less selling, distribution, and collection expenses for outside customers represents an excellent transfer price.
- Where an outside market exists for the intermediate product but is not perfectly competitive, a negotiated-transfer-price system will probably work best, since the outside market price can serve as an approximation of the opportunity cost. At least occasional transactions with outside suppliers and customers must occur if both divisions are to have credibility in the negotiating process and if reliable quotes from external firms are to be obtained.
- When no external market exists for the intermediate produce transfers should occur at the incremental cost of production. This will facilitate the decision making of the purchasing division. A periodic fixed fee should also be paid by the buying divisions to the producing divisions to enable the producing divisions to recover budgeted fixed costs and the cost of invested capital. The fixed fee should allocate the fixed costs of the facility in proportion to each user's planned use of that facility. The fixed fee also forces the purchasing division to recognize the full cost of producing the intermediate product internally and provides a motivation for the producing divisions to cooperate in choosing the proper level of productive capacity to acquire.
- We find it difficult to discover circumstances in which a transfer price based on fully allocated costs per unit (using present methods of allocation) or full cost plus mark-up has desirable properties. While the full-cost transfer price, as presently computed, has limited economic validity, it remains widely used. Perhaps an activity-based cost, which approximates long-run variable cost, provides the unifying concept that would enable a practical full-cost system to conform to economic theory.

| Approach | Cost Based | Market-based | Negotiated | Administered |
|------------------|--|--|---|--|
| Measure Used | Market Price | Product Cost | Direct Negotiations | Application of a Rule |
| Advantage | Easy to put in place, where cost accounting is actively practiced in the company | If a market price exists, it is objective and provides the proper economic incentives | This reflects the accountability and controllability principles underlying Responsibility Centres | This is simple to use and avoids confrontations between the two parties to the transfer pricing relationship |
| Problems | There are many cost possibilities and any costs other than the Marginal Cost will not provide the proper economic signal | There may be no market or it may be difficult to identify the proper market price because the product is difficult to classify | This can lead to decisions that do not provide the greatest economic benefits | This tends to violate the spirit of the Responsibility approach |

Table 7.4 Comparison of major Transfer Pricing Approaches

7.3.3 External Monitoring and Control of Transfer Pricing

Economists often get hot under the collar about transfer prices when the transfer price set by; for example, a multinational organization relates to business taking place between two countries. The problem here is that the organization may set an artificial transfer price such that the tax exposure in one country is minimized. Alternatively, the transfer price may be set with the intention of repatriating as much profit as possible from the country containing the subsidiary organization. Many of the arguments under this heading tend to revolve around organizations with investments in developing countries. Thus a multinational that has investments in Africa might take as much profit as possible by means of its manipulation of transfer prices of the products developed in the African subsidiary. The purpose of our discussion here is to reassure anyone who believes that multinationals have it all their own way. Whilst it is probably still true that large organizations have experts working on this kind of problem all of the time, the tax authorities in many countries have for several years attempted to control the situation through external monitoring. If necessary, tax authorities are often prepared to dictate to an organization what they feel is the correct transfer price for a subsidiary's outputs if they believe that tax evasion is taking place. Nevertheless, transfer pricing is a sufficiently serious issue for the tax authorities to devote such a relatively large amount of their energies towards regulating it.

7.3.4 Transfer Pricing Law in India

Increasing participation of multi-national groups in economic activities in the country has given rise to new and complex issues emerging from transactions entered into between two or more enterprises belonging to the same multi-national group. With a view to provide a detailed statutory framework which can lead to computation of reasonable, fair and equitable profits and tax in India, in the case of such multinational enterprises, the Finance Act, 2001 substituted section 92 with a new section and introduced new sections 92A to 92F in the Income-tax Act, relating to computation of income from an international transaction having regard to the arm's length price, meaning of associated enterprise, meaning of information and documents by persons entering into international transactions and definitions of certain expressions occurring in

Section 92: As substituted by the Finance Act, 2002 provides that any income arising from an international transaction or where the international transaction comprise of only an outgoing, the allowance for such expenses or interest arising from the international transaction shall be determined having regard to the arm's length price. The provisions, however, would not be applicable in a case where the application of arm's length price results in decrease in the overall tax incidence in India in respect of the parties involved in the international transaction.

Arm's length price: In accordance with internationally accepted principles, it has been provided that any income arising from an international transaction or an outgoing like expenses or interest from the international transaction between associated enterprises shall be computed having regard to the arm's length price, which is the price that would be charged in the transaction if it had been entered into by unrelated parties in similar conditions. The arm's length price shall be determined by one of the methods specified in Section 92C in the manner prescribed in Rules 10A to 10C that have been notified vide S.O. 808 E dated 21.8.2001.

| Specified methods are as follows: | |
|--|---------------------------------------|
| a. | Comparable uncontrolled price method; |
| b. | Resale price method; |
| c. | Cost plus method; |
| d. | Profit split method or |
| e. | Transactional net margin method. |

The taxpayer can select the most appropriate method to be applied to any given transaction, but such selection has to be made taking into account the factors prescribed in the Rules. With a view to allow a degree of flexibility in adopting an arm's length price the proviso to sub-section (2) of section 92C provides that where the most appropriate method results in more than one price, a price which differs from the arithmetical mean by an amount not exceeding five percent of such mean may be taken to be the arm's length price, at the option of the assessee.

Associated Enterprises: Section 92A provides meaning of the expression associated enterprises. The enterprises will be taken to be associated enterprises if one enterprise is controlled by the other, or both enterprises are controlled by a common third person. The

concept of control adopted in the legislation extends not only to control through holding shares or voting power or the power to appoint the management of an enterprise, but also through debt, blood relationships, and control over various components of the business activity performed by the taxpayer such as control over raw materials, sales and intangibles.

International Transaction: Section 92B provides a broad definition of an international transaction, which is to be read with the definition of transactions given in section 92F. An international transaction is essentially a cross border transaction between associated enterprises in any sort of property, whether tangible or intangible, or in the provision of services, lending of money etc. At least one of the parties to the transaction must be a non-resident. The definition also covers a transaction between two non-residents where for example, one of them has a permanent establishment whose income is taxable in India.

Sub-section (2), of section 92B extends the scope of the definition of international transaction by providing that a transaction entered into with an unrelated person shall be deemed to be a transaction with an associated enterprise, if there exists a prior agreement in relation to the transaction between such other person and the associated enterprise, or the terms of the relevant transaction are determined by the associated enterprise. An illustration of such a transaction could be where the assessee, being an enterprise resident in India, exports goods to an unrelated person abroad, and there is a separate arrangement or agreement between the unrelated person and an associated enterprise which influences the price at which the goods are exported. In such a case the transaction with the unrelated enterprise will also be subject to transfer pricing regulations.

Documentation: Section 92D provides that every person who has undertaken an international transaction shall keep and maintain such information and documents as specified by rules made by the Board. The Board has also been empowered to specify by rules the period for which the information and documents are required to be retained. The documentation has been prescribed under Rule 10D. Such documentation includes background information on the commercial environment in which the transaction has been entered into, and information regarding the international transaction entered into, the analysis carried out to select the most appropriate method and to identify comparable transactions, and the actual working out of the arm's length price of the transaction. The documentation should be available with the assessee by the specified date defined in section 92F and should be retained for a period of 8 years. During the course of any proceedings under the Act, an AO or Commissioner (Appeals) may require any person who has undertaken an international transaction to furnish any of the information and documents specified under the rule within a period of thirty days from the date of receipt of notice issued in this regard, and such period may be extended by a further period not exceeding thirty days.

Further, Section 92E provides that every person who has entered into an international transaction during a previous year shall obtain a report from an accountant and furnish such report on or before the specified date in the prescribed form and manner. Rule 10E and form No. 3CEB have been notified in this regard. The accountants report only requires furnishing of factual information relating to the international transaction entered into, the arm's length price determined by the assessee and the method applied in such determination. It also requires an opinion as to whether the prescribed documentation has been maintained.

Burden of Proof: The primary onus is on the taxpayer to determine an arm's length price in accordance with the rules, and to substantiate the same with the prescribed documentation: where such onus is discharged by the assessee and the data used for determining the arm's

length price is reliable and correct there can be no intervention by the Assessing Officer (AO). This is made clear in sub-section (3) of section 92C which provides that the AO may intervene only if he is, on the basis of material or information or document in his possession of the opinion that the price charged in the international transaction has not been determined in accordance with the methods prescribed, or information and documents relating to the international transaction have not been kept and maintained by the assessee in accordance with the provisions of section 92D and the rules made there under, or the information or data used in computation of the arm's length price is not reliable or correct ; or the assessee has failed to furnish, within the specified time; any information or document which he was required to furnish by a notice issued under sub-section (3) of section 92D. If any one of such circumstances exists, the AO may reject the price adopted by the assessee and determine the arm's length price in accordance with the same rules. However, an opportunity has to be given to the assessee before determining such price. Thereafter, the AO may compute the total income on the basis of the arm's length price so determined by him under sub-section (4) of section 92C.

Section 92CA provides that where an assessee has entered into an international transaction in any previous year, the AO may, with the prior approval of the Commissioner, refer the computation of arm's length price in relation to the said international transaction to a Transfer Pricing Officer. The Transfer Pricing Officer, after giving the assessee an opportunity of being heard and after making enquiries, shall determine the arm's length price in relation to the international transaction in accordance with sub-section (3) of section 92C. The AO shall then compute the total income of the assessee under sub-section (4) of section 92C having regard to the arm's length price determined by the Transfer Pricing Officer.

The Transfer Pricing Officer means a Joint Commissioner/ Deputy Commissioner/Assistant Commissioner authorized by the Board to perform functions of an AO specified in section 92C & 92D.

The first proviso to section 92 C(4) recognizes the commercial reality that even when a transfer pricing adjustment is made under that sub-section the amount represented by the adjustment would not actually have been received in India or would have actually gone out of the country. Therefore no deductions u/s 10A or 10B or under chapter VI-A shall be allowed in respect of the amount of adjustment.

The second proviso to section 92C(4) provides that where the total income of an enterprise is computed by the AO on the basis of the arm's length price as computed by him, the income of the other associated enterprise shall not be recomputed by reason of such determination of arm's length price in the case of the first mentioned enterprise, where the tax has been deducted or such tax was deductible, even if not actually deducted under the provision of chapter VIIB on the amount paid by the first enterprise to the other associate enterprise.

Penalties: Penalties have been provided as a disincentive for non-compliance with procedural requirements. Explanation 7 to sub-section (1) of section 271 provides that where in the case of an assessee who has entered into an international transaction any amount is added or disallowed in computing the total income under sub-sections (1) and (2) of section 92, then, the amount so added or disallowed shall be deemed to represent income in respect of which particulars have been concealed or inaccurate particulars have been furnished. However, no penalty under this provision can be levied where the assessee proves to the satisfaction of the Assessing Officer (AO) or the Commissioner of Income Tax (Appeals) that the price charged or paid in such transaction has been determined in accordance with section

92 in good faith and with due diligence. Section 271AA provides that if any person who has entered into an international transaction fails to keep and maintain any such information and documents as specified under section 92D, the AO or Commissioner of Income Tax (Appeals) may levy a penalty of a sum equal to 2% of the value of international transaction entered into by such person. Section 271BA provides that if any person fails to furnish a report from an accountant as required by section 92E, the AO may levy a penalty of a sum of one lakh rupees. Section 271G provides that if any person who has entered into an international transaction fails to furnish any information or documents as required under section 92D (3), the AO or CIT(A) may levy a penalty equal to 2% of the value of the international transaction. Above mentioned penalties shall not be impossible if the assessee proves that there was reasonable cause for such failures.

Some Important Definitions: Section 92F defines the expressions “accountant arm’s length price”, “enterprise”, “permanent establishment”, “specified date” and “transaction” used in section 92, 92A, 92B, 92C, 92D and 92E. The definition of enterprise is broad and includes a permanent establishment (PE) even though a PE is not a separate legal entity. Consequently, transaction between a foreign enterprise and its PE, for example between the head office abroad and a branch in India are also subject to these transfer-pricing regulations. Also the regulations would apply to transactions between foreign enterprise and a PE of another foreign enterprise. The term PE has been defined on the lines of the definition found in tax treaties entered into by India with other countries. PE includes a fixed place of business through which the business of the enterprise is wholly or partly carried on.

Documentation requirements under the Indian Transfer Pricing law By: Dinesh Verma

The author is an officer of the Indian Revenue Service currently posted as Commissioner of Income tax, Mumbai. The views expressed in this article are the author's personal views and do not necessarily reflect the views of his employer. In India a new transfer pricing regime has been introduced this year by the Finance Act 2001. Earlier a limited provision (Section 92) existed in the Income tax Act, which provided for making adjustment to the income of a resident taxpayer from a transaction with a non resident if the Assessing Officer was of the view that the income from such a transaction was understated in the hands of the resident due to the close connection between the two. No other rules or obligations about maintenance of documents about such transaction existed under the old

Section 92 which remained in the statute for a number of years though it was almost never invoked in practice. The Finance Act 2001 has substituted a new section 92 and inserted sections 92A to 92F and certain other provisions in the Income tax Act which provide the statutory backbone of the new transfer pricing law. The procedural rules under these sections have been inserted in the Income tax Rules, by Notification S.O 808 (E) dated 21 August, 2001. This article touches very briefly on the main substantive provisions and then provides a summary of the requirements relating to documentation under the Indian transfer pricing regulation. The new transfer pricing regime requires compliance with the principle of arm's length price in cases involving an 'international transaction' between associated enterprises (Section 92). The term 'associated enterprise' is defined in Section 92A which provides 13 parameters to determine if the enterprises concerned would constitute 'associated enterprises'. Section 92B defines the term 'international transaction' as a transaction between two or more associated enterprises when either or both they are non resident. The transactions covered are transfer of tangibles, intangibles, services, lending and borrowing of capital and cost contribution agreements. Section 92 C lays down five methods for the determination of arm's length price. These are same as the transaction methods prescribed in the OECD guidelines viz. comparable uncontrolled price method, resale price method, cost plus method, profit split

method and transaction net margin method. Section 92C also lays down the provisions relating to transfer pricing audit which may be triggered if the administration is of the opinion that the transfer price adopted does not reflect arm's length price, or if proper information or documents are not maintained. Provisions have also been made in respect of penalties for concealment of income by adopting non arm's length price, defaults relating to maintenance of prescribed information and documents and failure to furnish required information or documents during an audit or appellate proceedings.

The legal framework for maintenance of information and documentation by a taxpayer is provided in Section 92D which lies down that every person who enters into an international transaction with an associated enterprise shall maintain prescribed information and documents. The various types of information to be maintained in respect of an international transaction, the associated enterprise and the transfer pricing method used are prescribed in Rule 10D of the Income tax Rules, as under:

1. A description of the ownership structure of the enterprise and details of shares or other ownership interest held therein by other enterprises;
2. A profile of the multinational group of which the taxpayer is a part and the name, address, legal status and country of tax residence of each of the enterprises comprised in the group with whom international transactions have been made by the taxpayer and the ownership linkages among them;
3. A broad description of the business of the taxpayer and the industry in which it operates and the business of the associated enterprises;
4. The nature, terms and prices of international transaction entered into with each associated enterprise, details of property transferred or services provided and the quantum and the value of each such transaction or class of such transaction;
5. A description of the functions performed, risks assumed and assets employed or to be employed by the taxpayer and by the associated enterprise involved in the international transaction;
6. A record of the economic and market analyses, forecasts, budgets or any other financial estimates prepared by the taxpayer for its business as a whole or separately for each division or product which may have a bearing on the international transaction entered into by the taxpayer;
7. A record of uncontrolled transactions taken into account for analyzing their comparability with the international transaction entered into, including a record of the nature, terms and conditions relating to any uncontrolled transaction with third parties which may be of relevant to the pricing of the international transactions;
8. viii. A record of the analysis performed to evaluate comparability of uncontrolled transactions with the relevant international transaction;
9. A description of the methods considered for determining the arm's length price in relation to each international transaction or class of transaction, the method selected as the most appropriate method along with explanations as to why such method was so selected, and how such method was applied in each case;
10. A record of the actual working carried out for determining the arm's length price, including details of the comparable data and financial information used in applying the most appropriate method and adjustments, if any, which were made to account for differences between the international transaction and the comparable uncontrolled transactions or between the enterprises entering into such transaction;
11. The assumptions, policies and price negotiations if any which have critically affected the determination of the arm's length price;

12. Details of the adjustments, if any made to the transfer price to align it with arm's length price determined under these rules and consequent adjustment made to the total income for tax purposes;
13. Any other information data or document including information or data relating to the associated enterprise which may be relevant for determination of the arm's length price.

Rule 10D also prescribes that the above information is to be supported by authentic documents which may include the following:

1. Official publications, reports, studies and data bases of the government of the country of residence of the associated enterprise or of any other country;
2. Reports of market research studies carried out and technical publications of institutions of national or international repute;
3. Publications relating to prices including stock exchange and commodity market quotations;
4. Published accounts and financial statements relating to the business of the associated enterprises;
5. Agreements and contracts entered into with associated enterprises or with unrelated
6. Transaction;
7. Enterprises in respect of transaction similar to the international transactions;
8. Letters and other correspondence documenting terms negotiated between the taxpayer and associated enterprise;
9. Documents normally issued in connection with various transaction under the accounting practices followed.

It is noteworthy that the information and documentation requirements referred to above are linked to the burden of proof laid on the taxpayer to prove that the transfer price adopted is in accordance with the arm's length principle. One of the conditions to be fulfilled for discharging this burden by the taxpayer is maintenance of prescribed information and documents in respect of an international transaction entered into with a associated enterprise. A default in maintaining information and documents in accordance with the rules is one of the conditions which may trigger a transfer pricing audit under Section 92C (3). Any default in respect of the documentation requirement may also attract penalty of a sum equal to two percent of the value of the international transaction (Sec 271AA).

There is no reference in the provisions included either in the Income tax Act or the Income tax Rules about any requirement to submit the prescribed information and documents at the stage of initial compliance in the form of submission of report under section 92E. All that Section 92E requires is that the concerned taxpayer shall obtain a report from an Accountant in the prescribed form (Form 3CEB) and submit the report by the specified date. Form 3CEB contains a certificate from the Accountant that in his opinion proper information and documents as prescribed have been maintained by the taxpayer. It does not require their submission along with the report. While there is no requirement for their submission along with the report, Rule 10D requires that the information and document maintained should be contemporaneous as far as possible and should exist latest by the specified date for filing the report under section 92E. Section 92D also provides that information and documentation may be requisitioned by the Assessing Officer or the Appellate Commissioner on a notice of thirty days which period may be extended by another period of 30 days.

Although the law has prescribed no monetary limit in respect of international transaction covered by the transfer pricing requirements, an exception is provided in paragraph 2 of Rule 10D in respect of the information and document requirement in respect of transactions not exceeding INR 10 million. It is provided that the above requirement will not apply to such transactions. However the concerned taxpayer may be required to substantiate on the basis of available material that the income arising from the international transaction is computed in accordance with the arm's length rule. The prescribed information and documents are required to be maintained for a period of eight years. Rule 10D absolves a taxpayer entering into a international transaction which continues to have effect over more than one year from maintaining separate set of documents for each year. However separate documents are required for each year if there is any significant change in the terms and conditions of the international transaction which have a bearing on the transfer price.

As the transfer pricing provisions introduced by the Finance Act are effective from 1 April 2001, the above requirements will be applicable to all international transactions entered into by associated enterprises in India after that date. The first compliance date in respect of the new transfer pricing regulation would be 31 July 2002 for non-corporate and 31 October 2002 for corporate taxpayers in respect of international transactions entered into by them during the period 1 April 2001 to 31st March 2002. Taxpayers who are affected by the new transfer pricing regulation would thus have time till the above-mentioned dates to be ready with the required information and documents in respect of covered transactions.

TECHNIQUES OF COSTING-II

Structure

- 8.1 Responsibility Accounting
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8.1 INTRODUCTION TO RESPONSIBILITY ACCOUNTING

The previous unit has presented many important tools of management accounting. Tools such as Activity-Based Costing, Budgeting, and Variance Analysis are each useful by themselves. They are most useful, however, when they are parts of an integrated system an orderly, logical plan to coordinate and evaluate all the activities of the organization's value chain. Managers of most organizations today realize that long-run success depends on focusing on cost, quality, and service - three components of the competitive edge.

The systems of costing, like standard costing and budgetary control, are useful to management for controlling the costs. In those systems the emphasis is on the devices of control and not on those who use such devices. Responsibility Accounting is a system of control where responsibility is assigned for the control of costs. The persons are made responsible for the control of costs. Responsibility Accounting implies a system of accounting whereby the performance of various people is judged by assessing how far they have achieved the pre-deter-

mined targets set for the divisions, departments or sections for which they are responsible. Each person is responsible for his area of operation.

Responsibility Accounting is similar to any other system of cost, such as standard costing or budgetary control, but with greater emphasis towards fixing of the responsibility of the persons entrusted with the execution of specific job. For example, if Mr. A has prepared the cost budget of his department, he will be made responsible for keeping the costs under control. Mr. A will be supplied with detailed information of actual costs incurred by his department. In case the costs are more than budgeted costs, then A will try to find out the reasons and take corrective measures. 'A' will be personally responsible for the performance of his department. Responsibility Accounting is a system under which managers are given decision-making authority and responsibility for each activity occurring within a specific area of the company. Under this system managers are made responsible for the activities of segments. These segments may be called departments or divisions.

Eric Kohler defines Responsibility Accounting as "a method of accounting in which costs are identified with persons assumed to be capable of controlling them, rather than with products or functions. It differs from activity accounting, in that it does not in itself require an organizational grouping by activities and sub-activities or provides a systematic criterion of system design." Charles T. Horngren defines "Responsibility Accounting is a system of accounting that recognizes various responsibility centers throughout the organization and reflects the plans and actions of each of these centers by assigning particular revenues and costs to the one having the pertinent responsibility. It is also called profitability accounting and activity accounting". Institute of Cost and Works Accountants of India defines Responsibility Accounting as a system of management accounting under which accountability is established according to the responsibility delegated to various levels of management and management information and reporting system instituted to give adequate feedback in terms of the delegated responsibility. Under this system, divisions or units of an organization under a specified authority in a person are developed as responsibility centers and evaluated individually for their performance." David Fanning defines Responsibility Accounting as a system or mechanism for controlling the wider freedom of action 'those executives decision centre manager in other words - are given by senior management and for holding those executives responsible for the consequences of their decisions.'

Robert Anthony defines Responsibility Accounting as "that type of management accounting that collects and reports both planned and actual accounting information in terms of responsibility centers." Responsibility Accounting focused main attention on responsibility centers. The managers of different activity centers are responsible for controlling the costs of their centers. Information about costs incurred for different activities is supplied to the persons in charge of various centers. The performance is constantly compared to the standards set and this process is very useful in exercising cost controls. Responsibility Accounting is different from cost accounting in the sense that the former lays emphasis on cost control whereas the latter lays emphasis on cost ascertainment.

Responsibility Accounting is a system, which makes every-one conscious and responsible: for the job that is entrusted to him by his supervisor, i.e. a control by delegating and locating responsibility for cost. Each supervisory area in the organization is charged only with the cost for which it is responsible or over which it has control. Not only the costs but also the revenues are assigned. That is why it is defined as "a system of accounting that recognizes various responsibility centres throughout the organization and that reflects plans and actions of each of these centres, by assigning particular revenues and cost to one having pertinent

responsibility. This system defines the specific responsibility of the departmental supervisor as well as functional managers, which should be performed. Practically it is the management that has to chalk out the plan and control the activities relating to the responsibility centre. It follows the basic principle like any other control system, such as Standard Costing or Budget. The only difference is that the fixation of responsibility lies in the hands of individuals or departments.

The following inferences can be made from the above definitions:

- (1) Responsibility Accounting stresses on communication of information in general and accounting information in particular to various decisional centres.
- (2) Responsibility Accounting lays greater emphasis on persons (human resources management)
- (3) Responsibility Accounting is tailored to the organizational structure so that the process of communication of information follows principles of organization.

It is an accounting system, which collects and report both planned and actual accounting data in terms of sub-units, which are recognized as responsibility centres.

8.1.1 Steps Involved in Responsibility Accounting

Responsibility Accounting is used as a control device. Following steps are necessary to effect control through the Responsibility Accounting:

- (1) The organization is divided into various responsibility centres. Each responsibility centre is put under the charge of a responsibility manager.
- (2) The targets or budgets of each responsibility centre are set in consultation with the manager of responsibility centre, so that he may be able to give full information about his department. The manager of responsibility centre should know as what is expected of him - each centre should have a clear set of goals. The responsibility and authority of each centre should be well defined.
- (3) Managers are charged with the items and responsibility, over which they can exercise a significant degree of direct control.
- (4) Goals defined for each area of responsibility should be attainable with efficient and effective performance.
- (5) The actual performance is communicated to the managers concerned. If it falls short of the standards, the variances are conveyed to the top management. The names of persons responsible for the variances are also conveyed so that responsibility may be fixed.
- (6) The performance reports for each centre should be prepared highlighting the variances and items requiring management's attention. The corrective measures are suggested or taken and communicated to the concerned managers of the centres.

The purpose of all these steps is to assign responsibility to different individuals so that their performance is improved and costs are controlled. The personal factor in Responsibility Accounting is most important. The management may prepare the best plan or the budget and put up before its staff, but its success depends upon the initiative and the will of the workers to execute it. The essence of Responsibility Accounting is to communicate the right information to the right person at the right time. Responsibility Accounting provides a means of control, it cannot control. Control is a personalized affair. The people do control, not the reports. Responsibility Accounting will certainly act as a control device and it will help in improving the overall performance of the business.

8.1.2 Responsibility Centres

A responsibility centre is a set of activities assigned to a manager, a group of managers, or other employees. A set of machines and machining tasks, for example, may be a responsibility centre for a production supervisor. The full production department may be a responsibility centre for the department head. Finally, the entire organization may be a responsibility centre for the president. In some organizations, management responsibility is shared by groups of employees to create wide "ownership" of management decisions, allow creative decision making, and prevent one person's concern (or lack of concern) for risks of failure to dominate decisions.

An effective management control system gives each lower-level manager responsibility for a group of activities and objectives and then monitors and reports on (1) the results of the activities and (2) the manager's influence on those results. Such a system has innate appeal for most top managers because it helps them delegate decision-making and frees them to plan and control. Lower-level managers appreciate the autonomy of decision-making they inherit. Thus system designers apply responsibility accounting to identify what parts of the organization have primary responsibility for each objective, develop performance measures and targets to achieve, and design reports of these measures by organization subunit or responsibility centre. Responsibility centres usually have multiple objectives that the management control system monitors.

Responsibility Accounting focuses attention on responsibility centres. A responsibility centre is a sub-unit of an organization under the supervision of a manager who has the responsibility for the activities of that responsibility centre. Each sub-unit has certain activities to perform and its manager is assigned the responsibility and/or authority to carry out those activities. Responsibility centre is the segment of business with reference to which information will be communicated to pin point responsibilities. In the words of Anthony and Races, "A responsibility centre is like an engine in that it has inputs, which are physical quantities of material, hours of various types of labor, and a variety of services; it works with these resources usually; working capital and fixed assets are also required. As a result of this work, it produces output, which is classified either as goods, if they are tangible or as services, if they are intangible. These goods or services go to other responsibility centre; within the company or to customers in the outside world."

Responsibility centres, for planning and control purposes, is classified into the following cases:

(A) Expense Centre: An expense centre or a cost centre is a responsibility centre in which inputs, but not outputs, are measured in monetary terms. A cost centre is a responsibility centre in which a manager is accountable for costs only. Its financial responsibilities are to control and report costs only. An entire department may be considered a single cost centre, or a department may contain several cost centres. For example, although one manager may supervise an assembly department, it may contain several assembly lines and regard each assembly line as a separate cost centre. Likewise, within each line, separate machines or test equipment may be regarded as separate cost centres. The determination of the number of cost centres depends on cost benefit considerations - do the benefits of smaller cost centres (for planning, control, and evaluation) exceed the higher costs of reporting?

Responsibility Accounting is based on financial information relating to input (costs) and outputs (revenues). In an expense centre of responsibility, the accounting system records only the cost incurred in / by the centre or unit, but revenues earned (output) are excluded. In case

of certain responsibility centres, it is neither possible nor necessary to measure the output in terms of monetary units. Most of the service departments come in this category. For example, it is almost impossible to measure the monetary value of the finance or the account department's contribution to the company. The accounting system, therefore, records the cost incurred in respect of these centres but not the revenue incurred. The performance of the responsibility centre managers is evaluated by comparing the costs incurred with the budgeted costs. Management focuses its attention on cost variances for control purposes.

(B) Revenue Centre: A revenue centre is a segment of the organization, which is primarily responsible for generating sales revenue. A revenue centre manager does not possess control over cost, investment in assets, but usually has control over some of the expenses of the marketing department. The performance of a revenue centre is evaluated by comparing the actual revenue with budgeted revenue. The marketing manager of a product line is an example of revenue centre.

