

**COST AND MANAGEMENT  
ACCOUNTING  
(DBC33)  
(BCOM)**



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**LESSON - 1**

# **NATURE AND SCOPE OF FINANCIAL ACCOUNTING AND COST ACCOUNTING**

**1.0 Objective :**

The objective of this lesson is to explain Definitions of Financial Accounting and Cost Accounting, Nature and Scope of Cost Accounting, Difference between Financial Accounting and Cost Accounting.

**Structure****1.1 Introduction :****1.2 Meaning and Definition of Accounting****1.3 Meaning of Financial Accounting****1.4 Limitations of Financial Accounting****1.5 Cost Accounting - Costing - Cost Accountancy****1.6 Cost****1.7 Costing****1.8 Cost Accounting****1.9 Cost Accountancy****1.10 Scope of Cost Accountancy****1.11 Objectives of Cost Accounting****1.12 Cost Accounting Vs Financial Accounting****1.13 Differences between Financial Accounting And Cost Accounting****1.14 Self Assessment Questions****1.15 Suggested Reading****1.1 INTRODUCTION :**

The accounting systems which we find today have developed with the development of institutions of trade, commerce and industry. In earlier days the business was simple and the transactions were few. The business men used to remember the transactions by memorising them. The advent of industrial revolution resulted in large scale production in widening of markets. With the increase in business activity the businessmen were expected to keep a track of their relationship with outsiders and to make a record of their assets and liabilities. The Technological changes have also brought a change in the field of accounting. Accounting is now considered as a managerial tool for planning and control.

**1.2 MEANING AND DEFINITION OF ACCOUNTING :**

Accounting involves the collection, recording, classification and presentation of financial data for the benefit of management and outside agencies such as shareholders, creditors, bankers and government. According to the committee on Terminology of American Institute of Certified Public Accountants, accounting is "the art of recording, classifying and summarising 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 results thereof". The transactions which are measurable in monetary terms only form a part of accounting. The recording of transactions is done in such a way that analysis and interpretation of business activities is possible.

Smith and Ashburne describe it as “Accounting is the science of recording and classifying business transactions and events, primarily of financial character, and the art of making significant summaries, analysis and interpretation of those transactions and events and communicating the results to persons who must make decisions or form judgements”. This definition emphasises financial reporting and decision-making aspect of accounting.

The word ‘ Accounting can be classified in to three categories.

- a) Financial Accounting
- b) Cost Accounting; and
- c) Management Accounting.

### 1.3 MEANING OF FINANCIAL ACCOUNTING :

Financial Accounting may be defined as the science and art of recording and classifying business transactions and preparing summaries of the same for determining year end profit or loss and the financial position of the concern. It is the part of accounting which is employed to communicate the financial information of a business unit.

Financial Accounting is primarily concerned with record keeping directed towards the preparation of Profit and Loss Account and Balance Sheet. It provides information regarding the profit and loss that the business enterprise is making and also its financial position on a particular date. The information concerning the business enterprise is helpful to management to control in a general way the major functions of a business i.e. finance, administration production and distribution but details regarding operating efficiency of these divisions are lacking.

### 1.4 LIMITATIONS OF FINANCIAL ACCOUNTING :

The following limitations of financial accounting have lead to the development of cost accounting.

**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 it what should be done to increase the efficiency of the concern.

**2. Provides the Information About the Concern as a Whole :** Financial accounting discloses only the net result of the collective activities of a business as a whole. It does not indicate the profit or loss of each department, job, process or contract. It does not disclose the exact cause of inefficiency.

**3. Not Helpful in Price Fixation :** Financial accounting is not helpful in fixing prices of products. Price fixation requires information about variable and fixed costs, indirect costs. Indirect expenses are estimated on the basis of past records for price determination. The concern may be required to quote price for the supply of goods in the near future. Financial accounting can not supply all these information. So it is not helpful in price determination.

**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 has 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.

**5) Appraisal of Policies Not Possible :** It is not possible to evaluate various policies and programmes 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 the 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 of materials, property or other assets is recorded in account books. The price 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 Strategic Decisions :** It does not supply useful data to management for comparison with previous period and for taking various financial decisions as introduction of new products, replacement of labour by machines, price in normal or special circumstances, producing a part in the factory or buying it from outside products, investment to be made in new products or not etc.

**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 business.

**10) Lack of Unanimity About Accounting Principles :** Accountants differ on the use of accounting principles and procedures. 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 dividend or to raise the prices of company's shares. Less profits may be shown to save taxes or for not paying bonus to workers etc. The possibility of manipulating financial accounts reduces their reliability.

**12) Inadequate Information for Reports :** It does not provide adequate information for reports to outside agencies such as banks, government, insurance companies and trade associations.

**13) No Analysis of Losses :** It does not provide complete analysis of losses due to defective material, idle time, idle plant and equipment. No distinction is made between avoidable and unavoidable wastage.

## **1.5 COST ACCOUNTING :**

Costing is a specialised branch of accounting. It has been developed because of limitations of financial accounts.

Concepts of Cost, Costing, Cost Accounting and Cost Accountancy.

## **1.6 COST :**

The term 'Cost' has a wide variety of meanings. Different people use this term in different senses for different purposes. For example while buying a book we generally ask "What is the cost of book?" Here it means the price of the book. But in management terminology, the term cost refers to expenditure and not the price. For our purposes cost is not the same as price. The costing terminology of the Institute of Cost and Works Accountants, London defines cost as "the amount of expenditure (actual or notional) incurred on or attributable to a given thing". Thus, cost refers to something that must be sacrificed to obtain a particular thing.

## **1.7 COSTING :**

Costing is the technique and process of ascertaining costs. It consists of the principles and rules which are used for ascertaining the costs of products and services. Costing is a systematic procedure of determining the unit cost of product / service.

## **1.8 COST ACCOUNTING :**

Cost Accounting is the classifying recording and appropriate allocation of expenditure for the determination of the costs of products or services and for the presentation of suitably arranged data for purposes of control and guidance of management. It includes the ascertainment of the cost of every order, job, contract process, service or unit as may be appropriate. It deals with the cost of production, selling and distribution. It is thus the provision of such analysis and classification of expenditure as will enable the total cost of any particular unit of production or service to be ascertained with reasonable degree of accuracy and at the same time to disclose exactly how such total cost is constituted so as to control and reduce its cost.

## **1.9 COST ACCOUNTANCY :**

Cost Accountancy is the application of costing and Cost Accountancy principles, methods and techniques to the science, art and practice of cost control and the ascertainment of profitability. It includes the presentation of information derived there from for purposes of managerial decision making. Thus, Cost Accountancy is the science, art and practice of a cost accountant. It is a science because it is a body of systematic knowledge having certain principles which a cost accountant should possess for proper discharge of his responsibilities. It is an art as it requires the ability and skill with which a cost accountant is able to apply the principles of cost accountancy to various managerial problems. Practice includes the continuous efforts of a cost accountant in the field of cost accountancy. Such efforts also includes the presentation of information for the purpose of managerial decision making and keeping statistical records.

## 1.10 SCOPE OF COST ACCOUNTANCY :

The scope of Cost Accountancy is very wide and includes the following :

**Cost Ascertainment :** It deals with the collection and analysis of expenses, the measurement of production of the different products at the different stages of manufacture and the linking up of production with the expenses. The varying procedures for the collection of expenses give rise to different systems Costing such as Historical or Actual Costs, Estimated Costs, Standard Costs etc. Again the varying procedures for the measurement of production have resulted in different methods of costing such as specific order costing, operation costing etc. For linking up of production with the expenses the different techniques of costing such as Marginal Cost Technique, the Total Cost Technique, Direct Cost Technique etc. All the three i.e. systems, methods and techniques can be used in one concern simultaneously.

**Cost Accounting :** It is the process of accounting for cost which begins with recording of expenditure and ends with the preparation of statistical data. It is the mechanism by means of which costs of products or services are ascertained and controlled cost accounting is helpful to the management in decision making.

**Cost Control :** Cost control is the guidance and regulation by an executive action of the costs of operating an undertaking. The cost can be controlled by standard costing, budgetary control, proper presentation and reporting of cost data and cost audit.

## 1.11 Objectives of Cost Accounting :

The Objectives of cost accounting are ascertainment of Cost, fixation of selling price, proper recording and presentation of cost data to management for measuring efficiency and for cost control. The following are the main objectives of cost accounting :

- a) To ascertain the cost per unit of the different products manufactured by a business concern.
- b) To provide correct analysis of cost both by process or operations and by different elements of cost.
- c) To disclose the sources of wastage whether of material, time or expenses or in the use of machinery, equipment and tools and to prepare reports to control such wastage.
- d) To provide requisite data and serve as a guide to price fixing of products manufactured or services rendered.
- e) To ascertain the profitability of each of the products and advise management as how these profits can be maximised.
- f) To exercise effective control of stocks of raw materials, work in progress, consumable stores and finished goods in order to minimise the capital locked up in these stocks.

- g) To supply useful data to management for taking various financial decisions such as introduction of new products, replacement of labour by machine etc.
- h) To present and interpret data for management planning, decision making and control.
- i) To provide specialised services of cost audit to prevent the errors and frauds and to facilitate prompt and reliable information to management.

### 1.12 Cost Accounting Vs Financial Accounting :

Both financial and cost accounting are the branches of accounting whose main objective is to provide information by recording the business transactions systematically and scientifically so that it may serve the purpose of the management for policy formulation and controlling to provide necessary protection to outsiders. Both are based on double entry system and their role are supplementary. The ordinary trading account provides valuable information. Financial accounting treats costs very broadly, while cost accounting does this in much greater detail. In order to illustrate this, fact, let us examine the following two statements under Financial Accounting

Trading and Profit and Loss Account  
(for the year ending 31st December..)

| Dr                                    |        | Cr                  |        |
|---------------------------------------|--------|---------------------|--------|
| Particulars                           | Rs.    | Particulars         | Rs.    |
| To Material Consumed                  | 20,000 | By Sales            | 75,000 |
| To Wages                              | 16,000 |                     |        |
| To Direct Expenses                    | 2,000  |                     |        |
| To Manufacturing Expenses             | 12,000 |                     |        |
| <br>                                  |        |                     |        |
| To Gross Profit C/d                   | 25,000 |                     |        |
|                                       | 75,000 |                     | 75,000 |
| <br>                                  |        |                     |        |
| To Office and Administration Expenses | 3,000  | By Gross Profit B/d | 25,000 |
| To Selling and Distribution Expenses  | 7,000  |                     |        |
| To Net Profit<br>20% on Sales         | 15,000 |                     |        |
|                                       | 25,000 |                     | 25,000 |

The contents of the above accounts are reproduced by the cost accountant in the following statement, that three products viz., A, B and C are manufactured.

### Statement of Cost and Profit

| Particulars                         | Products    |         |          |         |
|-------------------------------------|-------------|---------|----------|---------|
|                                     | Total<br>Rs | A<br>Rs | B<br>Rs  | C<br>Rs |
| Direct Materials                    | 20,000      | 8,000   | 8,000    | 4,000   |
| Direct Labour                       | 16,000      | 6,000   | 8,000    | 2,000   |
| Direct Expenses                     | 2,000       | 1,000   | 1,000    | -       |
| Prime Cost                          | 38,000      | 15,000  | 17,000   | 6,000   |
| Factory Overheads                   | 12,000      | 4,000   | 7,000    | 1,000   |
| Office & Admn Overheads             | 50,000      | 19,000  | 24,000   | 7,000   |
|                                     | 3,000       | 1,000   | 1,500    | 500     |
|                                     | 53,000      | 20,000  | 25,500   | 7,500   |
| Selling & Distribution<br>Overheads | 7,000       | 3,000   | 2,500    | 1,500   |
| Total Cost                          | 60,000      | 23,000  | 28,000   | 9,000   |
| Sales                               | 75,000      | 38,000  | 23,500   | 13,500  |
| Profit / Loss                       | 15,000      | 15,000  | - 4,500  | 4,500   |
| Percentage of Profit on Sales       | 20 %        | 39.47 % | -19.15 % | 33.33 % |



The profit as shown by the financial books is Rs. 15,000 being 20 % profit on sales but the cost accountant shows how this profit has been arrived at. The product 'A' is giving a profit of 39.47 % and product 'C' a profit of 33.33 % on sales while product B is actually giving a loss. This analysis as shown by cost accounting is quite useful and necessary but the financial accounting does not take to this point.

### 1.13 Differences between Financial Accounting & Cost Accounting :

| Basis              | Financial Accounting   | Cost Accounting   |
|--------------------|--|---|
| Purpose            | It provides information business in general way. It tells about the profit and loss and financial position of the business to owners and other out side parties. | It provides information to the management for proper planning, operation, control and decision making.                                |
| Form of accounts   | These accounts are kept in such a way to meet the requirements of companies Act and Income Tax Act.  | These accounts are kept voluntarily to meet the requirements of the management.   |
| Recording          | It records the expenditure in a subjective manner i.e. according to the nature of expenses.  | It records the expenditure in an objective manner i.e. according to the purpose for which it is incurred.                             |
| Control            | It lays emphasis on the recording aspect without giving any importance to control.   | It provides a detailed system of control for materials, labour and overheads with the help of standard costing and budgetary control. |
| Period             | It reports operating results and financial position usually at the end of the year.  | It gives information through cost reports to management as and when desired.  |
| Analysis of Profit | Financial accounts are the accounts of the whole business. It disclose the net profit or loss of the business as a whole.  | Cost accounts are only a part of the financial accounts and disclose the profit or loss of each product, job, or service.             |
| Reporting of Costs | The Costs are reported in aggregate in financial accounts.   | The costs are broken down on a unit basis in cost accounts.   |

| <b>Basis</b>           | <b>Financial Accounting</b>  | <b>Cost Accounting</b>  |
|------------------------|--|---|
| Nature of transactions | Financial accounts relate to commercial transactions of the business and include all expenses i.e. manufacturing, office, selling and distribution etc. Financial accounts are concerned with external transactions. | Cost accounts relate to transactions connected with the manufacture of goods and services cost accounts are concerned with internal transactions. |
| Information            | It deals with the monetary transactions.   | It deals with the monetary and non-monetary transactions.   |
| Figures                | Financial accounts deal mainly with actual facts and figures.  | Cost accounts deal partly with facts and figures and partly with estimates.   |
| Stock Valuation        | Stocks are valued at cost or market price whichever is less.   | Stocks are valued at cost.  |

### 1.14 Self Assessment Questions

1. Give five limitations of financial accounting.
2. State the differences between financial accounting and cost accounting.
3. Define - i) Cost accounting  
ii) Costing  
iii) Cost accountancy.
4. State five objectives of Cost Accounting.

### 1.15 Suggested Reading

Cost & Management Accounting - S.P.Jain & K.L.Narang.

Advanced Management Accounting - Shashi k. Gupta, R.K.Sharma.

Cost Accounting - N.K.Prasad.

**P.USHA RANI**

**LESSON - 2****NATURE AND SCOPE OF  
MANAGEMENT ACCOUNTING****2.0 Objective :**

The objective of this lesson is to explain the concepts of Management Accounting, characteristics, Scope, objectives, Functions, Advantages, Differences and limitations of Management Accounting.

**Structure**

- 2.1 Introduction**
- 2.2 Meaning of Management Accounting**
- 2.3 Definitions of Management Accounting**
- 2.4 Characteristics of Management Accounting**
- 2.5 Scope of Management Accounting**
- 2.6 Objectives of Management Accounting**
- 2.7 Functions of Management Accounting**
- 2.8 Advantages of Management Accounting**
- 2.9 Financial Accounting Vs Management Accounting**
- 2.10 Cost Accounting Vs Management Accounting**
- 2.11 Limitations of Management Accounting**
- 2.12 Self Assessment Questions**
- 2.13 Suggested Readings / Reference books.**

**2.1 INTRODUCTION :**

Cost accounting no doubt serves the internal management by directing their attention on inefficient operations and assisting in a day to day control of activities of the enterprise. But even costing information fails to meet informational needs for managerial functions. In actual practice cost accountants are doing the jobs of management accountants. Further, most of the techniques of management accounting are also being used by the cost accountants. That is why, management accounting is treated as extension of cost accounting. Management accounting includes many more aspects of the study besides the cost accounting. Management Accounting has been developed with the limitations of financial and cost accounting.

## 2.2 Meaning of Management Accounting :

The term Management Accounting is of a recent origin. Management Accounting is comprised of two words 'Management' and 'Accounting'. It is the study of managerial aspect of accounting. Management Accounting is the presentation of accounting information in such a way so as to assist management in the creation of policy and day to day operation of an undertaking. That it relates to the use of accounting data collected with the help of financial accounting and cost accounting for the purpose of policy formulation, planning, control and decision making by the management.

## 2.3 Definitions of Management Accounting :

"Management Accounting is concerned with accounting information that is useful to management".

- R.N. Anthony.

"Management Accounting is the term used to describe accounting methods, systems, techniques which coupled with special knowledge and ability, assists management in its task of maximising profits or minimising losses".

- J.Balty.

From the above it is clear that management accounting uses all techniques of financial accounting, cost accounting and statistics to collect and process data for making it available to management so that it can take decisions in a scientific manner.

## 2.4 Nature or Characteristics of Management Accounting :

The following are the main characteristics of Management Accounting.

**1) Providing Accounting Information :** Management accounting involves the presentation of information in a way it suits managerial needs. Management accounting provides necessary information to different levels of management to take various policy decisions.

**2) Cause and Effect Analysis :** The study of cause and Effect relationship is possible in management accounting. If there is profit or loss, the factors directly influence the profit or loss are studied.

**3) Use of Special Techniques and Concepts :** Management accounting uses special techniques and concepts to make accounting data are more useful. The techniques usually used include financial planning and analysis, standard costing, budgetary control, marginal costing, project appraisal, control accounting etc.

**4) Taking Important Decisions :** Management Accounting helps in taking various important decisions. It supplies necessary information to management to take important decisions.

**5) Achieving of Objectives :** In management accounting, the accounting information is used in such a way that it helps in achieving organisational objectives. In case there are deviations between the standards set and actual performance of various departments corrective measures can be taken at once. This is possible with the help of budgetary control and standard costing.

**6) No Fixed Norms Followed :** No specific rules are followed in management accounting. Though the tools of management accounting are the same but their use differs from concern to concern. Every concern uses the figures in its own way. The presentation of figures will be in the way which suits the concern most. So every concern has its own rules and by-rules for analysing the data.

**7) Increase in Efficiency :** The purpose of using accounting information is to increase efficiency of the concern. The efficiency can be achieved by setting up of goals for each department. If there is any deviation, an effort is made to take corrective measures so that efficiency is improved.

**8) Supplies Information and not Decision :** The management accountant supplies information to the management. The decisions are taken by the Top Management. Management Accounting is only to guide and not to supply decisions.

**9) Concerned with Fore Casting :** The management accounting is concerned with the future. It helps the management in planning and forecasting.

## 2.5 Scope of Management Accounting :

The scope of management accounting is very wide and broad based. It includes all information which is provided to the management for financial analysis and interpretation of the business operations. The following field of activities are included in the scope of management Accounting :

**i) Financial Accounting :** Financial Accounting though provides historical data but is very useful for future planning and forecasting. Designing of a proper financial accounting system is a must for obtaining full control and coordination of operations of the business. So management accounting is closely related to financial accounting.

**ii) Cost Accounting :** It provides various techniques of costing like marginal costing, standard costing, differential and opportunity cost analysis etc., which play a useful role in the operation and control of the business undertakings.

**iii) Budgeting and Forecasting :** Budgeting means expressing the plans, policies and goals of the enterprise for a definite period in future. Forecasting on the other hand is a prediction of what will happen as a result of a given set of circumstances. Forecasting is judgement whereas budgeting is an organisational object. Both budgeting and forecasting are for management accountant in planning various activities.

**iv) Cost Control Procedures :** These procedures are integral part of the management accounting process and includes inventory control, cost control, labour control, budgetary control and variance analysis etc.

**v) Reporting :** The management accountant is required to submit reports to the management on the various aspects of the undertaking. While reporting he may use statistical tools for presentation of information as graphs, charts, pictorial presentation, index numbers and other devices in order to make the information more impressive and intelligent.

**vi) Methods and Procedures :** It includes in this study all those methods and procedures which help the concern to use its resources in the most efficient and economical manner. It undertakes special cost studies and estimation reports on cost volume profit relationship under changing circumstances.

**vii) Tax Accounting :** It is an integral part of management accounting and includes preparation of income statement determination of taxable income and filing up the return of income etc.

**viii) Internal Audit :** Internal Audit helps the management in fixing responsibility of different individuals.

**ix) Interpretation of Data :** The management accountant interprets various financial statements to the management. These statements give an idea about the financial and earning position of the concern. These statements may be studied in comparison to statements of earlier periods or comparison with statements of similar other concern.

**x) Office Services :** The management accountant may be required to maintain and control office services in some organisation. This function includes data processing, reporting on best use of mechanical and electronic devices, communications etc.

## 2.6 OBJECTIVES OF MANAGEMENT ACCOUNTING :

The Primary objective of management accounting is to enable management to maximise profits or minimise losses. This is done through the presentation of statements in such a way that management is able to take correct policy decisions. The following are the important objectives of management accounting.

**1) Planning and Policy Formulation :** The object of management accounting is to supply necessary data to management for formulating plans.

**Helpful in controlling performance:** management accounting devices like standard costing and budgetary control are helpful in controlling performance. The management is able to control performance of each and every individual with the help of management accounting devices.

**2) Helpful in Organising :** Management accounting is connected with the establishment of cost centres, preparation of budgets, preparation of cost control accounts and fixing of responsibility for different functions. All these aspects are helpful in setting up an effective and efficient organisational frame work.

**3) Helpful in Interpreting Financial Information :** The main object of management accounting is to present financial information to the management in such a way that it is easily understood.

**4) Motivating Employees :** The objective of management accounting is to help the management in selecting best alternatives of doing the things. Targets are laid down for the employees. They feel motivated in achieving their targets and further incentives may be given for improving their performance.

**5) Helpful in Making Decisions :** The information provided by the accountant helps the management in selecting a suitable alternative and taking correct decisions.

**6) Reporting to Management :** One of the primary objectives of management accounting is to keep the management fully informed about the latest position of the concern. This helps management in taking proper and timely decisions.

**7) Helpful in coordination :** Management accounting provides tools which are helpful in co-ordinating the activities of different sections or departments Management accountant act as a co-ordinator and reconciles the activities of different sections.

**8) Helpful in Tax Administration :** Management accounting helps in assessing various tax liabilities and depositing correct amount of taxes with the concerned authorities Tax administration is carried on with the advice and guidance of the management accountant.

## 2.7 FUNCTIONS OF MANAGEMENT ACCOUNTING :

Management accounting is a part of accounting. It has developed out of the need for making more and more use of accounting for taking managerial decisions. Some of the functions of management accounting are given as follows :

**i) Planning and Forecasting :** One of the important functions of the management accounting is to help management in planning for short-term and long term periods and also in making forecasts for the future.

**ii) Modification of Data :** Management accounting helps in modifying accounting data. The information is modified in such a way that it becomes useful for the management. Management accountant classifies and modifies information according to the requirements of the management.

**iii) Financial Analysis and Interpretation :** The management accountant analyses the data and presents it before the management in Non technical language along with his comments and suggestions so that top management can understand it and take decisions with out any difficulty.

**iv) Facilitates Managerial Control :** Management accounting is very useful in controlling performance. Performance evaluation is possible through standard costing and budgetary control which are an integral part of management accounting.

**v) Communication :** Management accounting establishes communication with in the organisation and with the outside world. The management accountant prepares reports for the benefit of different levels of management and employees. The activities of the concern, are communicated to outsiders such as bankers, investors, creditors, government agencies etc.

**vi) Co-ordinating :** Management accountant acts as a co-ordinator among different financial departments through budgeting and financial reports.

**vii) Helpful in Taking Strategic Decisions :** Management accounting helps in taking strategic decisions. It supplies analytical information regarding various alternatives and the choice of management is made easy. These decisions may be regarding seasonal or temporary stoppage of production, replacement decisions, expansion and diversification of works and a correct decision is taken.

## 2.8 ADVANTAGES OF MANAGEMENT ACCOUNTING :

The following are the advantages of Management Accounting :

**1) Increase Efficiency :** Management accounting increases efficiency of business operations. The targets of different departments are fixed in advance and achievements of those goals is a tool for measuring their efficiency.

**2) Proper Planning :** Management is able to plan various operations with the help of accounting information. The activities of the concerned are planned in a systematic manner.

**3) Measurement of Performance :** The systems of budgetary control and standard costing enable the measurement of performance. In standard costing, standards are determined and then actual cost is compared with standard cost. It enables the management to find out deviations between standard cost and actual cost. The performance will be good if actual cost does not exceed the standard cost. Budgetary control system too helps in measuring efficiency of all employees.

**4) Maximising Profitability :** The Thrust of various management techniques is to control cost of production and increase efficiency of each and every individual in the organisation. The profits of enterprise are maximised with the help of management accounting system.

**5) Improves Service to Customers :** The cost control devices employed in management accounting enable the reduction of prices. The quality of products becomes good because quality standards are predetermined. The customers are supplied good quality goods at reasonable prices.

**6) Effective Management Control :** The tools and techniques of management accounting are helpful to the management in planning, coordinating and controlling activities of the concern.

## 2.9 Financial Accounting Vs Management Accounting :

The following are the main distinctions between the financial accounting and management accounting.



| <b>Basis</b>             | <b>Financial Accounting</b>   | <b>Management Accounting</b>  |
|--------------------------|---|---|
| 1. Objects               | The objective of Financial accounting to measure the business income and provide information to outsiders i.e. creditors, bankers, investors etc. | The objective is to help the internal management.   |
| 2. Subject Matter        | It deals with all the activities of the business as a whole and reveals over all performance.   | It deals with vital and significant activities of the business.   |
| 3. Nature                | It is objective in nature lays emphasis on the past activities and represents historical records just to show the results of the business.        | It is subjective in nature, stresses the future and uses historical costs and data for estimating the future. |
| 4. Compulsion            | It is obligatory for Joint stock companies  | It is optional.   |
| 5. External Parties      | Accounts are prepared to meet the requirements of outsiders.  | Accounts are maintained to provide information for internal use of management only.                           |
| 6. Methodology           | Financial Accounting records the transactions relating to income, expense, revenue personal accounts and property accounts.                       | Management accounting reports, costs and revenue by profit centre or responsibility centre.                   |
| 7. Publication and audit | Statements are to be audited and published for the general use of public.   | Statements are not to be published and audited as there are for internal use.                                 |
| 8. Description           | In Financial Accounting all the transactions are recorded and can be measured in monetary terms.  | Monetary and Non monetary transactions are recorded.  |
| 9. Period of reporting   | In Financial accounting final accounts are prepared on year to year basis.  | It lays emphasis on weekly, fortnightly and monthly reporting.  |

## 2.10 Cost Accounting Vs Management Accounting :

Cost Accounting and Management Accounting both have the same objectives of helping the management in planning, control and decision making. Both are internal to the organisation and use common tools and techniques like standard costing, variable costing, budgetary control etc. In spite of these similarities there are certain differences between these two. The main distinctions between cost accounting and management accounting are :

| <b>Basis</b>             | <b>Cost Accounting</b>   | <b>Management Accounting</b>  |
|--------------------------|--|---|
| 1. Deals with            | It deals with ascertainment, allocation, apportionment and accounting aspect of costs.               | It deals with the effect and impact of cost on the business.  |
| 2. Base                  | It provides a base for management accounting.  | It is derived from both cost accounting and financial accounting.   |
| 3. Role                  | It is helpful in collecting costing data for management.   | It is greater degree of relevance and objectivity as the management accountant has a clear idea of the types of costs and items requiring analysis and state the specific problems of business. |
| 4. Scope                 | It does not include financial accounting, tax planning and tax accounting.                           | It includes financial accounting, cost accounting tax planning and tax accounting.  |
| 5. Period of Planning    | It is concerned with short term planning.  | It is concerned with short range and long range planning.   |
| 6. Tools and Techniques. | It has standard costing variable costing, break even analysis etc as the basic tools and techniques. | Along with these the management accounting has funds and cash flow statements, ratio analysis etc as his accounting tools and techniques.   |
| 7. Assistance            | It merely assist the management in its functions.  | It assists and evaluates the management performance.  |
| 8. Installation          | It can be installed with out management accounting.  | It needs financial and cost accounting as its base for its installation.  |

### 2.11 Limitations of Management Accounting :

- i) The management accountant takes into consideration the past records provided by the financial and cost accounting while making decisions for future.
- ii) Management must have the knowledge of various fields for taking sound decisions but the person who is taking decisions may not have comprehensive knowledge of all the subjects.
- iii) The Techniques and tools suggested by the management accountant are not alternate or substitute of good administration.
- iv) There is possibility of personal bias from the collection of data to interpretation stage in financial accounting.
- v) The installation of management accounting system is costly.
- vi) Management accounting has not reached the final stage and is in the process of development.

### 2.12 Self Assessment Questions :

1. Define Management Accounting.
2. What are the characteristics of Management Accounting ?
3. What is the scope of Management Accounting ?
4. State any five objectives of Management Accounting.
5. State five functions of Management Accounting.
6. What are the Advantages of Management Accounting ?
7. State any five differences between Financial Accounting and Management Accounting.
8. State the differences between Cost Accounting and Management Accounting.
9. What are the limitations of Management Accounting?

### 2.13 Suggested Readings :

- |                                |   |                                |
|--------------------------------|---|--------------------------------|
| Cost & Management Accounting   | - | S.P.Jain & K.L.Narang.         |
| Advanced Management Accounting | - | Shashi k.Gupta,<br>R.K.Sharma. |
| Cost Accounting                | - | N.K.Prasad.                    |

**P.USHA RANI**

**LESSON - 3****COST ACCOUNTING - ADVANTAGES -  
LIMITATIONS****3.0 Objective:**

The objective of this lesson is to explain the advantages and limitations of Cost Accounting System.

**Structure****3.1 Advantages of Cost Accounting****3.2 Limitations of Cost Accounting****3.3 Objections against cost Accounting****3.4 Principles of cost Accounting****3.5 Characteristics of an Ideal Costing System****3.6 Installation of Costing System****3.7 Practical difficulties in installing a Costing System****3.8 Steps to overcome Practical Difficulties****3.9 Self Assessment Questions****3.10 Suggested Readings****3.1 Advantages of Cost Accounting:**

The main advantages of cost accounting are given below :

- (1) Profitable and Unprofitable activities are disclosed and steps can be taken to eliminate or reduce those activities from which little or no benefit is obtained or change the method of production in order to make such activities more profitable.
- (2) It enables a concern to measure the efficiency and then to maintain and improve it. This is done with the help of valuable data made available for the purpose of comparison
- (3) It provides information upon which estimates and tenders are based.
- (4) It guides future production policies.
- (5) It helps in increasing profits by disclosing the sources of loss or waste and by controlling that loss or wastage.
- (6) It enables a periodical determination of profits or losses with out resort to stock taking.
- (7) It furnishes reliable data for comparing costs in different periods.

- (8) The exact cause of a decrease or an increase in profit or loss can be detected.
- (9) Cost Accounting discloses the relative efficiencies of different workers and there by facilitates the introduction of suitable plans of wage to reward efficiency and to provide adequate incentive to less efficient workers.
- (10) It enables the creditors and investors to judge the financial strength and credit worthiness of the business.
- (11) It is helpful to the Government. It facilitates the assessment of Excise duty and Income Tax and the formulation of policies regarding industry, export, import, taxation etc.
- (12) It is helpful to consumers by supplying goods at lower price.
- (13) Costing has a more important role to play in public enterprises than in private enterprises. In public enterprises the primary objective is not to raise profit but it is to serve the society by providing quality goods at cheaper rates. A good system of costing ensures efficient and effective control through a proper analysis of their working.

### 3.1.1 Costing – An Aid to Management:

Cost accounting helps the management in carrying out efficiently its functions by developing practical cost procedures that provide information useful in controlling the operations of the business enterprise. Cost accounting does this by analysing, recording, standardizing, forecasting, comparing, reporting and recommending. In fact, cost accounting is so closely allied to management that it is difficult to indicate where work of cost accountant ends and managerial control begins.

A good system cost accounting serves management in the following ways.

- a) **Classification and sub division of cost:** Costs are collected and classified by various ways in order to provide information to the management for control purposes and to ascertain the profitability of each area of activity.
- b) **Control of Materials, Labour and Over head Costs:** An efficient check is provided on stores and materials. Stores Ledger and Material Abstracts are maintained which provide an effective check on the stores and material used in the business. Maximum, Minimum, Reordering levels are maintained so that stocks can be arranged in time. An efficient check on labour and machines is provided by giving detailed information about the availability of machine and labour capacity. The work is so planned that no section is over worked and no section remains idle. By having proper classification of overheads into controllable and uncontrollable or fixed and variable, it helps to control the overhead costs.
- c) **Business Policies:** Business policy may require the consideration of alternative methods and procedures and this is facilitated by cost information correctly presented. It helps the management to take vital decisions such as introduction of a new product, selection of a most profitable product mix, utilisation of spare capacity, exploration of additional market, whether to make or buy, problem of limiting factor, replacement of existing assets, appraisal of proposed investment to meet expansion programme etc, with the help of marginal costing techniques and differential cost analysis.

- d) **Budgeting:** It provides the use of budgets and performance reports and enables management to correct inefficiencies before they enter into business. Two important cost accounting tools for helping managers are budgets and performance reports.
- e) **Standards for Measuring Efficiency:** It provides the use of standards to assist management in making estimates and plans for future and to provide the basis of management of efficiency. Actuals are compared with predetermined standards to determine the operating efficiency.
- f) **Best use of limited Resources:** Cost Accounting provides the reliable data of costs with regard to materials, wages and other expenses. These help the management to get maximum output at the minimum cost by indicating where economies may be affected, waste eliminated and inefficiency increased.
- g) **Instrument of Management control:** It provides management with valuable data for planning, budgeting and control of costs. An efficient system of cost accounting is, thus, regarded as an important part in the efforts of any management to secure business stability.
- h) **Cost Audit:** The operation of a system of cost audit in the organisation will assist in prevention of errors and frauds.
- i) **Price Determination:** It helps the management to fix the remunerative selling prices of various items of goods in different circumstances. If prices are fixed without costing information, it is possible, that prices quoted may be too high or too low. In periods of depression, it may become necessary to reduce the prices even below total cost. It is only costing which will guide the business man in this matter.

#### Expansion:

Management is able to formulate expansion policy on the basis of estimates of cost of production at various levels provided by cost accountant.

### 3.2 Limitations of Cost Accounting:

The Cost system has the following limitations.

1. The system is based on estimates the results differ from activities.
2. The methods and techniques adopted within the system are several and their applications varying on different plans makes the results unworthy of cost comparison and cost control, e.g ;
  - a) Pricing of issue of materials by different methods
  - b) Remunerating labour on different bases
  - c) Apportionment and Absorption of overhead at different bases and by the application of different methods,
  - d) Classification of costs into direct and indirect.
  - e) Classification of overheads into fixed and variable;
  - f) Determination of standard in standard costing
  - g) Charging of depreciation and valuation of stocks at different bases.

3. For getting the benefits of cost accounting many formalities are to be observed. Due to which the establishment and running costs are so much.
4. It has not involved so far any tool for handling inflationary situation.

### 3.3 Objections against Cost Accounting:

A number of objections are generally raised against the introduction of costing on various grounds. The following are some of the important objections usually raised:

- 1. Cost system is unnecessary:** It has been argued that costing is of recent origin and that industries prospered in the past and are still prospering with out the aid of costing and therefore it is unnecessary expenditure. But the modern industries are running under highly competitive conditions and every manufacturer should know the actual cost of production to decide how far he can reduce the selling price.
- 2. Inapplicability:** It is argued that modern methods of costing are inapplicable to many type of industries. But in many cases some methods of costing can always be devised to suit the requirements of the business.
- 3. The system has failed in many cases:** It is argued that the adoption of costing system failed to produce the desired results in many cases and therefore, the system is defective. But the failure of a system may be due to several causes. So it is hasty to find the fault with the system.
- 4. Cost system is a matter of forms and rulings:** It is argued that after some time, a costing system degenerates in to a matter of forms and rulings. This is not the fault of the system. It is fault of the way in which the system is maintained.
- 5. Cost system is highly expensive:** It is argued that the expenditure incurred on the installation of cost system is quite heavy and the operational part is also expensive. But the cost system is so designed to suit the economy of the business – whether small or big.

### 3.4 General Principles of Cost Accounting

The following are the main principles of Cost Accounting:

- 1. Cause – effect relationship:** Cause effect relationship should be established for each item of cost. This cost should be shared only by those units which pass through the departments for which such cost has been incurred.
- 2. Charge of cost only after its incurrance:** Unit cost should include only those costs which have been actually incurred.
- 3. Past cost should not form part of future cost:** Past cost should not be recovered from future cost as it will not only affect the true results of future period but will also distort other statements.
- 4. Exclusion of abnormal costs from cost accounts:** All costs incurred because of abnormal reasons (like theft, negligence) should not be taken in to consideration while computing the unit cost. If done, so it will distort the cost figures and mislead the management resulting in wrong decisions.

**5. Principle of double entry should be followed preferably:** To Lessen the chances of any mistake or error, cost ledgers and cost control accounts, as far as possible should be maintained on double entry principles.

### 3.5 Characteristics of an Ideal costing system:

The following are the main characteristics which an ideal system of costing system should possess or the points which should be taken into consideration before installing a costing system.

- i) Suitability to the business:** A costing system must be devised according to the nature, conditions, requirements, and size of the business.
- ii) Simplicity :** The system of costing should be simple and plain so that it may be easily understood even by a person of average intelligence.
- iii) Flexibility:** The system of costing must be flexible so that it may be changed according to changed conditions and circumstances.
- iv) Economical:** A costing system should not be expensive and must be adopted according to the financial capacity of the business.
- v) Comparability :** The costing system must be such so that it may provide facts and figures necessary to the management for evaluating the performance by comparing it with the past figures, figures of other concerns or against the industry as a whole or other departments of the same concern.
- vi) Capability of presenting information at the desired time :** The system must provide accurate and timely information so that it may be helpful to the management for taking decisions and suitable action for the purpose of cost control.
- vii) Minimum changes in the existing set up:** The existing system of delegation and division of authority and responsibility must not be disturbed with the costing system.
- viii) Uniformity of forms:** All forms and proformas be necessary to the system should be uniform in size and quality of paper.
- ix) Efficient system of Material control:** There should be an efficient system of stores and stock control as materials usually account for a greater portion of the total cost.
- x) Adequate wage Procedure:** There should be a well defined wage procedure for recording the time spent by workers on different jobs, for preparing the wage sheet and for the payment of wages. Thus the introduction of well defined wage system will help to control the cost of labour.
- xi) Departmentalisation of expenses:** A sound plan should be devised for the collection, allocation, apportionment and absorption of overheads in order to ascertain the cost accurately



**xii) Reconciliation of cost and financial accounts:** The costing system should be so devised that the two sets of accounts are capable of easy reconciliation.

**xiii) Duties and Responsibilities of the cost accountant:** Under a good system of cost accounting the duties and responsibilities of the cost accountant should have access to all works and departments.

### 3.6 Installation of Costing System

The fundamental factors that a cost accountant should consider while introducing a system of costing are:

- i) The existing organisation should be distributed as little possible.
- ii) There should be a gradual and smooth introduction of the system.
- iii) While over – elaboration of records should be avoided.

#### 3.6.1 Steps for Installation:

The steps to be taken in installing a costing system are:

**1. Objectives to be achieved:** The costing system will be simple if the objective is only to determine cost but it will have to be elaborate if the objective is to have information which will help the management in exercising controlling and taking decisions.

**2. Studying the Organisation:** In this connection the points to be noted are – the nature of the business and of operations, extent of responsibility and authority attached to the various functionaries, the lay out of the factory, the methods of dealing with wastage of materials, the system of time recording and the methods of computing and paying wages, the system of issuing orders and the amount of fixed, semi variable and variable overheads.

**3. Deciding the structure of cost accounts:** What system of cost accounting is suitable and the extent of details required can be decided after a thorough study of the manufacturing process and their ancillary services. The designing of the system should be such that there is a gradual build up of the cost at each significance stage of production.

**4. Determining the cost rates:** This entails a thorough study of factory conditions and decisions are to be made about classification of cost in to direct and indirect, grouping of indirect cost in to production, selling and administration etc, treatment of waste of all kinds, methods of pricing issues, methods of recovering overheads and calculation of overhead rates.

**5) Introducing the system:** Before the system is put in to effect, the implications of the system should be explained to all indicating to them the benefits that will accrue to each and to the business as a whole.