(C) Profit Centre: A responsibility centre is called a profit centre when the manager is held responsible for both costs (inputs) and revenues (outputs) and thus for profit. Despite the name, a profit centre can exist in nonprofits organizations (though it might not be referred to as such) when a responsibility centre receives revenues for its services. A profit centre is a big segment of activity for which both revenues and costs are accumulated: A centre, whose performance is measured in terms of both - the expense it incurs and revenue it earns, is termed as a profit centre. The output of a responsibility centre may either be meant for internal consumption or for outside customers. In the latter case, the revenue is realized when the sales are made. That is, when the output is meant for outsiders, then the revenue will be measured from the price charged from customers. If the output is meant for other responsibility centre, then management takes a decision whether to treat the centre as profit centre or not. In fact, any responsibility centre can be turned into a profit centre by determining a selling price for its outputs. For instance, in case of a process industry, the output of one process may be transferred to another process at a profit by taking into account the market price. Such transfers will give some profit to that responsibility centre. Although such transfers do not increase the Company's assets, they help in management control process.

(D) Investment Centre: An investment centre goes a step further than a profit centre does. Its success is measured not only by its income but also by relating that income to its invested capital, as in a ratio of income to the value of the capital employed. In practice, the term *investment centre* is not widely used. Instead, the term *profit centre* is used indiscriminately to describe centres that are always assigned responsibility for revenues and expenses, but may or may not be assigned responsibility for the capital investment.

It is defined as a responsibility centre in which inputs are measured in terms of cost / expenses and outputs are measured in terms of revenues and in which assets employed are also measured. A responsibility centre is called an investment centre, when its manager is responsible for costs and revenues as well as for the investment in assets used by his centre. He is responsible for maintaining a satisfactory return on investment i.e. asset employed in his responsibility centre. The investment centre manager has control over revenues, expenses and the amounts invested in the centre's assets. The manager of an investment centre is required to earn a satisfactory return. Thus, return on investment (**ROI**) is used as the performance evaluation criterion in an investment centre. He also formulates the credit policy, which has a direct influence on debt collection, and the inventory policy, which determines the investment in inventory. The Vice President (Investments) of a mutual funds

company may be in charge of an Investment Centre.

In the Investment Centre, the manager in charge is held responsible for the proper utilization of assets. He is expected to earn a satisfactory return on the assets employed in his responsibility centre. Measurement of assets employed poses many problems. It becomes difficult to determine the amount of assets employed in a particular responsibility centre. Some of the assets are in the physical possession of the responsibility centre while for some assets it may depend upon other responsibility centres or the Head Office of the company. This is particularly true of cash or heavy plant and equipment. Whether such assets should be included in the figure of assets employed of the responsibility centre and if included, at how much value, is a difficult question. On account of these difficulties, investment centres are generally used only for relatively large units, which have independent divisions, both manufacturing and marketing, for their individual products.

8.1.3 Advantages of Responsibility Accounting

Management uses Responsibility Accounting as a control device. The aim of Responsibility Accounting is to help management in achieving organizational goals. It is an invaluable support to modern management. It contributes to the firm's management by providing relevant information on a continuous basis. The following are some of the advantages of Responsibility Accounting:

1. It introduces sound system of control - a system of closer control.
2. Each and every individual in the organization is assigned some responsibility and they are accountable for their work.
3. Everybody knows what is expected of him. Nobody can shift responsibility to anybody else if something goes wrong.
4. It is effective tool of cost control and cost reduction applied with budgetary control and standard costing.
5. It facilitates the management to set realistic plans and budgets.
6. It is not only a control device but also facilitates decentralization of decision-making.
7. It measures the performance of individuals in an objective manner.
8. It fosters a sense of cost-consciousness among managers and their subordinates.
9. It helps the management to make an effective delegation of authority and required responsibility as well.
10. Under the system of Responsibility Accounting, detailed information is collected about costs and revenues, on a continuous basis and the data is helpful in planning for future costs and revenues.
11. Timely corrective action can be taken and better control over costs can be achieved.

8.1.4 Cost Centres vs. Responsibility Centres

A cost centre is "a location, person or item of equipment (or group of these) for which costs may be ascertained and used for purposes of cost control". Thus, cost centre is used as a means of assembling items of cost, so that they can be assigned to goods and services. In the case of cost centre, emphasis is more on products, jobs or processes whose costs are to be ascertained. Thus here the emphasis is not on the persons who may be managing a level or product or process. Responsibility centres, on the other hand, are established on the basis of responsibility delegated to responsible personnel of the organization with a view to identify costs which can be controlled by each one of them. However, cost centres sometimes may be used as responsibility centres too. In that case cost reports are prepared both costs wise-wise and responsibility -centre- wise.

8.1.5 Development of Measures of Performance

Because most responsibility centres have multiple objectives, only some of these objectives are expressed in financial terms, such as operations budgets, profit targets, or required return on investment, depending on the financial classification of the centre. Other objectives, which are to be achieved concurrently, are non-financial in nature. For example, many companies list environmental stewardship and social responsibility as key objectives. The well-designed management control system functions alike for both financial and non-financial objectives to develop and report measures of performance. Good performance measures will:

1. Relate to the goals of the organization
2. Balance long-term and short-term concerns
3. Reflect the management of key results and activities
4. Be affected by actions of managers and employees
5. Be readily understood by employees
6. Be used in evaluating and rewarding managers and employees
7. Be reasonably objective and easily measured
8. Be used consistently and regularly

Both financial and non-financial performance measures are important. Sometimes accountants and managers focus too much on financial measures such as profit or cost variances because they are readily available from the accounting system. Managers, however, can improve operational control by also considering non-financial measures of performance. Such measures may be timelier and more closely affected by employees at lower levels of the organization, where the product is made or the service is rendered. Non-financial measures are often easier to quantify and understand. Hence, employees can be easily motivated toward achieving performance goals. For example, AT&T Universal Card Services, which was awarded the prestigious Baldrige National Quality Award (presented by the U.S. Department of Commerce), uses 18 performance measures for its customer inquiries process. These measures include average speed of answer; abandon rate, and application processing time (three days compared to the industry average of 34 days).

Often the effects of poor non-financial performance (quality, productivity, and customer satisfaction) do not show up in the financial measures until considerable ground has been lost. Financial measures often are lagging indicators that arrive too late to help prevent problems and ensure the organization's *health*. What is needed are leading indicators. As a result, many companies now stress management of the activities that drive revenues and costs rather than waiting to explain the revenues or *costs* themselves after the activities have occurred. Superior financial performance usually follows from superior non-financial performance.

The Balanced Scorecard: There are several approaches to performance reporting. Each approach attempts to link organizational strategy to actions of managers and employees. One popular approach to performance reporting is the balanced scorecard. A balanced scorecard is a performance measurement and reporting system that strikes a balance between financial and operating measures, links performance to rewards, and gives explicit recognition to the diversity of organizational goals. Companies such as Champion International, AT&T, Allstate, and Apple Computer use the balanced scorecard to focus management's attention on items subject to action on a month-by-month and day-to-day basis.

One advantage of the balanced scorecard approach is that line managers can see the relationship between non-financial measures, which they often can relate more easily to their own actions, and the financial measures that relate to organizational goals. Another advantage of the balanced scorecard is its focus on performance measures from each of the following four components of the successful organization. This enhances the learning process because managers learn the results of their actions and how these actions are linked to the organizational goals.

| Sl. No. | Component | Performance measures used to monitor achievement of the Responsibility Centre In-charge |
|---------|------------------------------|--|
| 1 | Financial Strength | Product Profitability, Earnings before Interest and Taxation (EBIT), Return on Investment (ROI), Residual Income (RI) etc. |
| 2 | Customer Satisfaction | Market-share, Customer Satisfaction Scores, Customer Complaints etc. |
| 3 | Business Process Improvement | Cycle Time, Defects / Non-Conformities, Activity Costs etc. |
| 4 | Organizational Learning | Training Time, Employees Turnover Ratio, Staff Satisfaction Score etc. |

Table 8.1 Components and Measures of Performance

How does a balanced scorecard look like? A balanced scorecard used in a Luxury Suite Hotel is given below:

| Components and Performance Measures | Targeted | Achieved |
|-------------------------------------|-------------|------------|
| Financial Strength | | |
| Revenue per new service | Rs. 620 Mio | Rs.632 Mio |
| Revenue per arrival | Rs. 3,500 | Rs. 3,800 |
| Customer Satisfaction | | |
| Customer Satisfaction Index | 93 | 89 |
| Brand Loyalty Index | 55 | 45 |

| | | |
|---|--------|--------|
| Business Process Improvement | | |
| Number of Improvements | 10 | 11 |
| Avg. cycle time for check-in and checkout | 15 Mts | 13 Mts |
| Organizational Learning | | |
| Employee Turnout Ratio | 12 % | 10 % |
| Employees Re-trained | 75 % | 80 % |

Table 8.2 Balanced Scorecard used in a Luxury Suites Hotel

This scorecard is for the organization as a whole. It has performance measures for all four components of organizational success. There are many scorecards for an organization. In fact, each area of responsibility will have its own scorecard. Scorecards for some lower-level responsibility centers that are focused strictly on day-to-day operations may be totally focused on only one of the four components. We should also note that not all performance measures appear on scorecards. Managers of responsibility centres include only those measures that are key performance indicators or **Key Result Areas (KRAs)** - measures that drive the organization to achieve its goals. For example, top management at Luxury Suites set "exceed guest expectations" as one organizational goal. The balanced score card should have at least one key performance indicator that is linked to this goal. The customer satisfaction index, brand loyalty index, number of improvements, and average cycle time for check-in and checkout measures all are linked to this goal.

Balanced Scorecard to be implemented by 40% of Fortune 1000

Gartner Group: 40% of Fortune 1000 companies will have implemented Balanced Scorecard by end of 2000.

What Is Balanced Scorecard?

- Translates vision and strategy
- Defines the strategic linkages to integrate performance across organizations.
- Communicates objectives and measures to a business unit, joint venture, or shared service.
- Aligns strategic initiatives
- Aligns everyone within an organization so that all employees understand how what they do supports the strategy
- Provides a basis for compensation
- Provides feedback to senior management if the strategy is working

Balanced Scorecard: part of Performance Management system to enable organizations to achieve their goals.

Translates strategic business unit's mission and strategy into a set of measures built around 4-5 perspectives:

- Financial: How do we look to our shareholders?
- Customers: How do we become our targeted customers most valued supplier?
- Internal Processes: What processes - both long and short term - must we excel at, to achieve our financial and customer objectives?

- Innovation and Improvement: How can we continue to improve our processes and systems in order to create value?
- Employee: How does our organization and employees continue to learn and grow?

Balanced Scorecard Benefits

According to Kaplan & Norton, 1992:

- Make strategy operational by translating strategy into performance measures and targets.
- Helps focus entire organization on what must be done to create breakthrough performance.
- Integrates and acts as an umbrella for a variety of often disconnected corporate programs, such as quality, re-engineering, process redesign, and customer service.
- Breaks down corporate level measures so local managers, operators, and employees can see what they must do well in order to improve organizational effectiveness.

Problem – Balanced Scorecard

Consider our example, the Luxury Suites hotel chain. As we have noted, top management established "**exceed guest expectations**" as one organization-wide goal. The critical process for this goal is *produce and delivers services*. Among the key success factors for this critical process are *timelines of customer service* and *quality of personalized service*. The Vice President (Customer Relations) is the manager responsible for the critical process of 'produce and deliver' services. He has already identified one action (objective) for the coming year, that is, upgrade customer service department capabilities.

- Identify several possible performance measures for the quality of *personalized service*, a key success factor.
- Recommend several specific actions or activities associated with upgrading customer service department capabilities that would drive Luxury Suites towards its goal of exceeding customer expectations.

Solution

- Performance measures for the *quality of personalized service* key success factor include number of changes to registration, rating on the "friendly, knowledgeable staff" question on the guest survey, number of complaints, percent return guests, and percent of customers with completed customer profile (profiles special needs of customers).
- Specific actions or activities include training employees, implementing a call checklist (list of services and options available to guest) and monitoring compliance with the list, developing a customer satisfaction survey, and reengineering the guest registration and reservation processes.

8.2 JIT (JUST IN TIME)



Business Readings Questions to Consider

- What are three main differences between the JIT and traditional manufacturing systems?
- What is the beneficial aspect of value-chain linkages?

JIT and the Balanced Scorecard:

Linking Manufacturing Control to Management Control

Just-in-Time manufacturing techniques can be made more effective by controlling them with the scorecard approach.

BY B. DOUGLAS CLINTON, CPA,
AND KO-CHENG HSU, CPA

Lybrand Gold Medal: The Just-in-Time (JIT) philosophy was adopted by American companies to control manufacturing. The Balanced Scorecard concept was developed to help management control overall operations. What we propose here is linking the two techniques to increase the effectiveness of both. The Balanced Scorecard meets a critical need for management information that has as yet been unsatisfied by other approaches. (See sidebar.) Financial accounting measures lag performance because they are historical in nature, by definition reporting on activities that already have occurred. For this reason, they are irrelevant in guiding managers in their quest to improve current and future operations. Second, the creation of value is not measured by financial accounting metrics. Because the nature of these metrics is to report on only the costs of past actions, little indication is provided of what value investors and other stakeholders will place on the actions of management to change future events, especially those considered to be long-term. Investment in employee training programs is a prime example because although traditional measures show the cost of training, the benefits are not directly quantified. Third, managers need to understand what factors drive success in their organizations again something that traditional financial measures do not help managers do. Fourth, the Balanced Scorecard, as described by

Norton and Kaplan, does more than measure. That is, if constructed properly, a Balanced Scorecard can communicate, provide feedback, create learning, and align strategic objectives with daily operational control. Changes in technology and the competitive environment are shaping analysis techniques, information gathering mechanisms, and the way decisions are framed. Management's job is to accommodate these changes with new managerial control systems to measure and evaluate operating performance and to provide timely and appropriate information for managerial decision making. Nowhere has a more dramatic example of radical change been displayed than by companies adopting and implementing the Just-in-Time (JIT) philosophy. That is why before constructing a Balanced Scorecard for companies implementing or using JIT, management carefully must consider the uniqueness of the manufacturing environment and the management control system. There are many important differences in approach between a traditional manufacturing environment and a JIT environment that would indicate unique considerations when the Balanced Scorecard is employed in a JIT context.

A Problem of Incongruence: After investigating the success of Japanese companies, American companies implemented JIT manufacturing systems with mixed success in the United States. The conversion from a traditional process to JIT has had profound effects on both manufacturing systems and organizations as a whole. In emulating Japanese techniques, American firms adopted what they believed was the essence of the method while ignoring areas directly affected by the change. Herein lies the problem. Changing the manufacturing process in a radical way without changing the management control system can create an incongruent state that results in inconsistent performance evaluation and dysfunctional behavior. Properly matching attributes of manufacturing control with management control is necessary to avoid this problem. Studies of JIT implementations have indicated that movements from traditional systems to JIT typically have not caused significant alterations in existing performance measurement systems. Furthermore, basic control and support systems frequently were not put in place prior to the adoption of the new technology, and changes in performance measurement systems often have tended to be reactive in nature. Accordingly, suggesting a proper linking of the manufacturing system with its drivers of performance requires an understanding of the differences between traditional and JIT manufacturing systems. From that vantage point, differences in management control among the systems can be examined appropriately.

Manufacturing Control; JIT can be described as a set of manufacturing techniques and concepts or a philosophy of doing business that minimizes inventory levels and enjoys the commensurate effects of doing so. Generally, JIT manufacturing is more oriented to broad-based effectiveness, while traditional manufacturing systems tend to emphasize efficiency. JIT exposes production problems because there is no buffer stock of inventory. If a part on the line is discovered to be defective, and therefore unusable, then the production line must be stopped because there is no additional excess inventory to replace it. JIT would require that the problem be addressed immediately so that production could resume and similar problems could be avoided in the future. Accordingly, JIT is quality oriented and emphasizes simplifying the process and preventing problems. If we compare JIT manufacturing methods with traditional manufacturing methods, typical differences in three areas are highlighted, implying the need for changes in management control. The first difference impacting management control is that JIT focuses more on the manufacturing process. Consistent with the quality emphasis in JIT systems, expectations actually are predicted to change as quality improves continuous improvement is assumed. Moreover, defects are prevented by line workers rather than appraised by a separate quality assurance department. Emphasis is on no

financial measures and controlling activities and transactions. Flexibility is considered to be more important than automation and efficiency.

Second, JIT promotes a stable workforce. Workers typically are not specialized in a dedicated production task but are trained to perform various production duties. Communication and teamwork among workers are encouraged as a means of identifying and resolving problems. Workers often are salaried and empowered to report and resolve problems as they arise. If the process is not going as quickly as needed in a particular area, then workers converge on that area. A spirit of cooperation and companywide loyalty is supported.

Third, the supplier base used with JIT is much smaller than with traditional systems and often consists of certified vendors. These suppliers are certified (i.e., contractually required) to provide timely deliveries of goods at a high-quality level. A partnership relationship with suppliers is encouraged, and suppliers often are invited to the plant to help them understand the needs of the manufacturer. Long-term contracts involving a minimum amount of paperwork are pursued.

Management Control; These three areas highlight differences in manufacturing that require different treatment in the management control system to be effective (see Table 1). With a JIT system, defect prevention becomes more important than appraisal, and workers are rewarded for pointing out and solving problems rather than hiding them. Managers are rewarded for minimizing investment by explicitly imputing inventory investment into the performance evaluation scorecard. Moreover, control over activities rather than costs are stressed while maintaining a long-term organization-based approach to evaluation.

A JIT system would suggest that performance expectations should be constantly changing under the assumption of continuous improvement. In addition, quality should be evaluated, not on the basis of specifications but on the basis of meeting and exceeding customer needs and wants. With traditional systems, minimization of defects discovered is rewarded as is the minimization of cost per unit. JIT workers, however, are encouraged to stop the production line to prevent defects, point out problems, or otherwise improve the process. Long production runs are irrelevant in a flexible JIT environment. Therefore, minimizing setup time for production changeovers is rewarded. Prevention of defects is emphasized along with the minimization of no value-added activities. Here the product versus process emphasis is extended to customer relations. That is, traditional systems identify appropriate customers with the marketing of products produced, while JIT identifies products to produce as desired by customers. Traditional systems schedule production based on worker expertise and running large batches, while JIT systems schedule production based on achieving flexibility to meet customer orders. JIT rewards workers based on their ability to work cooperatively as a team in adapting to the flexibility required in satisfying customers. Where traditional systems emphasize planning, budgeting, and scheduling, JIT emphasizes communication and workers helping each other with urgent demands. Using certified supplier relationships simplifies supplier relations, ensures that quality and delivery levels are attained, and minimizes transaction cost and paperwork. Activity analysis is appropriate with JIT to determine effectiveness. Activity analysis also is helpful in developing relevant management control metrics.

Linking Manufacturing Control to Management Control: JIT manufacturing control activities can be mapped to their related drivers, which double as the metrics that would be used for management control in the Balanced Scorecard. The manufacturing control factors are presented in the three areas of

(1) Process, (2) workforce, and (3) suppliers as discussed previously.

Although several Balanced Scorecard metrics are suggested here, these performance measures should not be considered generic for any JIT operation. Each company must develop its own metrics based on its own individual strategy. Moreover, the metrics used should be well-thought-out to ensure that they can be linked to strategic objectives and linked together in such a way that they reinforce each other. Kaplan suggests a heuristic for evaluating the veracity of the linkage: "You should be able to look at your measures and infer the business strategy the company is intending to use to get to breakthrough performance."³ That is, the measures themselves should obviate the strategy intended. For this reason, the metrics should be fairly specific. For example, for the manufacturing control activity "increase flexibility" (shown in Figure 8.1 a)), the driver should be somewhat more specific than "respond quickly to changes." The ability to minimize setup and changeover time, as shown, would be a more reasonable metric to drive manufacturing flexibility and provide a specific indicator of the company's ability to perform in that area.

| Manufacturing Control Activities | Management Control Metrics | Time Horizon | Value Chain | Scorecard Category* |
|--------------------------------------|---|--------------|---------------|---------------------|
| Process: | | | | |
| Identify problems | Percent of activities nonvalue added | Short-term | All | IBP |
| Simplify the process | Throughput time | Short-term | Production | IBP |
| | Process reliability | Intermediate | Up/Production | IBP |
| Solve problems | Percent decrease in nonvalue-added activities | Short-term | All | All IBP |
| Ensure quality | Number of defects | Intermediate | All | IBP |
| Reduce or eliminate inventory | Inventory costs | Long-term | Up/Production | Financial |
| Inspect online | Appraisal cost per defect | Short-term | Production | IBP |
| Increase flexibility | Setup and changeover time | Short-term | Up/Production | IBP |
| Workforce: | | | | |
| Cross-train workers | Number in-plant job descriptions | Short-term | Up/Production | IBP |
| Encourage – innovation – teamwork | Time spent outside primary work area | Short-term | Production | I & L |
| | Employee satisfaction | Intermediate | All | IBP |
| Empower workers | Average number of jobs the worker is trained to perform | Intermediate | Up/Production | I & L |
| | Number of actions requiring approval | Intermediate | Production | IBP |
| Suppliers: | | | | |
| Certify supplier – quality | Percent defects by supplier | Short-term | Production | IBP |
| | Percent on-time delivery | Short-term | Production | IBP |
| – delivery | Throughput time | Short-term | Production | IBP |
| | Average transaction cost per supplier | Short-term | Production | IBP |
| Reduce paperwork | Number of suppliers | Intermediate | Production | IBP |
| Reduce number of suppliers | Number of invoices | Short-term | Production | IBP |
| Overall: | | | | |
| Enhance supplier relations | Supplier satisfaction | Intermediate | Production | IBP |
| Expose waste | Process quality | Intermediate | Up/Production | IBP |
| Increase morale | Number of employee complaints | Short-term | All | IBP |
| | Number of customer complaints | Short-term | Down | Customer |
| Promote organization excellence | Cash flow ROI | Long-term | All | Financial |
| | Market share | Long-term | All | Customer |
| Sustain competitive advantage | Percent of revenue from innovation | Long-term | All | Financial |
| | Number of new products | Intermediate | Up | I & L |

*Note: 1A is raised portion of figure; 1B is entire figure. *IBP = Internal Business Processes; I & L = Innovation and Learning

Fig8.1 a) Activities to Metrics Mapping & b) Integrated Balanced Scorecard

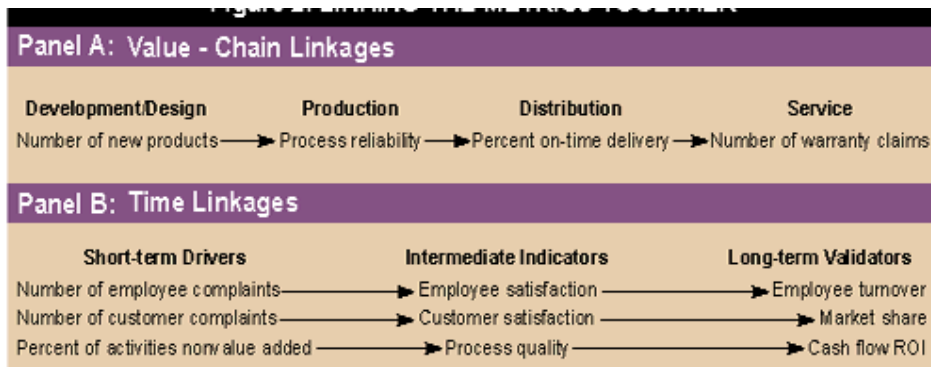


Fig 8.2 Linking the Metrics Together

The time horizon for each metric (Figure 8.1a)) reflects the importance of considering the time dimension in assessing how each metric meets strategic objectives and how the metrics are linked together. Each measure should be time sequenced in its linkages to other measures to avoid the non beneficial lag problem associated with most financial accounting measures and to indicate its purpose clearly. The time element should vary in application to suit the needs of the company. One way to break this element down would be in

(1) Short-term specific causes or primary drivers of the control factor, (2) evaluation in intermediate indicators of time, and (3) long-term validations in terms of time. Most of the items shown in Figure 8.1a) reflect metrics with short-term time horizons.

Each short-term manufacturing control activity should have at least one short-term driver that provides a clear cause-and-effect type of relationship to provide guidance for management action. Indeed, the most sensible metric to use will in many cases be derived directly from the management activity itself. For example, reducing paperwork is an objective of JIT systems that clearly would be driven by the amount of paper itself (i.e., the direct output of the activity). The number of invoices is an example of a measure derived from the activity that directly reflects a tangible output from management actions to reduce paperwork.

Other measures are better indicators of the indirect results of specific management activities, for example, employee satisfaction. This measure would be expected to result from such things as empowering workers and encouraging teamwork. Employee satisfaction is not a direct measure of either of these items (i.e., the degree to which employees are becoming empowered or participating with other workers in a manner that would reflect teamwork). Nevertheless, employee satisfaction is important and should be measured and linked back to the specific short-term drivers that are expected to produce it. These metrics can be referred to as intermediate indicators, and they likely are fewer in number than the metrics thought to reflect the primary short-term drivers of the manufacturing control activities.

The long-term validators are fewer in number than even the intermediate indicators. Only one such item is shown in Figure 8.1, mostly for illustration purpose that of inventory costs. Metrics in this category should reflect long-term expectations and are broader in scope and more fundamental to overall company goals. Reduction in inventory costs is a fundamental objective of JIT and could be used as a long-term validator of something you would expect to see with a changeover to JIT. Often, as in this case, the long-term validator-type metrics are financial measures, and it is here that companies can establish the link between intermediate and long-term performance metric categories and the more traditional overall financial indicators of effectiveness.

Panel A of Fig 8.2 shows how various metrics can be linked to each other by considering the time horizon of relevant activities. That is, a short-term metric is shown that relates to an intermediate indicator that in turn relates to a long-term validator metric. Studying these linkages reveals how each metric relates to the "big picture" strategy and provides a clear map for evaluating particular management actions. The value of specific activities can be assessed by linking them all the way from their short-term drivers through their intermediate indicators and ultimately to their long-term validation.

By considering the categories of the Balanced Scorecard and where specific management actions are likely to take place to achieve results, a company can conduct value-chain analysis. For the JIT manufacturing items discussed, most specific management actions are likely to be initiated in the production phase of the value chain. Although these actions must include top management support and involvement, and ultimately will affect other phases of value creation, identifying the value-chain phase where primary drivers of results occur is a worthwhile task. Knowing the primary areas where value creation is initiated is important to reinforcing those efforts and tracking them with suitable metrics. This effort also can facilitate using a responsibility accounting approach to monitoring the measures. For purposes of illustration involving the JIT items discussed here, making a distinction between production and upstream and downstream categories is sufficient. This can be shown as part of a Balanced Scorecard where the value-chain perspective is integrated.

Panel B of Fig 8.2 shows how metrics can be linked together through the value chain. In the panel, the upstream development and design metric number of new products is linked to the production phase process reliability metric. Arguably, the activities involved with increasing the number of new products will be intertwined inextricably with the reliability of the production process. Indeed, the employees responsible for value creation in these two groups likely will work together and be functionally dependent on each other for value creation in these areas. From there, the linkage is made to the distribution metric percent on-time delivery and on to the service phase metric number of warranty claims. Again, these metrics are related. In a JIT context process, reliability will greatly affect the percentage of on-time deliveries that are made and ultimately the degree of warranty claims resulting from production defects (i.e., those caused by or arising as a result of an unreliable process).

The beneficial aspect of value-chain linkages is to facilitate an overall management assessment of value creation across functional categories. The old adage that a chain evens a value chains only as strong as its weakest link is ever true with the Balanced Scorecard as well.

Putting It All Together: Fig 8.1 b) shows a comprehensive presentation of an Integrated Balanced Scorecard. This format presents a "big picture" approach to linking JIT manufacturing control activities to management control metrics via the Balanced Scorecard. In addition to showing the Drivers/metrics and their activity linkages, such a presentation emphasizes the time horizon, value-chain phase(s), and Balanced Scorecard categories for each management control metric. Figure 8.1 b) builds upon the Figure 8.1 a) presentation of activity-to-metric linkages and their respective time horizons by adding the value-chain phases and scorecard categories as additional columns. Also added is a section for overall objectives which would be germane to a JIT context.

The addition of the overall section is provided as an illustration of how a firm would integrate broad measures of success to the more specific JIT considerations of process, workforce, and supplier relationships. The overall objectives, metrics, time horizons, and value-chain and scorecard categories used in this illustration are in some cases somewhat arbitrary. There are many possibilities in terms of different strategies and management perspectives regarding what metrics are appropriate, how they link to strategy, what time horizon is relevant, and where value would be primarily initiated or created. The items presented, however, are representative of a typical conceptualization that could be used. Again, the point to using the Balanced Scorecard as a management tool is not to adopt a specific set of metrics by cloning them from a particular list. The idea is to analyze each of these components and consider how they link to strategy and link together to support a meaningful continuous improvement and assessment effort.

Although the "overall" category items are presented in Figure 8.1 b) as activities similar to the Figure 8.1 a) manufacturing control items, because they are broader they should be understood as having multiple drivers. Moreover, these drivers will occur at various levels. For this reason, the metrics associated with them often will be classified as intermediate indicators or long-term validators in terms of the time horizon. This section is where the more traditional financial accounting-based "validator-type" measures will be located. Even though traditional financial measures can be found here, they are by no means the only measures found here. Note that in the Figure 8.1 b) "Overall" section, only two of the eight measures presented fall into the financial category. Many "big picture," overall-type objectives are best measured by using no financial metrics.

Previously it was mentioned that when categorizing metrics into the value chain, the primary location where value creation is initiated should be the method of classification. Although this rule of thumb is true, there are some activities that are inseparable within the value chain and some for which it would be dysfunctional to specify a particular value-chain phase. In the JIT context there are many activities for which production and engineering personnel work together. For example, the process reliability metric discussed earlier is highly influenced by both the diligence of the workforce and the initial design and subsequent changes made by industrial engineering. Therefore, both production and upstream phases should be considered.

Likewise, specifying a value-chain phase for broadly sweeping metrics such as "decreasing no value-added activities" or "increasing employee satisfaction" would be to suggest that one set of workers adds value to the exclusion of others or that the company should be more concerned with the satisfaction of a particular subset of the company's employees. Indeed, all phases of the value chain are not only relevant to these activities but vital.

Clearly, there are activities that fall exclusively in the domain of particular phases of the value chain. In these cases, specifying the primary initiation of the value creation process is critically important to achieving success. Management can encourage viewing these value-chain phases as responsibility centers for the activities isolated in these areas and use the linked metrics for creating Balanced Scorecards for individual departments, divisions, or other segments. In this way, each department can be informed of its contribution to the success of the company and be evaluated accordingly.

The final column in the integrated table is the Balanced Scorecard category classification as conceptualized by Kaplan and Norton. Most of the items mentioned here will fall in the Internal Business Processes (IBP) category for JIT items because this area is where the most tangible changes from a traditional system will be initiated. Exceptions involve inventory

cost, which is a "big picture" financial metric, item designed to measure workforce gains in the innovation and learning category, and those metrics targeted specifically at meeting and exceeding customer needs and wants.

The Balanced Scorecard, as illustrated, can be a useful tool in systematizing the management control system to accommodate radical changes in activities that are brought on by implementation of a JIT manufacturing system. Properly matching attributes of manufacturing control with management control is necessary to avoid dysfunctional results brought about by such sweeping changes. The Balanced Scorecard provides a context for conducting activity and measurement analysis, linking activities to the value chain, time phasing each metric for proper interpretation, and linking the elements together in an integrated and useful manner. This tool for management accounting change will benefit companies and their managers who desire to find a systematic way to analyze and control operations in a timely and relevant manner.

8.3 INTRODUCTION TO VALUE ADDED ACCOUNTING

Now we will discuss the new dimension of management accounting concept. Interestingly value addition is a vital part of any commercial establishments for growth and development. Let us look into the concept in detail. The concept of value added is considerably old. It originated in the USA. Treasury in the 18th Century and periodically accountants have deliberated upon whether the concept should be incorporated in financial accounting practice. But actually, the value added statement has come to be seen with greater frequency in Europe and more particularly in Britain. The discussion paper "Corporate Report" published in 1975 by the then Accounting Standard Steering committee (now known as Accounting Standards Board) of the U.K. advocated the publication of value added statement along with the conventional annual corporate report. In 1977, the Department of Trade, U.K. published 'The Future of Company Report' which stated that all substantially large British companies should include a value added (V.A.) statement in their annual reports. Also a few companies in the Netherlands include V.A. information in their annual reports, but the disclosures often fall short of being a full V.A. statement and also the method of arriving at V.A. is grossly non-standardized. In India Britannia Industries Limited and some other prepare value added statement as supplementary financial statement in its annual report.

Definition:

Value Added (V.A.): VA is the wealth a reporting entity has been able to create through the collective effort of capital, management and employees. In economic terms, value added is the market price of the output of an enterprise less the price of the goods and services acquired by transfer from other firms. VA can provide a useful measure in gauging performance and activity of the reporting entity.

Gross Value Added (GVA): GVA is arrived at by deducting from sales revenue the cost of all materials and services, which were brought in from outside suppliers. We know that the retained profit of a company for a given accounting year is derived as below:

$$R = S - B - \text{Dep} - W - I - T - \text{Div} \quad \dots (1)$$

Where R= Retained profit, S= Sales revenue, B= Bought in cost of materials and services, Dep= annual depreciation charge, W= Annual wage cost, I= Interest payable for the year T= Annual Corporate tax and Div = Total dividend payable for the year. Rearranging the equation (1) we get GVA as below:

$$S - B = R + \text{Dep} + W + I + T + \text{Div} \quad \dots (2)$$

Each side of equation (2) represents GVA. However this is a very simple definition of GVA. In practice GVA includes many other things.

Besides sales revenue, any direct income, investment income and extraordinary incomes or expenses are also included in calculation of GVA. Including these items in the above equation No.2, we get

$$(S + \text{Di}) - B + \text{Inv} + \text{EI} = R + \text{Dep} + W + T + I + \text{Div}. \quad \dots (3)$$

Where Di = Direct incomes, Inv = Investment incomes, EI= Extraordinary items.

The above equation can be shown by way of the following statement.

| | | |
|---|----------|----------|
| Gross Value added of a manufacturing company | | |
| Sales | | X |
| Add: Royalties and other direct income | | X |
| Less: Materials and Services used | | <u>X</u> |
| Value added by trading activities | | X |
| Add: Investment Income | | X |
| Add/Less: Extraordinary items | <u>X</u> | <u>X</u> |
| Gross Value Added | | X |

Applied as follows:

| | |
|---|----------|
| To employees as salaries, wages etc. | X |
| To government as taxes, duties, etc. | X |
| To Financiers as interest on Borrowing | X |
| To Shareholders as dividends | X |
| To retained earnings including depreciation | <u>X</u> |

Net Value Added (NVA): NVA can be defined as GVA less depreciation.

Rearranging the equation (1) we can get NVA as below:

$$S - B - \text{Dep} = R + W + I + T + \text{Div}.$$

Reporting Value Added

The 'Corporate Report' of the U.K. advised the British companies to report Gross value Added (GVA). The 'Report' did not consider the possibility of the alternative Net Value Added (NVA). As a result the majority of British companies prefer to set forth their VA statement as a report on GVA, so that depreciation is an application of VA rather than a cost to be deducted in calculating VA. In India also GVA is more popular among reporting companies than NVA. The reasons for reporting GVA are as follows:

GVA can be derived more objectively than NVA. This is because depreciation is more Prone to subjective judgment than are bought-in costs.

- GVA format involves reporting depreciation along with retained profit. The resultant sub-total usefully shows the portion of the year's VA, which has become available for re-investment.
- The practice of reporting GVA would lead to a closer correspondence between VA and national income figures. This is because economists generally prefer gross measures of national income to net one.

However, there are also valid reasons for reporting NVA. They are:

- Wealth Creation (i.e. VA) will be overstated if no allowance is made for the wearing out or loss of value of fixed assets, which occurs as new assets are created.
- NVA is a firmer base for calculating productivity bonus than is Gather productivity of a company may increase because of additional investments in modernization of plant and machinery. Consequently, the value added component may improve significantly. The employees of the company will naturally claim and be given some share of additional VA as productivity bonus. But if the share is based on GVA then no recognition is given to the need for an increased depreciation charge.
- The concept of matching demands that depreciation be deducted along with bought in costs to derive NVA. GVA is inconsistent, for costs would be charged under the bought in heading if the item has a life of under one year. But if the item has a longer life it would be treated as a depreciable fixed assets and its cost would never appear as a charge while arriving at GVA. From the above discourse it can be said that it is better to report on NVA rather than on GVA.

8.3.1 Why VA Statement?

The advantages claimed for the VA statement are considerable. The main thrust of financial accounting development in the recent decades has been in the area of 'how' we measure income rather than 'whose' income we measure. The common belief of the traditional accountants that net income or profit is the reward of the proprietors (shareholders in the case of a company) had been considered as a very narrow definition of income. In fact, proponents of the proprietary theory argued that the proprietor is the centre of interest. The assets were assumed to be owned by the proprietor and the liabilities were the proprietor's obligations. The notion of proprietorship was accepted and practiced so long as the nature of business did not experience revolutionary changes. The proprietary theory did hold good for a sole proprietorship or a partnership kind of business. But with the emergence of corporate entities and the legal recognition of the existence of business entity separate from the personal affairs and other interests of the owners led to the rejection of the proprietary theory and formulation of other theories like entity theory, enterprise theory and fund theory. The entity theory has its main application in the corporate form of business enterprise. The entity theory is based on the basic accounting equation and it suggests that the net income of the reporting entity is generally expressed in terms of the net change in the stockholders' equity. It represents the

residual change in equity position after deducting all outsiders' claims. The enterprise theory is a broader concept than the entity theory. For entity theory, the reporting entity is considered to be a separate economic unit operating primarily for the benefit of the equity shareholders, whereas in the enterprise theory, the reporting entity is a social institution, operating for the benefit of many interested groups. The most relevant concept of income in this broad social responsibility concept of the enterprise is the value added concept. Therefore, the origin of concept of value added lies in the enterprise theory. Proponents of VA argue that there are advantages in defining income in such a way as to include the rewards of a much wider group than just the shareholders. The various advantages of the VA statement are as follows:

- Reporting on VA improves the attitude of employees towards their employing companies this is because the VA statement reflects a broader view of the company's objectives and responsibilities.
- VA statement makes it easier for the company to introduce a productivity linked bonus scheme for employees based on VA. The employees may be given productivity bonus on the basis of VA/Payroll ration.
- VA based ratios (e.g. VA/Payroll, Taxation/VA, VA/Sales etc.) are useful diagnostic and predictive tools. Trends in VA ratios, comparisons with other companies and international comparisons may be useful. In India, the VA statement of Britannia Industries Limited for the two years 1992-93 and 1993-94 showed that almost 50% of the value addition is applied in payment of various taxes and duties. The employees and shareholders get almost and constant share of value added of 35% and 5% respectively. The value added as a percentage of sales revenue has increased from 23.8% to 25.6% over the two years period. However, it may be noted that the VA ratios can be made more useful if the ratios are based on inflation adjusted VA data.
- VA provides a very good measure of the size and importance of a company. To use sales figures or capital employed figures as a basis for company rankings can cause distortion. This is because sales may be inflated by large bought in expenses or a capital intensive company with a few employees may appear to be more important than a highly skilled labor intensive company.
- VA statement links a company's financial accounts to national income. A company's VA indicates the company's contribution to national income.
- Finally VA statement is built on the basic conceptual foundations, which are currently accepted in balance sheets and income statements. Concepts such as going concern, matching, consistency and substance over form are equally applicable to the VA statement.

Value Added Statement (VA Statement): The VA statement shows the value added for a business for a particular period and how it is arrived at and apportioned to the following shareholders:

The workforce– for wages, salaries and related expenses;

The financiers– for interest on loans and for dividends on share capital.

The government – for corporation tax;

The business– for retained profits

A statement of VA represents the profit and loss account in different and possibly more useful manner. The conventional VA statement is divided into two parts – the first part shows how VA is arrived at and the second part shows the application of such VA.

Illustration

Given below is the Profit & Loss Account of Creamco Ltd.

Profit and Loss Account for the year ended 31st March 1999

| | Notes | Amount |
|---|-------|---------------|
| Income | | (Rs.'000) |
| Sales | 1 | 28,525 |
| Other income | | <u>756</u> |
| | | 29,281 |
| Expenditure | | |
| Operating Cost | 2 | 25,658 |
| Excise duty | | 1,718 |
| Interest on Bank overhead | 3 | 93 |
| Interest on 10% Debentures | | <u>1.157</u> |
| | | <u>28.616</u> |
| Profit before Depreciation | | 655 |
| Less: Depreciation | | <u>255</u> |
| Profit before tax | | 400 |
| Provision for tax | 4 | <u>275</u> |
| Profit after tax | | 125 |
| Less: Transfer to Fixed Asset Replacement Reserve | | <u>25</u> |
| | | 100 |
| Less: Dividend paid and payable | | <u>45</u> |
| Retained profit | | <u>55</u> |

Notes:

1. This represents the invoice value of goods supplied after deducting discounts, returns and sales tax.
2. Operating cost includes Rest. ('000) 10.247 as wages, salaries and other benefits to employees.
3. The bank overdraft is treated as a temporary source of finance.
4. The charge for taxation includes a transfer of Rs. ('000) 45 to the credit of deferred tax account.

You are required to:

- (a) Prepare a value added statement for the year ended 31st March 1999.
- (b) Reconcile total value added with profit before taxation.

Solution

(a)

CREAMCO LTD.
VALUE ADDED STATEMENT
For the year ended March 31, 1999

| | Rs. ('000) | Rs. ('000) | % |
|--|-------------------|-------------------|---------------|
| Sales | | 28.525 | |
| Less: Cost of bought in material and services: | | | |
| Operating Cost | 15,411 | | |
| Excise duty | 1,718 | | |
| Interest on Bank Overdraft | <u>93</u> | <u>17.222</u> | |
| Value added by manufacturing and trading activities | | 11.303 | |
| Add: Other Income | | <u>756</u> | |
| Total value added | | <u>12,059</u> | |
| Application of value added: | | | |
| To pay employees: | | | |
| Wages, salaries and other benefits | | 10.247 | 84.97 |
| To pay government: | | | |
| Corporation tax | | 230 | 1.90 |
| To pay providers of capital: | | | |
| Interest on 10% Debentures | 1.157 | | |
| Dividends | <u>45</u> | 1.202 | 9.98 |
| To provide for the maintenance And expansion of the company: | | | |
| Depreciation | 255 | | |
| Fixed Assets Replacement Reserve | 25 | | |
| Deferred Tax Account | 45 | | |
| Retained profit | <u>55</u> | <u>380</u> | <u>3.15</u> |
| | | <u>12,059</u> | <u>100.00</u> |

(b) Reconciliation between total value Added and Profit before Taxation

| | Rs. ('000) | Rs. ('000) |
|------------------------------------|-------------------|----------------------|
| Profit before tax | | 400 |
| Add back: | | |
| Depreciation | 255 | |
| Wages, salaries and other benefits | 10.247 | |
| Debenture interest | 1.157 | <u>11.659</u> |
| Total Value Added | | <u>12.059</u> |
| | | |

Notes:

- (1) Deferred tax could alternatively be shown as a part of 'To pay government'.
- (2) Bank overdraft, being a temporary source of finance, has been considered as the provision of a banking service rather than of capital. Therefore, interest on bank overdraft has been shown by way of deduction from sales and as a part of 'cost' of bought in material and services.

8.3.2 Limitations of VA

It is argued that although the VA statement shows the application of VA of several interest groups (like employees, government, shareholders, etc.) the risks associated with the company is only borne by the shareholders. In other words, employees, government and outside financiers are only interested in getting their share on VA but when the company is in trouble, the entire risks associated therein is borne only by the shareholders. Therefore, the concept of showing value added as applied to several interested groups is being questioned by many academics. They advocated that since the shareholders are the ultimate risks takers, the residual profit remaining after meeting the obligations of outside interest groups should only be shown as value added accruing to the shareholders. However, academics have also admitted that from overall point of view value added statement may be shown as supplementary statement of financial information. But in no case can the VA statement substitute the traditional income statement (i.e. Profit & Loss Account.)

Another contemporary criticism of VA statement is that such statements are non-standardized. One area of non-standardizations is the inclusion or exclusion of depreciation in the calculation of value added. Another major area of non-standardization in current VA practice is taxation. Some companies report only tax levied on profits under the heading of "VA applied to governments". Other companies prefer to report on extensive range of taxes and duties under the same heading. In the case of Britannia Industries Limited. It has shown taxes and duties paid under the heading "VA applied to Government". In the illustration given in Para 1.5-excise duty has been shown as a part of bought-in cost and deducted while calculating value added. Some academics argued that such excise duty should be shown as an application of VA. However, bringing out an accounting standard on value added can effectively eliminate this practice of non-standardization. Therefore, this criticism is a temporary phenomenon.

The reasons for preferring NVA to GVA. We prepare the NVA statement on the basis of the information given in illustration in Para 1.5. It can be mentioned here that in preparing VA statement on NVA basis excise duty has been shown as an application of VA.

(a)

CREAMCO LTD.
VALUE ADDED STATEMENT
For the year ended March 31, 1999

| | Rs. ('000) | Rs. ('000) | % |
|---|------------|---------------|---------------|
| Sales | | 28.525 | |
| Less: Cost of bought in material and services: | | | |
| Operating Cost | 15,411 | | |
| Interest on Bank Overdraft | 93 | 15.504 | |
| Gross Value Added | | 13.021 | |
| Less: Depreciation | | 255 | |
| Net Value Added | | 12,766 | |
| Add: Other income | | 756 | |
| Available or application | | 13.522 | |
| Applied as follows: | | | |
| To pay employees: | | | |
| Wages, salaries and other benefits | | 10.247 | 75.78 |
| To pay government: | | | |
| Corporation tax & excise duty | | 1.948 | 14.41 |
| To pay providers of capital: | | | |
| Interest on 10% Debentures | 1.157 | | |
| Dividends | 45 | 1.202 | 8.8 |
| To provide for the maintenance And expansion of the company: | | | |
| Fixed Assets Replacement Reserve | 25 | | |
| Deferred Tax Account | 45 | | |
| Retained profit | 55 | 125 | 0.92 |
| | | 13.522 | 100.00 |

(b) Reconciliation between total value Added and Profit before Taxation

| | Rs. ('000) | Rs. ('000) |
|------------------------------------|--------------|---------------|
| Profit before tax | | 400 |
| Add back: | | |
| Excise duty | 1.718 | |
| Wages, salaries and other benefits | 10.247 | |
| Debenture interest | <u>1.157</u> | <u>13.122</u> |
| Total Value Added | | <u>13.522</u> |

We can see that VA based ratios have changed significantly particularly with respect to payments to employees and government (i.e. Payroll/VA and taxation /VA.) Taxation/VA ratio has increased from a meager 1.9% to a significant 14.41%, whereas payroll/VA ratio has come down from 84.97% to 75.78%. It suggests that although the employees are enjoying the major share of VA. Government's share has also increased significantly. As a result the retained profit of the company has significantly come down.

Illustration

Prepare a Gross Value Added statement from the following Profit and Loss Account of Strong Ltd. Show also the reconciliation between Gross Value Added and Profit before taxation.

Profit & Loss Account for the year ended 31st March, 1999

| Income | Notes (Rs. In lakhs) | Amount (Rs. In lakhs) | |
|-----------------------------------|----------------------|-----------------------|------------|
| Sales | | | 610 |
| Other Income | | | <u>25</u> |
| | | | 635 |
| Expenditure | | | |
| Production & Operational Expenses | 1 | 465 | |
| Administration Expenses | 2 | 19 | |
| Interest and other charges | 3 | 27 | |
| Depreciation | | <u>14</u> | <u>525</u> |
| Profit before Taxes | | | 110 |
| Provision for Taxes | | | 16 |
| | | | 94 |
| Balance as per Last Balance Sheet | | | <u>7</u> |
| | | | <u>101</u> |

| | | | | |
|----------------------------------|--|-----------|-----------|------------|
| Transferred to: | | | | |
| General Reserve | | 60 | | |
| Proposed Dividend | | <u>11</u> | 71 | |
| Surplus carried to Balance Sheet | | | <u>30</u> | |
| | | | | <u>101</u> |

Notes:

| | |
|---|-----------------------|
| 1. Production & Operational Expenses | (Rs. In lakhs) |
| Increase in Stock | 112 |
| Consumption of Raw Materials | 185 |
| Consumption of Stores | 22 |
| Salaries, Wages, Bonus & Other Benefits | 41 |
| Cess and Local Taxes | 11 |
| Other Manufacturing Expenses | <u>94</u> |
| | <u>465</u> |

1. Administration expenses include inter-alia audit fees of Rs.4.80 lakhs, salaries & commission to directors Rs.5 lakhs and provision for doubtful debts Rs.5.20 lakhs.

| | |
|---------------------------------------|-----------------------|
| 2. Interest and other Charges: | (Rs. In lakhs) |
| On working capital loans from Bank | 8 |
| On Fixed Loans from IDBI | 12 |
| Debentures | <u>7</u> |
| | <u>27</u> |

Solution

STRONG LIMITED
VALUE ADDED STATEMENT
For the year ended March 31, 1999

| | Rs. ('000) | Rs. ('000) | % |
|--|------------|------------|---------------|
| Sales | | 610 | |
| Less: Cost of bought in material and services: | | | |
| Production and operational expenses | 413 | | |
| Administration expenses | 14 | | |
| Interest on working capital loans | <u>8</u> | <u>435</u> | |
| Value added by manufacturing and trading activities | | 175 | |
| Add: Other Income | | <u>25</u> | |
| Total Value Added | | <u>200</u> | |
| Application of Value Added: | | | |
| To pay employees: | | | |
| Wages, salaries Bonus and other benefits | | 41 | 20.50 |
| To pay Directors: | | | |
| Salaries and Commission | | 5 | 2.50 |
| To pay Government: | | | |
| Cess and Local Taxes | 11 | | |
| Income Tax | <u>16</u> | 27 | 13.50 |
| To pay providers of Capital | | | |
| Interest on Debenture | 7 | | |
| Interest on Fixed Loan | 12 | | |
| Dividend | <u>11</u> | 30 | 15.00 |
| To Provide for Maintenance and Expansion of the Company: | | | |
| Depreciation | 14 | | |
| General Reserve | 60 | | |
| Retained Profit (30-7) | <u>23</u> | <u>97</u> | <u>48.50</u> |
| | | <u>200</u> | <u>100.00</u> |

Reconciliation between total value Added and Profit before Taxation

| | Rs. ('000) | Rs. ('000) |
|------------------------------------|------------|------------|
| Profit before tax | | 110 |
| Add back: | | |
| Depreciation | 14 | |
| Wages, salaries and other benefits | 41 | |
| Directors' Remuneration | 5 | |
| Cess and Local Taxes | 11 | |
| Interest on Debentures | 7 | |
| Interest on Fixed Loans | <u>12</u> | |
| Total Value Added | <u>90</u> | <u>200</u> |

8.3.3 Interpretation of VA

While the absolute value of net VA and its proportion to gross output are very important, the factor components of value addition reveal more information. It is generally found that value addition is highest for service companies and lowest for a trading business. Consider a hypothetical situation. There are three companies A, B and C. Each sells the finished product for Rs.1, 000. Company A buys a lump of metal in the market for Rs.500 performs four operations on it – annealing, forging, trimming and polishing – and sells the finished product for Rs.1, 000. Company B buys the semi finished product in the market for Rs.800, performs certain operations and sells the finished product at the said price of Rs.1000. Company C buys the finished product from another company for Rs.950 and sells it for Rs.1, 000.

Thus even though al

l the three companies have the same turnover, company. A has added highest net value to its product and company C the least. As a percentage of the gross output, company A's value addition is 50%, company B's 20% and company C's a meager 5%. At this point it appears that company A, having highest value addition, will give highest returns to shareholders. But if it so happens that out of total value addition of Rs.500 by company A, almost 90% goes out for meeting wage bill, the position is entirely different. Therefore, considering the ratio of net value added to gross output does not yield a complete picture .If much a company net value added comes from an unproductive labor force, there will be little leftover for future investments for addition to reserves. Hence, besides considering the ratio of net value addition to gross output, one must consider the contribution of various factor costs to the net value added.

8.4 INTRODUCTION TO INFLATION ACCOUNTING

Accounting is based on the traditional concept of cost and revenue. Money is the yardstick for measuring profits and losses and financial health of the business operating results and financial position. The basic objective of accounting is the preparation of financial statements in a way that they give a true and fair view of the business. That is, the income statement should disclose the true profit or loss made by the business during a particular period while the balance sheet must show a true and fair view of the financial position of the business on a particular date. Financial statements are prepared in monetary units i.e., rupee. The medium of expression is the money value. The value of money is itself fluctuating; any measurement with an unsteady scale cannot be finite and comparable. The recording of business transac-

tions under the assumption that monetary unit is stable is known as historical accounting. However, it has been our experience that over a period of time, the prices have not remained stable. There have been inflationary as well as deflationary tendencies. Rise in general price level, termed inflation erodes the intrinsic value of money, and conversely, fall in general prices called deflation, raises its purchasing power. Inflation is a concept which every human being is not only aware of, but also painfully experiencing. The direct effect of inflation is the erosion in the purchasing power of money. The root cause of the problem is the change in the value of money.

Monetary unit is never stable and all types of countries have been experiencing high rates of inflation. The prices change as a result of various economic and social forces and such changes bring about a change in the purchasing power of money. Unless the necessary adjustments are made, price level changes produce distortions in the financial statements and suffer serious limitations. Financial statements, prepared according to conventional or historical accounting system, do not reflect current economic realities. The assumption of stable money value subject to which the financial statements are prepared is fallacious in the context of rising prices. By Inflation, we mean a rise in general price level and a fall in the value of money. Because historical rupee is not comparable to the present day rupee. Unlike physical units, such as kilogram, metre etc. is stable units in measuring weight and distance, monetary units i.e., rupee is an unstable unit of exchange value.

Consider the following example:

| | | | |
|---------------------|-----------|--------------------|-----------|
| Capital Employed | 8,00,000 | Fixed Assets | 8,00,000 |
| Current Liabilities | 2,00,000 | Less: Depreciation | 2,00,000 |
| | | | 6,00,000 |
| | | Current Assets | 4,00,000 |
| | 10,00,000 | | 10,00,000 |

Profit after tax@ 50% and depreciation of Rs. 80, 000 (10% of the original cost of assets), the profit is Rs 2, 00, 000. The replacement cost of the fixed asset is Rs.15, 00,000 due to inflation. In the above example,, the rate of return on capital employed is 25% i.e. (2,00,000/ 8, 00, 000x100) under historical accounting system.

But when the profit is compared to the real value of the fixed assets, being used i.e., Rs. 15, 00,000, it would be clear that the rate of return on capital employed is not 25% as shown below:

| | |
|---|-------------------------|
| Net Profit | |
| Add: 10% depreciation on Rs. 8, 00,000 | Rs 2, 00,000 |
| Add: Tax @ 50% of profit before tax | 80,000 |
| Profit before charging depreciation and tax: | |
| Less: 10% of depreciation on replacement cost of Asset: Rs 15, 00,000 | <u>2, 00,000</u> |

| | |
|--|---|
| | 4, 80, 000 |
| Less: Tax @ 50% | <u>1, 50,000</u> |
| Profit on the basis of price level accounting | 3, 30,000 |
| Capital employed on the basis of replacement cost: | <u>1, 65,000</u> |
| Fixed Assets | 15, 00,000 |
| Less: Depreciation (as in historical accounting system) | <u>3, 75,000</u> |
| | 11, 25,000 |
| Add Current Assets | <u>4, 00, 000</u> 15, 25, 000 |
| Less Current Liabilities | <u>2, 00,000</u> |
| Capital Employed | <u>13, 25, 000</u> |
| Rate of Return on Capital Employed $\frac{\text{Rs } 1, 65,00}{\text{Rs } 13, 25,000} \times 100$ | 12.45% |

Thus it is clear that the profit is over-stated and the fixed assets are under-stated, when the effect of inflation is ignored. In this example, when the asset has to be replaced, larger funds are required on account of inflationary conditions. The asset purchased for Rs. 8, 00,000 and its life was expected to be 10 years, a sum of Rs 80,000 (10%) would be charged as depreciation every year. If after 10 years, the asset can be purchased for Rs. 13, 00,000, the firm may have to face serious problems because of insufficiency of funds. Hence, the need for inflation accounting.

8.4.1 Limitations of Historical Accounting

In order to trace the impact of inflation on the financial statements, it becomes necessary to pinpoint the limitations of the conventional statements conveying historical financial information for end-users within an organization and also outsiders.

Changes in the price level are not taken into account. The financial statements prepared under the conventional system are merely statements of historical facts. They fail to give realistic and correct picture of the state of affairs of a concern. Monetary unit is never stable under inflationary conditions. This instability has resulted in a number of distortions in the financial statements and is the most serious limitation of historical accounting.