**6) Organising the Cost Office:** It is always better that the cost office is situated adjacent to the factory so that delay in routing out documents or in clearing up discrepancies and doubts is avoided. The costing staff must be allowed to have access to the works if they are to perform their duties properly.

**7) Relationship of cost office to other departments:** The cost department should function independently, the cost accountant being made directly responsible to the General Manager, or Managing Director. The costing system should be designed to serve management at all levels.

### 3.7 Practical difficulties in installing a costing system:

Practical difficulties apart from technical costing problems which a cost accountant has to face in installing a costing system are:

- 1) Lack of support from Top Management:** In most of the cases the cost accounting system is introduced without the support of the top management in all the functional areas.
- 2) Resistance from the existing accounting staff:** When ever a new system is introduced resistance is natural, as the existing staff may feel that they would lose their importance and may be unsure of their position in the organisation.
- 3) Non cooperation at other levels of organisation:** The foremen, supervisors and other staff may not cooperate with other departments in providing information which is absolutely necessary for the smooth and efficient working of any accounting system.
- 4) Shortage of trained staff:** The work of costing department cannot be handled with out the availability of trained staff.
- 5) Heavy cost of operating system:** The cost of operating system may be heavy unless the costing system is properly designed according to the requirements of each case.

### 3.8 Steps to overcome Practical Difficulties:

To over come the above difficulties the following steps are suggested.

- 1. Support from top management:** Before the installation or operation of a costing system there must be firm commitment to the system on the part of the top management.
- 2. Utility of system to the existing staff:** The existing accounting staff should be impressed about the need to supplement the existing financial accounting system.
- 3. Workers confidence for cooperation:** The various employees must be properly educated regarding the benefits which can be obtained from such a system.
- 4. Training of existing accounting staff:** The existing staff working in the accounts department must be properly trained in costing methods and techniques with the help of the Institute of cost and works Accountants of India, Calcutta.
- 5. Proper supervision:** There should be proper supervision after installation and continuous efforts on the part of the cost accountant to make the system successful and to achieve the desired goal of cost ascertainment, cost presentation and cost control.

### 3.9 Self Assessment Questions:

1. State two advantages of cost accounting to:

- i) Management
- ii) Workers
- iii) Creditors
- iv) Government
- v) General Public

2. What are the limitations of Cost Accounting

3. What are the objections against cost Accounting

4. Give five characteristics of an Ideal costing system

5. State the factors which a cost accountant should consider introducing a costing system

6. What are the practical difficulties in installing a costing system.

### 3.10 Suggested Readings

Cost & Management Accounting - S.P. Jain & K.L. Narang

Cost Accounting - N.K. Prasad.

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**LESSON - 4****COST CONCEPTS - CLASSIFICATION - ANALYSIS****4.0 Objective :**

The objective of this lesson is to explain the concepts of Cost, classification of Cost, elements of Cost and preparation of Cost Sheet.

**Structure**

- 4.1 Cost Concepts**
- 4.2 Classification of Cost**
- 4.3 Elements of Cost**
- 4.4 Cost Sheet / Statement of Cost**
- 4.5 Proforma of Cost Sheet**
- 4.6 Self Assessment Questions**
- 4.7 Suggested Readings**

**4.1 COST CONCEPTS :**

Some Cost Concepts which are used in cost accounting are discussed below :

**a) COST :** It is the amount of resources given up in exchange for some goods and services. The resources given up are expressed in monetary terms. Cost is defined as “the amount of expenditure (actual or notional) incurred on or attributable to a given thing or to ascertain the cost of given thing” (ICMA).

In the ICMA definition cost is the amount of

- a) actual expenditure incurred on a given thing and
- b) notional expenditure attributable to a given thing.

Regarding notional expenditure is one which is conceptual and which is deemed to have been incurred or attributed for instance i) rent of owned factory where rent is charged as cost for purpose of comparison with the cost of undertaking running factory in rented factories although this rent is not actually paid. ii) Interest on owned capital where interest is charged in cost a matter of policy although it is not paid.

The objective for which costs are computed is also important. For example, if the purpose is to fix selling price, the total cost is considered. For valuation of stock cost means cost of production only. If the objective is to measure efficiency, Cost will have to be compiled differently than if the purpose is to quote or value the stock. So the term cost has different interpretations.

A cost must always be studied with reference to its purpose and conditions. For the valuation of work in progress, factory cost is used but for valuation of finished goods cost of production is used. If the purpose of the study of cost is the same, different conditions may lead in variation in cost. The cost per unit of product changes with increase or decrease in volume of output as the amount of fixed expenses to be borne by each unit of output decreases or increases with increase or decrease in units of production. Cost is also different from value as cost is measured in terms of money where as value is measured in terms of usefulness or utility of an article.

**b) EXPENSE :** Expenses are costs which have been applied against revenue of particular accounting period in accordance with the principle of matching cost to revenue e.g., cost of goods sold, office salaries of the period in which they are incurred.

**c) COST CENTRE :** A cost centre is the smallest segment of activity or area or responsibility for which costs are accumulated. Typically cost centres are departments but in some instances, a department may contain several cost centres. These cost centres are the departments or sub departments of an organisation with reference to which cost is collected for cost ascertainment and cost control. A cost centre can be a location i.e an area such as department store yard or sales area or an item of equipment, e.g., lathe machine, delivery vehicle or a person, e.g., sales man, foreman.

The determination of a suitable cost centre is very important for ascertainment and control of cost. The manager incharge of a cost centre is held responsible for control of cost of his cost centre. It enables the accumulation of all such costs at one place for which a common base of recovery may be used.

**d) PROFIT CENTRE :** A profit centre is the segment of activity of a business which is responsible for both revenue and expenses and discloses the profit of a particular segment of activity. Profit centres are created to delegate responsibility to individuals and measure their performance.

The selection of suitable cost centres or cost units for which costs are to be ascertained in an undertaking depends upon the organisation of the factory; condition of incidence of cost; requirements of costing i.e suitability of the unit or cost centre for cost purpose; availability of information; management policy regarding making a particular choice from several alternatives.

## 4.2 COST CLASSIFICATIONS :

Cost classification is the process of grouping costs according to their common characteristics. It is the placement of like items together according to their common characteristics. A suitable classification of costs is of vital importance in order to identify the cost with cost centres or cost units. The cost may be classified according to their nature i.e material, labour and expenses and a number of other characteristics. The same cost figures are classified according to different ways of costing depending upon the purpose to be achieved and requirements of a particular concern. The important ways of classification are :

1) By Nature or Elements, 2) By Functions, 3) By Direct and Indirect, 4) By Change in activity or volume, 5) By Controllability, 6) By Normality, 7) By Capital and Revenue, 8) By Time, 9) According to planning and control, 10) By Association with product and 11) For Managerial decisions.

**1) By Nature or Elements or Analytical Classification :** According to this classification, the costs are divided into three categories i.e Material, Labour and Expenses. There can be further sub-classification of each element; for example material into raw material components, spare parts, consumable stores, packing material etc. This classification is important as it helps to find out the total cost, now such total cost is constituted and valuation of work in progress.

**2) By Functions (i.e. Functional Classification) :** According to this classification costs are divided in the light of the different aspects of basic managerial activities involved in the operation of a business undertaking. It leads to grouping of costs according to the broad division or functions in a business undertaking i.e. production, administration, selling and distribution.

**3) By Direct and Indirect :** According to this classification, total cost is divided in to Direct costs and Indirect costs.

**Direct Costs :** Direct costs are those which are incurred for and may be conveniently identified with a particular cost centre or cost unit. Materials used and labour employed in manufacturing an article or in a particular process of production are common examples of direct costs.

**Indirect Costs :** Indirect costs are those costs which are incurred for the benefit of a number of cost centres or cost units and cannot be conveniently identified with a particular cost centre or cost unit. Examples of indirect costs include rent of building, management salaries, machinery depreciation etc. The nature of the business and the cost unit chosen will determine which costs are direct and which are indirect. The importance of the distinction of costs into direct and indirect lies in the fact that direct costs of a product or activity can be accurately determined while indirect costs have to be apportioned on certain assumptions as regards their incidence.

**4) By Changes in Activity or Volume :** According to this classification, costs are classified according to their behaviour in relation to changes in the level of activity or volume of production. On this basis, costs are classified in to three groups i.e fixed, variable and semi variable.

**i) Fixed Costs :** Fixed costs are commonly described as those which remain fixed in total amount with increase or decrease in the volume of output or productive activity for a given period of time. Fixed cost per unit decreases as production increases and increases as production declines. Examples of fixed costs are rent, insurance of factory building, factory manager's salary etc. These fixed cost are constant in total amount but fluctuate per unit as production changes. These costs are known as period costs because these are dependent on time rather than on output.

**ii) Variable Costs :** Variable costs are those which vary in total indirect proportion to the volume of output. These costs per unit remain relatively constant with changes in production. Thus, variable costs fluctuate in total amount but tend to remain constant per unit as production activity changes. Examples are direct material costs, direct labour costs, power, repairs etc. Such costs are known as product costs because they depend on the quantum of output rather than on time.

**iii) Semi Variable Costs :** Semi variable costs are those which are partly fixed and partly variable. For example telephone expenses include a fixed portion of monthly charge plus variable according to calls; thus total telephone expenses are semi variable. Other examples of such costs are depreciation, repairs and maintenance of building and plant etc.

**5) By Controllability :** Under this, costs are classified according to whether or not they are influenced by the action of a given member of the undertaking. On this basis costs are classified in to two categories;

**i) Controllable Costs:** Controllable Costs are those which can be influenced by the action of a specified member of an undertaking, that is to say costs which are at least partly within the control of management. An organisation is divided in to a number of responsibility centres and controllable costs incurred in a particular cost centre can be influenced by the action of the manager responsible for the centre. Generally speaking all direct costs including direct materials, direct labour and some of the overhead expenses are controllable by lower level of management.

**ii) Un controllable costs:** Uncontrollable costs are those which can not be influenced by the action of a specified member of an undertaking, that is to say, which are not within the control of management. Most of the fixed costs are uncontrollable. For example rent of the building is not controllable and so is managerial salaries. Overhead cost, which is incurred by one service action and is apportioned to another which receives the service is also not controllable by latter.

**6. By Normality :** Under this costs are classified according to whether these are costs which are normally incurred at a given level of output in the conditions in which that level of activity is normally attained. On this basis, it is classified into two categories:

**a) Normal Cost:** It is the cost which is normally incurred at a given level of output in the conditions in which that level of output is normally attained. It is a part of cost of production.

**b) Abnormal Cost:** It is the cost which is not normally incurred at a given level of output in the conditions in which that level of output is normally attained. It is not a part of cost of production and charged to costing Profit and Loss Account.

**7. By capital and Revenue :** The cost which is incurred in purchasing an assets either to earn income or increasing the earning capacity of the business is called capital cost. For example, the cost of machine. Such cost is incurred at one point of time but the benefits accruing from it are spread over a number of accounting years. If any expenditure is incurred in order to maintain the earning capacity of the concern such as cost of maintaining an asset or running a business it is revenue expenditure e.g., cost of materials used in production, labour charges paid to convert the materials in to production, salaries, depreciation, repairs and maintenance charges, selling and distribution charges. The distinction between capital and revenue items is important in costing as all items of revenue expenditure are taken in to consideration while calculating cost where as capital items are completely ignored.

**8. By Time:** Cost can be classified in to

i) Historical cost and ii) predetermined cost

**i) Historical Costs:** The costs which are ascertained after being incurred are called historical costs. Such costs are available only when the production of a particular thing has already been done.

**Basic Characteristics of such Costs are:**

a) They are based on recorded facts

- b) They can be verified because they are always supported by the evidence of their occurrence.
- c) They are mostly objective because they relate to happenings which have already taken place.

**ii) predetermined Costs:** Such costs are estimated costs i.e., computed in advance of production taking in to consideration the previous period's costs and the factors affecting such costs. Predetermined cost determined on scientific basis becomes standard cost. Such cost which compared with actual costs will give the reasons of variance and will help the management to fix the responsibility and to take remedial action to avoid recurrence in future.

**9. According to planning and control:** Planning and control are two functions of management. According to this, costs can be classified as budgeted costs and standard costs.

**Budgeted Costs:** Budgeted costs represent an estimate of expenditure for different phases of business operations such as manufacturing, administration, Sales, research and development etc. Continuous comparison of actual performance (i.e actual cost) with that of budgeted cost is made so as to report the variations from the budgeted cost to the management for corrective action.

**Standard Costs:** Budgeted Costs are translated in to actual operation through the instrument of standard costs. The Chartered Institute of Management Accountants, London defines Standard Costs as "the predetermined cost based on technical estimate for materials labour and overhead for a selected period of time for a prescribed set of working conditions". Thus standard cost is determination, in advance of production, of what should be the cost.

**10. By Association with the Product :** Under this classification costs can be product costs and period costs.

**Product Costs :** Product costs are those cost which are traceable to the product and are included in inventory valuation. They comprise direct materials, direct labour and manufacturing overheads in case of manufacturing concerns. These are used for valuation of inventory and are shown in Balance sheet till they are sold because such costs provide income or benefit only after sale.

**Period Costs:**Period costs are incurred on the basis of time such as rent, salaries etc. These may relate to administration and selling costs essential to keep the business running. Though these are not associated with production and are necessary to generate revenue but cannot be assigned to a product. These are charged to the period in which these are incurred and treated as expense.

**II For Managerial Decisions:** On this basis, costs may be classified in to the following costs.

**i) Marginal Cost:** Marginal cost is the total of variable cost i.e. prime cost plus variable overheads. It is based on the distinction between fixed and variable costs. Fixed costs are ignored and only variable costs are taken in to consideration for determining the cost of products and value of work in progress and finished goods.



**ii) Out of Pocket Costs:** This is the portion of costs which involves payment to outsiders i.e gives rise to cash expenditure as opposed to such costs as depreciation which do not involve any cash expenditure. Such costs are relevant for price fixation during recession or when make or buy decision is to be made.

**iii) Differential Costs :** The change in costs due to change in the level of activity or pattern or method of production is known as differential cost. If the change increases the cost it will be called incremental cost. If there is decrease in cost resulting from decrease in output, the difference is known as decremental cost.

**iv) Sunk Cost :** A sunk cost is an irrecoverable cost and is caused by complete abandonment of a plant. It is written down value of abandoned plant less its salvage value. Such costs are not relevant for decision making and are not affected by increase or decrease in volume. Thus, which has taken place and is irrecoverable in a situation is treated as sunk cost.

**v) Imputed or Notional Costs :** These costs are notional in nature and do not involve any cash outlay. The chartered Institute notional cost as “the value of a benefit where no actual cost is incurred”. Even though such costs do not involve any cash outlay but are taken into consideration while making managerial decisions. Examples of such costs are: Notional rent charged on business premises owned by the proprietor interest on capital for which no interest has been paid.

**vi) Opportunity Cost :** It is the maximum possible alternative earning that might have been earned if the productive capacity or services had been put to some alternative use. For example, if an owned building is proposed to be used for a project the likely rent of the building is the opportunity cost which should be taken into consideration while evaluating the profitability of the project.

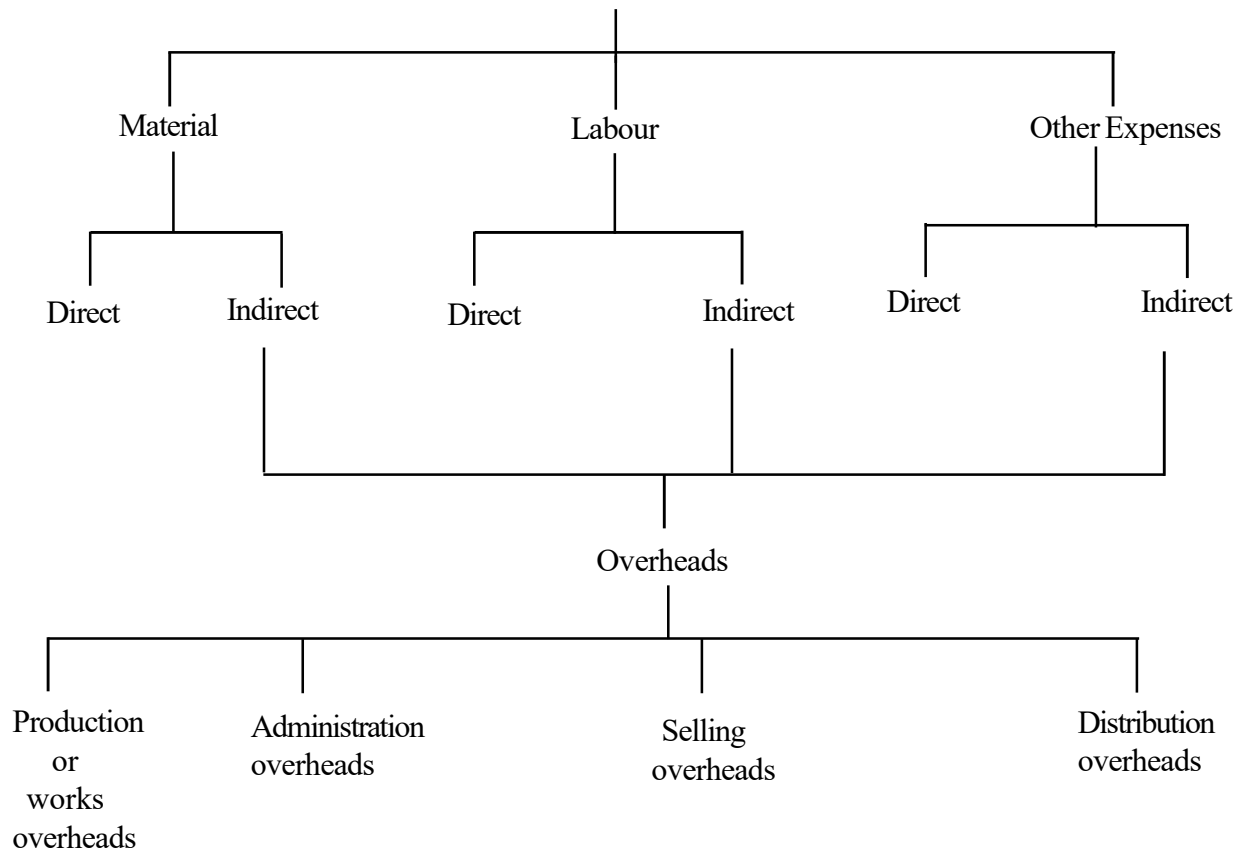
**vii) Replacement Cost :** It is the cost at which there could be purchase of an asset, or material identical to that which is being replaced or revalued. It is the cost of replacement at current market price.

**viii) Avoidable and Unavoidable Cost :** Avoidable costs are those which can be eliminated if a particular product or department with which they are directly related in discontinued. For example, salary of the clerks employed in a particular department can be eliminated if the department is discontinued. Unavoidable cost is that cost which will not be eliminated with the discontinuation of a product or department. For example salary of factory manager or factory rent can not be eliminated even if product is eliminated.

### 4.3 ELEMENTS OF COST :

Mere knowledge of total cost cannot satisfy the needs of management. For proper control and managerial decisions, management is to be provided with necessary data to analyse and classify the costs. For this purpose the total cost analysed by elements of cost i.e by the nature of expenses. The elements of costs are three i.e materials, labour and other expenses. The elements of cost further analysed in to different elements as follows :

## Elements of Cost



**1. Direct Materials :** Direct materials are those materials which can be identified in the product and can be conveniently measured and directly charged to the product. Thus, these materials directly enter the production and form a part of the finished product. For example, timber in furniture making cloth in dress making and bricks in building a house. The following are the Direct Materials.

- i) All raw materials like jute in the manufacture of gunny bags, pig iron in foundry and fruits in canning industry.
- ii) Material specifically purchased for a specific job, process or order like glue for book, binding, starch powder for dressing yarn.
- iii) Parts or components purchased or produced like batteries for transistor radios and tyres for cycles.
- iv) Primary packing materials like cartons, wrappings, card board boxes etc used to protect finished product from climatic conditions or for easy handling inside the factory.

**2. Indirect Materials :** Indirect materials are those materials which can not be identified in the product and cannot be conveniently measured and not directly charged to the product. Example of indirect materials are : Consumable like cotton waste, lubricants, cleaning materials, materials for repairs and maintenance of fixed assets, diesel used in power generators etc.

Classification of materials into direct and indirect facilitates material control. Direct materials are usually high value items as compared to indirect material and need strict control and critical analysis for reducing their cost.

However in some cases, though the materials is a part of the finished product yet it is not treated as direct material; for example sewing thread in dress making and nails in furniture making.