Fixed assets are shown in the position statement at the cost at which they were acquired. Further purchase of assets at different points of time is clubbed together as additions to the existing assets, without any regard to change in the purchasing power of rupee. For example, we constructed a building at a cost of Rs. 1, 00,000 in 1990 and constructed a similar building in 2000 at a cost of Rs 2, 50,000. The rupee value in 1990 is not the same as in 1990. The value is significantly less in 2000. These buildings are shown as follows:

| | |
|-----------------|----------------------|
| Building (1990) | Rs. 1, 00,000 |
| Building (2000) | Rs. <u>2, 50,000</u> |
| | Rs. <u>3, 50,000</u> |

8.4.2 Methods of Accounting for Changing Prices

The following are the generally accepted methods of accounting for price level changes:

- Current Purchasing Power Method (or) General Purchasing Power Method (CPP or GPP Method)
- Current Cost Accounting Method (CCA Method)
- Hybrid Method i.e. mixture of CPP and CCA Methods.

a) Current Purchasing Power Method (CPP)

Institute of Chartered Accountants in England and Wales recommended that changes in the price level should be reflected in the financial statements through the current purchasing power method (CPP). For measuring changes in the price level and incorporating the changes in the financial statements we use index numbers, which may be considered to be a barometer meant for the purpose. Under this method any established and approved general price index is used to convert the values of various items in the Balance Sheet and Profit and Loss Account. This method takes into consideration the changes in the value of items as a result of the general price level, but it does not account for changes in the value of individual items. For example, a particular machine may have become cheaper over the last few years, whereas the general price level may have risen; the value of the machine will also be raised in accordance with general price index. Thus general price level adjustment restates financial data by bringing past rupee amounts in line to current rupee purchasing power by general index multiplier.

The preparation of the financial statements according to CPP method needs understanding of the following steps:

(i) Conversion Factor

CPP method involves the restatement of historical figures at current purchasing power. For this purpose, historical figures must be multiplied by conversion factors and the formula for the calculation of conversion factor is:

$$\text{Conversion Factor} = \frac{\text{Price Index at the date of revaluation}}{\text{Price Index at the date of existing figures}}$$

Illustration: A Company purchased a machine on 1.1.2000 for Rs. 60,000. The retail price index on that date stood at 150. You are required to restate the value of the machine according to CPP method on 31.12.2000 when the price index stood at 200.

Solution:

$$\text{Conversion Factor} = \frac{\text{Price Index at the date of revaluation} \quad 200 \quad 4}{\text{Price Index at the date of existing figures} \quad 150 \quad 3} = \frac{4}{3}$$

Value of machine on 31 st December 2000 = Existing Value Conversion Factor = Rs. 60,000 x 4 / 3 = Rs. 80,000

In case, one desires to know only the difference between existing value and the converted value of an item, it can directly be known by applying the following formula:

$$\begin{aligned} \text{Difference} &= \text{Existing Value} \times (\text{Conversion Factor} - 1) \\ &= \text{Rs. } 60,000 \times ((4 / 3) - 1) = \text{Rs. } 60,000 \times 1 / 3 = \text{Rs. } 20,000 \end{aligned}$$

(ii) Mid-Period Conversion

In case of transactions occurring throughout a period, it will be advisable to convert them according to the average index of the period. Such transactions generally include revenue items such as sales and purchases of goods, payment of expenses etc. In case the information regarding average index is not available, it may be calculated by taking the average of the index numbers at the beginning and at the end of the period.

(iii) Monetary and Non-Monetary Items

Monetary items are those assets and liabilities the amount of which are fixed by contract or otherwise, and expressed in units of money, regardless of changes in general price level. These cover cash, bank, bills receivable, bills payable, debtors, creditors, outstanding expenses, pre-paid expenses etc., represent specific monetary claim which is receivable or payable in specified number of rupees regardless of price level changes. For example, a person lends to a company a sum of Rs. 10,000 on 1st Jan. 2000 and payable on 31st Dec. 2000. The price index on 1st Jan. 2000 was 100 while it is 150 on 31st Dec. 2000. If the creditor is to be compensated for loss in purchasing power on account of increase in the price level, he should be paid:

$$\text{Rs. } 15,000 \times (\text{Rs. } 10,000 \times 150 \div 100)$$

However, he will be paid as per contract only a sum of Rs. 10,000. Similarly the company is gaining Rs. 5,000 while the lender is losing Rs. 5,000. Monetary items need no conversion since they are already stated in current rupees at the end of the period to which the accounts relate.

Contrary to monetary items, non-monetary items denote such assets and liabilities that do not represent specific monetary claims and include land, buildings, machinery, investments, stocks, etc. For example, a land costing Rs. 50,000 in 1998 may sell for Rs. 1,00,000 in 2000. This is due to change in the general price level. The non-monetary items do not carry a fixed value like monetary items. Therefore, under CPP method, all such items are to be restated to represent current general purchasing power.

Monetary assets lose their value during a period of inflation since they are expressed in fixed monetary value: similarly, there is a gain in holding monetary liabilities. Accordingly, the loss by holding monetary assets is offset to a little extent by the gain on monetary liabilities. The difference between the loss and gain indicates the extent to which the concern is exposed to inflation.

Illustration: Compute the net monetary result of X Company Ltd. as at 31st December 2000. The relevant data are given below:

| | 1.1.2000 | 31.12.2000 |
|-----------------------------|----------|------------|
| | Rs | Rs |
| Cash | 5,000 | 10,000 |
| Book Debts | 20,000 | 25,000 |
| Creditors | 15,000 | 20,000 |
| Loan | 20,000 | 20,000 |
| Retail price index numbers: | | |
| 1st January | 200 | |
| 31st December | 300 | |
| Average for the year | 240 | |

Solution:**Statement showing the Net Monetary Result on account of Price Level Changes**

| | Rs |
|--|--------------------|
| Monetary liabilities as on 1st Jan. 2000 should have gone up with increase in price indices (Rs. 35,000 x 1.5) | 52,000 |
| Increase in monetary liabilities during 2000, which should have gone up with increase in price indices (Rs. 5,000 x 1.25) | 6,250 |
| Monetary liabilities on 31st Dec. 2000 should have stood at: | 58,750 |
| However the liabilities on 31 st Dec. 2000 stood at | 40,000 |
| Gain on holding of monetary liabilities Monetary assets £15 on 1st Jan. 2000 should have gone up with increase in price indices (Rs. 25,000 x 1.5) | 18,750 |
| | 37,500 |
| Increase in monetary assets during 2000 should have gone up with increase in price indices (Rs. 10,000 x 1.25) | 12,500 |
| Monetary assets on 31 st Dec. 2000 should have stood at | 50,000 |
| However the monetary assets on 31 st Dec. 2000 stood at | 35,000 |
| Loss on holding monetary assets | |
| Net gain on monetary items | 15,000 |
| Working Notes: Conversion Factor: | 3,750 |
| For items as on 1st Jan. 2000 | $300 / 200 = 1.5$ |
| For items arising during 2000 | $300 / 240 = 1.25$ |

Increase in monetary assets and liabilities during 2000:

| | as on 1.1.2000 Rs. | as on 31.12.2000 Rs. | Increase during the year Rs. |
|-------------------------|-----------------------|-------------------------|------------------------------------|
| (a) Monetary assets | 25,000 | 35,000 | 10,000 |
| b) Monetary Liabilities | 35,000 | 40,000 | 5,000 |

It is not necessary to find out monetary gain or loss for each item separately.

(iv) Cost of Sales and Inventories

Cost of sales and inventory value vary according to cost flow assumptions, i.e., FIFO or LIFO. Under FIFO method cost of sales comprise the entire opening stock and current purchases less closing stock. And closing stock is entirely from current purchases.

Under LIFO method cost of sale comprise current purchases only. However, if the current purchases are less than cost of sales, a part of the opening inventory may also become a part of cost of sales. And closing stock comprises purchases made in .the previous year.

The following indices are used under CPP method for restating the historical figures:

- i. For current purchases: Average index of the year.
- ii. For opening stock: Index at the beginning of the year.
- iii. For purchases of the previous year: Average indices for the year.

Illustration From the following data calculate (a) cost of sales and cost of inventory under CPP method presuming that the firm is following LIFO method for inventory valuation:

| | |
|------------------------------|--------|
| | Rs |
| Inventory as on 1.1.2000 | 8,000 |
| Purchases during 2000 | 48,000 |
| Inventory as on 31.12.2000 | 12,000 |
| Price Index as on 1.1.2000 | 100 |
| Price Index as on 31.12.2000 | 140 |
| Average Price Index for 2000 | 125 |

Solution:**Cost of Sales and Closing Inventory (LIFO)**

| | Historical Cost Rs | Conversion Factor | Converted Amount Under CPP Rs |
|---|-----------------------|-------------------|-------------------------------------|
| Determination of Profit | | | |
| Inventory as on 1.1.2000 | 8,000 | 140/100 | 11,200 |
| Add: Purchases | <u>48,000</u> | 140/125 | <u>53,760</u> |
| | 56,000 | | <u>64,960</u> |
| Less: Closing Inventory (<i>b</i>) | | | |
| From opening inventory | 8,000 | 140/100 | 11,200 |
| From current purchase | 4,000 | 140/125 | 4,480 |
| Cost of goods sold (<i>a</i>) | 44,000 | | 49,280 |

Under Current Purchasing Power Method, the profit can be determined in two ways:

(i) Net Change Method

This method is based on the normal accounting principle that profit is the change in equity during an accounting period. In order to determine this change the following steps are taken:

(a) Opening Balance Sheet prepared under historical cost accounting method is converted into CPP terms as at the end of the year. This is done by application of proper conversion factors to both monetary as well as non-monetary items. Equity share capital is also converted. The difference in the balance sheet is taken as reserves. Alternatively, the equity share capital may not be converted and the difference in balance sheet be taken as equity.

(b) Closing Balance Sheet prepared under historical cost accounting is also converted. Of course, monetary items are not restated, as explained earlier. The difference between the two sides of the balance sheet is put as reserves after converting the equity capital. Alternatively, the equity capital may not be restated in CPP terms and the balance be taken as equity.

(c) Profit is equivalent to net change in reserves (where equity capital has also been converted) or net change in equity (where equity capital has not been restated).

(ii) Conversion or Restatement of Income Statement Method

In case of this method, the income statement prepared on historical cost basis is restated in CPP terms, generally on the basis:

(a) Sales and operating expenses are converted at the average rate applicable for the year.

(b) Cost of sales is converted as per cost flow assumption (FIFO or LIFO) as explained in the preceding pages.

(c) Fixed assets are converted on the basis of the indices prevailing on the dates they were purchased. The same applies to depreciation.

(d) Taxes and dividends paid are converted on the basis of indices that were prevalent on the dates they were paid.

(e) Gain or loss on account of monetary items should be calculated and stated separately in Restated Income Statement to arrive at the overall figure of profit or loss.

b) Current Cost Accounting Method

The current cost accounting method is an alternative to the current purchasing power method. Price changes may be general or specific. Changes in the general level of prices which occur as a result of a change in the value of the monetary unit are measured by index numbers. Specific price changes occur if prices of a particular asset held change without any general price movements. Under this method, assets are valued at current cost. Current cost is the cost at which the assets can be replaced as on a date. While the current purchasing power method is known as the general price level approach, the current cost accounting method is known as the specific price level approach or replacement cost accounting.

Sandilands Committee of U.K has suggested this method. The Sandilands Committee published its report in September 1975 recommending the adoption of current cost accounting for dealing with the problem of inflation accounting. In this method, historic values of items are not taken into account; rather current values of individual items are taken as the basis for preparing profit and loss account and balance sheet. Thus items are not adjusted as a result of the change in the general price level as they are adjusted in the CPP method.

Features of CCA System

The following are the important features of the CCA Method:

(a) Fixed Assets are to be shown in the Balance Sheet at their *value to the business* and not at historical cost as reduced by depreciation. That is assets are shown in terms of what such assets would currently cost.

(b) Similarly, inventories are shown in the Balance Sheet at their value prevailing on the date of the Balance Sheet. These are not shown at cost or market price whichever is lower, as in case of historical accounting.

(c) Depreciation is to be computed on the current value of fixed assets.

(d) The cost of goods sold during the year has to be ascertained on the basis of prices prevailing at the date of consumption and not at the date of purchase.

(e) The difference between the current values and the depreciated original cost of fixed assets and of stocks, the increased requirements for monetary working capital and the under provision of depreciation in the past years may be adjusted through Revaluation Reserve Account.

(f) The fixed assets are shown at their "value to the business". The "value to the business" can be defined in one of the following three ways:

- (i) **Replacement cost** is the estimated cost of acquiring new asset of the same Productive capacity at current prices adjusted for estimated depreciation since acquisition.
- (ii) **Net Realizable value** is the estimated selling price in the ordinary course of business less reasonably predictable costs of completion and disposal.
- (iii) **Economic value** is the sum of the discounted future cash flows expected from the use of an asset during its useful life.

Current Cost Operating Profit

Three main adjustments to trading account, calculated on the historical cost basis before interest, are required to arrive at current cost operating profit. These are called the Depreciation Adjustment, Cost of Sales Adjustment and Monetary Working Capital Adjustments.

➤ **Depreciation Adjustment**

The depreciation adjustment allows for the impact of price changes when determining the charge against revenue for the part of fixed assets consumed in the period. It is the difference between the value to the business of part of fixed assets consumed during the accounting period and the amount of depreciation charged on historical cost basis. The resulting total depreciation charge thus represents the value to the business of the part of fixed assets consumed in earning the revenue of the period.

Illustration A plant was purchased on 1st Jan. 1996 for Rs. 2, 00,000 and is depreciated at 10% p.a. on straight line basis. By the end of 2000, the price of the same went up to Rs. 4, 00,000. Show how the plant account would appear in the Balance Sheet as at 31st Dec. 2000.

Solution:

| | Historical Cost | Current Cost |
|-----------------------------------|------------------------|---------------------|
| | Rs | Rs |
| Plant | 2, 00,000 | 4, 00,000 |
| Less: Depreciation for five years | <u>1, 00,000</u> | <u>2, 00,000</u> |
| | 1, 00,000 | 2, 00,000 |

The increase in the value that is Rs 2,00,000 less increased depreciation that is Rs 1,00,000=Rs 1,00,000 would be shown on the liability side of the balance sheet as current cost reserve.

➤ **Cost of Sales Adjustment**

The important principle to be remembered is that current costs must be matched with current revenues. As far as sales are concerned, it needs no adjustment as it is current revenue. One of the features of current cost accounting is to show inventories in the Balance Sheet on the basis of their value to the business, and not at cost or market price, whichever is lower. If there are stocks, certain adjustments are to be made to cost of sales. If there are no stocks, then cost of sales will comprise only current purchases and cost of sales adjustment is not necessary.

not have to be found by the business and this reduces the need for a COSA and in some cases for a MWCA on debtors. The part of the MWCA related to trade creditors reflects this reduction.

Gearing Adjustment: The net operating assets shown in the Balance Sheet have usually been financed partly by borrowing and the effect of this is reflected by means of a gearing adjustment in arriving at current cost profit attributable to shareholders. No gearing adjustment arises where a company is wholly financed by shareholders' capital. While repayment rights on borrowing are normally fixed in monetary amount, the proportion of net operating assets so financed increases or decreases in value to the business. Thus, when these assets have been realized, either by sale or use in the business, repayment of borrowing could be made so long as the proceeds are not less than the historical cost of those assets.

Illustration From the data given below calculate the gearing adjustment required under CCA method:

| Current Cost | Opening (Rs.) | Closing (Rs.) |
|------------------------|-----------------------|----------------------|
| Convertible Debentures | 1, 00,000 | 1, 20,000 |
| Bank Overdraft | 60,000 | 80,000 |
| Cash | 10,000 | 20,000 |
| Paid up Share Capital | 1, 50,000 | 2, 00,000 |
| Reserves | 30,000 | 50,000 |
| COSA | 20,000 | |
| MWCA | 15,000 | |
| Depreciation | <u>5000</u> 40,000 | |

Solution:

| | Opening (Rs.) | Closing (Rs.) |
|--|-------------------|------------------|
| Calculation of net borrowing: | | |
| Convertible Debentures | 1, 00,000 | 1, 20,000 |
| Bank Overdraft | 60,000 | 80,000 |
| Total of the borrowing | 1, 60,000 | 2, 00,000 |
| Less: Cash which does not enter MWCA | 10,000 | 20,000 |
| Net borrowings (L) | 1, 50, 000 | 1, 80,000 |
| Shareholders funds (S) | 1, 80,000 | 2, 50,000 |
| Total of borrowings and shareholders funds (L + S) | 3, 30,000 | 4, 30,000 |

The gearing adjustment is calculated by the application of the formula:

$$\text{Gearing Adjustment} = L / (L + S) \times A$$

L = Average net borrowing

S = Average shareholders interest

A = Total of the current cost adjustments.

The gearing equation is $= (1,50,000 + 1,80,000) / (3,30,000 + 4,30,000) = 43.5 \%$

Gearing Adjustment = $43.5\% \times \text{Rs. } 40,000 = \text{Rs. } 17,400$

8.4.3 Merits of Inflation Account

Since assets are shown at current values, Balance Sheet exhibits a fair view of the financial position of a firm. Depreciation is calculated on the value of assets to the business and not on their historical cost - a correct method. It facilitates easy replacement. Profit and Loss Account will not overstate business income. Inflation accounting shows current profit based on current prices. Profit or loss is determined by matching the cost and the revenue at current values, which are comparable - a realistic assessment of performance. Financial ratios based on figures, adjusted to current value, are more meaningful. Inflation accounting gives correct information, based on current price to the workers and shareholders. In the absence of this, workers may claim for higher wages and shareholders too claim for higher dividends.

8.4.5 Demerits of Inflation Account

The system is not acceptable to Income tax authorities. Too many calculations make complications. Changes in prices are a never ending process. The amount of depreciation will be lower in times of deflation. The profit calculated on the system of price level accounting may not be a realistic profit

8.5 INTRODUCTION TO HUMAN RESOURCE ACCOUNTING

Dear students, I believe by this time the prime object of the management accounting is to optimum utilization of resources. You should find that Human resource is the vital resource for success of any organization. As you are interestingly learning all managerial tools for, perhaps it will enrich your knowledge. Let us discuss the same.

Human beings are considered central to achievement of productivity, well above equipment, technology and money. Human Resource Accounting (HRA) is an attempt to identify, quantify and report investment made in human resources of an organization that are not presently accounted for under conventional accounting practice. The committee of HRA of the American Accounting Association defined HRA as the process of identifying and measuring data about human resources and communicating this information to interested parties. However Resources are not yet recognized as 'assets' in the Balance Sheet. The measures of the net income, which are provided in the conventional financial statement, do not accurately reflect the level of business performance. Expenses relating to the human organization are charged to current revenue instead of being treated as investments to be amortized over the economic service life, with the result that the magnitude of net income is significantly distorted.

The necessity of HRA arose primarily as a result of the growing concern for human relations management in industry since the sixties of the last century. Behavioral scientists (like R. Likert, 1960), concerned with management of organizations pointed out that the failure of

accountants to value human resources was a serious handicap for effective management. Many social scientists are of the opinion that it is difficult to value human resources. Some others have cautioned that people are sensitive to the value others place on them. A machine never reacts to an over or under valuation of its capacity, but an employee will certainly react to such distortion. Conventionally, human resources are treated just as any other services purchased from outside the business firm. As a result conventional Balance Sheet fails to reflect the value of human assets and hence distort the value of the business. The treatment of human resources as assets is desirable with a view to ensuring compatibility and completeness of financial statements and more efficient allocation of funds as well as providing more useful information to management for decision-making purpose.

8.5.1 Models of HRA

Quite a few models have been suggested from time to time for the measurement and valuation of human assets. Some of these models are briefly discussed below:

- **Cost Based Models:**

Capitalization of Historical Costs: R. Likert and his associates at R. G. Barry Corporation in Ohio, Columbia, USA, developed this model in 1967. It was first adopted for managers in 1968 and then extended to other employees of R. G. Barry Corporation.

The method involves capitalizing all costs related with making an employee ready for providing service – recruitment training, development etc. The sum of such costs for all the employees of the enterprise is taken to represent the total value of human resources. The value is amortized annually over the expected length of service of individual employees. The unamortized cost is shown as investment in human assets. If an employee leaves the firm (i.e. human assets expire) before the expected service life period, the net asset value to that extent is charged to current revenue. The model is simple and easy to understand and satisfies the basic principle of matching cost and revenues. But historical costs are sunk costs and are irrelevant for decision-making. This model was severely criticized because it failed to provide a reasonable value to human assets. It capitalizes only training and development costs incurred on employees and ignores the future expected cost to be incurred for their maintenance. This model distorts the value of highly skilled human resources. Skilled employees require less training and therefore, according to this model, will be valued at a lesser cost. For all these reasons, this model has not been totally rejected.

Replacement Cost: The Flamholtz Model (1973): Replacement cost indicates the value of sacrifice that an enterprise has to make to replace its human resource by an identical one. Flamholtz has referred to two different concepts of replacement cost viz. ‘individual replacement cost’ and ‘positional replacement cost’. The ‘individual replacement cost’ refers to the cost that would have to be incurred to replace an individual by a substitute who can provide the same set of services as that of the individual being replaced. The ‘positional replacement cost’, on the other hand, refers to the cost of replacing the set of services required of any incumbent in a defined position. Thus the positional replacement cost takes into account the position in the organization currently held by an employee and also future positions expected to be held by him. However, determination of replacement cost of an employee is highly subjective and often impossible. Particularly at the management cadre, finding out an exact replacement is very difficult. The exit of a top management person may substantially, change the human assets value.

Economic Value Models: Opportunity Cost: The Hekimian and Jones Model (1967): This model uses the opportunity cost that is the value of an employee in his alternative use, as a basis for estimating the value of human resources. The opportunity cost value may be established by competitive bidding within the firm, so that in effect, managers must bid for any scarce employee. A human asset, therefore, will have a value only if it is a scarce resource, that is, when its employment in one division denies it to another division. One of the serious drawbacks of this method is that it excludes employees of the type, which can be 'hired' readily from outside the firm, so that the approach seems to be concerned with only one section of a firm's human resources, having special skills within the firm or in the labor market. Secondly, circumstances in which managers may like to bid for an employee would be rare, in any case, not very numerous.

Discounted wages and salaries: The Lev and Schwartz Model (1971): This model involves determining the value of human resources as the present value of estimated future earnings of employees (in the form of wages, salaries etc.) discounted by the rate of return on investment (cost of capital). According to Lev and Schwartz, the value of human capital embodied in a person of age t is the present value of his remaining future earnings from employment. Their valuation model for a discrete income stream is given by the following:

$$V_t = \sum_{t=r}^T \frac{I(t)}{(1+r)^{t-r}}$$

Where,

V_t = the human capital value of a person t years old

$I(t)$ = the person's annual earnings up to retirement.

R = a discount rate specific to the person

T = retirement age.

However, the above expression is an ex-post computation of human capital value at any age of the person, since only after retirement can the series $I(t)$ be known. Lev and Schwartz, therefore, converted their ex-post valuation model to an ex-ante model by replacing the observed (historical) values of $I(t)$ with estimates of future annual earnings denoted by $I^*(t)$. According, the estimated value of human capital of a person τ years old is given by:

$$V_t = \sum_{t=r}^T \frac{I^*(t)}{(1+r)^{t-r}}$$

Lev and Schwartz again pointed out the limitation of the above formulation in the sense that the above model ignored the possibility of death occurring prior to retirement age. They suggested that the death factor can be incorporated into the above model with some modification and accordingly they recommended the following expression for calculating the expected value of a person's human capital:

$$E(V^*_{\tau}) = \sum_{T=t}^T \mathcal{R}(t+1) \sum_{I=t}^t \frac{I^*}{(1+r)^{1-r}}$$

Where $R(t)$ is the probability of a person dying at age 't'.

Lev and Schwartz have shown in the form of a hypothetical example the method of computing the firm's value of human capital. Age groups and degrees of skill have decomposed employees of the hypothetical firm and the average annual earnings for each age and skill group have been ascertained. Finally the present values of future earnings for each group of employees have been calculated on the basis of a capitalization rate. The sum of all such present value of future earnings was taken as the firm's value of human capital.

In this model, wages and salaries are taken as surrogate for the value of human assets and therefore it provides a measure of future estimated cost. Although according to economic theory, the value of an asset to a firm lies in the rate of return to be derived by the firm from its employment. Lev and Schwartz model surrogated wages and salaries of the employees for the income to be derived from their employment. They felt that income generated by the workforce is very difficult to measure because income is the result of group effort of all factors of production.

However, this model is subject to the following criticisms:

- A person's value to an organization is determined not only by the characteristics of the person himself (as suggested by Lev and Schwartz) but also by the organizational role in which the individual is utilized. An individual's knowledge and skill is valuable only if these are expected to serve a means to given organizational ends.
- The model ignores the possibility and probability that the individual may leave an organization for reasons other than death or retirement. The model's expected value of human capital is actually a measure of the expected 'conditional value' of a person's human capital – the implicit condition is that the person will remain in an organization until death or retirement. This assumption is not practically social.
- It ignores the probability that people may make role changes during their careers. For example, an Assistant Engineer will not remain in the same position throughout his expected service life in an organization.

In spite of the above limitations, this model is the most popular measure of human capital both in India and abroad.

Stochastic process with service rewards: Flamholtz (1971) Model: Flamholtz (1971) advocated that an individual's value to an organization is determined by the services he is expected to render. An individual moves through a set of mutually exclusive organizational roles or service states during a time interval. Such movement can be estimated probabilistically. The expected service to be derived from an individual is given by:

$$E(s) = \sum_{I=1}^n S_i P(S_i)$$

Where S_i represents the quantity of services expected to be derived in each state and $P(S_i)$ is the probability that they will be obtained.

However, economic valuation requires that the services of the individuals are to be presented in terms of a monetary equivalent. This monetary representation can be derived in one of the two ways:

- (a) By determining the product of their quantity and price, and
- (b) By calculating the income expected to be derived from their use.

The present worth of human capital may be derived by discounting the monetary equivalent of expected future services at a specified rate (e.g. interest rate)

The major drawback of this model is that it is difficult to estimate the probabilities of likely service states of each employee. Determining monetary equivalent of service states is also very difficult and costly affair. Another limitation of this model arises from the narrow view taken of an organization. Since the analysis is restricted to individuals, it ignores the added value element of individuals operating as groups.

Valuation of group basis: Jaggi and Lau Model: Jaggi and Lau realized that proper valuation of human resources is not possible unless the contributions of individuals as a group are taken into consideration. A group refers to homogeneous employees whether working in the same department or division of the organization or not. Individuals expected service tenure in the organization is difficult to predict but on a group basis it is relatively easy to estimate the percentage of people in a group likely to leave the organization in future. This model attempted to calculate the present value to all existing employees in each rank. Such present value is measured with the help of the following steps:

- Ascertain the number of employees in each rank
- Estimate the probability that an employee will be in his rank within the organization or terminated/promoted in the next period. This probability will be estimated for a specified time period.
- Ascertain the economic value of an employee in a specified rank during each time period.
- The present value of existing employees in each rank is obtained by multiplying the above three factors and applying an appropriate discount rate.

Jaggi and Lau tried to simplify the process of measuring the value of human resources by considering a group of employees as valuation base. But in the process they ignored the exceptional qualities of certain skilled employees. The performance of a group may be seriously affected in the event of exit of a single individual.

8.5.2 Implications of Human Capital Reporting

The relevance of the human resource information lies in the fact that it concerns organizational changes in the firm's human resources. The ratio of human to non-human capital indicates the degree of labor intensity of the enterprise. Reported human capital values provide information about changes in the structure of labor force. Difference between general and specific values of human capital is another source for management analysis – the specific value of human capital is based on firm's wages scale while the general value is based on industry wise wage scale. The difference between the two is an indicator of the level of the firm's wages scale as compared to the industry.

8.5.3 HRA in India

HRA is a recent phenomenon in India. Leading public sector units like OIL, BHEL, NTPC, MMTC, SAIL etc. have started reporting, 'Human Resources' in their Annual Reports as additional information from late seventies or early eighties. The Indian companies basically adopted the model of human resource valuation advocated by Lev and Schwartz (1971). This is because the Indian companies focused their attention on the present value of employee earnings as a measure of their human capital. However, the Indian companies have suitably modified the Lev and Schwartz model to suit their individual circumstances. For example BHEL applied Lev and Schwartz model with the following assumptions:

- Present pattern of employee compensation including direct and indirect benefits;
- Normal career growth as per the present policies, with vacancies filled from the levels immediately below;
- Weight age for changes in efficiency due to age, experience and skills;
- Application of a discount factor of 12% per annum on the future earnings to arrive at the present value.

OIL, on the other hand, used a discount factor of 10.5% per annum for the year 1985-86 and increased the discount factory to 15% per annum from the year 1986-87.

However, the application of Lev and Schwartz model by the public sector companies has in many cases, led to over ambitious and arbitrary value of the human assets without giving any scope for interpreting along with the financial results of the corporation. For example, in the case of MMTC over a period of three years (1984-85 to 1986-87), the value of human assets increased by more than 46%, whereas during the same period the book value of all other assets increased only by about 3%. On the other hand in the case of Oil India Ltd. (OIL) the value of human assets had actually decreased over a three-year period from 1985-86 to 1987-88. The human assets accounted for 49.38% of total resources (including investment in HR) as on 31st March 1986. But it came down to 38.01% on 31st March 1988. In the Indian context, more particularly in the Public Sector, the payment made to the employees are not directly linked to productivity. The fluctuations in the value of employee's contributions to the organization are seldom proportional to the changes in the payments to employees. All qualitative factors like the attitude and morale of the employees are out of the purview of Lev and Schwartz model of human resource valuation.

Illustration:

From the following information in respect of Exe Ltd. Calculate the total value of human capital by following Lev and Schwartz model:

Distribution of employees of Exe Ltd.

| Age | Unskilled | | Semi – skilled | | Skilled | |
|-------|-----------|--------------------------------|----------------|--------------------------------|---------|--------------------------------|
| | No. | Av. Annual Earnings (Rs. '000) | No. | Av. annual earnings (Rs. '000) | No. | Av. Annual Earnings (Rs. '000) |
| 30-39 | 70 | 3 | 50 | 3.5 | 30 | 5 |
| 40-49 | 20 | 4 | 15 | 5 | 15 | 6 |
| 50-54 | 10 | 5 | 10 | 6 | 5 | 7 |

Apply 15% discount factor

Solution

The present value of earnings of each category of employees is ascertained as below:

(A) Unskilled employees:**Age group 30-39. Assume that all 70 employees are just 30 years old.**

| | Present Value Rs. |
|-----------------------------------|----------------------|
| Rs.3, 000 p.a. for next 10 years | 15.057 |
| Rs.4, 000 p.a. for years 11 to 20 | 4,960 |
| Rs.5, 000 p.a. for years 21 to 25 | <u>1,025</u> |
| | <u>21.042</u> |

Age group 40-49. Assume that all 20 employees are just 40 years old.

| | Present Value Rs. |
|-----------------------------------|----------------------|
| Rs.4, 000 p.a. for next years | 20,076 |
| Rs.5, 000 p.a. for years 11 to 15 | <u>4,140</u> |
| | <u>24.216</u> |

Age group 50-54. Assume that all 10 employees are just 50 years old.

| | |
|---------------------------------|---------------|
| Rs.5, 000 p.a. for next 5 years | <u>16,760</u> |
|---------------------------------|---------------|

Similarly, present value of each employee under other categories will be calculated.

(B) Semi-skilled employees:**Age group 30-39**

| | Present Value Rs. |
|-----------------------------------|----------------------|
| Rs.3, 500 p.a. for next 10 years | 17.567 |
| Rs.5, 000 p.a. for years 11 to 20 | 6,200 |
| Rs.6, 000 p.a. for years 21 to 25 | <u>1,230</u> |
| | <u>24.997</u> |

Age group 40-49

| | Present Value Rs. |
|-----------------------------------|----------------------|
| Rs.5, 000 p.a. for next 10 years | 25,095 |
| Rs.6, 000 p.a. for years 11 to 15 | <u>4,968</u> |
| | <u>30,063</u> |

Age group 50-54

| | Present Value Rs. |
|---------------------------------|------------------------------|
| Rs.6, 000 p.a. for next 5 years | <u>20,112</u> |

(C) Skilled employees:

Age group 30-39

| | Rs. |
|-----------------------------------|----------------------|
| Rs.5, 000 p.a. for next 10 years | 25,095 |
| Rs.6, 000 p.a. for years 11 to 20 | 7,440 |
| Rs.7, 000 p.a. for years 21 to 25 | <u>1,435</u> |
| | <u>33,970</u> |

Age group 40-49

| | Rs. |
|-----------------------------------|----------------------|
| Rs.6, 000 p.a. for next 10 years | 30,114 |
| Rs.7, 000 p.a. for years 11 to 15 | <u>5,796</u> |
| | <u>35,910</u> |

Age group 50-54

| | Rs. |
|---------------------------------|----------------------|
| Rs.7, 000 p.a. for next 5 years | <u>23,464</u> |

8.5.4 Total Value of Human Capital

| Age | Unskilled | | Semi – skilled | | Skilled | | Total | |
|-------|-----------|-------------------------------|----------------|-------------------------------|---------|-------------------------------|-------|-------------------------------|
| | No | Av. Annual Earnings (Rs.'000) | No. | Av. Annual Earnings (Rs.'000) | No. | Av. Annual Earnings (Rs.'000) | No. | Av. Annual Earnings (Rs.'000) |
| 30-39 | 70 | 14,72,940 | 50 | 12,49,850 | 30 | 10,19,100 | 150 | 37,41,890 |
| 40-49 | 20 | 4,94,320 | 15 | 4,50,945 | 15 | 5,38,650 | 50 | 14,73,915 |
| 50-54 | 10 | 1,67,600 | 10 | 2,01,120 | 5 | 1,17,320 | 25 | 4,86,040 |
| | 100 | 21,24,860 | 75 | 19,01,915 | 50 | 16,75,070 | | 57,01,845 |

The central problem in HRA is not what kind of resources should be treated, but rather when the resources should be recognized. This timing issue is particularly important because human resources are not owed by the firm, while many physical resources are. However, the firm also uses many services from physical resources, which it does not own. The accounting treatment for such services should, therefore, be the same as the treatment used for human resources. Traditional accounting involves treatment of human capital and non-human capital differently. While non-human capital is represented by the recorded value of assets, the only reference to be found in financial statement about human resources are entries in the income statement in respect of wages and salaries, directors fees etc. But it should be kept in mind that measuring and reporting the value of human assets in financial statements would prevent management from liquidating human resources or overlooking profitable investments in human resources in a period of profit squeeze. But while valuing human assets one should not lose sight of the fact that human beings are highly sensitive to external forces and human, skills in an organization do not remain static. Skill formation, skill obsolescence or utilization may take a continuous process. Besides employee attitude, loyalty commitment, job satisfaction etc. may also influence the way in which human resource skills are utilized. Therefore human resources should be valued in such a way so to cover the qualitative aspects of human beings. As human being are highly susceptible to certain behavioral factors (unlike physical assets) any human resource valuation model without behavioral features can hardly present the value of human assets in an objective manner. However while attaching respective weight age to behavioral factors, care should be taken to avoid excessive subjective ness.

MODERN TECHNIQUES OF MANAGEMENT ACCOUNTING

Structure

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9.1 INTRODUCTION TO STANDARD COST

Dear learner you just recollect the fundamental objectives of the Management Accounting is, managing a business through accounting information. In this process management accounting is facilitating managerial control. It you can also apply to your own day/monthly expenses if

necessary, applying correct measures so that performance takes place according to plans. Planning is the first tool for making control effective. The vital aspect of managerial control is cost control. Hence, it is very important to plan and control costs. Standard costing is a technique, which helps you to control costs and business operations. It aims at eliminating wastes and increasing efficiency in performance through setting up standards or formulating cost plans.

When you want to measure some thing we must take some parameter or yard stick for measure then this is we can measure as standard. What your daily expenses an average is Rs50. if you have been spending from so many days. Hence this is your daily standard expenses. The word standard means a benchmark or yard stick. The standard cost is a predetermined cost which determines in advance what each product or service should cost under given circumstances. In the words Backer and Jacobsen, “standard cost is the amount the firm things a product or the operation of the process for a period of time should cost based upon certain assumed conditions of efficiency, economic conditions and other factors”. The CIMA London “a predetermined cost which is calculated from managements standards of efficient operations and the relevant necessary expenditure”. They are the predetermined costs on technical estimate of material labour and overhead for a selected period of time and for a prescribed set of working conditions. A standard cost is a planned cost for a unit of product or service rendered

The technique of using standard costs for the purposes of cost control is known as standard costing. It is a system of cost accounting, which is designed to find out how much, should be the cost of a product under the existing conditions. The actual cost can be ascertained only when production is undertaken. The pre-determined cost is compared to the actual cost and a variance between the two enables the management to take necessary corrective measures.

9.1.1 Advantages of Standard Costing

By now you may understand the very purpose of the standard costing. It is evident to emphasize that it is a management control technique for every activity. Standard costing is not only useful for cost control purposes but it is also helpful in production planning and policy formulation. It allows **management by exception**. In the light of various objectives of this system some of the advantages of the tool. are:

1. **Efficiency Measurement:** You just find it is a yardstick for measuring efficiency. The comparison of actual costs with standard costs enables the management to evaluate performance of various cost centers. In the absence of standard costing system actual costs of different period may be compared to measure efficiency. It is not proper to compare costs of different period because circumstance of both the periods may be different. Still a decision about base period with which actual performance can be compared.

2. **Finding of Variance:** Now we can find the performance by comparing actual costs with standard costs variances are determined. Management is able to spot out the place of inefficiencies. It can fix responsibility for deviation in performance. It is possible to take corrective measures at the earliest. A regular check on various expenditures is also ensured by standard cost system.

3. **Management by Exception:** Now we can use of standard costing, the targets of different individuals are fixed if the performance is according to predetermined standards then there is nothing to worry the attention of management is drawn only when actual performance is less than the budgeted performance. Management by exception means that everybody is given a

target to be achieved and management need not supervise each and everything. The responsibilities are fixed and every body tries to achieve his targets.

4. Cost Control: Every costing system aims at cost control and cost reduction. The standards are being constantly analyzed and an effort is made to improve efficiency. When ever a variance occurs the reasons are studied and immediate corrective measures are undertaken. The action taken in spotting weak points enables cost control system.

5. Right Decisions. It enables and provides useful information to the management in taking important decisions. The problem created by inflating, rising prices. It can also be used to provide incentive plans for employee's etc.

6. Eliminating Inefficiencies. The settings of standard for different elements of cost require a detailed study of different aspects. The standards are differently set for manufacturing, administrative and selling expenses. Improved methods are used for setting these standards. The determination of manufacturing expenses will require time and motion study for labor and effective material control devices for materials. Similar studies will be needed for finding other expenses. All these studies will make it possible to eliminating inefficiencies at different steps.

9.1.2 Limitations of Standard Costing

In our previous discussion we find the need and importance of the standard costing. It can be success full when its have the standards and actual comparison. Now we can look in to real difficulties and limitations.

- It cannot be used in those organizations which non – standard products are produced. If the production is undertaken according to the customer specifications then each job will involve different amount of expenditures.
- In the process of setting standard is a difficult task, as it requires technical skill. The time and motion study is required to be undertaken for this purpose. These studies require a lot of time and money.
- There are no inset circumstances to be considered for fixing standards. The conditions under which standards are fixed do not remain static. With the change in circumstances the standards are not revised the same become impracticable.
- The fixing of responsibility is not an easy task. The variances are to be classified into controllable and uncontrollable variances. This is only for controllable variances.
- For instance if the industry changed the technology then the system will not suitable then we have to change or revise the standards. A frequent revision of standards will be come costly.

9.1.3 Setting Standards

You may be experienced that, normally setting up standard basing on the past experience. The total standard cost includes direct materials, direct labor and overheads. Normally all these are fixed to some extent. The standards should be set up in a systematic way so that they are used as a tool for cost control. Some of the various elements, which influence the setting the standards.

Setting Standards For Direct Materials: There are several basic principles, which ought to be appreciated in setting standards for direct materials. Generally when you want to purchase some material what are the factors you consider? If material is used for a product it is known as direct material, on the other hand if the material cost cannot be assigned to the

manufacturing of the product it will be called indirect material. Therefore it involves two things. 1. Quality of materials 2. Price of the materials. When you want to purchase quantity of material the quality and size of materials should be determined. The standard quality to be maintained should be decided. The quantity is decided by production department this department makes use of historical records and an allowance for changing conditions will also be given for setting standards. A number of test runs may be undertaken on different days and under different situations and an average of these results should be used for setting material quantity standards. The second step in determining direct material cost will be a decision about the standard price. Materials cost will be decided in consultation with the purchase department. The cost of purchasing and store keeping of materials should also be taken into consideration. The procedure for purchase of materials, minimum and maximum levels for various materials, discount policy and means of transport are the other factors which have bearing on the materials cost price. It includes the Cost of materials; Ordering cost; Carrying cost. The purpose should be to increase efficiency in procuring and store keeping of materials. The type of standard used ideal standard or expected standard, also affect the choice of standard price.

Setting Direct Labor Cost: When you want to engage labor force for manufacturing a product or a service for which you need to pay some amount, which is called as wages. If the labor is engaged directly to produce product which is known as direct labor. The second largest amount of cost is labor. The benefit derived from the workers can be assigned to a particular product or a process. The wages paid to workers cannot be directly assigned to a particular product; these will be known as indirect wages. The time required for producing a product would be ascertained and labor should be properly graded. Different grades of workers will be paid different rates of wages. The times spent by different grades of workers for manufacturing a product should also be studied for deciding upon direct labor cost. The setting of standard for direct labor basically on Standard labor time for producing; Labor rate per hour. You may find standard labor time indicates the time taken by different categories of labor force

1. Skilled labor
2. Semi-skilled labor
3. Unskilled labor

Now you setting a standard time for labor force normally we take account for previous experience past performance records, test run result, work-study etc.,. The labor rate standard refers to the expected wage rates to be paid for different categories of workers. Past wage rates and demand and supply principle may but be safe guide for determining standard labor rates. The anticipation of expected changes in labor rates will be an essential factor. In case there is an agreement with workers for payment of wage in the coming period then these rates should be used. If a premium or bonus scheme is in operation then anticipated extra payments should also be included. Where a piece rate system is used then standard cost will be fixed per piece. The object of fixed standard labor time and labor rate is to device maximum efficiency in the use of labor.

Setting Standards of Overheads: The next important element which comes under overheads. The very purpose of setting standard for overheads is to minimize the total cost. Standard overhead rates are computed by dividing overhead expenses by direct labor hours or units produced. The standard overhead cost is obtained by multiplying standard overhead rate by the labor hours spent or number of units produced. The determination of overhead rate involves three things.

- A. Determination of overheads
- B. Determination of labor hours or units manufactured
- C. Calculating overheads rate by dividing A by B

The overheads are classified into fixed overheads, Variable overheads and semi-variable overheads. The fixed overheads remain the same irrespective of level of production while variable overheads change in the proportion of production. The expenses increase or decrease with the increase or decrease in output. Semi-variable overheads are neither fixed nor variable. These overheads increase with the increase in production but the rate of increase will be less than the rate of increase in production. The division of overheads into fixed, variable and semi-variable categories will help in determining overheads.

9.1.4 Determination of Standard Costs

I have explained you is the overall controlling system of standard costing. Any controlling process it should go for investigation of facts and its rectifications. In the same process now we look in to how to determine the ideal standards for better controlling. I think you are interested to know some thing about.

1. **Determination of Cost Centre:** According to J.Betty, “a cost center is a department or part of a department or item of equipment or machinery or a person or a group of persons in respect of which costs are accumulated and one where control can be exercised”. Cost Centers Are Necessary For Determining The Costs. In the whole factory is engaged in manufacturing a product the factory will be a cost centre. In fact, a cost center describes the product whole cost is accumulated. Cost centers enabled the determination of costs and fixation of responsibility. A cost centre relating to a person is called personnel cost centre and a cost centre relating to products and equipments is called impersonal cost centre.

2. **Current Standards:** A current standard is a standard, which is established for use over a short period of time and is related to current condition. It reflects the performance, which should be attained during the current period. The period for current standard is normally only year. It is presumed that conditions of production will remain unchanged. In case there is any change in price or manufacturing condition, the standards are also revised. Current standard may be ideal standard and expected standard.

3. **Ideal Standard:** This is the standard, which represents a high level of efficiency ideal standard is fixed on the assumption that favorable conditions will prevail and management will be at it best. The price paid for materials will be lowest and wastes. Etc. will be minimum possible. The labor time for making the production will be minimum and rates of wages will also be low. The overheads expenses are also set with maximum efficiency in mind. All the conditions both internal and external should be favorable and only then ideal standard will be achieved. Ideal standard is fixed on the assumption of those conditions, which may rarely exist. This standard is not practicable and may not be achieved. Though, this standard may not be achieved even then an effort is made to reach this standard the deviation between targets and an actual performance is ignorable. In practice, ideal standard has an adverse effect on the employees. They do not try to reach the standard because the standards are not considered realistic.

4. **Basic Standards:** A basic standard may be defined as a standard which is established for use for an indefinite period which may a long period. Basic standard is established for a long period and is not adjusted to the preset conditions. The same standard remains in force for a

long period. These standards are revised only on the changes in specification of material and technology productions. It is just like an index number against which subsequent process changes can be measured. Basic standard enables the measurement of changes in costs. For example, if the basic cost for material is Rs.20 per unit and the current price is Rs.25 per unit it will show an increase of 25% in the cost of materials. The changes in manufacturing costs can be measured by taking basic standard, as a basic standard cannot serve as a tool for cost control purpose because the standard is not revised for a long time. The deviation between standard cost and actual cost cannot be used as a yardstick for measuring efficiency.

5. **Normal Standards:** As per terminology, normal standard has been defined as, a standard, which it is anticipated, can be attained over a future period of time, preferably long enough to cover one trade cycle. This standard is based on the conditions, which will cover a future period 5 years, concerning one trade cycle. If a normal cycle of ups and downs in sales and production is 10 years then standard will be set on average sales and production which will cover all the years. The standard attempts to cover variance in the production from one time to another time. An average is taken from the periods of recessions and depression. The normal standard concept is theoretical and cannot be used for cost control purpose normal standard can be properly applied for absorption of overhead cost over a long period of time.

6. **Organization for Standard Costing:** In this emphasis is on the success of standard costing system will depend upon the setting up of proper standards. For the purpose of setting standards, a person or a committee should be given this job. In a big concern a standard costing committee is formed for this purpose. The committee includes production manager, purchase manager, sales manager, personnel manager, chief engineer and cost accountant. The cost accountant acts as a co-coordinator of this committee.

7. **Accounting System:** Classification of accounts is necessary to meet a required purpose i.e. function, asset or revenue item. Codes can be used to have a speedy collection of accounts. A standard is a predetermined measure of material, labor and overheads. It may be expressed in quantity and its monetary measurements in standard costs.

9.2 COST VARIANCE ANALYSIS

You observe the whole concept of management accounting is control the cost and maximum the profit. The fundamental object of any concern is maximizing the profit. If you want to earn maximum profit what you will do. Now I feel that there are two for getting profit

- Increase the selling price.
- Decrease the cost of the product.

Increases the selling price may not possible in the all circumstances .we increase the selling price we cannot meet the competition. There fore there is another alternative is to reduce the cost of production with ensuring quality. You may recollect cost is an expenditure incurred to make a product or a service. Total cost includes the following elements

- Direct materials
- Direct Labor
- Overheads

Earlier we are aware how to setting of standards. For the effective cost control we can ensure when we compare the standards and actual performance. You now very well that variance means the difference between or deviation between two or more items. The deviation of the actual from the standard is known as variance. The variance may be favorable or unfavorable. Incase of cost variances, if the actual cost is less than the standard cost, it is something favorable and therefore, it will be said that there is a favorable variance. In case actual cost is more than standard cost it said to be unfavorable or adverse variance

9.2.1 Causes of Variances

You know why variances occur. You may across in this situation in your monthly budgets. If you're standard expenditure for instance is Rs. 5000 but in the some month you spend Rs. 6000. Now this difference is known as your budget variance in the month. Similarly in organization the cost variances may occur. The causes of variances can be categorized as follows.

- Implementation deviation results from a human or mechanical failure to achieve an attainable outcome.
- Prediction deviation results from errors in specifying the parameter values in decision model.
- Measurement deviation arises as a result of error in measuring the actual outcome
- Model deviation arises as a result of an erroneous formulation in a decision model.
- Random deviations due to chance fluctuations of a parameter for which no cause can be assigned.

| Variance | Favorable | Un favorable |
|---------------------|--|---|
| A. Material price | *Unforeseen discounts received *Greater care taken in purchasing *Change in material standard | *Price increase *Careless purchasing *Change in materials standard |
| B. Material usage | *Materials used of higher quality than standard *More effective use of material *Errors in allocating material to jobs | *Defective materials *Excessive waste *Thefts *Stricter quality control * Errors in allocating material to jobs |
| C .Labor rate pay | *Use of apprentices or other workers at a rate of pay lower than standard | *Wage Rate increase |
| D. Idle time | | *Machine break down <ul style="list-style-type: none"> • Non – availability of material • Illness or injury to worker |
| E.Labour efficiency | <ul style="list-style-type: none"> • Out put produced more quickly than expected, i.e. actual | <ul style="list-style-type: none"> • Lost time in excess of standard allowed • Output lower than |

| | | |
|-------------------------|---|--|
| | <p>output in excess of standard output set for same number of hours because of work motivation, better quality of equipment or material</p> <ul style="list-style-type: none"> • Errors in allocating time to jobs | <p>standard set because of deliberate restriction lack of training or sub standard material used</p> <ul style="list-style-type: none"> • Errors in allocating time to jobs |
| F. Overhead expenditure | <ul style="list-style-type: none"> • Savings in costs incurred • More economical use of services. | <ul style="list-style-type: none"> • Increase in cost of services used • Excessive use of change in type of services used. |
| G. Overhead efficiency | <ul style="list-style-type: none"> • The same reasons as for the labour efficiency variance have caused overhead recovery to be different from standard. | <ul style="list-style-type: none"> • The same reasons as for the labour efficiency variance have caused overhead recovery to be different standard |
| H. Overhead volume | <ul style="list-style-type: none"> • Excess of actual time worked over budget | <ul style="list-style-type: none"> • Excessive idle time Shortage of plant capacity |

9.2.2 Controllable and Uncontrollable Variances

The variances may be categorized as controllable and uncontrollable .If a variance can be regarded as a responsibility of a particular person it will be known as controllable variance. The excessive use of materials or more labor hours than the standards can be assigned to inefficiency or particular persons. In case the variances are not in the control of persons then they will be called uncontrollable variances. The rise in prices of materials or an increase in wage rates will enhance material and labor costs. These increases cannot be assigned to the inefficiency of any one. When variances arise due to outside factors then these will be known as uncontrollable variances. A distinction between controllable and uncontrollable variances will be essential for fixing responsibility.

9.2.3 Uses of Variance Analysis

The following are in uses of variances.

- To provide a formal basis for assessing performance and efficiency
- To control costs by establish standards and analysis of variances
- To enable the principle of management by exception to be practiced at the detailed, operational level
- To assist in setting standard
- The standard costs are readily available substitutes for actual average unit costs and can be used for stock and work-in-progress valuation, profit planning and decision making and as a basis of pricing where cost-plus system

- To assist in assigning responsibility for non-standard performance in order to correct deficiencies or to capitalize on benefits.
- To motivate staff and management
- To provide a basis for estimating
- To provide guidance on possible ways of improving performance

9.2.4 Types of Cost Variances

You remember the total cost includes material, labor and overheads. Material is to be a major component in most products. Secondly labour and finally other expenses .the following are classification of variances

1. Material variance
2. Labour variance
3. Overhead variance

1. Material Variance: Material variance also known as direct material variance. I have explained in our discussion variance is difference between standards and actual results. Material variance is mean by difference between standard material and actual materials used. It is basically basing 1. Quantity of materials 2. Price of materials

Material Cost Variance: The variance is difference between standard material and actual material used. The variance cause for change in price in material and quantity of materials .Now you can calculate the variance is as follows

Material cost variance (MCV) = standard material cost - actual material cost

*Standard material cost = standard quantity X STD price per unit

*Actual material cost = actual quantity X actual price per unit

Note: If standard cost is less than the actual cost then it is favorable variance

If standard cost is more than the actual cost then it is UN favorable variance

Material Price Variance (MPV): It is a part of material cost variance. The price variance is due to change in the following reasons

1. Change in the basic prices of material
2. Failure to purchase the quantities anticipated at the time when standards were set.
3. Failure to secure discount on purchases
4. Failure to make bulk purchases and incurring more on freight
5. Failure to purchase material at proper time.
6. Not taking cash discount when setting standards
7. Supply and demand of materials and price
8. Calculation of the variance

Material Price Variance: Standard Qty (Standard Price – Actual Price) In the above the answer is positive value then it is favorable variance .If it is negative then it is UN favorable variance

Material Usage Variance /Quantity Variance: As you know it is also part of material cost variance in this what we take is quantity difference such as standard quantity and actual quantity. This is due to the following reasons.

1. Lot of waste in material use
2. More negligence in use of material
3. Loss due to theft
4. Use of material mixes other than the standard mix
5. Normal and abnormal loss in the materials
6. Defective production methods
7. Change of processing

Calculation

Material Usage Variance (MUV) Standard price = (standard qty-actual qty). In the above calculation the result is positive then it is favorable variance. If it is negative it is UN favorable

Material Mix Variance (MMV) For instance some time we use more than one material for a product it means we use a combination of materials it is called mix of materials. Which arises due to changes in standard and actual composition of mix. It results from a variation in the material mix used in cost of actual material mix will be more on the other hand, the use of cheaper material in large proportions will mean lower material cost than the standard. Material mix is difference between standard price of standard mix and standard price of actual mix. The standard price is used in calculating this variance. The variance is calculated under two situations:

- When actual mix is equal to standard weight mix
- When actual weight mix and standard weight of mix are equal

Material Mix Variance

(Revised STD Qty – Actual quantity) standard price per unit

Revised standard Qty = (Standard_Qty/Total std Qty) Total actual qty

In the above the result is positive then it is favorable variance If it is negative then it is UN favorable

Material Yield Variance (MYV)

Some times in some processing like oil refining petroleum and some other industries normally the material is used for production we may not get cent percent of production. It is known as normal loss. Some times there is an abnormal loss, which means that when actual loss is more than the estimated loss it is known to be abnormal loss. Normal loss is recurring nature and abnormal loss in non-recurring nature. Therefore a standard output is expected from the raw materials put in the actual output may be more or less than the estimated output. The material yield variance is that portion of the direct material usage variance, which is due to the standard yield specified and the actual yield obtained. This is very important for processing industries in which final product of one process becomes the raw materials.

Calculation

Material yield variance

Standard Rate = (STD loss- actual loss) Average STD Price

Avg. Standard price = standard cost of STD mix/net standard out put

In the above the result is positive then favorable variance

In the above the result is negative then UN favorable variance

2. Labor Variances

Labor is supposed to be second major cost element in any industry. The amount is paid to labour force is called wages. It may be direct wages or indirect wages. The difference between standard labour cost and actual amount paid to them is called as labour variance. The deviation in cost of direct labour may occur because of two main factors.

1. Difference in actual rates and standard rates of labour
2. The variation in actual time taken by worker and the standard time allotted to them for performing a job or an operation.

Labour variance is very similar to material variance and they can be very easily calculated.

Labor Cost Variance (LCV): IT is the difference between the standard direct wages and actual wages. Labour cost variance is the function of labour rate of pay and labour time variance it arises due to a change in either a wage rate or in time or in the labour cost variance is calculated as follows:

- Labour Cost Variance = (Standard labour cost – actual labour cost)
- Std labour cost = Std labour hours X std rate per hour
- Actual labour cost = actual labour hours X actual labour rate

In the above calculation the result is positive then the variance is favorable. If it is negative then it is UN favorable (Adverse)

Labor Rate Variance (LRV): Generally it is a part of labor cost variance. This is due to a change in specified wage rate labour variance arising due to the following reasons:

1. Change in basic wage rate or piecework rate
2. Employing persons of different grade than specified
3. Payment of more over time than fixed earlier
4. New workers being paid to workers employed for seasonal work or excessive workload.
5. Different rates being paid different rates than the standard rates.

The labor rates are determined by demand and supply conditions of labour conditions in labour market wage board awards etc. the labour variance is uncontrollable except if it arises due to the development of wrong grade of labour for which production.

Calculation: Labor Rate Variance = Actual hours (standard rate per hour – actual rate per hour). IN the above calculation the result is positive then it is favorable variance If it is negative it is adverse result

Labor Efficiency (L EV)/Time Variance: It is also the part of labour cost variance which arises due to the difference between standard labour hours specified and the actual labour hours spent. This variance helps in controlling efficiency of workers. The reasons for this are:

1. Lack of proper supervision
2. Defective machinery and equipment
3. Insufficient training and incorrect instructions
4. Increase in labour turnover
5. Bad working conditions
6. Discontentment among workers due to unsatisfaction & relations

Calculation: Labor efficiency variance = STD rate per Hour (Std Hours – Actual hours)
In the above the result is positive it is favorable variance. If it is negative then it is adverse variance

Idle Time Variance: You can see in situations production can stop due to some reasons. But you need to pay labour payments with any productions. Normally labour engaged for production some times power failure machinery problems low supply of raw materials accidents in the factory etc. in this positions normally no production. There fore the number of labors waste is known as idle time. As a result we get only adverse variance.