**3. Direct Labour :** Direct labour is that labour which can be conveniently identified or attributed wholly to a particular job, product or process or expanded in converting raw materials in to finished goods. Wages of such labour are known as direct wages.

The wages paid to supervisors, inspectors etc though not direct labour can be treated as direct labour if they are directly engaged specific product or process and the hours they spend on it can be directly measured with out much of an effort. Similarly where the cost is not significant like the wages of trainees or apprentices, their labour though directly spent on product is not treated as direct labour.

**4. Indirect Labour :** Indirect labour is the labour which are not directly engaged in the production of goods and services but which indirectly helps the direct labour engaged in production. The example of indirect labour are supervisors, sweepers, foremen, watchmen, time keeper, cleaners, repairers etc. The cost of indirect labour cannot be conveniently allocated to a particular job, order, process or article.

**5. Direct Expenses :** Direct expenses are those expenses which are directly incurred in process of production other than direct material and direct labour. For example excise duty, Royalty on production, Architect fees, travelling expenses to site, expenditure on pilot projects, experimental expenditure, planning expenditure.

**6. Overheads :** Overheads may be defined as the aggregate of the cost of indirect materials, indirect labour and such other expenses including services as cannot conveniently be charged direct to specific cost units. Thus overheads are all expenses other than direct expenses. In general terms, overheads comprise all expenses incurred for or in connection with the general organisation of the whole or part of the undertaking i.e the cost of operating supplies and services used by the undertaking and including the maintenance of capital assets. The main groups in to which overheads may be sub-divided are i) Manufacturing overhead ii) Administration overhead iii) Selling overheads iv) Distribution overheads v) Research and Development overheads.

### **Expenses Excluded from Costs :**

The total cost of a product should include only those items of expenses which are a charge against profit. Items of expenses which are relating to capital assets, capital losses, payments by way of distribution of profits and matters of pure finance should not form a part of the costs

Examples of such expenses are - income tax, dividends, abnormal wastage of material, abnormal idle time, interest on capital given or received, expenses of raising capital, discount on shares and debentures, profit or loss from the sale of asset or investments, excessive depreciation, appropriation of profits, writing off goodwill, preliminary expenses and underwriting commission, cash discount, debentures interest, incomes which are connected with business i.e transfer fees, rent, interest, dividend received and capital expenditure.

#### 4.4 Cost Sheet or Statement of Cost :

Cost sheet is a statement designed to show the output of a particular accounting period along with break-up of costs. There is no fixed form for preparation of a cost sheet but in order to make the cost sheet more useful it is generally presented in columnar form. The main advantages of cost sheet are :

1. It discloses the total cost and the cost per unit of the units produced during the given period.
2. It enables a manufacturer to keep a close watch and control over the cost of production.
3. By providing a comparative study of the various elements of current cost with the past results and standard costs, it is possible to find out the causes of variations in costs and to eliminate the adverse factors and conditions which go to increase the total cost.
4. It acts as a guide to the manufacturer and helps him in formulating a definite useful production policy.
5. It helps in fixing up the selling price more accurately
6. It helps the business man to minimise the cost of production when there is a cut throat competition.
7. It helps the business man to submit quotations with reasonable degree of accuracy against tenders for the supply of goods.

#### 4.5 Proforma of Cost Sheet :

##### Cost Sheet

| Particulars                           | Rs.     | Total Cost<br>Rs. | Cost Per Unit<br>Rs. |
|---------------------------------------|---------|-------------------|----------------------|
| Opening stock of Raw Materials        | X X X X |                   |                      |
| Add : Purchases                       | X X X X |                   |                      |
| Add : Carriage on Purchases           | X X X X |                   |                      |
|                                       | X X X X |                   |                      |
| Less : Closing stock of Raw Materials | X X X X |                   |                      |

**Cost Sheet**

| <b>Particulars</b>                   | <b>Rs.</b>       | <b>Total Cost<br/>Rs.</b> | <b>Cost Per Unit<br/>Rs.</b> |
|--------------------------------------|------------------|---------------------------|------------------------------|
| Cost of Raw Materials Used           |                  | x x x x                   | x x x x                      |
| Direct Wages                         |                  | x x x x                   | x x x x                      |
| Direct Expenses                      |                  | x x x x                   | x x x x                      |
| <u>Prime Cost</u>                    |                  | x x x x                   | x x x x                      |
| Add : Factory / Works<br>Overheads   | x x x            |                           |                              |
| Factory Rent Rates & Taxes           | x x x            |                           |                              |
| Fuel & Water                         | x x x            |                           |                              |
| Indirect materials                   | x x x            |                           |                              |
| Indirect wages                       | x x x            |                           |                              |
| Works manager salary                 | x x x            |                           |                              |
| Drawing office salaries              | x x x            |                           |                              |
| Works expenses                       | x x x            |                           |                              |
| Depreciation on Plant &<br>Machinery | x x x            |                           |                              |
| Repairs of plant & machinery         | x x x            |                           |                              |
| Insurance on plant &<br>machinery    | x x x            |                           |                              |
| Depreciation on land &<br>Buildings  | x x x            |                           |                              |
|                                      | x x x x          |                           |                              |
| Less : Scrap value                   | x x x            |                           |                              |
| Add : Opening work in<br>progress    | x x x x<br>x x x |                           |                              |
|                                      | x x x x          |                           |                              |
| Less : Closing work in<br>progress   | x x x            |                           |                              |

**Cost Sheet**

| <b>Particulars</b>                                     | <b>Rs.</b> | <b>Total Cost<br/>Rs.</b> | <b>Cost Per Unit<br/>Rs.</b> |
|--|------------|---------------------------|------------------------------|
| <u>Factory Cost / Works Cost /<br/>Cost of Out put</u> |            | x x x x                   | x x x x                      |
| Add : Administrative or office<br>overheads :          | x x x      |                           |                              |
| Counting office salaries                               | x x x      |                           |                              |
| Office manager salary                                  | x x x      |                           |                              |
| Staff salaries   | x x x      |                           |                              |
| Office rent, taxes, insurance                          | x x x      |                           |                              |
| Office lighting & cleaning                             | x x x      |                           |                              |
| Directors fees   | x x x      |                           |                              |
| Managing Director Salary                               | x x x      |                           |                              |
| Printing & Stationary                                  | x x x      |                           |                              |
| Postage  | x x x      |                           |                              |
| Telephone expenses                                     | x x x      |                           |                              |
| Audit Fees   | x x x      |                           |                              |
| Depreciation on office furni-<br>ture and buildings    | x x x      |                           |                              |
| Other expenses   | x x x      |                           |                              |
| <u>Office cost or<br/>Cost of Production</u>           | x x x x    |                           |                              |
| Add : Opening stock of<br>finished goods               | x x x      | x x x x                   | x x x x                      |
|  | x x x x    |                           |                              |
| Less : Closing stock of<br>finished goods              | x x x      |                           |                              |
| <u>Cost of goods sold :</u>                            |            | x x x x                   | x x x x                      |

**Cost Sheet**

| <b>Particulars</b>                       | <b>Rs.</b> | <b>Total Cost<br/>Rs.</b> | <b>Cost Per Unit<br/>Rs.</b> |
|--|------------|---------------------------|------------------------------|
| Add : Selling and Distribution overheads |            |                           |                              |
| Sales men salaries & commission          | X X X      |                           |                              |
| Sales manager Salary                     | X X X      |                           |                              |
| Advertisement Expenses                   | X X X      |                           |                              |
| Show room expenses                       | X X X      |                           |                              |
| Samples & free gifts                     | X X X      |                           |                              |
| Market research expenses                 | X X X      |                           |                              |
| Bad debts                                | X X X      |                           |                              |
| Ware house rent & insurance              | X X X      |                           |                              |
| Travelling expenses                      | X X X      |                           |                              |
| Carriage outwards                        | X X X      |                           |                              |
| Packing expenses                         | X X X      |                           |                              |
| Delivery van expenses                    | X X X      |                           |                              |
| Depreciation on delivery van             | X X X      |                           |                              |
| <u>Cost of Sales / Total Cost</u>        |            | X X X X                   | X X X X                      |
| <u>Profit / Loss</u>                     |            | X X X                     | X X X X                      |
| <u>Sales / Selling Price.</u>            |            | X X X X                   | X X X X                      |

#### 4.6 Self Assessment Questions :

1. Prepare a chart showing the different elements of cost.
2. Define i) Cost ii) Cost centre.
3. Define cost classification.
4. Distinguish between Direct and Indirect Cost.
5. Define : i) fixed cost ii) variable cost iii) Semi variable cost.
6. Distinguish between product cost and period cost.
7. Explain the controllable and uncontrollable costs.
8. How the cost is classified for Management decision.

#### 4.7 Suggested Readings

- Cost & Management Accounting - S.P.Jain & K.L.Narang.  
Cost Accounting - N.K.Prasad.

**P. USHA RANI**



## Lesson - 5

# COST SHEET

### 5.0 OBJECTIVES:

After studying this lesson you should be able to Prepare cost sheet

### STRUCTURE:

- 5.1 Introduction
- 5.2 Features of incentive schemes
- 5.3 Method of payment of incentives
- 5.4 Solved Problems
- 5.5 Self Assessment Questions
- 5.6 Books Recommended

### 5.1 INTRODUCTION:

Cost sheet is also known as statement of cost. It is designed to show the out put of a particular accounting period along with breakup of costs. The data incorporated in cost sheet are collected from various statements of accounts. The main advantages of a cost sheet are :

1. It discloses the total cost and the cost per unit of the units produced during the given period.
2. It enables a manufacturer to keep a close watch and control over the cost of production.
3. Cost sheet provides a comparative study of the various elements, current costs with the past results to find out the causes of variations in costs.
4. It helps the manufacturer in formulating a definite useful production policy.
5. It helps in fixing up the selling price more accurately.
6. It helps the businessmen to minimise the cost of production.

There is no fixed form for preparation of a cost sheet but in order to make the cost sheet more useful it is generally presented in columnar form as given in the following format.

solution :

**COST SHEET**

| Particulars                               | June 2006       | June 2007       |
|---|-----------------|-----------------|
|   | Rs.             | Rs.             |
| Opening balance of Raw material           | 30,000          |                 |
| Add : Purchases                           | <u>4,50,000</u> |                 |
|   | 4,80,000        |                 |
| Less : Closing balance of Raw material    | <u>25,000</u>   |                 |
| Materials consumed                        |                 | 4,55,000        |
| Add : wages                               |                 | <u>2,30,000</u> |
| Prime cost                                |                 | 6,85,000        |
| Add : factory over heads                  |                 | <u>92,000</u>   |
|   |                 | 7,77,000        |
| Add : opening balance of work in process  |                 | <u>12,000</u>   |
|   |                 | 7,89,000        |
| Less : Closing balance of work in process |                 | <u>15,000</u>   |
| Factory cost                              |                 | 7,74,000        |
| Add : office expenses                     |                 | <u>30,000</u>   |
| Total cost of production                  |                 | 8,04,000        |
| Add : opening balance of finished goods   |                 | <u>60,000</u>   |
|   |                 | 8,64,000        |
| Less: closing balance of finished goods   |                 | <u>55,000</u>   |
| Cost of goods sold                        |                 | 8,09,000        |
| Add : selling & distribution expenses     |                 | <u>20,000</u>   |
| Total cost                                |                 | 8,29,000        |
| Net profit                                |                 | <u>71,000</u>   |
| Sales                                     |                 | <u>9,00,000</u> |

|  |               |                 |                 |
|--|---------------|-----------------|-----------------|
| Labour amenities (2:3)                             | 600           | 900             | 1500            |
| works general (2:3)                                | <u>10,000</u> | <u>20,000</u>   | <u>30,000</u>   |
| Works cost   | 75,800        | 1,92,100        | 2,67,900        |
| Administration and Selling<br>(10% of works cost ) | <u>7,580</u>  | <u>19,210</u>   | <u>26,790</u>   |
| Total cost   | <u>83,380</u> | <u>2,11,310</u> | <u>2,94,690</u> |

Cost per unit of each vehicle 138.97, 264.14

**Notes :**

- Material cost has been apportioned on the basis of cost ratio per unit multiplied by the units produced  
i.e  $A:B = 1 \times 600 ; 2 \times 800 = 600 ; 1,600 = 3:8$
- Direct wages have similarly been apportioned  
i.e  $A:B = 2 \times 600 ; 3 \times 800 = 1200 ; 2400 = 1:2$
- Stores overheads have been apportioned as a percentage of material cost  
i.e  $\frac{19800}{1,98000} \times 100 = 10\%$
- Running expenses of machines have been apportioned on the basis of machine utilization ratio per unit multiplied by the units produced  
i.e  $A:B = 1 \times 600 ; 2 \times 800 = 600 ; 1,600 = 3:8$
- Depreciation charges have been apportioned on the same basis as running expenses of machines.
- Labour amenities are apportioned on the basis of direct labour ratio i.e.  $A : B = 2:3$
- Works general expenses have been apportioned on the basis of direct labour ratio  
i.e  $A : B = 2 : 3$
- Administration and selling overheads have been apportioned on the basis of works cost  
i.e ; 758 : 1,921.

|  |                 |                  |
|--|-----------------|------------------|
| Less stock of Raw material 31.1.2007       | <u>1,40,000</u> |                  |
| Cost of material consumed                  |                 | 10,00,000        |
| Add wages                                  |                 | <u>5,00,000</u>  |
| Prime cost                                 |                 | 15,00,000        |
| Add works over heads                       |                 | <u>1,50,000</u>  |
| Works cost                                 |                 | 16,50,000        |
| Add office expenses                        |                 | <u>1,00,000</u>  |
| Cost of production                         |                 | 17,50,000        |
| Add : Stock of finished goods ( opening)   |                 | <u>50,000</u>    |
|  |                 | 18,00,000        |
| Less : Stock of finished goods ( closing ) |                 | <u>60,000</u>    |
| Cost of goods sold                         |                 | 17,40,000        |
| profit                                     |                 | <u>6,60,000</u>  |
| sales                                      |                 | <u>24,00,000</u> |

Percentage of works overheads charges to production

$$\text{Wages } \frac{1,50,000}{5,00,000} \times 100 = 30 \%$$

Percentage of general over headss to works cost

$$\text{Wages } \frac{1,00,000}{16,50,000} \times 100 = 6.06 \%$$

9. The following extract of costing information relates to commodity 'A' for the half year ending 31st December 2007

|                           | <b>Rs.</b> |
|---------------------------|------------|
| Purchase of Raw materials | 1,20,000   |
| Works overheads           | 48,000     |
| Direct wages              | 1,00,000   |

## Lesson - 6

# MATERIALS-I

### 6.0 OBJECTIVES:

After studying this lesson you should be able to understand the following

- What is material control
- How to control material
- Procedure for purchasing of material
- Role of different levels of stock in controlling material ( or stores )

### STRUCTURE:

- 6.1 Introduction
- 6.2 Types of material
- 6.3 Material Control
  - 6.3.1 Objectives of material control
  - 6.3.2 Essentials of material control
  - 6.3.3. Advantages of material control
- 6.4 Purchasing and its organisation
  - 6.4.1 Objectives of purchasing department
  - 6.4.2. Centralised purchasing
  - 6.4.3. Decentralised purchasing
- 6.5 Layout of stores
  - 6.5.1 Centralised stores
  - 6.5.2 Decentralised stores
  - 6.5.3 Sub - stores
- 6.6 The store keeper
- 6.7 Levels of materials
- 6.8 Illustrations
- 6.9 Conclusion
- 6.10 Self Assessment Questions
- 6.11 Books Recommended

4. **Minimum wastage** : Wastage should not exceed the normal level of wastage. Store keeper and worker should be trained to handle the material in a scientific way to avoid the wastage.
5. **Risks of spoilage and obsolescence** : Risk of spoilage and obsolescence must be avoided. For this purpose, a maximum quantity of each material is determined and proper method of issue of material is followed.
6. **Information about availability of materials** : Information should be made continuously available to the management so that planning of production may be done.
7. **Misappropriation by employees** : Material can be easily misappropriated by employees, this requires an internal check on materials which is a part of material control.

### 6.3.2. Essentials of material control :

The important requirements of material control are -

- i. Proper co - ordination among the departments involved in the buying, receiving, inspection, storage and accounting.
- ii. Centralisation of purchasing under the control of competent buyer.
- iii. Proper scheduling of material requirements.
- iv. Proper classification of materials.
- v. The operation of a system of internal check to ensure that all transaction involving materials and equipment are checked by properly authorised and independent persons.
- vi. The storage of materials is well - planned and kept in properly designated location.
- vii. The operation of a perpetual inventory system.
- viii. Fixing maximum, minimum and reordering levels of stock.
- ix. Adequate records to control materials.
- x. Regular reports to management about material control.

### 6.3.3. Advantages of material control :

A good system of material control enjoys the following advantages.

- a. eliminates waste in the use of material.
- b. reduces the risk of loss of material from fraud and theft.
- c. helps in keeping perpetual inventory and other records to facilitate the preparation of accurate reports to management.
- d. reduces the capital tied up in inventories.
- e. reduces the cost of storage.

4. **Compilation & consultation of records** : All records with regard to purchases are kept at one place under the supervision of the purchase officer. This results in economy, both in compilation and consultation of records.
5. **Product standards** : It avoids duplications of efforts and is helpful in achieving product standards.
6. **Economy** : Centralised purchasing results in economy to a vendor because there is only one purchase officer to be dealt with instead of many persons under decentralised purchasing.

**Disadvantages :**

1. Centralised purchasing will cause delay because branches at different places will send their requirements to the purchasing department and the purchasing department will then look into their requirements and place the order for the purchase of materials.
2. There are chances of misunderstanding between the branch which requires the materials and the purchasing department with the result that wrong purchases of materials can be made.
3. It will lead to high initial cost because a separate purchasing department for the purchase of materials is to be set up.

It is advantageous to have centralised purchasing if the branches or factories situated at different places need the same types of materials.

**6.4.3. Decentralised purchasing :**

Decentralised purchasing means purchasing function is decentralised. Heads of different departments purchase their requirements. Branches also purchase separately their requirements.

**Advantages :**

1. Delay in purchases can be reduced.
2. There are no chances of misunderstanding among the branches.

**Disadvantages :**

1. When purchases are decentralised, trade discounts or economies in transport cannot be obtained because the quantity involved will be less.
2. Better control on purchasing is not possible. There are chances of reckless buying when several persons are authorised to make purchases for their requirements.

**6.5. LAYOUT OF STORES :**

The stores department should be properly organised and equipped for handling of material coming in and going out. The stores department should be housed in a position which is readily accessible from any part of the factory and also as near to the road, railway siding or wharf as is possible in order that the minimum expenditure is incurred in unloading the materials purchased. A good location of layout of stores may bring down cost of production.

Types of stores layouts :

1. centralised stores.
2. decentralised stores
3. sub- stores.

### **6.5.1. Centralised stores :**

Under this system all materials are held in bulk in a place which is centrally located. Other decentralised stores draw their supplies from the central stores. Centralised store is always advisable from the point of view of control and economy.

#### **Merits :**

The advantages of purely centralised stores are -

1. Better supervision, better layout of stores and better control over stores.
2. Fewer obsolete articles.
3. Minimum investment in stock
4. Possibility of bulk buying at lower cost.
5. Inventory checks and inventory control facilitated.

#### **Demerits :**

1. Increased transportation costs
2. Inconvenience and delay in delivering goods to departments from central stores.
3. Production stoppages in departments due to breakdowns in transport or hold- ups in central store.

### **6.5.2. Decentralised stores :**

Under the system stores are organised individually by different branches. These stores draw their supplies from centralised stores.

### **6.5.3. Sub - stores :**

Sub - stores permit stocking of specialised materials for particular departments, closer liaison between storekeeper and the department he serves, easier detection of discrepancies in stores records and physical stocks and avoid delay in drawing stores. Each sub store is given as a commencing stock sufficient supplies for a little more than the re - stocking period. At the end of each week or other suitable period the sub- store keeper passes all its requisitions to the central store which reimburses it for these issues and there by restores the stock of each material to its imprest or original level. The control over such sub- stores is very good as over issues will not be reimursed. This system thus, combines the advantages of centralised buying and storage with the benefits of having stock conveniently available at several issuing points. But in this type of organisation centralised control may be lost, more space may be required and the storage cost may increase due to increased staff in stores and increased handling equipments.



## 6.6. THE STORE KEEPER :

All manufacturing concerns appoint a person known as the store keeper, chief store keeper or the stores superintendent who is in charge of the stores department and is responsible for stores control. The storekeeper should have technical knowledge and wide experience in stores routine and ability of organising the operations of the stores. He should be a man of undoubted integrity. His duties and responsibilities include the following.