Calculation: Idle Time Variance = (Idle Hours) X (Std Rate Per Hour)

Labor Mix Variance (LMV): Basically labour force includes various grade of labour such as skilled semi- skilled and UN skilled or men worker woman workers child workers basing on nature of production and industry. The change in labour composition may be caused by the shortage of one grade of labour necessitating the employment of another grade of labour. This variance shows to the management how much labour cost variance is due to the change in labour cost variance is due to the change in labour compositions. The labour mix variance and material mix variance can be calculated in the same way. Labour mix variance = Revised STD hours – actual hours) STD rate per hour In the above calculations the result is positive then favorable variance .If it is negative then it is adverse variance

3. Overhead Variance: The first is material cost second is labour cost and finally is other expenses (over heads). Overhead costs are the operating costs of a business which cannot be identified or allocated but which can be apportioned to, or absorbed by cost centers or cost units. According to the terminology of cost accountancy (ICWA) overhead is defined as “the aggregate of indirect material cost, indirect wages (indirect labour cost) and indirect expensed”. Thus overhead costs are important for the management for the purposes of cost control under cost accounting; cost units on some suitable basis absorb overhead costs. Under standard costing, overhead rates are predetermined in terms of either labor hour’s production units. The actual labour hours or actual units produced are multiplied by the standard overhead rate to determine the standard overhead cost that to have been incurred. Standard overhead cost so calculated is then compared with actual overhead cost to find out the variance, if any, so as to take corrective measures. Overhead cost variance can, thus, be defined, as the difference between the standard cost of overhead allowed for actual out put and the actual overhead cost incurred.

Calculation: Overhead cost variance = Actual output X STD overhead Rate per unit – actual overhead cost

Types of Overhead Cost Variance: Overhead expenses change always depends of volume of production. Some times change some time cannot change. The behavior cost. Again in the overheads we have fixed and variable overheads. There are others, which remain unaffected by variations in the volume of out put achieved or labor hours spent. The formed costs represent the variable overhead and the latter fixed overheads. Thus, overhead cost variances can be classified as Variable overhead very directly with the volume of output and hence, the standard variable overhead rate remains uniform. Therefore, computation of variable overhead variance, also known as variable overhead cost variance parallels the material and labour cot variances. Thus, variable overhead cost variance (VOCA) is the difference between the standard variable overhead cost for actual output and the actual variable overhead cost. It

can be calculated as follows: (Actual out put X STD variable overhead Rate per unit) actual variable overheads

Variable Overhead Expenditure variance: This is the difference between the standard variable overheads for the actual hours and the actual variable overheads incurred and can be calculated as: (Actual out put X STD variable overhead Rate per unit) actual variable overheads

Variable overhead efficiency variance: It represents the difference between the standard hour allowed for actual production and the actual hours taken multiplied with the standard variable overhead rate.

Calculation: STD variable overhead rate (STD hours) – actual hours for actual output

Fixed Overhead Variance: Some times even in the over head also to extent some overheads are fixed in the nature those are known as fixed over head variances.

Fixed Overhead Variance (Actual output X STD fixed over head Rate) – Actual fixed overheads Fixed overhead variance may be dived into expenditure and volume variances

Expenditure Variance: It is that part of fixed overhead variance, which is due to the difference between, budgeted expenditure and actual expenditure

Calculation: Budgeted fixed overheads – actual fixed overheads

Volume Variance: This variance shows a variation in overhead recovery due to budgeted production being more or less than the actual production. When actual production is more than the standard production it will show an over recovery of fixed overheads and the variance will be favorable. On the other hand, if actual production is less than the standard production I twill show an under recovery and the variance will be un favarourable the volume variance may arise due to change in capacity, variation in efficiency or change in budgeted and actual number of working days. Volume variance is calculated as follows

Calculation: (Actual output X standard rate) – Budgeted fixed overheads
The above volume variance is sub dived in to the following three varieties

Capacity Variance: It is that part of volume variance which arises due to over utilization or under utilization of plant and equipment. The working in the factory is more or less than the standard capacity. This variance arises due to idle time caused by strikes power failure, on supply of materials, breakdown of machinery, absenteeism etc. capacity variance is calculated as

Calculation: STD rate (Revised budgeted units – budgeted units)

Calendar Variance: This variance arises due to the difference between actual number of days and the budgeted days. It may arise due to more public holidays announced that anticipated or working for more days because of change in holidays schedule etc. If actual working days are more than budgeted, the variance will be favorable and it will be unfavorable if actual working days are less than the budgeted number of day's calendar variance can be expressed

Calculation: STD rate per unit X decrease/ increase units to the difference of budgeted /actual days

Efficiency Variance: This is that portion of the volume variance, which arises due to increased or reduced output because of more or less efficiency that expected. It is signifies deviation of standard quantity from the actual quantity produced. This variance is related to the efficiency variance of labor.

Calculation: Standard rate (actual quantity – standard quantity)
In the above calculation result is if actual quantity is more than the budgeted quantity, the variance will be favorable and it will be vice versa

9.3 MATERIAL COST VARIANCE ANALYSIS

Terminology for Material Variance Calculation:

SQ = Standard Quantity

SR = Standard Rate or SP = Standard Price

AQ = Actual Quantity

AP = Actual price or AR = Actual Rate

RSQ = Resaved STD Quantity

MCV = Material cost variance

MUV = Material usage variance

MPV = Material price variance

MMV = Material Mix variance

MYV = Material Yield variance

Problem: The following information is obtained from X Co. Ltd.

| Product | SQ (Units) | SR (Rs.) | AQ (Units) | AP (Rs.) |
|---------|---------------|-------------|---------------|-------------|
| A | 1050 | 2.00 | 1100 | 2.25 |
| B | 1500 | 3.25 | 1400 | 3.50 |
| C | 2100 | 3.50 | 2000 | 3.75 |

Calculate: 1) Material Cost Variance
 2) Material Price Variance
 3) Material Usage Variance

Problem:

| Product | SQ | SR | Total | AQ | AP | Total |
|---------|----|----|-------|----|----|-------|
| A | 10 | 2 | 20 | 5 | 3 | 15 |
| B | 20 | 3 | 60 | 10 | 6 | 60 |
| C | 20 | 6 | 120 | 15 | 5 | 75 |
| TOTAL | 50 | | 200 | 30 | | 150 |

Find out (1) MCV (2) MPV (3) MMV (4) MUV

Solution

(1) MCV = (SQ X SR) – (AQ X AP)

A = (10 X 2) – (5 X 3) = 5 F

B = (20 X 3) – (10 X 6) = NIL

C = (20 X 6) – (15 X 5) = 45 F

TOTAL = -----
50 F

(2) MPV = (SR – AP) AQ

A = (2-3) 5 = 5 A

B = (3-6) 10 = 30 A

C = (6-5) 15 = 15 F

TOTAL = -----
20 (A)

(3) MMV = (RSQ – AQ) SP

In this total std. mix and total Actual mix is difference in proportion. Now you should calculate revised STD's.

MMV = (RSQ – AQ) TAQ

RSQ = $\frac{SQ}{TSQ} \times TAQ$

A = $\frac{10}{50} \times 30 = 6$

B = $\frac{20}{50} \times 30 = 12$

20

$$\begin{array}{rcl}
 C & = & \frac{\text{---}}{50} \times 30 = 12 \\
 \text{Now MMV} & & \\
 A & = & (6-5) \times 2 = 2 \text{ F} \\
 B & = & (12-10) \times 3 = 6 \text{ F} \\
 C & = & (12-15) \times 6 = 18 \text{ A} \\
 & & \text{-----} \\
 & & 10 \text{ (A)} \\
 & & \text{-----} \\
 \text{(4) MUV} & = & (\text{SQ} - \text{AQ}) \text{ SP} \\
 A & = & (10 - 5) \times 2 = 10 \text{ F} \\
 B & = & (20 - 10) \times 3 = 30 \text{ F} \\
 C & = & (20 - 15) \times 6 = 30 \text{ F} \\
 & & \text{-----} \\
 & & 70 \text{ F}
 \end{array}$$

Verification =

$$\text{MCV} = \text{MPV} + \text{MUV}$$

$$50 \text{ F} = 20 \text{ A} + 70 \text{ (F)}$$

$$50 \text{ F} = 50 \text{ F}$$

Problem: The standard cost of a certain Chemical Mixture is
 40 % Material A at Rs. 200 per ton
 60% Material B at Rs.300 Per ton

A standard loss of 10 % in Expected in Production. During a period there is used
 90 Tons Material A at the Cost of Rs.180 Per ton
 10 Tons Material B at the Cost of Rs.340 Per ton

Calculate : 1. Material Price Variance
 2. Material Mix Variance
 3. Material yield Variance.

Solution

Here you do one thing you make it a standard format like previous problem it would be easier to calculate

Working Notes:

$$\begin{array}{rcl}
 \text{Total actual Quantity} & = & A = 90 \text{ Tons} \\
 & & B = 110 \text{ Tons} \\
 & & \text{-----} \\
 & & \mathbf{200 \text{ Tons}} \\
 & & \text{-----}
 \end{array}$$

Standard Quantity is

$$\begin{array}{rcl}
 A & = & 200 \times 40\% = 80 \\
 B & = & 200 \times 60\% = 120 \\
 & & \text{-----} \\
 & & \mathbf{200} \\
 & & \text{-----}
 \end{array}$$

| | | | | | |
|----------------------|---|------------|---|----------------------------|---------------------|
| | | ----- | | | ----- |
| | | 1190 | | | 6513.75 |
| Mat – B | | | | | |
| Actual Rate per unit | = | 3000 | | | |
| | | ----- | = | 2.50 | |
| | | 1200 Kgs | | | |
| 1. MUV | = | (SQ X SR) | - | (AC X AR) | |
| A | = | (830 X 4) | - | {(35 X 4) + (795 X 4.25)} | |
| | | 3320 | - | 3518.75 | = 198.75 A |
| B | = | (1190 X 3) | - | {(40 X 3) + (1150 X 2.50)} | |
| | | 3570 | - | 2995 | =575. F |
| Total MUV | | | | | ----- 376.25 (F) |

| | | | |
|---------------|-------------|-----------------|--------------------------|
| 2. MPV | =SR (SQ-AQ) | | |
| A | = | 4 (800-830) | = 120 (A) |
| B | = | 3 (1200 – 1190) | = 30 F |
| Total | | | ----- 90 (A) ----- |

| | | | |
|-----------------------------------|---|---|--|
| 3. Material Yield Variance | = | (Stand. loss – Actual loss) Avg. Std. Price | |
| Avg. Std. Price | = | A = 800 Kgs @ 4 = 3200 | |
| | | B = 1200 Kgs @ 3 = 3600 | |
| | | ----- | |

| | | | | |
|-----------------|---|------------|---|------|
| | | Total Cost | | 6800 |
| Avg. Std. Price | = | 6800 | | |
| | | ----- | = | 4 |
| | | 2000 | | |

| | | | | |
|----------|---|--------------|---|------|
| Std Loss | = | Input | = | 2000 |
| | | (-) 15% loss | = | 300 |

| | | | | |
|--------------|--|--|--|------------------------|
| Std. out put | | | | ----- 1700 ----- |
|--------------|--|--|--|------------------------|

| | | | |
|--------------|----------------------|---|------|
| Actual yield | =For 2000 Std. input | = | 1700 |
| | 2020 =? | | |

| | | | | |
|--|--------------|------|------|--|
| | | 1700 | | |
| | ----- X 2020 | = | 1717 | |
| | 2000 | | | |

| | | |
|--------------|---|------|
| Actual input | = | 2000 |
|--------------|---|------|

| | | |
|-----------------------|---|------|
| (-) Actual production | = | 1717 |
|-----------------------|---|------|

| | | |
|-------------|---|--------------|
| Actual loss | = | ----- 283 |
|-------------|---|--------------|

| | | | | |
|-------------------------|---|----------------------|---|-------|
| Material Yield Variance | = | ----- (300-283) 4 | = | 68(A) |
|-------------------------|---|----------------------|---|-------|

9.4 LABOUR COST VARIANCE ANALYSIS

Terminology

| | | |
|------|---|----------------------------|
| SH | = | Std. Hours |
| SR | = | Std. Rate per Hour |
| AH | = | Actual Hour |
| AR | = | Actual Rate per Hour |
| RSH | = | Revised Std. Hour |
| LCV | = | Labor cost Variance |
| LRV | = | Labour rate Variance |
| LTV | = | Labour Efficiency Variance |
| LMV | = | Labor mix Variance |
| LITV | = | Labor Idle time Variance |

Problem: The information regarding the composition and Weekly wages rates of Labor force engaged on a particular Job.

| Workers | Std. No. Of Hour | Std. Rate per hour | Actual no. Of Hour | Actual rate per Hour |
|--------------|------------------|--------------------|--------------------|----------------------|
| Skilled | 75 | 60 | 70 | 70 |
| Semi-skilled | 45 | 40 | 30 | 50 |
| Unskilled | 60 | 30 | 80 | 20 |

Calculate: 1.LCV 2. LRV 3.LEV

Solution

| | | | | | |
|-------------------------|---|--------------|---|------------|-----------|
| 1. Labour cost Variance | = | (SH X SR) | - | (AH X AR) | |
| Skilled | | (75 X 60) | - | (70 X 70) | |
| | | 4500 | - | 4900 | = 400(A) |
| Semi – skilled | | (45 X 40) | - | (30 X 50) | = |
| | | 1800 | - | 1500 | =300 F |
| Unskilled | | (60 X 30) | - | (80 X 20) | = |
| | | 1800 | - | 1600 | =200 F |
| | | | | | ----- |
| Total LCV | | | | | 100 F |
| | | | | | ----- |
| 2. LRV | = | AH (SR – AR) | | | |
| Skilled | = | 70 (60 – 70) | = | 70 X (-10) | = 700 (A) |
| Semi-Skill | = | 30 (40 -50) | = | 30 X (-10) | = 300 (A) |
| Un-Skilled | = | 80 (30-20) | = | 80 X (-10) | = 800 (F) |
| | | | | | ----- |
| Total LRV | | | | | = 200 A |
| | | | | | ----- |
| 3. LEV | = | SR (SH AH) | | | |
| Skilled | = | 60 (75-70) | = | 60 X 5 | = 300 F |

$$\begin{array}{rclclcl}
 \text{Semi-Skilled} & = & 40 (45-30) & = & 40 \times 15 & = & 600 \text{ F} \\
 \text{Un-Skilled} & = & 30 (60-80) & = & 30 \times (-20) & = & 600 \text{ A} \\
 & & & & & & \text{-----} \\
 & & & & & & 300 \text{ (F)} \\
 & & & & & & \text{-----} \\
 \\
 \text{Verification} & = & \text{LCV} & = & \text{LRV} + \text{LEV} \\
 & & 100 \text{ (F)} & = & 200 \text{ (A)} + 300 \text{ (F)} \\
 & & 100 \text{ (F)} & = & 100 \text{ (F)}
 \end{array}$$

Problem

The Budgeted Labor force for producing 1000 articles is

| Particulars | Total Std Hour | Total Std. Cost |
|--|----------------|-----------------|
| 30 men @ Rs. 40 Per Hour For 50 Hrs | 1500 | 600 |
| 20 women @ Rs. 30 per Hour For 30 Hrs | 600 | 1800 |
| 10 Boys @ Rs. 20 per Hour For 20 Hrs | 200 | 40 |
| | 2300 | 820 |
| The Actual data for producing 1000 articles is | | |
| 25 Men @ 45 per How for 50 Hrs | 1250 | 562.50 |
| 30 Women @ 30 per How for 30 Hrs | 900 | 270.00 |
| 10 boys @ 30 Per How for 15 Hrs | 150 | 30.00 |
| | 2300 | 86250 |

Calculate 1. LCV 2. LRV 3. LEV 4. LMV

Solution

$$\begin{array}{rclclcl}
 1. \text{ LCV} & = & \text{SH} \times \text{SR} & - & \text{AH} \times \text{AR} & & \\
 \text{Men} & = & 1500 \times 40 & - & 1250 \times 45 & = & 3750 \text{ F} \\
 \text{Women} & = & 600 \times 30 & - & 900 \times 30 & = & 9000 \text{ A} \\
 \text{Boys} & = & 200 \times 20 & - & 150 \times 20 & = & 1000 \text{ F} \\
 \\
 \text{Total} & & & & & = & 4250 \text{ (A)} \\
 & & & & & & \text{-----} \\
 \\
 2. \text{ LRV} & = & (\text{SR} - \text{AR}) \text{ AH} & & & & \\
 \text{Men} & = & (40 - 45) 1250 & = & 6250 \text{ A} \\
 \text{Women} & = & (30 - 30) 900 & = & \text{Nil} \\
 \text{Boys} & = & (20-20) 150 & = & \text{nil} \\
 \\
 \text{Total} & & & & & = & 6250 \text{ (A)} \\
 & & & & & & \text{-----} \\
 \\
 3. \text{ LEV} & = & (\text{SH} - \text{AH}) \text{ SR} & & & &
 \end{array}$$

| | | | | |
|-------|---|------------------|---|----------|
| Men | = | (1500 – 1250) 40 | = | 1000 (F) |
| Women | = | (600 – 900) 30 | = | 900 (A) |
| Boys | = | (200-150) 20 | = | 100 F |
| | | | | ----- |
| Total | | | | 6250 (A) |
| | | | | ----- |

4. Labour Mix Variance = (RSH-AH) SR

Note: Revised standard proportions are same as standard Hour because the Actual total Hour is equal to total std. Hour. Hence there is no mix variance.

Problem: Standard Labor Hour and Rate for production of an Article

| Particulars | | | |
|----------------------------|---------|---------------|--------|
| | Hour | Rate per hour | Total |
| Skilled | 5 | 15 | 70 |
| Unskilled | 8 | 5 | 30 |
| Semi-skilled | 4 | 7.50 | 30.00 |
| | 17 | | 145 |
| Actual date for 1000 units | | | |
| Skilled Worked | 4500 | 20-00 | 90, 00 |
| Unskilled | 10,000 | 4.50 | 45.000 |
| Semi – skilled | 4200 | 7.50 | 31,500 |
| | 700700. | | 166500 |

Calculate: 1. LCV 2. LRV 3. LEV 4. LMV

Solution

1. LCV = (SH X SR) - (AH X AR)
 Skilled Worked = (500 X 15) – (4500 X20) =75000 – 90000 = 15,000 (A)

Unskilled = (8000 X5) – (10.000 X 45) =40,000 – 45.000= 5000 (A)

Semi – skilled = (4000 X 750) = 31500 = 1500 (A)

21,500

2. LRV = (SR – AR) AH
 Skilled Worked = (15-20) 4500 = 22500 (A)

Unskilled = (750-750) 4200 = Nil

Semi – skilled = (50- 450) 1000 = 500 (F)

22.000 (A)

3. LEV = (SH – AH) SR
 Skilled Worked = (5000-5500) 15 = 7500 (A)

Unskilled = (8000-8800) 5 = 4000 (A)

Semi – skilled = (4000- 4400) 75 = 300 (A)

22.000 (A)

3.LMV

For calculate, Labor variance mix we have to calculate Revised Std. Mix sine Std. labour and Total Actual Labor are different

| | | | | |
|----------------|---|-----------------|---|------------------|
| LMV | = | (RSH – AH) SR | | |
| RSH | = | 5000 | | |
| Skilled | | ----- X 18700 | = | 5500 |
| | | 17000 | | |
| Unskilled | = | 8000 | | |
| | | ----- X 18700 | = | 8800 |
| | | 17000 | | |
| Semi – skilled | = | 4000 | | |
| | | ----- X 18700 | = | 4400 |
| | | 17000 | | |
| LMV – Skilled | = | (5500-4500) 15 | = | 15000 (F) |
| Unskilled | = | (10.000-8800) 5 | = | 6000 (A) |
| Semi-skilled | = | (4400-4200) 7.5 | = | 1500 (G) |
| | | | | ----- |
| | | | | 10500 (F) |
| | | | | ----- |

Working Notes

Calculating Std. Hour for actual Products

For

| | | | | |
|----------------|---|--------------------|---|--------------------|
| 1 Unit | = | 5 Hour | | |
| Skilled Worked | = | 1000units X 5 Hour | = | 5000 Hour |
| Unskilled | = | 1000units X 8 Hour | = | 8000 Hour |
| Semi – skilled | = | 1000units X4 -Hour | = | 4000 Hour |
| | | | | ----- |
| | | | | 17.000 Hour |

Overhead Variance

Problem: You are required to calculate various overhead variances

| Particulars | Budget | Actual |
|---------------------|--------|--------|
| Out put in Units | 12.000 | 14.000 |
| No. Of Working days | 20 | 22 |
| Fixed over Heads | 36.000 | 49.our |
| Variable over Heads | 24.000 | 35.our |

There was an increase of 5% in capacity

Solution: First Calculate Std Fixed O.H Rate per Unit

$$\text{Std Fixed over Head Rate} = \frac{36.000}{12.000 \text{ units}} = 3 \text{ per unit}$$

$$\text{Std Variable over Head Rate} = \frac{24100}{12.000} = 2 \text{ Per unit}$$

$$1. \quad \text{Total overhead cost variance} = (\text{Actual out put}) \times 9 \text{ STD Rate} - \text{Actual Over Head}$$

$$14000 \times (3+2) - (49.000+35\dots)$$

$$70.000 - 84.000 = 14000(A)$$

$$\begin{aligned} 2. \quad \text{Variable over Heads Variance} &= \\ &= (\text{Actual output X Std variable O.H Rate}) - (\text{Actual Variance O.H}) \\ &= 14000 \times 2 - 35.000 = 28000 - 35.000 = 7000(A) \end{aligned}$$

$$3. \quad \text{Fixed overhead Variance} \\ (\text{Actual output X Std Fixed O.H Rate}) - \text{Actual O.H}$$

$$14000 \times 3 - 49.000 = 42.000 - 49.000 = -7000(A)$$

$$4. \quad \text{Expenditure variance} = (\text{Budget Fixed OH}) - (\text{Actual Fixed O.H}) \\ = 36.000 - 49.000 = -13000(A)$$

$$5. \quad \text{Volume variance} = \text{Actual output X STD Rate} - \text{budgeted Fixed O.H}$$

$$= (14000 \times 3) - (36.000)$$

$$= 42.000 - 36.000 = 6.000(F)$$

$$6. \quad \text{Capacity Variance} = \text{Std. Rate (Revised Budget Units - Budget Units)}$$

$$\text{Budgeted Units for 20 days} = 12.000$$

$$\text{Budgeted Units for 22 days} = 12.000 \times 22$$

$$= 264.000$$

$$- 240.000$$

$$= 24.000$$

$$\text{Revised Budget Units} = 13.200 + (13,200 + 5) \text{ (After Increase 5\% Capacity)}$$

$$= 13.200 + 660$$

$$= 13.200 + 660 = 13.860$$

$$\text{Capacity Variance} = 3(13860 - 13200) = 1980 (F)$$

$$7. \quad \text{Calendar Variance} =$$

Change in No. of Units by change in Actual and Standard No. of days X Standard Rate

$$\text{Change in No. of Day} = 2$$

$$\text{Increase in Units in 2 days} = 12.000 \times 2 = 24.000$$

$$- 24.000$$

$$= 0$$

$$\text{Calendar Variance} = 24.000 \times 3 = 72.000 (F)$$

$$8. \quad \text{Efficiency Variance} = \text{Standard Rate (Actual Qty. - Revised Budgeted Units)}$$

$$= 3 (14.000 - 13.860)$$

$$= 3 (140) = 420 (F)$$

9.5 SALES VARIANCE ANALYSIS

You may recall our previous discussion regarding cost variance analysis where we covered cost variance analysis such material, labor and overhead variance analysis. We already understand controlling of business through cost controlling but on the other hand sales also is an important element of getting maximum revenue for survival. The analysis of sales variances is important to study profit variances. The analysis of variances will be complete only when the difference between the actual profit and standard profit is fully analyzed. It is necessary to make an analysis of sales variances to have a complete analysis of profit variance because profit variance because profit is the difference between sales and cost. Thus, in addition to the analysis of cost variances. That means cost variance, labor cost variance and overheads cost variance, an analysis of sales variances should be made. Sales variances

may be calculated in two different ways. These may be computed so as to show the effect on profit or these may be calculated to show the effect on sales value.

9.5.1 Sales Variance Calculation Methods

VALUE METHOD – SALE VARIANCE

This is calculated according to value method show the effect on sales value and enable the sales manager to know the effect of the various sales efforts on his overall sales value figures.

1. SALES VALUE VARIANCE (SVV)

It is difference between the standard value and the actual value of sales affected during a period. It is you can calculate like this

$$SVV = (\text{STANDARD SALES} - \text{ACTUAL SALES})$$

After calculation you should know why this variance occurs. I may say that the following reasons

1. Actual sales price may be higher or lower than the budgeted sales
2. Actual sales quantity may be higher or lower than the budget sales
3. You are selling different products its called sales mix with different quantity, but the budgeted sales mix and quantity is differ

4. Some revised sales quantity may be more or less than the budgeted sales quantity

2. SALES PRICE VARIANCE (SPV)

IN this variance due to sales price means actual sales price change due to so many reasons like discounts free offers etc. The simple formula you can follow for its calculation

$$SPV = \text{ACTUAL QUANTITY} (\text{STANDARD PRICE} - \text{ACTUAL PRICE})$$

3. SALES VOLUME VARIANCE (SVV)

Some times you may not sale the quantity that wanted to sell due to so many causes like market trends competition demand and supply of goods or manufacturing problems etc. This variance occurs due to actual quantity sold and standard quantity. You can find out like this

$$SVV = \text{STANDARD PRICE} (\text{STANDARD QTY} - \text{ACTUAL QTY})$$

We can sub divide the sales volume variance in to

➤ SALES MIX VARIANCE (SMV)

It is the difference in the proportion in which various articles are sold and the standard proportion in which various article we to be sold. You can find as the following

$$SMV = \text{STD VALUE OF ACTUAL MIX} - \text{STD VALUE OR REVISED STD MIX}$$

➤ SALES QUANTITY VARIANCE (SQV)

IT is the difference between revised standard sales quantity and budgeted sales quantity. This you can calculate

$$SQV = \text{STD SELLING PRICE} (\text{REVISED SALES QTY} - \text{BUDGETED SALE QTY})$$

9.5.2 Profit or Margin Method

This is we can calculate basing the profit and its margin. The sales according to this method can be calculated as

1. Total Sales Margin Variance (TSMV)

TSMV = ACTUAL PROFIT – BUDGET PROFIT
OR

(ACTUAL QUANTITY OF SALES) (ACTUAL PROFIT PER UNIT – BUDGED QUANTITY OF SALES) (BUDGETED PROFIT PER UNIT)

2. Sales Margin Variance (SMV) Due To Selling Price

IT is due to selling price. It is that portion of total sales margin variance, which is due to the difference between the actual price of quantity of sales affected and the standard price of articles sold being more or less than the budgeted quantity of sales. It is you can calculate
SMV = actual qty of sales (actual selling price per unit – std selling price per unit)

3. Sales Margin Variance (SMV) Due To Volume

IT is that portion of total sales margin variance, which arises due to the number of articles sold being more or less than the budgeted quantity of sales. It is calculated as
SMV = Std profit per unit (actual qty of sales – budgeted qty of sales)

Again the sales margin variance due to volume can be divided into two parts as given below.

A. Sales Margin Variance Due To Sales Mixture (SMV – SM)

It is that portion of sales margin variance due to volume, which arises because of different proportion of actual sales mix. It is taken as the difference between the actual and budgeted quantities of each product of which the sales mixture is composed valuing the difference of quantities at standard profit this you can calculate
SMV – SM = STANDARD PROFIT – REVISED STD PROFIT

B. Sales Margin Variance Due To Sales Qty (SMV – SQ)

It is portion of sales margin variance due to volume, which arises due to the difference between the actual, and budgeted quantity sold of each product. It is calculated as
SMV – SQ = REVISED STD PROFIT – BUDGETED PROFIT

9.5.3 Causes of Variance and Disposition

Dear Students in the long explanation you are able to understand standards variances of cost and profit. After analysis you should be able to guide the management where by identify the causes of each variance and responsible persons and take remedial measures. Then the purpose controlling is getting served.

Analysis of variances highlights the areas of strength and weakness in the operation of a firm, but in itself, it does not indicate what corrective action, if any, should be taken. Thus, it is very important to identify and report quickly the causes of variances to the management so that remedial measures may be taken. The following are some of the possible causes for different cost variances indicating the persons responsible for the same. The cause of one variance may be wholly or partly dependent upon the cause of another variance. You can find the variance causes and responsible persons

| VARIANCE | POSSIBLE CAUSE | PERSON RESPONSIBLE |
|-------------------------------|--|--|
| 1. Material price variance | 1. change in market price 2. inefficient buying 3. emergency purchases 4. loss of discounts 5. non-availability of std qty | Uncontrollable purchase Officer production/sale/accounts in charge |
| 2. Material usage variance | 1. excessive wastage 2. careless handling 3. wrong specification 4. poor quality of material 5. wrong mixture of materials 6. incorrect setting of material | Fore man Store keeper Purchase officer Planning engineer Production manager Cost accountant |
| 3. Rate pay variance | 1. wrong grade of labor 2. general rise in wages 3. overtime for urgent work | Foreman Uncontrollable Production manager |
| 4. Labour efficiency variable | 1. ineffective supervision 2. poor quality of materials 3. poor working conditions | Fore man Purchase officer Personnel manager |
| 5. Idle time variance | 1. shortage of materials 2. break- down of machinery 3. power failure 4. time lost in instructions | Purchase officer Maintenance engineer Electrical engineer Production manager |
| 6. expenditure variance | 1. rise in general price level 2. changes in production methods 3. ineffective control | Uncontrollable Production manager Departmental manager |
| 7. Volume variance | 1. Lack of orders 2. Ineffective supervision 3. Poor efficiency of machinery 4. Poor efficiency of workers 5. More or less working days | Sales manager Departmental manager Maintenance manager Foreman Uncontrollable |
| 8. Sales price variance | 1. Unexpected completion 2. Rise in general price level 3. Poor quality of products | Uncontrollable Uncontrollable Production manager |
| 9. Sale volume | 1. Unexpected competition 2. Ineffective sales promotion 3. Ineffective supervision and control of sales man | Uncontrollable Publicity manger Sales manager |

The analysis of variances should be reported to the management, so that corrective action may be taken. The cost accountant cannot take corrective action. The management can only take it. So reporting of variances to the management becomes essential. To make variances reporting effective, it is essential to make variances reporting effective, it is essential that following conditions be fulfilled:

1. The variances arising out of each factor should be correctly segregated so that their correct reporting to the management. For example volume variance arising on account of change in production should be correctly segregated into capacity variance, calendar variance and efficiency variance.
2. Authority and responsibility of each employee should be clearly laid down so that responsibility for negative variances may be fixed and corrective action may be taken. This will avoid shirking of responsibility.
3. Variances should be divided into controllable variances. Uncontrollable variances are beyond the control of the organization; so an employee can be held responsible for these variances. But controllable variances should be reported with no loss of time so that responsibility may be fixed and action may be taken against the individuals who are responsible for such variances.
4. Reporting of variances to the top management should contain broad details only whereas reporting of variances to the lower levels of management should be a detailed one showing the causes of each variance along with the persons who may be held responsible for each variance.

Practical Problem

Problem: From the following particulars calculate all sales variances according to (A) Profit Method and (B) Value Method.

| Product | Standard | | | Actual | | |
|---------|-------------------|------------------|-------------------|-------------------|------------------|-------------------|
| | Quantity Units | Cost Per unit | Price Per unit | Quantity Units | Cost Per unit | Price Per unit |
| X | 3,000 | Rs. 10 | Rs. 12 | 3,200 | Rs. 10.50 | Rs. 13 |
| Y | 2,000 | Rs. 15 | Rs. 18 | 1,600 | Rs. 14.00 | Rs. 17 |

Solution:

A Profit Method

1. Total sales Margin Variance = Actual Profit – Budgeted Profit
= Rs. 12,800 – Rs. 12,000 = Rs. 800 (F)
2. Sales Margin Variance due to selling price
= Actual Qty. of Sales (actual sale price per unit – Budget sales price per unit)
X = 3,200 (Rs. 13 – Rs. 12)
3. Sales Margin Variance due to Sales Mix

= Standard profit per unit (Actual Qty. of sales – Standard Proportion for Actual Sales)
X = Rs. 2(3,200 – 2,880) = Rs. 640 (F)
Y = Rs. 3(1,600 – 1,920) = Rs. 960 (A)
1. Sales Margin Variance due to Sales Quantity
= Standard profit per unit (STANDARD Proportion for Actual sales – Budgeted Quantity of Sales)

$$X = \text{Rs. } 2(2,880 - 3,000) = \text{Rs. } 240 \text{ (A)}$$

$$Y = \text{Rs. } 3(1,920 - 2,000) = \text{Rs. } 2460 \text{ (A)}$$

B Value Method

1. Sales Value Variance = Actual Value of Sales – Budgeted Value of sales)

$$= \text{Rs. } 68,800 - \text{Rs. } 72,000 = \text{Rs. } 3,200 \text{ (A)}$$
2. Sales Price Variance = Actual Quantity of Sales (Actual Price-Budgeted Price)

$$= X = 3,200 (\text{Rs. } 13 - \text{Rs. } 12) = \text{Rs. } 3,200 \text{ (F)}$$

$$= Y = 1,600 (\text{Rs. } 17 - \text{Rs. } 18) = \text{Rs. } 1,600 \text{ (A)}$$

$$\text{-----}$$

$$1,600 \text{ (F)}$$
3. Sales Value Variance = Standard Price (Actual Quantity of Sales- Budgeted Qty. sales)

$$= X = \text{Rs. } 12(3,200 - 3000) = \text{Rs. } 2,400 \text{ (F)}$$

$$= Y = \text{Rs. } 18(1,000 - 2,000) = \text{Rs. } 7,200 \text{ (A)}$$

$$\text{-----}$$

$$4,800 \text{ (A)}$$

$$\text{-----}$$
4. Sales Mix Variance = (Standard Value of Mix) - (Standard Value of revised standard Mix.)

$$= \text{Rs. } 67,200 - \text{Rs. } 69,120 = \text{Rs. } (1,920) \text{ (A)}$$
5. Sales Quantity Variance = Standard selling price (Revised sales Qty. – Budgeted Qty.)

$$X = \text{Rs. } 12(2,880 - 3000) = \text{Rs. } 1,440 \text{ (A)}$$

$$Y = \text{Rs. } 18(1,920 - 2,000) = \text{Rs. } 1,440 \text{ (A)}$$

$$\text{-----}$$

$$2,880 \text{ (A)}$$

$$\text{-----}$$

9.6 BUDGETARY CONTROL AND MONITORING

Now we are going to deal with the actual control over the costing part. Generally, the management forecast that how much has to be produced? What would be the requirement of raw materials at the verge of production? How much money is to be required? For answering all these questions the management prepares budgets? You might have heard about financial budget of the country which every year is been prepared and presented in the parliament. Generally it is in deficit? Here we would be talking about the budgets prepared by the company.

9.6.1 Importance of Budgetary Control

A manager may have many good ideas but implementation of those ideas requires proper planning. You would understand that it is not a one-time exercise. The planning horizon varies from one day to many years, depending on the objectives of the organization and the uncertainties involved. An organization may be well equipped in advanced technology and resourceful for having a galaxy of intelligent managers but it may not achieve success unless it sets its objectives clearly and plans its activities accordingly. Even if the objectives are set, an organization may not be able to achieve them for want of a proper plan. A budget is the quantitative expression of plans - it expresses the plan in terms of physical units or monetary units. Budget gives the target to be achieved. Not only a big business entity or government of the country needs a budget, it is essential for a very small business unit or even for a family.

In the context of a business organization, budget is the integral part of strategy and tactics'. Strategies mean designing objectives and tactics are the ways of achieving the strategic goals. The term 'Budget's defined as a financial and/or quantitative statement, prepared prior to a defined period of time, of the policy to be pursued during that period for the purpose of attaining a given objective.

The analysis of this definition reveals the following characteristics of the budget.

- It may be prepared in terms of quantity or money or both.
- It is prepared for a fixed or set period of time.
- It is prepared before the defined period of time commences.
- It spells out the objects to be attained and the policies to be pursued to achieve that objective.

The term 'Budgetary Control' is defined as the establishment of budgets, relating the responsibilities of executives to the requirements of a policy and the continuous comparison of actual with budgeted results, either to secure by individual action the objective of that policy or to provide the basis for its revision.

The analysis of this definition reveals the following facts about budgetary control

- It deals with the establishment of the budgets.
- It deals with the comparison of budgeted results with the actual results.
- It deals with computation of the variations and the actions to be taken for maintaining the favorable variations, removing the adverse variation or revising the Budgets themselves.

9.6.2 Essentials of Budgetary Control

If the organization decides to install the Budgetary Control system as a cost control technique, it will have to comply with the following preliminaries.

Deciding the Budget Centre: A Budget Centre is that section of the organization with respect to which the budgets will be prepared. A Budget centre may be in the form of a product or a department or a branch of the company and so on. Budget centre should be clearly defined and established, as the budgets will be prepared with respect to each and every Budget Centre.

Deciding the Budget Period: A Budget Period is that period of time for which the budget will be prepared and operated. The selection of the Budget Period should be made very carefully- too long a budget period makes the correct estimation more difficult while too short a budget period may prove to be more costly. The selection of Budget Period may depend upon the nature of operations and the purpose of preparing the budget {'As such, in case of industries like the ones engaged in generation and distribution of electricity, transport operations etc. where capital expenditure is too high, budgets may be prepared even for a period of 5 to 10 years, while in case of industries like the ones engaged in manufacturing of motor vehicles or radios etc., where the customer demand may change more frequently, the budget period may be shorter. Similarly, a sales budget may be prepared for a period of 5 years, whereas the short-term cash budget may be prepared on weekly or even daily basis.

Establishment of Accounting Records: There should be an efficient and proper system of accounting so that the information and data as required for the efficient implementation of the Budgetary Control system will be available in time.

Organization for Budgetary Control: A property prepared organization chart may make the duties and responsibilities of each level of executive very clear to himself. A senior executive in the form of budget controller or budget officer will head the budgetary control organization. In small or medium sized organizations, he himself will be involved in all types of works involved with the budgetary control system. However, in case of large organizations, he may have a budget committee under him, which may consist of Chief Executive, budget officer himself and heads of main departments. The role of budget committee may be only advisory and its decision may become binding only if accepted by the Chief Executive. The functions performed by the budget committee can be broadly stated as below.

- To receive and scrutinize the functional budgets.
- To revise the functional budgets, if necessary.
- To approve the revised budgets.
- To receive the budget reports and comparative statements.
- To locate the responsibilities and recommend the corrective and remedial action.

9.6.3 Budget Manual

A budget manual is a document setting out the responsibilities of the persons engaged in and the forms and procedures required for the budgetary control. A budget manual enables the standardization of the methods and procedures in relation to the budgetary control. It should be well written, indexed and divided into the sections. It may be in bound book form or loose-leaf form. A budget manual may contain the following particulars.

- (a) Introduction of principles and objectives of budgetary control and the definitions and brief explanations.
- (b) Duties and responsibilities of the various executives and the organization chart, Functions and duties of budget officer and budget committee.
- (c) Scope of the budget and areas to be covered, whether budget will be a fixed budget or flexible budget
- (d) Accounts codes, budget center codes and other codes operated.

Determination of Budget Key Factor

A budget key factor is that the impact of which should be assessed first before other functional budgets are prepared to ensure that other functional budgets are capable of fulfillment. The key factor may take various forms e.g. Sales, Raw material, Labor, Production capacity, availability of funds and Government restrictions. Once the key factor is established, the budget with respect to that function will be prepared first and the other budgets will be prepared to conform to that E.g. If sales are the key factor, the sales manager will prepare and submit sales forecast first. The production manager will then decide whether it is possible to produce the quantity to meet sales demand. In case of the situations where there is more than one key factor, the importance of key factors themselves will be assessed first. The problem of multiplicity of key factors may be solved with the help of techniques like linear programming, operations research etc.

9.6.4 Budget Monitoring

Friends you have learned what is all about budget in our earlier discussion. I am sure that we have strong conceptual foundation on budgets. Just remained you that budget is a financial plan expects in financial terms prepared well in advance before commercial operation is undertaken. Actually speaking, budget is a target, which should be accomplished in defined

future, say, during the operational period. Actual results in terms of profitability and growth is ascertained and the same is required to be compared against the budgeted estimates and we should find out any deviation between the budgeted estimate and actual results. If actual results corresponds with the budgets then management of an entity express its satisfaction and extends rewards in terms of different kinds of incentives to the functional managers. On the contrary if the budgeted results is not achieved, then critical analysis and review of the entire commercial operation is undertaken by the management and the reasons for deviations between budgeted estimate and actual results is worked out in judicious manner and the most possible and feasible remedial measures are prescribed by the management in order to achieve the target of the organization.

Friends, we may therefore be able to say that comparison between budgeted estimate and actual result is of periodical exercise. The importance of comparison of the actual results against the budgeted benchmark is the key function of the middle level management of an organization. Top management of the firm is generally busy with strategic planning and policy formulation. The necessary feedback of financial control and monitoring of commercial monitoring is transmitted to the top management from time to time on the basis of which top management issues necessary guide lines and instructions to the middle level management and middle level management circulate the same through out the length and breadth of the organization that obviously includes operational level of management. Dear learner you're there fore instructed to do some practical problems from the referred standard text books as well as follow the problems solve in the class. Simply speaking comparison between budgeted estimate and actual results is technically known as budget monitoring in industries.

9.7 COST AUDIT

Dear learner you understand that management accounting is concerned with decision-making accounting. It looks in to planning, organizing and controlling. In the previous lessons we have been discussing about various controlling techniques for cost and sales Variances. For proper controlling check your accounts in all the relevant areas and accounting efficiency. In the lesson you are appreciate to learn the auditing system for cost and management. Meaning of Audit: The term 'audit' means examination of books of accounts and vouchers so as to establish their accuracy. Audit is defined as a systematic examination of financial statements, records and related operations to determine adherence to generally accepted accounting principles, management policies or stated requirements. According to the International Federation of Accountants, an audit is the independent examination of financial information of an entity whether profit oriented or not and irrespective of its size or legal form, when such an examination is conducted with a view to expressing an opinion thereon. The essential feature of auditing as per the Institute of Cost and Works Accountants of India (ICWAI) are as follows

- (i) Making a critical review of the systems and procedures in an organization;
- (ii) Making such tests and enquires into the results as well as the operation of such systems and procedures, as the auditor may consider necessary to form an opinion;
- (iii) Expressing that opinion in the accepted phraseology that has been developed;
- (iv) Ensuring that the opinion covers all aspects, which are required to be covered by law or accepted professional norms.

9.7.1 Cost Audit: Types, Advantages

The Institute of Cost and Works Accountants of India (ICWAI) has defined cost audit as verification of cost accounts and a check on the adherence to the cost accounting plan. THE ICWAI further states that cost audit is the audit of efficiency in minute details of expenditure while the work is in progress and not a post-mortem examination, financial audit is fait accompli. Cost audit is mainly preventive measure, a guide for management policy and decision, in addition to being barometer of performance. Thus the main functions of cost audit are:

- (i) To verify that the cost accounts are correctly kept in accordance with the generally accepted cost accounting principles applicable to the industry concerned;
- (ii) To ensure that the cost accounting routine laid down by the business is properly carried out;
- (iii) To detect errors and prevent frauds and possible misappropriation.

Types of Cost Audit

You may cost includes so many cost factors. Since total cost includes materials labour and other expenses that's why we do cost audit separately. The following are the main types of cost audit:

- (i) **Cost Audit to Assist Management.** The main object of this type of cost audit is to make available accurate, relevant and prompt information to management to assist it in taking important managerial decisions. The function of this audit is to ensure management the accuracy of cost accounts. In this type of audit, a cost auditor suggests ways to reduce the cost of production and make an improvement in the cost accounting plan.
- (ii) **Cost Audit on behalf of the Government.** The Government may appoint a cost auditor to conduct cost audit where it is necessary –
 - (a) To do so in the opinion of the Government under section 233-B of the Companies Act, 1956;
 - (b) To ascertain correct cost of certain units when Government is approached for protection or financial help;
 - (c) To ascertain correct cost of contract given to private firms under 'cost plus' basis;
 - (d) To fix reasonable prices of certain items of production so as to prevent undue profiteering.
- (iii) **Cost Audit on behalf of a Customer.** Sometimes, cost audit may be conducted on behalf of a customer when he agrees to pay price for a certain product on 'cost plus' basis. The customer in such a case gets cost accounts of the product concerned audited to establish correct cost so that he may be able to pay price on the basis of correct cost price an agreed margin of profit.
- (iii) **Cost Audit on behalf of Trade Association.** Sometimes a trade association may appoint a cost auditor to conduct cost audit –
 - (a) To ascertain comparative profitability of its members;
 - (b) To determine minimum price to avoid cut throat competition among its members;
 - (c) To maintain prices at a certain level so as to prevent undue profiteering.
- (iv) **Cost Audit on behalf of Tribunals.** Sometimes, Labor Tribunals may direct the audit of cost accounts to settle trade disputes for more wages, bonuses share in

profits etc. Similarly Income Tax tribunals may direct the audit of cost accounts to assess correct profit for assessment purposes.

- (v) Cost Audit under statute: The Central Government may, under section 233-B of the Companies Act 1956 order that certain classes of companies which are required to maintain proper records regarding materials consumed, labor and other expenses under section 209 are required to get their cost accounts audited. The aim of such type of audit is that the Government wants to ascertain the relationship of costs and prices.

Advantages of Cost Audit

You can observe when we analyze each cost element where by we surely can control the cost and eliminate the waste cost .The following are the main advantages of cost audit to management, cost accountant, shareholders, taxpayers, government and consumers:

1. Cost audit will establish the accuracy and will assist in prevention of errors and frauds. It will also help to improve cost accounting methods and techniques to facilitate prompt and reliable information to management. It creates cost consciousness, results in improved cost accounting methods and help to have better internal control.
2. It will help management in taking important decisions because prompt, accurate and reliable information is made available to management with the help o cost audit.
3. It will help in reducing cost of production because a close check will be maintained on all wastages relating to materials, labor and overheads, Wastages will be promptly reported to management so that there may not be recurrence of those wastages.
4. It will bring more reliability on the costing data and hence can be more effectively used for inter-firm comparison.
5. Management by exception is possible since cost audit separates efficient from inefficient operations and fixes individual responsibility for inefficient operations.
6. Analysis of variances is facilitated with cost audit because a comparison of actual with standard production and sales is made. Hence, the systems of standard costing and budgetary control will be gainfully applied with cost audit. It improves the effectiveness of cost control and cost presentation by introducing efficient routines, reducing expenditure and ensuring promptness.
7. Cost audit assists the financial auditor because he can safely rely on many important costing data such as cost of closing stock of raw materials, work in progress and finished goods. In financial accounts closing stock in valued at cost or market price whichever is lower. The actual cost of closing stock can be reliably taken from costing books. In other matters, like payment of commission on gross profit, production bonus to staff etc. the date supplied by cost accounts audited by cost auditor can be taken as correct by the financial auditor. Thus the task of the financial auditor is greatly facilitated if cost accounts are audited.
8. Cost audit is very useful in public undertakings because it pinpoints the inefficiency of the employees. Thus it will help in reducing cost o production of goods produced by such organizations. Making goods available to the masses at cheaper rates is the prime need of the day and cost audit will help in this direction.

9. Cost audit will promote better understanding between persons at the help of affairs and persons at the bottom. The cost data audited by the cost auditor will prove useful settling trade disputes for wage, bonus share in profit etc.
10. The existence of cost audit has a great moral influence on the employees as a result of which the efficiency is increased.
11. The government and the trade associations may require cost audit for the purpose of fixing ceiling prices to prevent excessive profit making. The Government may also require cost audit to give protection to certain industries in public interest. It contributes to the betterment of the economy by increasing productivity and performance.
12. Cost audit reports raise the status of Cost Accountant. Being external it helps in improving costing methods and can solve specific problems, which ultimately raises the status of costing department.

It provides information relating to weak, inefficient or mismanaged units for taking proper corrective action. It also helps to identify the symptoms of sickness in a unit.

9.7.2 Cost Audit and Financial Audit

I can distinguish the general auditing and cost auditing the basic function o both cost audit and financial audit is the same i.e. to carry out independent scrutiny of the accounts of an organization. The basic principles adopted are also common though the approach and the objective with which they are carried out are quite different. The following are the main points of difference between cost audit and financial audit.

| Sr. No. | Basic of Distinction | Cost Audit | Financial Audit |
|---------|----------------------|--|---|
| 01. | Coverage | It covers cost accounts | It covers financial accounts |
| 02. | Meaning and Aim | It is the verification of cost accounts and a check on the adherence of cost accounting plan. It stresses propriety of expenditure and efficiency of performance through analysis of expenditure incurred. | It is to verify the financial accounts and report whether. Balance Sheet and Profit & Loss Account have been drawn properly and whether they exhibit a true and fair view of the state of affairs of the concern. Its aim is to prevent the errors and frauds and prevention of their recurrence. It is more of a honesty audit |
| 03. | Approach | It imparts a forward-looking approach besides checking of cost records. | It is generally a postmortem check to see that the expenditure recorded has been actually incurred. It is concerned with the past and historical in nature. |

| | | | |
|-----|-------------------------|--|--|
| 04. | Concerned with | It is to verify the accuracy of cost of each job, product process, unit etc. and is concerned with the analysis of information and its prompt presentation to the management for taking managerial decisions i.e. price fixing make or buy etc. A cost auditor is to find out what the cost should be. | It is concerned with totality of the picture in respect of profit and financial position. A financial auditor is not to arrive at what the cost should have been and is merely concerned with the detection of errors and frauds and improvement in the accounting system. |
| 05. | Reports | Cost Auditor reports to the management except in case of statutory audit in which case he reports to the Government. | Financial auditor reports to the shareholders of the company |
| 6. | Difference in treatment | There is a difference in treatment of certain cost factor as valuation of stock, depreciation interest on capital etc. in cost audit as compared to financial audit. | Financial audit treat valuation of stock depreciation, interest on capital etc. in a different way as compared to cost audit. |

9.7.3 Cost Auditor

In a cost ledger accounting system, the responsibility of a cost auditor can be from that of the financial auditor. Financial accounts are maintained separately. In an integrated system of accounts, the responsibility of cost audit and financial audit cannot be separated since both the cost accounts and financial accounts are maintained in one set of accounts and both the financial and cost accounts are audited by one person.

Appointment of Cost Auditor: The Cost Auditor has to be appointed by the Board of Directors under section 233B of the Companies Act subject to prior approval of the company Law Board. This will be done on receipt of specific order from the company Law Board for getting audited the Cost Accounting Records of a particular year for specified products. For appointment of cost auditor, the Board of Directors is required to pass a resolution either in its meeting or by circulation with a condition that the same is subject to approval of the Central Government. Appointment of cost auditor is made on the receipt for an order from Central Government within a specified period. The person to be appointed as auditor must hold a certificate of practice from the Institute of Cost & Works Accountants of India. Consent of the cost auditor should be obtained before making an appointment. Application in prescribed form (23-C) is submitted to the central Government with the prescribed fee along with a copy of the Board's resolution.

Approval for appointment is communicated by the Central Government to the company after considering the application and the name of the auditor proposed subject to the condition that the cost auditor is not disqualified under section 233-B (5) of the Companies Act, 1956 as amended. A copy of this communication will also be sent by the Central Government to the cost Auditor giving the time limits, submission of Report in triplicate the date of commencement and completion of audit. The company should issue a formal letter of

appointment to the concerned auditor, after receiving the approval of the Central Government so that he can start the work of this assignment.

After receiving the letter of his appointment, the cost auditor should communicate with the previous auditor, if any, for his reaction. He must send his formal acceptance of the assignment to the company.

Eligibility for Appointment: The following persons are eligible to be appointed as cost auditor under section 233-B.

- (1) Cost Accountant within the meaning of the Cost and Works Accountants Act, 1959 or
- (2) Any such Chartered Accountant within the meaning of the Chartered Accountants Act 1949 and has passed Part I of the Management Accountancy Examination of the Institute of Chartered Accountants of India or
- (3) Other person, as may possess and prescribed qualification.

Duties and Responsibilities of a Cost Auditor

The duties and responsibilities of the Cost Auditor have not been clearly given in the Companies Act. The cost auditor is also required to perform the duties as are expected from auditors in general. The main duties and responsibilities of a cost audit are:

- (i) He is liable to the Company if he does not perform his duties properly or is guilty of negligence.
- (ii) He also owes a legal responsibility to third parties who might have been misled by his audit certificate and acted in reliance thereon.
- (iii) He should maintain his working papers as an evidence of his having carried out his duties.
- (iv) He should not disclose any confidential information which he might have acquired in the course of his work and should not use such information for personal gain or gain of a third party.
- (v) He is responsible to answer any query or clarification required by the Central Government on a scrutiny of the cost audit report submitted by him.

Cost Audit Programme: No standard patterns can be laid down for the cost audit programme. The nature and size of business, attitude of the management and existing system will affect it. The cost auditor should have a cost audit programme which should be specific to the unit concerned. In drawing up such a programme, the guiding factors should be:

Functions of a Cost Auditor: The cost auditor has to plan his activities and is required to make out a suitable audit programme. The procedure and programme to be adopted for audit the various forms and documents used for it should be laid down in an Audit Manual. The audit programme should be drawn in such a way as to cover the various areas of audit as illustrated below:

1. **Inventory:** The cost Auditor should examine the following regarding inventory:
 - (a) Is the size of the inventory adequate or excessive compared with the production programme?
 - (b) Is the provisioning drill most economical?
 - (c) Does it ensure optimum order size?
 - (d) Does it take into account the storage cost on the one hand, and carrying cost on the other hand?

- (e) Does it take note of lead-time of the various items or group of items?
 - (f) Does the receipt and issue system cause any bottleneck in production?
 - (g) Does it involve too many forms and too much paper work?
 - (h) Is there any room for reduction of inventory cost consistent with production needs?
 - (i) Does the Management certify the inventory as per the priced store ledger and as physically correct?
 - (j) Is the same amount of attention and care given to monies translated into materials things, like raw materials, stores and supplies of all kinds as is given to liquid cash?
 - (k) Does the issue of raw materials make the production in accordance with the standard of schedule or otherwise, or covered by authorized schedule?
 - (l) Is the expenditure of consumable stores within the standard? If not, why not?
- 2. Opening and Closing Stock:** The cost Auditor should examine the following regarding opening and closing stock.
- a) That the opening stock is not unduly large compared with the volume of production during the year.
 - b) That the opening stock against various jobs does really represent the actual physical stock in the production shop and is not merely an accounting figure:
 - c) That the responsibility of the Shop Foreman in charge of the stock held in the production shop is clear and properly documented that he maintains proper record of actual consumption vis-à-vis the actual withdrawal from the stock.
 - (i) Valuation and correct indication of closing stock in the Trading and Profit and Loss Account and in Balance Sheet is important. The Cost Auditor should also examine and certify:
 - (a) That the physical verification is correctly carried out;
 - (b) That the valuation is correct with reference to the actual cost of production and recognized policy for valuation;
 - (c) That the volume of closing stock is commensurate with the volume of production and that it does not reflect any failure or bottleneck in sales budget or production budget;
 - (d) That the volume of unmoved stores is not abnormal in comparison with normal rate of yearly consumption. The Cost Auditor will recommend disposal of such unmoved stores with consequent, release of capital unnecessarily locked up to the advantage of the financial resources of the concern.
- 3. Stores Issue Procedure:** The Cost Auditor should consider the following:
- (a) That withdrawal of materials from stores to production shop is scientific or covered by authorized schedule and permits receipts to be located.
 - (b) That there is no possibility of loss or pilferage of stock lying in the production sections;
 - (c) That surplus materials and scraps arising in production shops are returned to stores correctly and without delay for which necessary credit is given to unit cost of production. If transferred to other jobs, proper transfer voucher has been prepared and copies sent to the accounts, stores etc.
- 4. Work-in-progress:** The cost auditor should consider the following:
- (a) That the work-in-progress has been physically verified and that it agrees with the balance in the incomplete cost cards;

- (b) That the valuation of the work-in-progress is correct with reference to the state of completion of each job process and the value job cost cards or process cost sheet;
- (c) That there is no over valuation or under valuation of work in progress, thereby artificially pushing up or down net profits or net assets as the case;
- (d) That the volume or value of work in progress is not disproportionate as compared with the finished out-turn.
- (e) Labor. The following points are to be considered.
 - (i) Proper utilization of labor and increase in productivity are receiving attention. Several productivity teams have emphasized its importance to higher productivity. It is therefore, essential to assess the performance efficiency of the labor and compare it with the standard performance, so that labor utilization could be progressively improved. The labor force in India Industries is generally very high compared to similar type of industries in other developed countries, our aim should be to reach that level, though not immediately but over some time. A study of this nature would give an idea where that inefficiency lies so that timely and adequate steps could be taken to ensure maximum utilization of labor and to reduce the labor cost.
 - (ii) Cost of labor is allocated to different jobs with reference to time or job cards.

5. Capacity utilization: The Cost Auditor should consider the following:

- (a) That the idle capacity in any production shop or of transport facilities for distribution is not excessive.
- (b) That production volume and overall machine hours utilised are commensurate. In other words, the machine hours utilised have given the optimum out-turn.