1. Receiving the stores correctly and comparing by an indent, a purchase order, an inspection note and a goods received note.
2. Entering all receipts regularly in the Bin cards.
3. Keeping every item of stores in its allotted bin. The principle of good store keeping is a place for everything and every thing in its place.
4. Maintaining the stores in an orderly and tidy manner.
5. Ensuring that materials are issued only to those who present a duly signed requisition note.
6. Requisitioning from the purchasing department when the stock of a material reaches the re-order level.
7. Ensuring that the stocks do not exceed the maximum level nor go below the minimum level at any time.
8. Checking the Bin card balances with the physical quantities in the bins.
9. Maintaining and supervising the duties of the different members of staff under this charge.
10. Preventing unauthorised persons from entering into the stores.

## 6.7. LEVELS OF MATERIALS OR REQUISITIONING FOR STORES :

One of the duties of the store keeper is to send requisitions for materials for replenishment in time so that the production may not hamper for want of materials. In this respect, he is guided by the re - order level, economic ordering quantity and maximum and minimum quantity which he is authorised to store in respect of each kind of material.

### a. Re - ordering level :

Re - ordering level is the point at which if stock of a particular material in store approaches, the store keeper should initiate the purchase requisition for fresh supplies of that material. This level is fixed supplies of that material. This level is fixed somewhere between the maximum and minimum levels.

Re ordering level = Minimum level + consumption during the time required to get the fresh delivery.

( or )

Re - ordering level = Maximum consumption X Maximum re - order period.

**Formula :**

Maximum Level = Re - order level - Expected minimum consumption in units during minimum weeks required to obtain delivery + Re ordering quantity in use.

**c. Minimum level :**

The minimum stock level is that level below which the stock of any item should not be allowed to fall. A minimum stock level is fixed by taking into consideration the following factors.

1. Re-order level
2. Average rate of consumption of material
3. Average time required to obtain delivery of fresh supplies.

**Formula :**

Minimum Level = Re - order level - [ normal or average usage per period x no. of periods required to obtain delivery (average)]

**d. Danger level :**

Danger level is a level at which normal issues of the material are stopped and issues are made only under specific instructions.

Dangel level = Average consumption x Max . re - order period for emergency purchases.

Average stock level

The average stock level is calculated by the following formula :

Average stock level = Minimum stock level + 1/2 of Re - order quantity

1/2 ( minimum stock level + 1/2 of re- order quantity).

**Illustration :**

Two components X and Y are used as follows :

Normal usage 50 units per week each

Maximum usage 75 units per week each

Minimum usage 25 units per week each

Reorder quantity X = 400 units Y = 600 units

Reorder period X = 4 to 6 weeks Y = 2 to 4 weeks.

Calculate for each component -

- Re-order level
- Minimum level
- Maximum level
- average stock level

**Solution :**

a) Re-order level -

Re-order level = Maximum Reorder period x Maximum usage

$$X = 6 \times 75 = 450 \text{ units}$$

$$Y = 4 \times 75 = 300 \text{ units}$$

b) Minimum level -

Minimum level = Re - order level - Normal usage per week X Average delivery time.

$$X = 450 - (50 \times 5) = 200 \text{ units}$$

$$y = 300 - (50 \times 3) = 150 \text{ units}$$

c) Maximum level

Reorder level - Minimum consumption during minimum weeks + Re ordering quantity.

$$X = 450 - (25 \times 4) + 400$$

$$y = 300 - (25 \times 2) + 600$$

$$\text{Average stock level} = \frac{\text{Maximum Level} + \text{Minimum Level}}{2}$$

$$X = \frac{750 + 200}{2} = 475 \text{ units}$$

$$Y = \frac{850 + 150}{2} = 500 \text{ units}$$

Average delivery time =

$$X = \frac{4 + 6}{2} = 5$$

$$Y = \frac{2 + 4}{2} = 3$$

**e. Economic ordering quantity :**

The quantity of material to be ordered at one time is known as economic ordering quantity. This quantity is fixed in such a manner as to minimise the cost of ordering and carrying the stock. Out of the total costs the only costs to be taken care of are ordering costs and carrying costs.

Carrying Cost : It is the cost of holding the materials in the store and includes.

1. Cost of the storage space
2. Cost of bins and racks.
3. Cost of maintaining the materials to avoid deterioration.
4. Amount of interest payable on the money locked up in the materials.
5. Cost of spoilage in stores
6. Transportation cost of material
7. Cost of obsolescence
8. Insurance costs
9. clerical costs.

Ordering costs : It is the cost of placing orders for the purchase of materials and includes.

1. Cost of staff posted in the purchasing, inspection and payment departments.
2. Cost of stationery, postage and telephone charges.

The quantity to be ordered should be such which minimises the carrying and ordering costs. The order to be purchased should be large enough to earn more trade discount and to take advantage of bulk transport, but it should not be too large to incur heavy payment on account of interest, storage and insurance costs. If the price to be paid is stable, the quantity to be ordered each time can be ascertained by the following formula.

$$Q = \sqrt{\frac{2CO}{I}}$$

Q = Quantity to be ordered

C = Consumption of the material concerned in units during a year.

O = Cost of placing one order.

I = interest payment including variable cost of storing per unit per year i.e holding costs of inventory.

**Illustration :**

Find out the economic ordering quantity from the following particulars.

Annual usage = 6,000 units

Cost of material per unit = Rs 20

Cost of placing and receiving one order = Rs 60

Annual carrying cost of one unit = 10 % of inventory value.

**Solution :**

$$\text{E.O.Q.} = \sqrt{\frac{2CO}{I}}$$

C = 6,000 units

O = Rs 60

$$I = \frac{20 \times 10}{100} = \text{Rs } 2$$

$$\text{E.O.Q.} = \sqrt{\frac{2 \times 6000 \times 60}{2}} = \sqrt{3,60,000} = 600 \text{ units}$$

E.O.Q. = 600 units

**6.8 ILLUSTRATION :****Illustration - 1**

Find out the ordering level from the following information

- a. Minimum stock 1000 units
- b. Maximum stock 2000 units
- c. Time required for receiving the material 15 days.
- d. Daily consumption of material 50 units

**Solution :**

$$\begin{aligned}\text{Ordering level} &= \text{Minimum stock} + (\text{consumption during the time required for fresh delivery}) \\ &= 1000 \text{ units} + 50 \times 15 = 1750\end{aligned}$$

$$\text{Ordering level} = 1750 \text{ units}$$

**Illustration - 2**

A manufacturer buys certain equipment from outside suppliers at Rs 30 per unit. Total annual needs are 800 units. The following further data are available

Annual return on investment 10%

Rent, Insurance, taxes per units per day Re 1

Cost of placing an order Rs 100

Determine the EOQ

**Solution :**

$$\text{E.O.Q.} = \sqrt{\frac{2CO}{I}}$$

Where C = Annual requirement of material 800 units

O = ordering cost Rs 100

I = Carrying cost per unit = 1 + 10% of Rs 30.

$$\text{E.O.Q.} = \sqrt{\frac{2 \times 800 \times 100}{4}} = 200 \text{ units}$$

$$\text{E.O.Q.} = 200 \text{ units}$$

**Illustration -3**

The components A and B are used as follows :

Normal usage 50 units per week each

Maximum usage 25 units per week each

Minimum usage 75 units per week each

Re order quantity A = 300 units

B = 500 units

Re-order period A = 4 to 6 weeks

B = 2 to 4 weeks.

Calculate for each component -

- Re-order level
- Minimum level
- Maximum level
- average level

**Solution :**

a) Re order level -

Re order level = Maximum usage x Maximum Reorder period

Re order level of Material A =  $75 \times 6 = 450$  units

Re order level of Material B =  $75 \times 4 = 300$  units

b) Minimum level -

Minimum level = Re - order level - (Normal consumption X Normal Re- order period).

Minimum level for material X =  $450 - (50 \times 5) = 200$  units

Minimum level for material y =  $300 - (50 \times 3) = 150$  units

Normal Re-order period =  $\frac{\text{Minimum Period} + \text{Maximum Period}}{2}$

Normal Re-order period for material = A =  $\frac{4 + 6}{2} = 5$  weeks

Normal Re-order period for material = B =  $\frac{2 + 4}{2} = 3$  weeks

c) Maximum level

Re-ordering level + Re-ordering quantity -

( Minimum consumption x Minimum Re-order level )

Material A =  $450 - (25 \times 4) = 650$  units

Material B =  $300 - (25 \times 2) = 750$  units

d) Average stock level = Minimum level + Half Re order quantity

$$\text{Material A} = 200 + \frac{1}{2} (300) = 350 \text{ units}$$

$$\text{Material B} = 150 + \frac{1}{2} (500) = 400 \text{ units}$$

#### Illustration -4

From the following data calculate maximum stock level, minimum stock level, Re ordering level Average stock level.

- Normal consumption 300 units per day
- Maximum consumption 420 units per day
- Minimum consumption 240 units per day
- Re order quantity 3600 units per day
- Re order time 10 to 15 days
- Normal Re order time 12 days.

#### Solution :

$$\begin{aligned} \text{Ordering level} &= \text{Maximum consumption} \times \text{Maximum delivery time} \\ &= 420 \times 15 = 6,300 \text{ units} \end{aligned}$$

$$\begin{aligned} \text{Minimum level} &= \text{ordering level} - (\text{General consumption} \times \text{general re - order level}) \\ &= 6,300 - (300 \times 12) = 2,700 \text{ units} \end{aligned}$$

$$\begin{aligned} \text{Maximum level} &= \text{Ordering level} + \text{Re - order quantity} - \text{Minimum consumption} \times \\ &\quad \text{Minimum delivery period.} \\ &= 6,300 + 3,600 - (240 \times 10) = 7,500 \text{ units} \end{aligned}$$

$$\begin{aligned} \text{Average stock level} &= \frac{\text{Maximum Level} + \text{Minimum Level}}{2} \\ &= \frac{2,700 + 7,500}{2} = 5,100 \text{ units} \end{aligned}$$

#### Illustration - 5

Calculate EOQ

Annual consumption = 4,000 kgs

Cost per order = Rs 5

price per k.g = Rs 5



Carrying cost = 8 % on average inventory

**Solution :**

$$\text{E.O.Q.} = \sqrt{\frac{2CO}{I}}$$

$$C = 4,000 \text{ units}$$

$$O = \text{Rs } 5$$

$$I = 8\% = \frac{5 \times 8}{100} = 0.40$$

$$\text{E.O.Q.} = \frac{2 \times 4000 \times 5}{0.40} = 316.23 \text{Kgs}$$

$$\text{E.O.Q.} = 316.23 \text{ Kgs}$$

## 6.9 CONCLUSION :

Thus the stores department should be properly organised and equipped for handling of material, coming in and going out. In determining the location and layout of stores several important considerations should be kept in view. The stores department should be located in a position which is readily accessible from any part of the factory and also as near to the road, railway siding or wharf as is possible in order to reduce the expenditure.

## 6.10. SELF ASSESSMENT QUESTIONS :

**Five Marks Questions :**

1. Give the meaning of material control
2. Give a list of the functions of the purchasing department
3. What is E.O.Q.
4. What are the advantages of ABC analysis.

**Ten Marks Questions :**

1. How is centralised purchasing superior to decentralised purchasing.
2. Discuss the functions and advantages of a centralised purchasing department of a company.
3. Explain different levels of stock

4. Enumerate the advantages and disadvantages of a centralised stores system

**Twenty Marks Questions :**

1. From the following figures compute the maximum level and minimum level.

Normal weekly requirement 1000 pieces

Maximum weekly requirement 1300 pieces

Minimum weekly requirement 800 pieces

Time required to obtain supplies 6 to 8 weeks. Re order quantity 10,000 pieces.

**Ans -** Min. level = 3,400 pieces

Max. level = 15,600 pieces

2. Calculate Minimum and maximum stock levels from the following :

Normal consumption 200 units per day

Maximum consumption 300 units per day

Minimum consumption 240 units per day

Re order period 10 to 15 days

Re order quantity 1500 units

Normal Re order period 12 days.

**Ans -** Min. level = 1620 units

Max. level = 4000 units

3. Calculate Maximum, Minimum and Average stock levels from the following :

Minimum consumption 1000 units per day

Maximum consumption 1500 units per day

Normal consumption 1200 units per day

Re-order period 10 to 15 days

Re-order quantity 15,000 units

Normal Re order period 12 days.

**Ans -** Min. level = 8,100

Max. level = 27,500

Ave. Stock level = 15,600

4. Two component A and B are used as follows :

Normal usage 100 units per week each

Minimum usage 50 units per week each

Maximum usage 150 units per week each

Re-order quantity A = 600 units

B = 1000 units

Re-order period A = 8 to 12 weeks

B = 4 to 8 weeks.

5. Calculate for each component

a. Re-order level

b. Minimum level

c. Maximum level and

d. Average stock level

6. Two component X and Y are used as follows :

Minimum usage 50 units per week each

Maximum usage 150 units per week each

Normal usage 100 units per week each

Re order quantity X = 600 units

Y = 1000 units

Re order period X = 4 to 6 weeks

Y = 2 to 4 weeks.

Calculate for each material Minimum level, Maximum level and ordering level

|                           | <b>x units</b> | <b>y units</b> |
|---------------------------|----------------|----------------|
| <b>Ans -</b> Min. level = | 400            | 300            |
| Max. level =              | 1300           | 1500           |
| ordering level =          | 900            | 600            |

### **6.11 BOOKS RECOMMENDED :**

1. Cost Accounting - Rudra Saibaba.
2. Cost & Management Accounting - S.P. Jain & K.L. Narang
3. Cost Accounting - B.K. Bhar.
4. Cost Accounting - S.P. Jain & K.L. Narang

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## Lesson - 7

# MATERIALS-II

## 7.0 OBJECTIVES:

After studying this lesson you should be able to understand-

- How to control cost through stores records
- What are the different methods of valuing material issues
- What is inventory Control

## STRUCTURE:

### 7.1 Introduction

### 7.2 Stores Records

#### 7.2.1 Bin Card

#### 7.2.2 Proforma of Bin Card

#### 7.2.3 Stores Ledger

#### 7.2.4 Proforma of Stores Ledger

#### 7.2.5 Differences between Bin Card & Stores Ledger

#### 7.2.6 Stores Requisition

### 7.3 Methods of Valuing Material Issues

#### 7.3.1 Cost Price Methods

### 7.4 Inventory Control

### 7.5 Conclusion

### 7.6 Self Assessment Questions

### 7.7 Books Recommended

## 7.1 INTRODUCTION:

Material is very significant factor of production. It occupies more than 60% of cost of production. Material which form part of a finished product is known as direct material. Hence proper control of material cost is necessary. Material control is accomplished through functional organisation, assignment of responsibility, and documentary evidence obtained in various stages of operation

Effective control also requires the systematic preparation of periodic summaries and reports. The bin cards and the stores ledger are the two important stores records that are generally kept for making a record of the various items of stores.

## 7.2.STORES RECORDS OR MATERIAL RECORDS

For recording the purchases, issues and balance of stock available, in the stores, the company prepares two stores records viz stores ledger and bin card, preparation and maintenance of stores ledger and bin card is the duty of store keeper.

### 7. 2.1. Bin Card :

The stock record maintained by stores department is known as Bin Card. Bin refers to as shelf or rack. It makes a record of the receipt and issue of material and is kept for each item of stores received is entered in the receipt column and the quantity of stores issued is recorded in the issue column of the bin card and a balance of the quantity stores is taken after every receipt or issue, so that the balance at any time can be readily seen. These cards are maintained by the storekeeper. These cards also assist the store keeper to control the stock. For each item of stores minimum quantity, maximum quantity and ordering quantity are stated on the card.

**Double Bin System** : Some concerns divide the bin, rack or shelf in two parts, namely the smaller part to store the quantity equal to the minimum quantity and the other part to store the remaining quantity and the other part to store the remaining quantity. The quantity in the smaller part is not issued so long as the quantity is available in the other part. This system helps in exercising stores control in an effective way as it facilitates physical verification and services as a signal when it becomes necessary to use the quantity kept in the smaller part.

#### **Merits of bin card :**

1. By seeing the bin card, the store keeper can send the material requisition for the purchase of material in time.
2. The store keeper should have a stock record under him.
3. Maintenance of bin cards is desired to have up to date balance of stock.

**STORES LEDGER ACCOUNT**  
**Weighted Average price**

| DATE      | RECEIPTS |          |            | ISSUES   |          |            | BALANCE  |          |            |
|-----------|----------|----------|------------|----------|----------|------------|----------|----------|------------|
|           | Quantity | Price Rs | Amount Rs. | Quantity | Price Rs | Amount Rs. | Quantity | Price Rs | Amount Rs. |
| 2-3-2007  | 200      | 2.00     | 400        | -        | -        | -          | 200      | -        | 400        |
| 10-4-2007 | 300      | 2.40     | 720        | -        | -        | -          | 500      | -        | 1120       |
| 20-4-2007 | -        | -        | -          | 250      | 2.24     | 560        | 250      | -        | 560        |
| 28-5-2007 | 250      | 2.60     | 650        | -        | -        | -          | 500      | -        | 1210       |
| 6-6-2007  | -        | -        | -          | 200      | 2.42     | 484        | 300      | -        | 720        |

$$1. \left( \frac{400 + 720}{200 + 300} \right) = 2.24$$

$$2. \left( \frac{560 + 650}{250 + 250} \right) = 2.42$$

**D. Inflated price method :**

There are some materials which are subjected to natural wastage. In such cases, the materials are issued at an inflated price ( a price higher than the actual cost ) So as to recover the cost of natural wastage of materials from the production. For Ex. materials lost due to loading and unloading.

**E. Specific price method :**

Under this method materials issued to production are priced at their purchase prices. The basic assumption in following this method is that materials in the stores are capable of being identified as belonging the specific lots. Identification can be made by placing some distinguishing mark usually price tag on every lot. When materials are issued price tags are removed and forwarded to the costing department for ascertaining the material cost of production.

**Merits :**

1. This method is simple in its mechanism and operation.
2. This method does not create accounting complications.

## **Lesson - 8**

# **LABOUR COST - CONTROL**

### **8.0 OBJECTIVES:**

After studying this lesson you should be able to understand -

- What is labour
- What are the types of labour
- How to control the labour cost
- Role of different departments in control of labour cost.
- Wage payment methods.

### **STRUCTURE:**

- 8.1 Introduction**
- 8.2 Types of material**
- 8.3 Material Control**
- 8.4 Control over labour costs**
  - 8.4.1 Personnel Department**
  - 8.4.2 Engineering Department**
  - 8.4.3 Time and Motion study Department**
  - 8.4.4 Time Keeping**
  - 8.4.5 Time booking**
- 8.5 Idle time**
- 8.6 Over time**
- 8.7 Wage payment methods**
  - 8.7.1 Essentials of a good wage payment methods**
  - 8.7.2 Time wage method**
  - 8.7.3 Piece wage method**
- 8.8 Conclusion**
- 8.9 Self Assessment Questions**
- 8.10 Books Recommended**



space against the particular day. The process is repeated for recording time of departure for lunch, return from lunch and time of leaving the factory in the evening. Late arrivals, early leavings and overtime are printed in red to attract the attention of the management

**Merits :**

1. This method is useful when the number of workers is large.
2. There are no chances of disputes arising in connection with recording of time of worker because time is recorded by the time recording clock.
3. There is no scope for partiality or carelessness of the time keeper as in case of manual methods.

**Demerits :**

1. There are chances that a worker may try to get his friends time card in order to get him marked present, when his friend is late or absent.
  2. Some times, the time recording clock goes out of order and the work of recording of time is dislocated.
- b. **Dial Time Records** : The dial time recorder is machine which has a dial around the clock. This dial has a number of holes and each hole bears a number corresponding to the identification number of the worker concerned. There is one radial arm at the centre of the dial. As a worker enters the factory gate, he is to press the radial arm after placing it at the hole of his number and his time will automatically be recorded on roll of a paper inside the dial time recorder against the number. The sheet on which the time is recorded provides a running account of the workers time.

**Merits :**

1. This machine allows greater accuracy and can itself transcribe the number of hours to the wage sheets.
2. This machine can also calculate the wages of the workers and thus avoids much loss of time.

**Demerits :**

1. It requires high installation cost.
2. It is useful only when number of workers is limited.

**8.4.5. Time Booking :**

Time booking is the recording of time spent by the worker on different jobs or work orders carried out by him during his period of attendance in the factory. Following are the objects of time booking.