6. Overheads: The cost auditor will consider and certify the following:

- (a) That allocation of indirect expenditure over production, sales or distribution is logical and correct;
- (b) That compared with volume of production in a production shop, the over head charges are not excessive;
- (c) That the actual indirect expenditure does not exceed budgets or standard expenditure significantly and that any variations are satisfactorily explained and accounted for;
- (d) That relation of indirect expenditure in keeping with the load on individual production shop is appropriate;
- (e) Correctness of appropriate allocation of overhead expenditure (both production and sales) will be certified by the Cost Auditors;
- (f) That allocation of overheads between finished products and unfinished products is in accordance with correct principles.
 - (i) The impact of different elements of cost on total cost
 - (ii) Comparison of actual with budgeted production and sales.
 - (iii) Analysis of variances.
 - (iv) Drawing up a list of priorities if more than one alternative was to be followed up.
 - (v) Critical examination of all statements to the presented to management for taking managerial decisions.
 - (vi) Frequently reviewing every system laid down or action taken.
 - (vii) Discussion of queries arised while conducting cost audit.
 - (viii) The effect of all abnormal factors should be separated.

- (ix) The same procedure of financial audit i.e. vouching, checking and ticking, test checks, audit notes and questionnaire should be followed to establish the verification of correctness of cost accounts.
- (x) Profit as per cost accounts should be reconciled with that as per financial accounts.

9.7.4 Cost Accounting Records

Section 209(1)(d) provides that a company, pertaining to any class of companies engaged in production, processing, manufacturing or mining activities should keep proper books of accounts showing such particulars relating to utilization of materials or labor or to other items of cost as may be prescribed, if such class of company is required by the Central Government to include such particulars in the books of account. Provided that all or any of the books of account aforesaid may be kept at such other place in India as the Board of Directors may decide and when the Board of Directors so decides, the company shall, within seven days of the decision, file with the Registrar a notice in writing giving the full address of that other place. In pursuance of this provision, the Central Government has notified Cost Accounting Record Rules for two dozen industries. Many more industries will be covered in course of time under cost audit. These rules prescribe the manner in which Cost Accounting Records should be maintained and also specify the particulars which should be entered in the books of accounts. These rules follow more or less a common pattern.

General Features of Cost Accounting Records

The following are some of the main heads in which costs are generally required to be complied:

- (1) **Materials:** Adequate records of receipts, issues and balances and the required to be maintained both in quantities and value. The cost of loss of material in transit during storage or for other reasons is to be worked out separately and the treatment of such losses in the accounts indicated. The cost shall include all direct charges up to works. If the quantity and value of material consumed are determined on any basis other than actual, the method adopted shall be indicated in the cost records. The overall reconciliation of such values of material with the actual and the treatment of such variations shall also be kept as record.
- (2) **Consumable Stores, small tools and machinery, spare etc.** Adequate records showing the receipts, issues and balance including consumption of each item are to be maintained in the same manner as for materials. Losses are also to be similarly dealt with. Items, which have not been moved at all for 24 months, are reported separately.
- (3) **Services (i.e., power, fuel, steam etc.)** Adequate records are to be maintained to ascertain the cost of power, fuel, steam etc. If power or steam is purchased, purchase cost is required to be shown separately. The allocation of power bill or generation cost to departments and products is also to be shown.
- (4) **Wages and Salaries:** Proper records shall be maintained to show the attendance and earnings of all employees and the departments or cost centers and the work on which they are employed. The system of remuneration and incentives paid, if any, is also to be indicated. Idle time cost is calculated and recorded separately. If wages are charged on a basis other than actual, reconciliation is to be made and the treatment of the actual is to be suitably indicated.
- (5) **Service Department Expenditure:** Expenses for these departments are to be calculated separately. The allocation and/or apportionment of expenses to these departments are required to be shown.
- (6) **Depreciation:** The amount of depreciation to be charged to cost should not be less than the amount worked out in accordance with Companies Act, 1956. Proper and suitable

records should be maintained in respect of depreciable fixed assets. It can be included as part of manufacturing overheads of the concerned departments or manufacturing units.

- (7) Royalty and payment of technical aid. Basis of calculating the amount of royalty and charging royalty and other allied payments to production costs are to be recorded.
- (8) Overheads: These must be segregated into works, administration, selling and distribution overheads. The method of their collection, allocation, apportionment and recovery in output are to be indicated. The accounting of variances is to be explained if overheads are charged on the basis of other than actual.
- (9) Work-in-progress. The value of work-in-progress should include materials, wages, overheads and depreciation. The records should also show the quantities of work-in-progress.
- (10) Reconciliation of cost and financial accounts. In order to ensure accuracy, this is to be done periodically.
- (11) Stock Verification. Records of stock verification should be maintained in respect of all raw materials, components stores, spare-parts including loose tools and other materials kept in stocks. The cost records should also indicate the method of dealing with discrepancies arising out of such verifications.

A perusal of Cost Accounting Records Rules of different industries reveal that the proper accounting records are to be maintained in respect of raw materials, stores and spare parts, services-power, fuel etc. wages, salaries, overheads, depreciation, packing expense, production; work-in-progress, stock valuation and other statistical records as relevant to the industries. The records should be kept in such a way so as to reveal the business operation and valuation of stocks should be done on realistic basis and that a reconciliation of the results obtained through cost records are to be made with that of financial accounts. The standard cost sheets have been prescribed for different industries. The cost auditor is required to send his audit report to the Company Law Board in accordance with the procedure laid down in the schedule annexed to these Rules and at the same time forward a copy of the report to the company. The Cost Audit (Report) Rules, 1968, are given below:

9.7.5 Cost Audit Report

Cost Audit Report Rules, 1968

In exercise of the powers conferred by sub-section (4) of Section 223-B read with sub-section (1) of section 227 and clause (6) of sub-section (1) of Section 642 of the Companies Act, 1956 (1 of 1956) the Central Government makes the following rules, namely:

1. Short title and commencement. (a) These rules may be called the Cost Audit (Report) Rules, 1968.
2. Application. These rules shall apply to every company in respect of which an audit of the cost accounting records has been ordered by the Central Government under subsection (1) of section 223 of the Companies Act, 1956 (1 of 1956).
3. Form of Report. Every auditor (hereinafter called the Cost Auditor) who conducts an audit of the cost accounting records of the company shall make a report to the Company Law Board [in the form and in accordance with the procedure] laid down in the Schedule annexed to these rules and at the same time forward a copy of the report to the Company. [He shall also reply to any clarification sought by the Company Law Board on the Cost Audit Report submitted by him, within such period as may be specified in the communication addressed to the Cost Auditor calling for clarification].

4. Time limit for submission of report. The cost auditor shall make his report to the Company Law Board and at the same time forward a copy of the report to the company within sixty days before the date fixed for the Annual General Meeting of the company.
5. Cost Auditor to be furnished with Cost Accounting Records etc. Without prejudice to the powers and duties the Cost Auditor under sub-section (4) of section 233-B of the Companies Act, 1956 the Company and every officer thereof, including the person referred to in sub-section (6) of section 209 of the said Act, shall make available to the Cost Auditor within ninety days from the end of financial year of the Company such cost accounting records, Cost Statement and other books and papers that would be required for conducting the Cost Audit, and shall render necessary assistance to the Cost Auditor so as to enable him to complete the Cost Audit and send his report within the time limit specified in rule 4.
6. Penalties. (I) If default is made by any Cost Auditor in complying with the provision of rules 3 and 4 he shall be punishable with fine, which may extend to five hundred rupees. (ii) If default is made by the Company in complying with the provisions of rule 5, the Company and every officer of the Company including the persons referred in sub-section (6) of section 209 of the Companies Act, 1956 who is in default, shall be punishable with fine which may extend to five hundred rupees.

Cost Audit Report

I/We*..... Having been appointed as auditor(s) under section 223-B of the Companies Act, 1956 (1 of 1956)(hereinafter referred to as the “Cost Auditor(s)” of Messrs Ltd., (hereinafter referred to as the company), have examined the books of accounts prescribed under clause (d) of sub-section (1) of section 209 of the said Act and other relevant records for the year ended .relating to .maintained by the company and report subject to my/our*cements undue the heading ‘Auditors Observation’s and Conclusions’ contained in the Annexure to this report that

- (a) I/we*have/have not*obtained all the information and explanations which to the best of my/our*knowledge and belief is necessary for the purpose of this audit;
- (b) Proper cost accounting records as required under clause (d) of sub-section (1) of Section 209 of the Companies Act, 1956 (1 of 1956) have/have not* been kept by the company;
- (c) Proper returns adequate for the purpose of my/our cot audit have/have not* been received from branches not visited by me/us*;
- (d) The said books and records give/do not give* the information required by the Companies Act, 1956 (1 of 1956) in the manner so required; and
- (e) In my/our* opinion the company’s cost accounting records have/have not* been properly kept as t give a true and fair view of the cost of production, processing, manufacturing of mining activities, as the case may be, and marketing of the product under reference.

The matters contained in the Annexure to this report form part of this report which is also subject to my/our* observation made therein

Dated this.....day of.....19 at*

Cost Auditor(s)

Annexure to the Cost Audit Report

1. General.

- (i) Name and address of the registered office of the Company whose accounts are audited.
- (ii) Name and address of the Cost Auditor.
- (iii) Reference No. And date of Government Order under which the audit is conducted.

- (iv) Reference number and date of Government letter appointing the appointment of the Cost Auditor.
 - (v) The Company's financial year for which the audit report is rendered.
 - (vi) Date of incorporation of the company, and its 'status' (i.e. whether it is public company/private Company which is a subsidiary of a public company etc.)
 - (vii) Location where accounts are maintained.
 - (viii) Location of Factory/Factories.
 - (ix) If there is any foreign technical collaboration for the product under reference, attach a copy of the collaboration agreement. If this is not possible prepare a brief note indicating:
 - (a) Name and address of the foreign collaborators.
 - (b) Main terms of agreement
 - (c) Amount of Royalty/Technical aid fee payable and the basis calculating the same.
 - (d) Whether the technical collaborator has contributed to the share capital. If so, the paid-up value of shares so held.
 - (x) Date of first commencement of commercial production of the product under reference. (If more than one factory under the same company produce the product under reference, particulars in respect of each may be given).
 - (xi) If the company is engaged in other activities besides the manufacture of the product under reference, give a brief note on the nature of such other activities.
 - (xii) Whether the Company is registered or has applied for registration under Monopolies and Restrictive Trade Practices Act, 1969 and/or governs by the Foreign Exchange Regulations Act, 1973.
2. Cost Accounting System. Briefly describe and comment on the Cost Accounting System and its adequacy or otherwise to determine correctly the cost of the product under reference.
3. Financial Position. (Relating the product under reference if possible otherwise for the company as a whole). Indicate the particulars of accounts included in terms of 1 (a), (2) and 3 (a) below duly recorded with financial accounts of the company for the relevant period.
- (1) Capital employed:
Capital Employed – defined as fixed assets at net book value (excluding the investment outside the business, capital work-in-progress, misc. expenditure and losses) and current assets minus current liabilities.
 - (a) For the Company as a Whole;
 - (b) For the product under reference,
 - (2) Net worth:
Net worth i.e. shares capital plus reserves and surplus less accumulated losses and intangible assets. If there is any change in the composition of the net worth during the year, special attention may be made along with reasons therefore.
 - (3) Profit after providing for depreciation and all other expenses excluding interest on borrowings including debentures but before providing for taxes income –
 - (a) For Company as a whole
 - (4) Income to be specified:
 - (a) Interest received on investments outside the business.
 - (b) Capital gains
 - (c) Any other income which is neither normal nor of a recurring nature.
 - (5) Ratios:
 - (a) Profit arrived at as per 3 (3) (a) and 3(3) (b) above expressed as a percentage of:
 - (i) Capital employed as per 3 (1)(a) and 3 (1)(b) respectively.

- (ii) Net sales for the company as a whole and for the product under reference respectively.
 - (b) (i) Current assets expressed as a percentage of current liabilities.
 - (ii) Net worth expressed as a percentage of long-term borrowings and liabilities (excluding current liabilities)
 - (iii) Net worth expressed as a percentage of a capital employed as per 3(1)(a) above.
 - (iv) Cost of sales of the product under reference as a percentage of capital employed as per 3 (1)(b) above.
 - (v) Cost of sales excluding depreciation of the product under reference as a percentage of working capital (i.e. Current Assets less Current Liabilities) for the product under reference.
4. Production. The following information is to be given for each type of product under reference and for each factory.
- (1) Licensed capacity (gives reference and license no. etc)
 - (2) Installed capacity.
 - (3) Actual production.
 - (4) Percentage of production in relation to installed capacity
- Notes.** (1) In order to have meaningful comparison of production and installed capacity wherever necessary, these should also be expressed in appropriate units e.g. standard hours or equipment/plant/vessel occupancy hours, crushing hours, spindle/loom shifts etc. If there is any shortfall in production of the product under reference as compared to installed capacity brief comments should be furnished as to the reasons for the shortfall bringing out clearly the extent to which they are controllable both in short term as well as long term.(2) It should be clarified whether the installed capacity is on single shift or multiple shift bases.
5. Process of Manufacture. A brief note regarding the process of manufacture of the product under reference may be given.
6. Raw Materials. (I) Show the cost of major raw materials consumed both in terms of quantity and value. Where the cost of transport etc. of raw materials is significant, specify the same separately. In the case of major imported raw materials, F.O.B. value, ocean-freight, insurance, customs duty and inland freight charges may be indicated. If both indigenous and imported materials are consumed, the percentage mix of the same may be indicated for each item. (a) Quantity of consumption of major raw materials per unit of production. (b) Standard requirement/theoretical norms per unit of production in terms of quantity; (c) Explanations for variations, if any, in the quantity of consumption of major raw materials per unit of production compared to standard consumption/theoretical requirement and also of the consumption of the preceding two years; Indicate the value of raw materials and components, finished and semi-finished which have not moved for one year and above and indicate their proportion to the value of stock at the end of the year.
7. Power and Fuel. Quantity, rate per unit and total cost separately for each major form of power and fuel used in production e.g. coal, furnace, oil, electricity and other utilities separately. Compare the actual physical consumption per unit of production with standard or theoretical norms; if any and with the preceding two years' consumption. Special feature, if any, may also be indicated.
In case, the company generates power, a comparison of the cost per unit generated with that purchased may be indicated for three years.

8. Wages and Salaries

(i) Total wages and salaries paid for all categories of employees, separately in respect of each of the following:

- (a) Direct labor costs of production.
- (b) An indirect employee costs of production.
- (c) Employee's costs on administration.
- (d) Employee's costs on selling and distribution.
- (e) Other employee's costs, if any (specify purpose).
- (f) Total employee's costs [total of items (a) to (e) above].

(ii) Total man-days of direct labor available and actually worked for the year,

(iii) Average number of workers employed for the year

(iv) Direct Labor cost per unit of output of the product under reference (if more than one type of product, give information in respect of each).

(v) Brief explanation for variations in (4) above, if any, as compared to the previous two years.

(vi) Comments on the incentive schemes, if any, particular reference to its contributions towards increasing productivity and its effects on cost of production.

9. Stores and Spare Parts.

10.

- (i) The expenditure per unit on output on stores etc.
- (ii) Indicate the amount and also the proportion of closing inventory of stores and spare-parts representing items which have not moved for over 24 months.

11. Depreciation.

- (i) State the method of depreciation adopted by the company e.g. straight line or diminishing balance etc. State whether the depreciation provided by the company is more or less than the amount of depreciation worked out in accordance with provisions of sub-section (2) of Section 205 of the Companies Act, 1956. In the case of assets or group of assets on which depreciation is written off at the rate of 100% in the relevant year, and the benefits from such assets is likely to be derived over a period beyond the relevant year, the depreciation should be notionally spread over the economic life of the assets. The impact of charging additional depreciation at the rate of 100% in the relevant year vis-à-vis the depreciation chargeable on the basis of economic life of the assets shall be indicated in total as well as for the product manufactured.
- (ii) State the basis of allocation of depreciation on common assets to the different departments.

12. Overheads. Give separately the total amount of the following overheads and a break-up for the company factor as a whole:

- (a) Factory overheads.
- (b) Administration overheads.
- (c) Selling and distribution overheads.
- (d) Annual bonus to employees (the amount of minimum bonus under the Payment of Bonus Act to be furnished separately).
- (e) Interest on borrowings including debentures.
- (f) Bad debts

- (g) Donations of all kinds
- (h) Retrenchment or other compensation to employees excluding premium on account of workmen's compensation insurance.
- (i) Lay-off wages.
- (j) Expenditure on special exhibitions etc. other than normal trade advertisements.
- (k) Commission based on profit to Managerial Personnel.
- (l) Any other item of expenditure the incidence of which is neither normal nor of a recurring nature.
- (m) Prior period charges.
- (n) Other expenses or portion thereof which are not admissible under Income Tax Act like:
 - (i) Perquisites of executives
 - (ii) Guest house expenses
 - (iii) Advertisement expenses.
 - (iv) Ex gratia payment to staff.
 - (v) Donation and charities.
 - (vi) Loss on exchange.
 - (vii) Others (to be specified,)

In respect of items (a), (b) and (c) above give the amounts relating to the products under reference along with the break up and state whether any amounts in respect of (d) to (n) above have been included in the total amounts of item (a), (b) and (c) relating to the products and the extent to which included.

Note. Indicate reasons for any significant variations in the expenditure-incurred against the items of overhead viz. (a), (b) and (c) as compared with the previous two years particularly for the product under reference.

13. Royalty/Technical Aid Payments. Shall the total amount of Royalty/Technical Aid Fees payable for the year and the amount chargeable per unit of the product.

14. Sales.

- (i) Indicate the sales in quantities and net sales realization of the products under reference showing the average sales realization per unit (If more than one type of product is sold, information to be given in respect of each).
- (ii) If product under reference is exported indicate quantity exported, net realisation per unit, countries to which exported- details may be given. Indicate the profit/loss incurred in exports.
- (iii) Any packaging charges not included in the price charged to the customers, may be indicated with the incidence of cost and amount recovered from the customer.
- (iv) The actual incidence of delivery and freight charges incurred for the quantity sold and the freight recovered from customers directly and/or from the freight pool may be indicated separately.
- (v) Where the product is sold at different prices in accordance with Government policy as in the case of sugar, cement etc. sales realization at different prices shall be shown separately along with quantity and value.

15. Abnormal Non-recurring Costs, If there were any abnormal features affecting production during the year e.g., strikes, lockouts major breakdowns in the plan, substantial power cuts, serious accidents etc., wherever practicable, be briefly mentioned indicating their effect on the unit cost of production.

16. Other Items. If there are any special expenses, which have been directly, allocated to products under reference the total amount, as also the unit incidence shall be shown.

17. Auditor's Observations and Conclusions.

- (i) The cost auditor may here report on –
 - (a) Matters which appear to him to be clearly wrong in principle or apparently unjustifiable;
 - (b) Cases where the company's funds have been used in negligent or inefficient manner;
 - (c) Factors which could have been controlled, but have not been done resulting in increase in the cost of production;
 - (d) Contracts or agreements, if any, between the company and other parties relating to selling, purchasing [bringing out any peculiar features, undue benefits];
 - (e) (I) The adequacy or otherwise of budgetary control system, if any, in vogue in the company; (ii) the scope and performance of internal audit, if any;
 - (f) Suggestions for improvement in performance, if any e.g., by;
 - (1) Rectification of general imbalance in production facilities;
- (2) Fuller utilization of installed capacity;
- (3) Concentration on areas offering scope for:
 - (i) Cost reduction;
 - (ii) Increased productivity;
 - (iii) Key/limiting factors causing production 'bottle-necks'
- (4) Improved inventory policies:
 - (i) The opinion expressed shall be based on verified date, reference to which shall be made here and shall, wherever practicable, be included after the company has been afforded an opportunity to comment on them.
 - (ii) Copies of the cost statements in respect of intermediate and completed products as given in Schedule II of the relevant notification issued under clause (b) of sub-section (1) of Section 209 of the Companies Act, 1956 duly completed and audited shall be appended to the report. However, the Company Law Board may at its discretion order the discontinuation or modification either permanently or temporarily of the submission of the detailed cost statement in respect of whole or part of the items referred in this Para.
 - (iii) If as a result of examination of the books of account, the auditor desires to give a qualified report he shall indicate the extent to which he has to qualify the report and the reasons therefore.
 - (iv) A statement showing the reconciliation of the profit or loss as indicated under 3 (3)(a) above with the profit or loss relating to the product under reference as arrived on the basis of the cost statements annexed to the report and the net sales realization as indicated in 13(1) above shall be appended to the report.
 - (v) After the auditor appointed under Section 224 of the Companies Act, 1956 (1 of 1956) submit his report, the cost auditor may, if he considers it necessary, submit a supplementary report to the Company Law Board before the date fixed for holding the Annual General Meeting of the Company. The supplementary report shall be limited to the extent of reconciling the statements annexed to the cost audit report with the financial accounts and the company.

Notes: 1. Figures to be given for the year under audit and to the extent practicable for the two preceding years in respect of 3, 4, 6, 7, 8, 9, 11, 12 and 13.
2. If the company has more than one factory producing the product under reference, details indicated in the annexure may be given separately for each factory, if such details are available.
3. If different varieties/types of products under reference are manufactured by the company, details of cost in respect of each shall be given. 4. The matters contained in the annexure shall be duly authenticated by the cost auditor. 5. The report should be neatly stitched and bound in a file and should be sent by Registered Post acknowledgement due, or otherwise delivered in person through messenger and acknowledgement obtained.

9.8 MANAGEMENT AUDIT

Due to rapid changes in the economic, social and political fields, it has become difficult for the management to take decisions. Moreover, careful observation, verification and detailed study in areas beyond the scope of conventional business audit have become necessary due to changed circumstances. This has given birth to a new type of audit known as Management Audit. Management Audit is a comprehensive and constructive review and appraisal of management methods and performances. It is an important tool for and the continuous evaluation of the methods and performances of an enterprise covers all areas of an undertaking as administration, accounts, human and physical facilities. William P, Leonard, a noted author has defined management audit as “a comprehensive and constructive examination of an organizational structure of a company, institution or branch or Government or of any components thereof, such as division of department and its plans or objectives, its means of operations and its use of human and physical facilities.” It is a comprehensive definition and covers audit of the operations as well as audit over plans and objectives of the entity, which is essentially a management function. It covers all the areas of an undertaking viz., Administration, Accounts, human and physical facilities etc.

9.8.1 Objectives and Scope of Management Audit

A comprehensive critical review of all aspects or process of management is broadly a concept of management audit. The basic objective of management audit is to help management to manage better, improve organizational profitability and ensure that management objectives are being met. To achieve the basic objectives, other objectives may be stated as under:

- (i) To ensure optimum utilization of human resources and available physical facilities.
- (ii) To point out deficiencies in objective, policies and plans.
- (iii) To suggest better and improve methods of operation.
- (iv) To point out weak links in organization structure and in internal control system and suggesting possible improvements.
- (v) To point out any changes of potential danger arising out of weak financial position thereby help the management by providing early signals of sickness and the ways to avoid the same.
- (vi) To anticipate problems and suggest remedies to solve them in time.

Management audit is a potent tool for managerial control and reduction of costs. Management audit, as the eyes and ears of the management, can bring to focus the weak areas of the operations, bring in the operational efficiency by interaction with the functionaries and highlight those areas to the top management for improvement in the system, procedures and methods of internal control. It is, therefore, a potent tool of managerial control. Cost of

production is directly related with the operational efficiency and continuous efforts to improve operational efficiency will result in the reduction of costs and increase the profitability.

The scope of management audit is very wide. The area of review is largely determined by the objectives or a predetermined scope. Some important areas which management audit probes to evaluate the performance efficiency and to ascertain the drawbacks in the methods of internal control, are stated as under: Production programme (ii) Inspection (iii) Sales programme (iv) Capacity utilization (v) Inventory holding (vi) Liquidity position (vii) Consumption efficiencies (viii) Cost of production (ix) Purchases (x) Receivables (xi) Overtime (xii) Controllable expenses and (xiii) Industrial relations.

9.8.2 Areas of Management Audit

The main areas covered by the Management Audit are inventory control, personnel administration, production management, finance control, sales function and general organization. A brief description is given as under relating to the different aspects of management audit giving a line of demarcation between transaction audit, systems audit and policy audit. Completeness of the two primary audits is to be ensured for the purpose of the policy audit.

A. Stores

1. Transaction Audit

- Check Stores Ledger postings with primary documents for receipts and issues.
- Compare for selected items, Stores Ledger, Bin Card and Physical Balances and reconcile the differences.
- Link up all bills paid against stores accounts with the corresponding store receipts note.
- Check for selected items, the rates adopted for pricing the issues.
- Check for selected items, the rate at which stocks are priced.

2. Systems Audit

- Check the purchasing routine starting from the preparation of stores indent to the passing of the bills for payment.
- Check the inspection notes for any three months with regard to inspecting authority follow up of rejections, recovery of amounts and action against unreliable suppliers.
- Check the routine for disposal of used and damages stores. Check the routine for receipt of goods and preparation of stores receipt notes,
- Check the routine for ensuring that the stocks are not issued in excess of standards fixed and that the total value of stores consumed is absorbed in costs.

3. Policy Audit

- Ensure that the maximum levels fixed for stock are correct and require no revision.
- Ensure that the minimum and ordering levels fixed for stock are correct and require no revision.
- Check and confirm that the standards for stores consumption are correct and required no revision.
- In cases where items re made in the works in preference to purchase from outside, check up whether this continues to be advantageous.
- Confirm that the present specifications for raw materials represent the minimum costs for the required standard of finished goods.

- Ensure that ordering quantities in use represent the optimum quantity for purchases.

B. Labor

1. Transaction Audit

- Check the cash disbursements with the certified copies of pay roll.
- Test checks of the pay-roll preparations with primary records like attendance, production, overtime sheets, etc.
- Test check of bonus calculations to ensure that they have been correctly computed.
- Check the unpaid and prepaid wages account.
- Check leaves payment and holiday wages payment sheets.

2. System Audit

- Carry out periodically a physical check on the attendance of selected departments and be personally present at some wages payments.
- Reconcile the wages paid with attendance or production records and ensure that the system for recording attendance and/or production is foolproof.
- Compare the actual labor cost with standards and ensure that variances are being correctly analyzed and acted upon.
- Confirm that the analysis of labor costs between direct and indirect is correctly done and that labor costs are fully absorbed in costs.

3. Policy Audit

- Confirm that the incentive bonus systems in operation are yielding the results anticipated and that the savings in costs are being achieved.
- Confirm that the present policy in respect of labor recruitment, training gradations etc., is yielding beneficial results.

C. Overhead Expenses

Transaction Audit

- Check all items of expenditure charged in costs with the primary records and ensure that they are correctly charged to the period concerned.
- Reconcile total overheads recovered in costs with those charged to the period.
- Check how the under or over absorption has been dealt with.
- Check the plan Register for its completeness and verify the accuracy of depreciation charges.

System Audit

- Check the accuracy of the various bases used for apportionment of expenditure over different cost centers.
- Check whether ascertainment, allocations, apportionment and absorption methods under use are basically correct.
- Investigate why or how under/over recovery occurs and ensures that steps taken to adjust them are correct.

Policy Audit

- Check all specific increases of overhead expenditure particularly those due to expansion of sale territories, alternative channels of distribution, mechanization of clerical work and ensure that the resultant benefits have been as anticipated.

- Check every case where overhead costs have not been charged as a matter of policy, e.g., the work-in-progress valuations, items of own manufacture etc., and confirm that the method adopted is correct.

D. Production

Transaction Audit

- Check all production record to ensure that quantities of work-in-process and the quantities transferred to finished goods has been correctly arrived at.
- Ensure that defectives, wastages, scrap etc., are collected, disposed of and accounted for.
- Link up production records with cost records, whenever possible, and ensure that unit costs are correctly compiled.
- Check all sale or issue of processed or semi-processed or material to staff members particularly when it is done at concessional rates.
- Where sub-contracts exist for production of components check all dispatches to and receipts from the sub-contractor and reconcile the amounts paid with quantities received.

Systems Audit

- Check how production is arrived at in cases where it is not directly weighed or measured, i.e., the accuracy of conversion ratios, formulae etc.
- Where production is measured or weighted, check the scales, tares etc. to ensure that production is being correctly recorded.
- Test check of finished goods ready for dispatch, for production standards, packing specifications etc.
- Calculate output and yield variances and ensure that these are periodically being worked out, investigated and acted upon.

Policy Audit

- Investigate into all charges recently made in the production programme, methods of lines of production etc., and measure their profitability

E. Sales

Transaction Audit

- Check all dispatches from finished goods to go down with invoices.
- Check the stock of selected items in the finished goods go down and compare with book balance.
- Check all postings in Sundry Debtors' Ledger and ensure that credit collections are being properly accounted.
- Check invoices to ensure that prices, discounts, sales tax, commission etc. have all been correctly computed.

System Audit

- Ensure that cost of selling and distribution are correctly charged to each territory.
- Examine whether the incidents of selling and distribution expenses on each product has been correctly arrived at.
- Examine whether sales variances are being correctly computed, investigated and acted upon.
- Check upon the system of sales commission and to confirm whether or not it offers enough incentive.