## Lesson - 9

# METHODS OF PAYMENT OF INCENTIVES (Labour Incentive Schemes)

## 9.0 OBJECTIVES:

After studying this lesson you should be able to understand the following

- Features of incentive schemes
- Methods of payment of incentives

## STRUCTURE:

- 9.1 Introduction
- 9.2 Features of incentive schemes
- 9.3 Method of payment of incentives
- 9.4 Solved Problems
- 9.5 Self Assessment Questions
- 9.6 Books Recommended

## 9.1 INTRODUCTION:

Incentive or Bonus means money or an equivalent given in addition to an employees usually compensation. The objective of an incentive plan is to increase the production by giving an inducement to the workers in the form of higher wages for less time worked. This system of wage payment is in between the time wage system and piece wage system. In time wage system worker does not get any reward for the time saved and in piece work system, the worker gets full payment for the time saved, whereas in a premium plan, both the worker and the employer share the labour cost of the time saved. The employer is able to save wages for a proportion of the time saved and on the other hand the worker is able to get extra wages for a fraction of the time saved. The incentive scheme is also known as bonus scheme because a worker has the incentive to earn more wages by completing the work in less time.

The procedure of payment of incentive is standard time is fixed for the completion of a specified job or operation and the worker is paid for the time taken by him to complete the job or operation at an hourly rate plus wages for a certain fraction of the time saved on the standard by way of a bonus.

A worker gets more premium under Halsey premium plan compare to Rowan plan when time saved is more than half of the standard time. For instance the following problems depicts it.

### Illustration

Standard time = 40 hours

Time taken = 16 hours

Rate per hour = Rs. 2.

Calculate wage under both Halsey and Rowan plans.

### Solution :

According to Halsey plan the wage is -

Total earnings =  $T \times R + 50\%$  of Time saved  $\times$  Rate per hour

$$\begin{aligned} &= 16 \times 2 + \frac{50}{100} \times 24 \times 2 \\ &= 32 + (12 \times 2) \\ &= 32 + 24 \\ &= 56 \end{aligned}$$

Wage under Halsey plan = Rs 56.

According to Rowan plan the wage is -

Total earnings =  $T \times R + \frac{S - T}{S} \times T \times R$

$$\begin{aligned} &= 16 \times 2 + \frac{40 - 16}{40} \times 16 \times 2 \\ &= 32 + \frac{24}{40} \times 16 \times 2 \\ &= 32 + 19.2 \\ &= 51.2 \end{aligned}$$

Wage under Rowan plan = Rs. 51.2

In this Illustration time saved by worker is more than half of the standard time so worker gets more wage in Halsey plan compare to Rowan plan i.e

Wage under Halsey plan = Rs 56.

Wage under Rowan plan = Rs. 51.2

### 9.3.3. Differential piece rate plans :

Under differential piece rate plans workers are paid according to their merits because distinction is made between efficient and inefficient workers. An efficient worker can earn more wages because wages are linked to output. Following are the important differential piece rate plans.

A. **Taylor's Differential piece rate system** : This system was introduced by F.W. Taylor, the father of scientific management. This system penalise a slow worker by paying him a low piece rate for low production and reward an efficient worker by giving him a higher piece rate for a higher production. Taylor proceeded on the assumption that through time and motion study it is possible to fix a standard time for doing a particular task. To encourage the workers to complete the work within the standard time. According to him if a worker performs the work within or less than the standard time, he is paid a higher piece rate, and if he does not complete the work within the standard time, he is given a lower piece rate. Differential rates are usually as follows -

1. 80% of piece rate for below standard
2. 120% of piece rate for above standard.

#### Illustration :

Calculate the earnings of workers A and B under straight piece - rate system and Taylor's differential piece - rate system from the following particulars.

Normal rate per hour - Rs 18

Standard time per unit - 20 seconds

differentials to be applied :

80% of piece rate for below standard

120% of piece rate for above standard.

Worker A produces 1,300 units per day and

Workder B produces 1,500 units per day.

#### solution :

Standard production per 20 seconds = 1 unit

Standard production per 1 minute =  $\frac{18.00}{180} = 3$  unit

Standard production per 1 hour =  $3 \times 60 = 180$  unit

Standard production per day of 8 hours =  $180 \times 8 = 1,440$  unit

$$\text{Low piece rate} = \frac{10 \text{ p} \times 80}{100} = 8 \text{ paisa}$$

$$\text{high piece rate} = \frac{10 \text{ p} \times 120}{100} = 12 \text{ paisa}$$

Earnings of Worker A :

$$1,300 \text{ units} \times 8 \text{ paisa} = \text{Rs } 104$$

$$\text{Earning of worker B} = 1500 \times 12 \text{ paisa} = \text{Rs } 180$$

Low piece rate has been applied in case of worker A because worker A's daily production of 1,300 units is less than the standard daily production of 1,440 units.

High piece rate has been applied to worker B because worker

B's daily productions of 1,500 units is more than the standard daily production of 1440units.

**Advantages of Taylor's differential piece rate plan :**

- i. An efficient worker can earn more wages.
- ii. Worker try to adopt better methods of production to increase their production.
- iii. Increased production will reduce fixed expenses.

**Disadvantages of Taylor's differential piece rate plan :**

- i. Workers have the fear of losing wages if they are not able to work due to some reason.
- ii. Workers may work at a very high speed for a few days earn good wages and then absent themselves for a few days, up setting the uniform flow of production.
- iii. Time is not guarented under this method.
- iv. Under this system if a worker just fails to complete the work within the standard time he earns much less wages than a worker who just completes the job within the standard time.

**B. Merrick's Multiple piece Rate system** : This method seeks to make an improvement in the Taylor's differential piece rate system. Under this method, three piece rates are applied for workers with different levels of performance.

| Percentage of standard | Wage rate                 |
|------------------------|---------------------------|
| Less than 83%          | Normal Piece rate         |
| 83% to 100%            | 110% of normal piece rate |
| More than 100 %        | 120% of normal piece rate |

This method is not as harsh as the Taylor's piece rate because penalty for slow workers is relatively lower.

### Illustration :

The following particulars apply to a particular job :

Standard production per hour 6 units : Normal rate per hour Rs. 1.20

In an 8 hour day Mohan produces 32 units, Sohan produces 42 units, Lakhan produces 50 units.

Calculate the wages of the workers under Merrick differential piece rate system

Solution :

Standard production per hour 6 units.

Normal rate per hour Rs. 1.20.

Piece rate = = 0.20

Merrick differential piece rates are

| efficiency       | Rate                      |
|------------------|---------------------------|
| upto 83%         | Re 0.20                   |
| from 83% to 100% | 110 % of Re 0.20 i.e 0.22 |
| above 100 %      | 120% of Re 0.20 = Re 0.24 |

earnings of workers :

**Mohan** produces 32 units which means his efficiency is  $\frac{32}{48} \times 100 = 67\%$  i.e below 83%.

Hence first rate will apply to him. His earnings will be  $\frac{32}{48} \times 1.20 = 32 \times 0.20 = \text{Rs. } 6.40$ .

**Sohan** produces 42 units, which means his efficiency is  $\frac{42}{48} \times 100 = 87.5\%$

i.e. above 83% but below 100 % Hence second rate will apply to him.

His earnings will be =  $42 \times 0.22 = \text{Rs } 9.24$ .

**Lakhan** produces 50 units which means his efficiency is  $\frac{50}{48} \times 100 = 104\%$

i.e above 100%. Hence third rate will apply to him.

His earnings will be =  $50 \times 0.24 = \text{Rs. } 12.00$

### 9.3.4. Bonus plans of combination of Time and Piece Rates :

#### A. Gantt task Bonus plan :

This plan is based on careful time and motion study. A standard time is fixed for doing a particular task, worker's actual performance is compared with the standard time and his efficiency determined. If a worker takes more risk than the standard time to complete. The task he is given wages for the time taken by him and if a worker takes the standard time to perform the task he is given wages for the standard time and a bonus of 20% on the wages earned. If the worker completes the task in less than the standard time he is given wages for the standard time plus a bonus of 20% of the wages for the standard time.

| Production                    | Wage Payment           |
|-------------------------------|------------------------|
| production less than standard | Time rate              |
| standard production           | Time rate + 20 % Bonus |
| production more than standard | High piece rate.       |

Thus with every reduction in time the plan ensures progressive increase in total wages.

For this reason the plan is also known as ' Progressive rate ' system.

#### Illustration :

Form the following information of P,Q, R. workers calculate their wages under grantt task method.

Monthly standard production of each worker - 100 units

unit rate - 0.80 paisa

Actual production - P = 800 units

Q = 1000 units

R = 1200 units

#### Solution :

##### P wage :

Standar production per month = 1000 units

per unit = 0.80 paisa

P production = 800 units

$$\text{efficiency level} = \frac{800}{1000} \times 100 = 80\%$$

Since his efficiency is less than standard production, he gets guarantee wage i.e.

**Advantages :**

- i. It is simple to understand
- ii. It is acceptable by workers because it gives gurantee wage.
- iii. This system is advantageous to less efficient workers
- iv. Inefficient workers are motivated to become efficient and earn more wages by producing more.

**Disadvantages :**

- i. Distinction is made between efficient and inefficient workers
- ii. The quality of the output will suffer because workers will try to produce more to earn more wages.

B. **Emerson's efficiency bonus system** : Under this bonus scheme bonus is paid according to the efficiency of the worker.

| <b>Efficiency</b>    | <b>Bonus</b>   |
|----------------------|--|
| a. below 66 2/3 %    | guaranteed time wage only  |
| b. 66 2/3 % to 100 % | a bonus increasing from 0.01% to 20% above basic wage on 100 % efficiency. |
| c. over 100 %        | a bonus of 20% above basic wage plus for each 1% increase in efficiency.   |

1%

Under this system less efficient workers get guaranteed time wage.

C. **Bedaux system** : Under this bonus scheme the wage is calculated as -

If 75 % bonus is paid to the workers the formula is

$$T \times R + 75 \% \left( \frac{P \times R}{60} \right)$$

P = Points saved

T = Time taken

R = Rate

If 100 % bonus is paid, the formula is  $T \times R + 100 \% \left( \frac{P \times R}{60} \right)$



### 9.3.5. Group Bonus schemes :

#### Co partnership and profit sharing schemes :

These schemes are becoming very popular now - a - days. Under these schemes, workers get a share of the yearly profits of the company. This is done with a view of getting the cooperation of workers by giving them the feeling that they are to share the prosperity of the business. Workers can be given their share of profits in the form of cash or shares in the company :

#### Advantages

- i. Under these schemes workers get share in the profits
- ii. If the company pay share of profit in the form of shares, workers get participation in the company's management.
- iii. Workers get interest in the future of the business.

#### Disadvantages

- i. It is difficult to fix the percentage of profits to be given to workers. If the share is not given to the satisfaction of the workers, they may resort to strikes.
- ii. The share of profits is given to all workers, so no distinction is made between efficient and inefficient workers.

The payment of bonus Act 1965 has made profit sharing compulsory in all industries and provides that to the eligible employees a minimum bonus of 8 1/3 % of gross annual earnings will have to be paid irrespective of profits made or losses incurred.

### 9.4 SOLVED PROBLEMS :

1. From the following information calculate wage of a worker under Halsey premium plan.

Time Rate per hour = Rs. 2.

Standard time = 40 hours

Time taken = 20 hours

Bonus = 50 % of time saved.

#### Solution :

$$\begin{aligned}
 \text{wage} &= T \times R + 50 \% ( S - T ) \times R \\
 &= 20 \times 2 + \frac{50}{100} ( 40 - 20 ) \times 2 \\
 &= 20 \times 2 + \frac{50}{100} \times 20 \times 2 \\
 &= 40 + 20 = \text{Rs } 60.
 \end{aligned}$$

2. In order to finish a task, standard time of 15 hours was determined by time and motion study. Ram took 16 hours to finish the job while Shyam took 12 hours. Time rate is Rs3. per hour. Calculate the earnings of the workers if 50 :50 Halsey premium plan is in operation.

Solution :

The Formula is

$$E = RT \times P ( S - T ) R$$

$$S = 15 \text{ hours}$$

**Ram wage :**

Ram could not finish his work within the standard time. So he will not be paid any bonus. His earnings will be :

$$= 16 \times 3 = \text{Rs } 48.$$

**Shyam wage :**

Shyam's earnings for 12 hours will be as follows :

$$E = 12 \times 3 + 50 \% ( 15 - 12 ) 3$$

$$= 36 + 4.50 = \text{Rs } 40.50$$

3. The following particulars apply to a job :

Standard time = 10 hours

Time rate = Rs. 2 per hour

Time taken = 8 hours

Calculate earnings under Rowan plans.

**Solution :**

Under Rowan system earnings will be calculated as follows -

$$E = T \times R + \frac{S - T}{S} \times T \times R$$

$$= 8 \times 2 + \frac{10 - 8}{10} \times 8 \times 2$$

$$= 16 + \frac{2 \times 8}{10} \times 2$$

$$= 16 + 3.20 = \text{Rs. } 19.20$$

4. From the following information calculate wage of a worker under Rowan plan.

Standard time = 32 hours

Actual time = 28 hours

Time saved = 4 hour

**Solution :**

$$\begin{aligned} \text{Wages} &= T \times R + \frac{S - T}{S} \times T \times R \\ &= 28 \times 1 + \frac{4}{32} \times 28 \times 1 \\ &= 28 + 3.50 \\ &= 31.50 \end{aligned}$$

Wage = Rs. 31.50

5. Calculate the earnings of a worker from the following information under :

- Time rate method
- Piece rate method
- Halsey plan
- Rowan plan

Standard time = 30 hours

Time taken = 20 hours

Hourly rate of wages is Re 1 per hour Plus a dearness allowance at 50 paise per hour worked.

**Solution :**

|  |                      |
|--|----------------------|
| a. Earnings under time rate method -               | Rs.                  |
| Wages for 20 hours ( time taken ) at Re 1 per hour | 20                   |
| D. A for 20 hour at 50 paise per hour              | <u>10</u>            |
|  | Wage = Rs. <u>30</u> |
| b. Earnings under piece rate method -              |                      |
| Wages for 30 hours at Re 1 per hour                | 30                   |
| D. A for 20 hour at 50 paise per hour              | <u>10</u>            |
|  | Wage = Rs. <u>40</u> |

c. Earnings under Halsey plan Rs

Wages for 20 hours at Re 1 per hour 20

Bonus for half of the time saved

$$\frac{S - T}{S} \times R = \frac{30 - 20}{2} \times 1 \quad \text{5}$$

D. A at 50 paise for 20 hour 10  
Wage = Rs. 35

d. Earnings under Rowan plan Rs

Wages for 20 hours at Re 1 per hour 20

$$\text{Bonus } \frac{S - T}{S} \times T \times R$$

$$\text{i.e. } \frac{30 - 20}{30} \times 20 \times 1 \quad \text{6.67}$$

D. A at paise 50 paise per hour ( 20x 0.50) 10

Wage = Rs. 36.67

6. In an Assembly shop of a Motor car factory a workmen A, B, C and D work together as a team and are paid on group piece rate. They also work individually on daily rate jobs. In a 44 hour week the following hours have been spent by A, B, C, and D on group piece work. Viz, A - 40 hour, B-40hours, C - 30 hours and D - 20 hours. The balance of the time has been booked by each worker on day works jobs.

Their hourly rates are ;

A 0.50 paise

B 0.75 paise

C 1.00

D 1.00

The group piece rate is Re 1 per unit and the team has produced 150 units. Calculate the gross weekly earning of each workman taking into consideration that each individual is entitled to dearness allowance of Rs 20 per week.

**Solution :**

|                              |    |            |
|------------------------------|----|------------|
| Group wages for 150 units at |    | Rs         |
| Rs. 1 per unit               |    | 150        |
| Less individual wages :      | Rs |            |
| Workman A - 40 hours x 0.50  | 20 |            |
| Workman B - 40 hours x 0.75  | 30 |            |
| Workman C- 30 hours x 1.00   | 30 |            |
| Workman D- 20 hours x 1.00   | 20 | <u>100</u> |
| Group Bons                   |    | <u>50</u>  |

Group bonus is to be divided among workmen in proportion to their time wages i.e  
20:30:30 :20

|                    |                            |    |
|--------------------|----------------------------|----|
|                    |                            | Rs |
| Workman A 's share | $50 \times \frac{20}{100}$ | 10 |
| Workman B's share  | $50 \times \frac{30}{100}$ | 15 |
| Workman C's share  | $50 \times \frac{30}{100}$ | 15 |
| Workman D's share  | $50 \times \frac{20}{100}$ | 10 |

## 2. Tylor's piece rate basis

Standard production in a 9 hour day =  $8 \times 9 = 72$  units

$$\text{Low piece rate} = 0.05 \times \frac{80}{100} = 4 \text{ paise}$$

$$\text{high piece rate} = 0.05 \times \frac{120}{100} = 6 \text{ paise}$$

Ram's earnings =  $54 \times 4 \text{ paise} = 2.16$

Shyam's earnings =  $75 \times 6 \text{ paise} = 4.50$

## 9.5. SELF ASSESSMENT QUESTIONS :

### Five Marks Questions :

1. What is meant by an incentre plan ? What are its features.
2. Explain different methods of payment of incentives in brief.
3. Describe Halsey premium plan
4. What is a Rowan plan.
5. What are the merits and demerits of Taylor's differential piece rate system.
6. Explain co partnership and profit sharing schemes
7. From the following information calculate wages under Halsey plan and Rowan plan.

Standard time - 24 hours

Time taken - 20 hours

Rate per hour - Rs. 10

8. From the following information calculate a worker's earnings under the following scheme's

a. Piece rate

b. Halsey premium plan

c. Rowan premium plan

d. Taylor differential piece rate

Working hours in a week = 48

Wage rate per hour = Rs. 3.75

Time per piece = 20 minutes

Standard production per week = 120 pieces

Actual production per week = 150 pieces

Differential piece rates

1. Lower pieces rate 80%
2. Higher pieces rate 120%

**Ans** - a) Rs 225, b) Rs 183.75 , c) Rs 187.20, d) Rs 270.

9. From the following information calculate wages of swetha, swathi, sruthi, Sravanthi under merrick differential piece rate system

Standard production - 12 units per hour

Rate per hour - 60 paise

working hour per week = 8

Actual production

swetha - 64

swathi - 96

sruthi - 84

Sravanthi - 100

**Ans** - Rs 3.20, 5.28, 6.00, 6.00

10. From the following information calculate wages of sita, geetha, neetha under merrick differential piece rate system

Piece rate per unit - Rs. 1.20

Standard production units per hour - 1 unit

working hours per week = 40 hours

Actual production

sita - 25 units

geetha - 40 units

neetha - 60 units

11. Calculate the earnings of a worker from the following information as under :

- a) Time Rate method
- b) Piece Rate method
- c) Halsey plan
- d) Rowan plan.

Information -

standard time 30 hours

time taken 20 hours

hourly rate of wage is Re 1 per hour plus a dearness allowance @ 50 paise per hour worked.

**Ans -** a) Rs 30, b) Rs 40 c) Rs 35, and d) Rs. 36.67

12. Calculate the earnings of workers A and B under straight piece rate system and Taylor's differential piece rate system from the following particulars

Normal rate per hour Rs. 2.40

Standard time per unit 30 seconds

Differentials to be applied -

80% of piece rate for below standard

120% of piece rate for above standard.

Worker A produces 800 units per day

Worker B produces 1000 units per day.

**Ans -** [ A - Rs. 16 and Rs 12.80 ; B - Rs 20 and Rs 24 ]

## 9. 6. BOOKS RECOMMENDED :

1. Cost & Management Accounting - S.P. Jain & K.L. Narang
2. Cost Accounting - P.K. Bar.
3. Practical costing - Khanna ; Pandey ; Ahuja.
4. Practical problems in Cost Accounting - S.P. Jain & K.L. Narang

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**Lesson - 10****OVERHEAD COSTS****10.0 OBJECTIVES**

After going through this lesson student can know about

- Classification of Overhead Costs.
- Allocation and Apportionment of Overhead.
- Reapportionment and methods of reapportionment.

**Structure**

- 10.1 Introduction**
- 10.2 Definition**
- 10.3 Classification of Overhead Costs**
  - 10.3.1 Functional Classification**
  - 10.3.2 Classification with regard to behaviour of expenditure**
  - 10.3.3 Element-wise of Classification**
  - 10.3.4 Classification according to nature of expenditure**
- 10.4 Allocation and Apportionment of Overhead**
  - 10.4.1 Allocation**
  - 10.4.2 Apportionment**
- 10.5 Bases of Apportionment**
- 10.6 Principles of Apportionment of Overhead Cost**
- 10.7 Reapportionment of Service Department Costs to Production Departments**
- 10.8 Methods of Reapportionments**
- 10.9 Examples**
- 10.10 Advantages of Departmentalisation of Overhead Expenses**
- 10.11 Exercise**
- 10.12 Summary**
- 10.13 Terminology**
- 10.14 Self Assessment Questions**
- 10.15 Reference Books**

## 10.1 INTRODUCTION

Cost pertaining to a cost centre or cost unit may be divided into direct costs and indirect costs. Direct costs are those costs which are incurred for and may be conveniently identified with a particular cost centre or cost unit. Materials used and labour employed in manufacturing an article or in a particular process of production are common examples of direct costs. Indirect costs are those costs which are incurred for the benefit of a number of cost centres or cost units. Indirect cost, therefore, cannot be conveniently identified with a particular cost centre or cost unit. Examples of indirect costs include rent of building, management salaries, machinery depreciation, etc. The importance of the distinction of costs into direct and indirect lies in the fact that direct costs of a product or activity can be accurately determined while indirect costs have to be apportioned on certain assumptions as regards their incidence.

## 10.2 DEFINITION OF OVERHEAD

The indirect portion of the total costs constitutes the overhead cost which is the aggregate of indirect material costs, indirect wages and indirect expenses. The term indirect denotes that which cannot be allocated but which can be apportioned to or absorbed by cost centres or cost units. Broadly speaking, any expenditure over and above prime cost is known as overhead. In general terms, overheads comprise all expenditure incurred for or in connection with the general organisation of the whole or part of the undertaking, i.e., the cost of operating supplies and services used by the undertaking including the maintenance of capital assets.

## 10.3 CLASSIFICATION OF OVERHEAD COSTS

Cost classification is the process of grouping costs according to their common characteristics and establishing series of special groups according to which costs are classified. Thus, it involves two steps: (i) the determination of the class or groups in which the overhead costs are subdivided, and (ii) the actual process of classification of the various items of expenses into one or the other of the groups. The method to be adopted for the classification of overhead costs depends upon the type and size of the business, nature of product or services rendered and policy of the management. For the purpose of accounting and costing overhead expenses are classified into the following groups or classes:

- (i) Functional Classification.
- (ii) Classification with regard to behaviour of expenditure,
- (iii) Element-wise classification.
- (iv) Classification according to nature of expenditure.

A concern may adopt one or more of the above classifications. For example, the overhead expenses in a concern may be first divided according to functions i.e., manufacturing, administration, selling and distribution groups. The expenses pertaining to one group say manufacturing may further be classified into fixed, variable and semi-variable. Each of these groups may then be grouped into the elements, i.e., indirect material, indirect labour and indirect expenses and under each element, the expenses may be further subdivided according to their nature i.e. depreciation, salary, repairs and maintenance etc.

### 10.3.1 Functional Classification of Overhead

When overhead expenses are classified with reference to major activity divisions of a concern, it is

called functional classification of overhead. The main groups forming the basis of the classification are: (a) Manufacturing overhead, (b) Administration overhead, (c) Selling overhead, (d) Distribution overhead, (e) Research and Development overhead.

(a) Manufacturing (or Production or works) Overhead. It is the indirect expense of operating the manufacturing division of a concern and covers all indirect expenditure. Examples of such expenses are: depreciation and insurance charges on fixed assets like plant and machinery works, buildings, and electric equipments and floating assets like stores, finished goods etc.; repairs and maintenance of fixed assets; electricity charges; coal and other fuel charges; rent, rates and taxes on works, etc.

(b) Administration Overhead. It is the indirect expenditure consists of all expenses incurred in the direction, control and administration (including secretarial, accounting and financial control) of an undertaking. Examples are the expenses in running the general office, e.g., office rent, light, heat, salaries and wages of clerks, secretaries and accountants, credit approval, cash collection and treasurer's department, general managers, directors, executives; legal and accounting machine services; investigations and experiments and miscellaneous fixed charges.

(c) Selling Overhead. It is the cost of seeking to create and stimulate demand and of securing orders and comprises the cost to products or distributors of soliciting and recurring orders for the articles or commodities dealt in and of efforts to find and retain customers. These include sales office expenses; advertisement charges; fancy packing to attract sales; samples and free gifts; after sales service expenses and demonstration and technical advice to potential customers.

(d) Distribution Overhead. It comprises all expenditure incurred from the time the product is completed in the works until it reaches its destination. Under these would be included warehouse rent; warehouse staff salaries, insurance etc.; expenses on delivery van and trucks; expenses on special packing for bulk transport like bales, crates chests etc.; losses in warehouse stocks and finished goods damaged in transit and cost of repairing and reconditioning of empties.

(e) Research and development expenses. Research cost is cost of searching for new and improved products, new applications of materials or products, and new applications and improved methods. Development cost is the cost of the process which begins with the implementation of the decision to produce a new or improved product or to employ a new or improved method and ends with the commencement of formal production of that product or by that method.

### 10.3.2 Classification with Regard to Behaviour Expenditure

some expenses vary directly with the rise and fall in output, some remain constant in spite of change in the level of activity of the concern whereas there are some other items which are constant only upto a certain level and then change their character to become variable or which vary with volume of output but less than proportionately. Based on this behaviour, the expenses may be classified into: (a) Fixed overhead, (b) Variable overhead, (c) Semi-variable or Semi-fixed overhead.

(a) Fixed Overhead. Fixed overhead expenses are those which remain fixed in total amount with increases or decreases in the volume of output or productive activity for a given period of time. Examples of fixed expenses are rent of building, storage space, etc.; depreciation of plant and machinery; depreciation of buildings, pay and allowances of directors, manager's secretaries, accountants; office expenses like stationery and postage etc.; bank charges, legal expenses, salaries of the works manager, interest on capital, if included in costs.

Fixed overheads have to be incurred during a particular period whether there is more or less production or no production at all. Fixed overhead expenses are thus period costs representing a constant amount of expenditure during a particular period. Sometimes, they are also termed as shutdown or stand-by-costs.

(b) Variable overhead costs are those which vary in total in direct proportion to the volume of output. These costs per unit remain relatively constant with changes in production. Thus variable costs fluctuate in total amount but tend to remain constant per unit as production activity changes. Examples are indirect material, indirect labour, spoilage, tools, defective work loss, lubricants, idle time, etc.

(c) Semi-variable overhead costs are in nature of hybrid costs; partly fixed and partly variable. For example, telephone expenses include a fixed portion of annual charge plus variable charge according to calls, thus the total telephone expenses are semi-variable. Examples are power and fuel lighting, heating and cooling, repairs and maintenance of buildings, machines & equipments, internal transport; stores handling, normal maintenance of buildings and plants, administrative wages and salaries, postage and stationery, supervisors and service department wages etc.

Classification of overhead into fixed and variable is highly helpful to the management for the efficient running of the factory. It is not only helpful for cost finding but also for cost control and management decision-making.

### 10.3.3 Elementwise Classification

This classification of overhead is done according to the nature and source of expenditure and follows naturally from the definition of overhead. According to this classification, the total expenses are broken up into the following items; (i) Indirect Materials, (ii) Indirect Labour, (iii) Indirect Expenses.

(i) Indirect materials are those materials which do not normally form a part of the finished product. It has been defined as “materials which cannot be allocated but which can be apportioned to or absorbed by cost centres or cost units”. There are:

(a) Stores used in maintenance of machinery, building etc., like lubricants, cotton waste, bricks and cement;

(b) Stores used by the service departments i.e., non-productive departments like Power House, Boiler House and Canteen etc.; and

(c) Materials which due to their cost being small, are not considered worthwhile to be treated as Direct Materials.

Examples of indirect materials are stores consumed for repair and maintenance work, sundry stores of small value expended for factory use, small tools for general use, lubricating oil, losses, deficiencies and deterioration of stores, etc.

(ii) Indirect Labour. The wages of that labour which cannot be allocated but which can be apportioned to or absorbed by cost centres or cost units is known as Indirect Labour. Examples of such labour are: charge-hands and supervisors; maintenance workers; departmental coolies; men employed in service departments, material handling and internal transport; apprentices, trainees and instructors; works clerical staff and labour employed in time office and security office, holiday pay, leave pay, employer's contribution to funds, miscellaneous allowances to labour.

(iii) Indirect Expenses are expenses which cannot be allocated but which can be apportioned to or absorbed by cost centres or cost units as rent, rates insurance, municipal taxes, general manager's salary, canteen and welfare expenses, power and fuel, cost of training new employees, lighting and heating, telephone expenses

#### 10.3.4 Classification of Overheads According to Nature of Expenses

In order to have effective analysis of the expenses in detail, each of the manufacturing, administration, selling and distribution overhead cost is classified into smaller sub-divisions so that expenses of similar nature can be grouped together under one head. This is achieved through Standing Order Number or syllabus of Work Order Number. These numbers are so called as they are listed on a permanent type of schedule or manual. Each Standing Order Number denotes particular type of expenditure so that items of expenses of similar nature.

The number of standing order numbers in a factory will depend on the size of factory, types of expenses and the extent of control necessary. 'A large variety or a number of types of expenditure in a factory will have large number of standing orders.

### 10.4 ALLOCATION AND APPORTIONMENT OF OVERHEAD

When all the items are collected properly under suitable account headings, the next step is allocation and apportionment of such expenses to cost centres. This also known as departmentalisation or primary distribution of overhead.

A factory is administratively divided into sub-divisions known as departments for running it smoothly and efficiently. This sub-division is done in such a manner that each department represents a division of activity of the concern such as repairs department, power department, tools department, stores department, cash department, cost department etc.

#### 10.4.1 Allocation

Cost allocation is defined as the allotment of whole item of cost to cost centres or cost units. So the term refers to the charging of expenses which can be identified wholly with a particular department. For example, the whole of overtime wages paid to the workers relating to a particular department should be charged to that department. Similarly, the cost of repairs and maintenance of a particular machine should be charged to that particular department wherein the machine is located. So, the term allocation means the allotment of the whole item without division to a particular department or cost centre. The process of such direct identification of costs is known as allotment of costs.

#### 10.4.2 Apportionment

The term refers to the allotment of expenses which cannot identified wholly with a particular department. Such expenses require division and apportionment over two or more cost centres or units. So cost apportionment will arise in the case of expenses common to more than one cost centre or unit and will be done to various cost centres on suitable basis.

The main difference between the cost allocation and apportionment in that while allocation deals with whole items, apportionment deals with proportion of items of cost. While some costs may be directly allocated whereas apportionment needs a suitable basis for sub-division of the cost by cost centres or cost units. For example, factory rent may be allocated to the factory and can be apportioned to products, departments or machines.

## 10.5 BASES OF APPORTIONMENT

Suitable bases have to be found out for apportioning the items of overhead cost to production and service departments and then for reapportionment of service departments costs to other service and production departments. The common expenses have to be apportioned or distributed over the departments on some suitable basis. The process of distribution is usually known as 'Primary Distribution'. The following are the main bases of overhead apportionment utilised in manufacturing concerns:

(i) Direct Allocation. Overheads are directly allocated to various departments on the basis of expenses for each department respectively. Examples are: overtime premium of workers engaged in a particular department, power, when separate meters are available, jobbing repairs, etc.

(ii) Direct Labour Hours. The overhead expenses are distributed to various departments in the ratio of total number of labour hours worked in each department. For example, administrative salaries and particularly salaries of the supervisors are apportioned on the basis of labour hours worked. This is so because time is an element of cost in these cases.

(iii) Direct Wages. According to this basis, expenses are distributed amongst the departments in the ratio of direct wages bills of the various departments. This method is used only for those items of expenses which are booked with the amount of wages, e.g., workers' insurance, their contribution to provident fund, workers' compensation, etc.

(iv) Number of Workers. The total number of workers working in each department taken as a basis for apportioning overhead expenses amongst departments. Where the expenditure depends more on the number of employees than on wages bill or number of labour hours, this method is used. This method is used for the apportionment of canteen expenses, welfare and recreation expenses, time keeping, medical expenses, etc.

(v) Relative Areas of Departments. This basis is adopted for the apportionment of certain expenses like lighting and heating, rent, rates taxes on building, air conditioning, etc.

(vi) Capital Values. The capital values of certain assets like machinery and building are used as basis for the apportionment of certain expenses. Examples are : rates, taxes, depreciation, insurance charges of the building etc.

(vii) Light Points. This is used for apportioning lighting expenses.

(viii) Kilowatt Hours. This basis is used for the apportionment of power expenses.

(ix) Technical Estimates. This basis of apportionment is used for the apportionment of those expenses for which it is difficult to find out any other basis of apportionment. An assessment of the equitable proportion is carried out by technical experts. This is used for distributing works manager salary, internal transport, steam, water etc. when these are used for processes.

## 10.6 PRINCIPLES OF APPORTIONMENT OF OVERHEAD COST

The determination of a suitable basis of primary importance and the following principles are useful guides to a cost accountant:

(i) Service or use or benefit derived. If the service rendered by a particular item of expense to different

departments can be measured, overhead can be conveniently apportioned on this basis. Thus, the cost of maintenance may be apportioned to different departments on the basis of machine hours or capital value of the machines, rent charges to be distributed according to the floor space occupied by each department.

(ii) Ability to pay method. Under this method, overhead should be distributed in proportion to the sales ability, income or profitability of the departments, territories, or products etc. Thus, jobs or products making higher profits take a higher share of the overhead expenses. This method is inequitable and is not generally advisable to relieve inefficient units at the cost of efficient units.

(iii) Efficiency method. Under this method, the apportionment of expenses is made on the basis of production targets. If the target is exceeded, the unit cost reduces indicating a more than average efficiency. If the target is not achieved, the unit cost goes up, disclosing thereby the inefficiency of the department.

(iv) Survey method. In certain cases it may not be possible to measure exactly the extent of benefit which the various departments receive as this may vary from period to period. A survey is made of the various factors involved and the share of overhead costs to be borne by each cost centre is determined.

### 10.7 Re-Appportionment of Service Department Costs to Production Departments

service department costs are to be reapportioned to the production departments or the cost centres where production is going on. This process of apportionment of overhead expenses is known as 'Secondary Distribution'. The following is a list of the bases of apportionment which may be accepted for the service department noted against each:

| <i>Service Department Cost</i>                                    | <i>Basis of Apportionment</i>   |
|---|---|
| (1) Maintenance department  | Hours worked for each department  |
| (2) Payroll or time-keeping                                       | Total labour or machine hours or number of employees in each department.  |
| (3) Employment or personnel department                            | Rate of labour turnover or number of employees in each department   |
| (4) Store-keeping department                                      | No. of requisitions or value of materials of each department.   |
| (5) Purchase department   | No. of purchase orders or value of materials for each department.   |
| (6) Welfare, ambulance, canteen service, recreation room expenses | No. of employees in each department.  |
| (7) Building service department                                   | Relative area in each department.   |
| (8) Internal transport service or overhead crane service          | Weight, value graded product handled, weight and distance travelled.  |
| (9) Transport Department  | Crane hours, truck hours, truck mileage, truck tonnage, truck tonne - hours, tonnage handled, number of packages. |
| (10) Power House (Electric power cost)                            | Wattage, horse power, horse power machine hours, number of electric points, etc.                                  |
| (11) Power House  | Floor area, cubic content   |

## 10.8 METHODS OF RE-APPORTIONMENT (OR RE-DISTRIBUTION)

The following are the methods or redistribution of service department costs to production departments:

(i) Direct Re-distribution, (ii) Step Method, (iii) Reciprocal Service Method.

(i) **Direct Re-distribution.** Under this method, the costs of service departments are directly apportioned to production departments without taking into consideration any service from one service department to another service department. Thus, proper apportionment cannot be done and the Production departments may either be overcharged or undercharged. The share of each service department cannot be ascertained accurately for control purposes.

(ii) **Step Method.** Under this method the cost of most serviceable department is first apportioned to other service departments and production departments. The next service department is taken up and its cost is apportioned and this process goes on till the cost of the last service department is apportioned. Thus, the cost of last service department is apportioned only to the production departments.

(iii) **Reciprocal Service Method.** In order to avoid the limitation of Step Method, this method is adopted. This method recognizes the fact that if a given department receives service from another department, the department receiving such service should be charged. If two departments provide service to each other, each department should be charged for the cost of services rendered by the other. Three methods available for dealing with inter-service department transfer are Simultaneous Equaiton Method, Repeated Distribution Method, Trail and Error Method.

(a) **Simultaneous Equation Method.** Under this method, the true cost of the service departmets are ascertained first with the help of simultaneous equations; these are then redistributed to production departments on the basis of given percentage. The following illustration may be taken to discuss the application of this method.

(b) **Repeated Distribution (Or Continuous Allotment) Method.** Under this method, the totals as shown in the departmental distribution summary, are put out in a line, and then the service department totals are exhausted in turn repeatedly according to the agreed percentages until the figures become to small to matter.

(c) **Trail and Error Method.** Under this method, the cost of one service department is apportioned to another centre. The cost of another centre plus the share received from the first centre is again approtioned to the first cost centre and this process is repeated till the balancing figure becomes negligible.

### 10.9 EXAMPLES

**Example 1:** A & Co. is divided into four departments A,B,C are production departments and D is a service department. The actual costs for the period are as follows:

|              |      |
|--------------|------|
|              | Rs.  |
| Rent         | 3000 |
| Repairs      | 1800 |
| Depreciation | 1350 |
| Light        | 600  |



|  |      |
|--|------|
| Supervision                                | 4500 |
| Fire insurance in respect of stock         | 1500 |
| Employer's contribution to Group Insurance | 450  |
| Power                                      | 2700 |

The following data are available in respect of four departments.

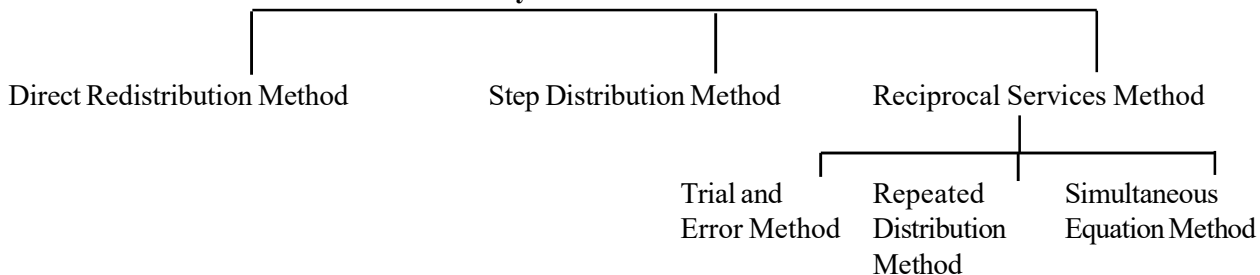
|                         | Dept.<br>A | Dept.<br>B | Dept.<br>C | Dept.<br>D |
|-------------------------|------------|------------|------------|------------|
| Area Sq.ft.             | 450        | 230        | 270        | 150        |
| Number of Workers       | 72         | 48         | 36         | 24         |
| Total Wages             | Rs.24000   | 18000      | 12000      | 6000       |
| Horse Power of Machines | 800        | 600        | 400        | 200        |
| Value of Plant          | Rs.72000   | 54000      | 36000      | 18000      |
| Value of Stock          | Rs.45000   | 27000      | 18000      |            |

Apportion the costs of the various departments on most equitable basis.

| Sno. | Items           | Basis of Apportionment | Total | Production Departments |      |      | Service Department |
|------|-----------------|------------------------|-------|------------------------|------|------|--------------------|
|      |                 |                        |       | A                      | B    | C    | D                  |
| 1    | Rent            | Area Sq.f              | 3000  | 1125                   | 825  | 675  | 375                |
| 2.   | Repair to plant | Value of plant         | 1800  | 720                    | 540  | 360  | 180                |
| 3    | Depreciation    | Value of plant         | 1350  | 540                    | 405  | 270  | 135                |
| 4    | Light           | Area Sq.ft.            | 600   | 225                    | 165  | 135  | 75                 |
| 5.   | Supervision     | No. of workers         | 4500  | 1800                   | 1200 | 900  | 600                |
| 6.   | Fire insurance  | Value of stock         | 1500  | 750                    | 450  | 300  | --                 |
| 7.   | Group insurance | No. of employees       | 450   | 180                    | 120  | 90   | 60                 |
| 8.   | Power           | Horse Power of Machine | 2700  | 1080                   | 810  | 540  | 270                |
|      |                 |                        | 15900 | 6420                   | 4515 | 3270 | 1695               |

**Methods of Reapportionment :** After the basis for redistribution of service department cost has been determined, actual redistribution can be done by any of the following methods:

**Secondary Distribution of Overhead**



**1. Direct Redistribution Method :** Under this method, service department's costs are apportioned to production departments only ignoring service rendered by one service department to the other. In this method, the number of secondary distributions will be equal to the number of secondary departments. This method gives no importance to the order in which service department cost columns are arranged in departmental distribution summary.

**Example 2:** X & Co. Ltd. has three production departments and four service departments. The expenses for these departments as per primary distribution summary was as follows:

|                         |              |               |
|-------------------------|--------------|---------------|
| A                       | 45000        |               |
| B                       | 39000        |               |
| C                       | <u>36000</u> | 1,20,000      |
| Service Departments     |              |               |
| Stores                  | 12000        |               |
| Time Keeping & Accounts | 9000         |               |
| Power                   | 4800         |               |
| Canteen                 | <u>3000</u>  | <u>28,800</u> |
|                         |              | 1,48,800      |

Following information is also available in respect of the production departments.

|                               | Dept. A  | Dept. B | Dept. C |
|-------------------------------|----------|---------|---------|
| Horse Power of machine        | 450      | 450     | 300     |
| Number of Workers             | 60       | 45      | 45      |
| Value of Stores requisitioned | Rs. 3750 | 2250    | 1500    |

Apportion the cost of various service departments to the production departments.

**Solution :**

#### Secondary Distribution Summary

| Item                             | Basis of apportionment              | Total Rs. | Production Departments |          |          |
|----------------------------------|-------------------------------------|-----------|------------------------|----------|----------|
|                                  |                                     |           | A<br>Rs.               | B<br>Rs. | C<br>Rs. |
| Cost as per primary distribution | --                                  | 1,20,000  | 45,000                 | 39,000   | 36,000   |
| Stores                           | Value of Stores<br>(5: 3: 2)        | 12000     | 6000                   | 3600     | 2400     |
| Time keeping & accounts          | Number of workers<br>(4: 3: 3)      | 9000      | 3600                   | 2700     | 2700     |
| Power                            | Horse power of machine<br>(3: 3: 2) | 4800      | 1800                   | 1800     | 1200     |
| Canteen                          | Number of Workers<br>(4:3:3)        | 3000      | 1200                   | 900      | 900      |
| Total                            |                                     | 148800    | 57600                  | 48000    | 43200    |

**2. Step Method :** This is also known as secondary distribution on non-reciprocal basis. This method is also known as elimination method. The cost of most serviceable department. Cost is apportioned to production and other service departments. The next service department is taken up and its cost is apportioned and this process goes on till the cost of last service department is apportioned. Thus, the cost of last service departments is apportioned only to the production departments.

**Example 3:** A manufacturing company has two production departments and three service departments. The departmental summary showed the following expenses for March 2006.

| Production Departments        | Rs.   |
|-------------------------------|-------|
| P <sub>1</sub>                | 32000 |
| P <sub>2</sub>                | 20000 |
| <br>Service Departments       |       |
| S <sub>1</sub> - Time Keeping | 8000  |
| S <sub>2</sub> - Stores       | 10000 |
| S <sub>3</sub> - Maintenance  | 6000  |

**Other information :**

|                               | Service Departments |                |                | Production Departments |                |
|-------------------------------|---------------------|----------------|----------------|------------------------|----------------|
|                               | S <sub>1</sub>      | S <sub>2</sub> | S <sub>3</sub> | P <sub>1</sub>         | P <sub>2</sub> |
| Number of Workers             | --                  | 40             | 20             | 80                     | 60             |
| Number of Stores requisitions | --                  | --             | 12             | 48                     | 40             |
| Machine Hours                 | --                  | --             | --             | 4800                   | 3200           |

**Basis of Apportionment**

|              |   |                               |   |               |
|--------------|---|-------------------------------|---|---------------|
| Time Keeping | - | No. of Workers                | - | 2 : 1 : 4 : 3 |
| Stores       | - | Number of Stores Requisitions | - | 3 : 12 : 10   |
| Maintenance  | - | Machine hours                 | - | 3 : 2         |

**Solution**

**Secondary Distribution Summary**

| Item                                | Service Departments                   |                                 |                                      | Production Departments |                       |
|-------------------------------------|---------------------------------------|---------------------------------|--------------------------------------|------------------------|-----------------------|
|                                     | S <sub>1</sub><br>Time Keeping<br>Rs. | S <sub>2</sub><br>Stores<br>Rs. | S <sub>3</sub><br>Maintenance<br>Rs. | P <sub>1</sub><br>Rs.  | P <sub>2</sub><br>Rs. |
| As per primary distribution summary | 4000                                  | 5000                            | 3000                                 | 16000                  | 10000                 |
| Time Keeping(S <sub>1</sub> )       | 4000                                  | 800                             | 400                                  | 1600                   | 1200                  |
| Stores                              | --                                    | 5800                            | 696                                  | 2784                   | 2320                  |
| Maintenance                         | --                                    | --                              | 4096                                 | 2458                   | 1638                  |
| <b>Total</b>                        | --                                    | --                              | --                                   | <b>22842</b>           | <b>15158</b>          |

The most important limitation of this method is that cost of one service centre to other service centre is ignored and thus cost of individual cost centres are not truly reflected.

**3. Reciprocal Services Method:** In order to avoid the limitation of step method, this method can be adopted under this method if a department receives service from another department, the value of that service should be charged to the receiving department. If two departments provide service to each other, each department should be charged for the cost of service rendered by the other. There are three methods under this to calculate.

(1) Simultaneous Equation Method

(2) Repeated Distribution Method

(3) Trial and Error Method

**(1) Simultaneous Equation Method:** Under this method, the true cost of the service departments are ascertained first with the help of simultaneous equations. These are then redistributed to production departments on the basis of given percentage.

**Example 4:** A company has three production departments and two service departments and for a period, the departmental distribution summary was as follows:

| Production Departments | Rs.              |
|------------------------|------------------|
| P <sub>1</sub>         | 1600             |
| P <sub>2</sub>         | 1400             |
| P <sub>3</sub>         | <u>1000</u> 4000 |
| Service Departments    |                  |
| S <sub>1</sub>         | 234              |
| S <sub>2</sub>         | <u>300</u> 534   |

The expenses of service departments are charged out on a percentage basis as follows:

| Item                              | Service Departments   |                       |                       | Production Departments |                       |
|-----------------------------------|-----------------------|-----------------------|-----------------------|------------------------|-----------------------|
|                                   | P <sub>1</sub><br>Rs. | P <sub>2</sub><br>Rs. | P <sub>3</sub><br>Rs. | S <sub>1</sub><br>Rs.  | S <sub>2</sub><br>Rs. |
| Service Department S <sub>1</sub> | 20%                   | 40%                   | 30%                   | --                     | 10%                   |
| Service Department S <sub>2</sub> | 40%                   | 20%                   | 20%                   | 20%                    | --                    |

Prepare a statement showing the apportionment of two service departments expenses to production departments by simultaneous equation method.

**Solution :**

Let x be the total overheads of department S<sub>1</sub>

y be the total overheads of department S<sub>2</sub>

Then  $x = 234 + 2y$

$y = 300 + 1x$

Rearrange and multiply to eliminate decimals :

$10x - 2y = 2340$

$-x + 10y = 3000$

Multiply equation (1) by 5

$50x - 10y = 11700$  -- (1)

$\underline{-x + 10y} = \underline{3000}$  -- (2)

$49x = 14700$

$\Rightarrow x = \frac{14700}{49} = 300$

Substitute this value in equation 1, we get

$y = 330$

**Second Distribution Summary**

| Item   | Total | P <sub>1</sub> | P <sub>2</sub> | P <sub>3</sub> |
|--|-------|----------------|----------------|----------------|
| As per distribution summary                          | 4000  | 1600           | 1400           | 1000           |
| Service department S <sub>1</sub><br>(90% of Rs.300) | 270   | 60             | 120            | 90             |
| Service department S <sub>2</sub><br>(80% of Rs.330) | 264   | 132            | 66             | 66             |
| Total  | 4534  | 1792           | 1586           | 1156           |

**(b) Repeated Distribution Method :** Under this method the totals are shown in the distribution summary, then the service department totals are exhausted in turn repeatedly according to the agreed percentages until the figures become too small to matter.

**Example 5:** X & Co. has three production departments and two service departments. For the month of January, the departmental distribution summary was as follows:

| Production Department | Rs.         |       |
|-----------------------|-------------|-------|
| A                     | 4800        |       |
| B                     | 4200        |       |
| C                     | <u>3000</u> | 12000 |

Service Department

|    |      |      |
|----|------|------|
| S1 | 1404 |      |
| S2 | 1800 | 3204 |

The expenses of service department are charged on a percentage basis as under.

|                      | <i>Production Departments</i> |          |          | <i>Service Departments</i> |                      |
|----------------------|-------------------------------|----------|----------|----------------------------|----------------------|
|                      | <i>A</i>                      | <i>B</i> | <i>C</i> | <i>S<sub>1</sub></i>       | <i>S<sub>2</sub></i> |
| <i>S<sub>1</sub></i> | 20%                           | 40%      | 30%      | --                         | 10%                  |
| <i>S<sub>2</sub></i> | 40%                           | 20%      | 20%      | 20%                        | --                   |

Show the secondary distribution summary of service department by repeated distribution method.

**Solution :**

### Secondary Distribution Summary

| <i>Item</i>                       | <i>Production Departments</i> |                        |                        | <i>Service Departments</i>         |                                    |
|-----------------------------------|-------------------------------|------------------------|------------------------|------------------------------------|------------------------------------|
|                                   | <i>A</i><br><i>Rs.</i>        | <i>B</i><br><i>Rs.</i> | <i>C</i><br><i>Rs.</i> | <i>S<sub>1</sub></i><br><i>Rs.</i> | <i>S<sub>2</sub></i><br><i>Rs.</i> |
| As per primary distribution       | 4800                          | 4200                   | 3000                   | 1404                               | 1800                               |
| Service Department S <sub>1</sub> | 281                           | 562                    | 421                    | (-1404)                            | 140                                |
| Service Department S <sub>2</sub> | 776                           | 388                    | 388                    | 388                                | (-1940)                            |
| Service Department S <sub>1</sub> | 78                            | 155                    | 116                    | (-388)                             | 39                                 |
| Service Department S <sub>2</sub> | 16                            | 8                      | 8                      | 7                                  | (-39)                              |
| Service Department S <sub>1</sub> | 2                             | 3                      | 2                      | (-7)                               | --                                 |
| Total                             | 5953                          | 5316                   | 3935                   | --                                 | --                                 |

**(c) Trial and Error Method :** Under this method, cost of one service department is apportioned to another service department. The cost of another service department plus the share received from first service department is again apportioned to first service department and this process is continued till the balancing figure becomes negligible.

**Example 6:** The Cost of service department of X is Rs.2000 and cost of service department of Y in Rs.2400. The analysis reveals that X departments renders 30% of its services to Y and Y department renders 20% of its services to X. Show how reciprocal distribution of cost by trail and error method.

**Solution :**

|              | Department X<br>Rs.2000 | Department Y<br>Rs.2400 |             |
|--------------|-------------------------|-------------------------|-------------|
| 20% of 3000  | 600                     | <u>600</u><br>3000      | 30% of 2000 |
|              |                         |                         |             |
| 20% of 180   | 36                      | 180                     | 30% of 600  |
|              |                         |                         |             |
| 20% of 10.80 | 2.16                    | 10.80                   | 30% of 36   |
|              |                         |                         |             |
| 20% of 0.65  | 0.13                    | 0.65                    | 30% of 2.16 |
|              |                         |                         |             |
|              | Negligible              | 0.04                    | 30% of 0.13 |
|              |                         |                         |             |
|              | <u>2638.29</u>          | <u>3191.49</u>          |             |

The cost of these service departments arrived will be apportioned among production departments. This method can be used, when there are two or three service departments affected by inter-departmental transfer of service.

**Example 7:** A company has three production departments A, B and C and two service departments S<sub>1</sub>, S<sub>2</sub>. Following is the information related to march, 2003. Rent Rs.15,000, Taxes Rs.5,000, Electricity Rs.2,400, Indirect Wages Rs.6,000, Depreciation on Machinery Rs.40,000, Canteen Expenses Rs.30,000, Power Rs.6,000, Miscellaneous Rs.10,000.

**Additional Information**

| Item                        | Total<br>Rs. | A<br>Rs. | B<br>Rs. | C<br>Rs. | S <sub>1</sub><br>Rs. | S <sub>2</sub><br>Rs. |
|-----------------------------|--------------|----------|----------|----------|-----------------------|-----------------------|
| Area (Sq.m.)                | 5000         | 1000     | 1250     | 1500     | 1000                  | 250                   |
| Lights Points<br>(Numbers)  | 240          | 40       | 60       | 80       | 40                    | 20                    |
| Direct Wages<br>(Rs.)       | 40000        | 12000    | 8000     | 12000    | 6000                  | 2000                  |
| Horse Power<br>(Numbers)    | 150          | 60       | 30       | 50       | 10                    | --                    |
| Value of<br>Machinery (Rs.) | 200000       | 48000    | 64000    | 80000    | 4000                  | 4000                  |
| Woking hours                |              | 2335     | 1510     | 1525     |                       |                       |

The expenses of Service departments are apportioned as follows :

|                       | <i>A</i><br>Rs. | <i>B</i><br>Rs. | <i>C</i><br>Rs. | <i>S1</i><br>Rs. | <i>S2</i><br>Rs. |
|-----------------------|-----------------|-----------------|-----------------|------------------|------------------|
| S1 Service Department | 20%             | 30%             | 40%             | --               | 10%              |
| S2 Service Department | 40%             | 20%             | 30%             | 10%              | --               |

Calculate the overhead rate per hour in respect of the three production departments.

What is the total cost of an article if its raw material cost is Rs.50, labour cost Rs.30 and it passes through departments  $P_1$ ,  $P_2$  and  $P_3$  for 4, 5 and 3 hours respectively.

**Solution :**

| Overhead Distribution Summary |                        |        |                        |                 |                 |                             |                             |
|-------------------------------|------------------------|--------|------------------------|-----------------|-----------------|-----------------------------|-----------------------------|
| Item                          | Basis of apportionment | Total  | Production Departments |                 |                 | Service Departments         |                             |
|                               |                        |        | <i>A</i><br>Rs.        | <i>B</i><br>Rs. | <i>C</i><br>Rs. | <i>S<sub>1</sub></i><br>Rs. | <i>S<sub>2</sub></i><br>Rs. |
| Direct Wages                  | Actual                 | --     | --                     | --              | --              | 6000                        | 2000                        |
| Rent                          | Area                   | 15000  | 3000                   | 3750            | 4500            | 3000                        | 750                         |
| Taxes                         | Area                   | 5000   | 1000                   | 1250            | 1500            | 1000                        | 250                         |
| Electricity                   | Lightpoints            | 2400   | 400                    | 600             | 800             | 400                         | 200                         |
| Indirect Wages                | Direct Wages           | 6000   | 1800                   | 1200            | 1800            | 900                         | 300                         |
| Power                         | Horse Power            | 6000   | 2400                   | 1200            | 2000            | 400                         | --                          |
| Depreciation                  | Value of Machinery     | 40000  | 9600                   | 12800           | 16000           | 800                         | 800                         |
| Canteen                       | Direct Wages           | 30000  | 9000                   | 6000            | 9000            | 4500                        | 1500                        |
| Miscellaneous                 | Direct Wages           | 10000  | 3000                   | 2000            | 3000            | 1500                        | 500                         |
| Total                         |                        | 114400 | 30200                  | 28800           | 38600           | 18500                       | 6300                        |

|                               |    |       |       |       |        |       |
|-------------------------------|----|-------|-------|-------|--------|-------|
| $S_1$ Service dept. (2:3:4:1) | -- | 3700  | 5550  | 7400  | -18500 | 1850  |
| $S_2$ Service dept. (4:2:3:1) | -- | 3260  | 1630  | 2445  | 815    | -8150 |
| $S_1$ Service dept.           | -- | 164   | 244   | 326   | -815   | 81    |
| $S_2$ Service dept.           | -- | 33    | 15    | 25    | 8      | -81   |
| $S_1$ Service dept.           | -- | 3     | 1     | 4     | -8     | --    |
| Total Overheads               | -- | 37360 | 36240 | 48800 | --     | --    |
| Working hours                 | -- | 2335  | 1510  | 1525  | --     | --    |
| Overhead rate per hour        | -- | 16    | 24    | 32    | --     | --    |



## 10.10 ADVANTAGES OF DEPARTMENTALISATION OF OVERHEAD EXPENSES

Departmentalisation of overhead expenses has the following advantages:

1. Allocation and apportionment of overhead expenses to the respective departments facilitate control of overhead cost by means of budgets predetermined.
2. Apportionment of service department cost to production and other service departments facilitates control of the uses made of the services rendered to respective departments.
3. Absorption of overheads costs in the products produced by departmental overhead rates facilitates ascertainment of true cost as the actual overhead costs of the respective departments are taken into consideration in determining the overhead rates.
4. The bases used in the predetermination of the departmental overhead rates may be used for control of actual basis in comparison to the quantity predetermined.
5. Analysis of under or over absorption of overhead discloses the reasons for variances which indicate the remedial measures to be taken.
6. For working out correctly the cost of work in progress. If the overhead is not departmentalised the cost of work in progress will be loaded with a proportion of overhead of all the departments including those in which the product is yet to be processed.

## 10.11 EXERCISE

1. A company has three production departments A,B,C and two service departments D and E. Following information is ascertained from the records.

|               | Rs.   |
|---------------|-------|
| Rent          | 5000  |
| Direct Wages  | 1500  |
| Depreciation  | 10000 |
| Lighting      | 600   |
| Power         | 1500  |
| Miscellaneous | 10000 |

Additional Information :

| Item                   | Total  | Production Departments |       |        | Service Departments |      |
|------------------------|--------|------------------------|-------|--------|---------------------|------|
|                        |        | A                      | B     | C      | D                   | E    |
| Area sq.m.             | 10000  | 2000                   | 2500  | 3000   | 2000                | 500  |
| Light points           | 60     | 10                     | 15    | 20     | 10                  | 5    |
| Direct Wages Rs.       | 10000  | 3000                   | 2000  | 3000   | 1500                | 500  |
| Horse Power of Machine | 150    | 60                     | 30    | 50     | 10                  | -    |
| Value of Machinery     | 250000 | 60000                  | 80000 | 100000 | 5000                | 5000 |

Show the primary overhead distribution.

[Ans. A - Rs.7500, B - Rs.7200, C - Rs.9650, D - Rs.3125, E - Rs.1075]

2. Following are the expenses of various departments. What is the basis for apportionment to various departments.

1. Fire insurance premium on plant.
2. Rent
3. Power
4. Lighting
5. Repairs of plant.
6. Depreciation of plant
7. Material maintenance expenses
8. Salaries
9. Commission on sales
10. Employees welfare

3. In a factory, there are two service departments D and E and three departments A, B and C. In April, 2004 the departmental expenses were :

| Departments | A        | B        | C        | D        | E        |
|-------------|----------|----------|----------|----------|----------|
| Rs.         | 6,50,000 | 6,00,000 | 5,00,000 | 1,20,000 | 1,00,000 |

The service department expenses are allocated on a percentage basis as follows:

| Service Departments | Production Departments |    |    | Service Departments |    |
|---------------------|------------------------|----|----|---------------------|----|
|                     | A                      | B  | C  | D                   | E  |
| D                   | 30                     | 40 | 15 | -                   | 15 |
| E                   | 40                     | 30 | 25 | 5                   | -  |

Prepare a statement the distribution of service department to production departments by simultaneous equation method.

[Ans. : Total Cost A - Rs.7,35,340, B - Rs.6,86,405, C - Rs.5,48,615.]

4. A manufacturing company has three production departments A,B and C and Service departments S<sub>1</sub> and S<sub>2</sub>. Following is the budget information related to Dec., 2003.

| Item             | Total | A    | B    | C    | S <sub>1</sub> | S <sub>2</sub> |
|------------------|-------|------|------|------|----------------|----------------|
| Direct Materials |       | 1000 | 2000 | 4000 | 2000           | 1000           |
| Direct Wages     |       | 5000 | 2000 | 8000 | 1000           | 2000           |
| Factory Rent     | 4000  |      |      |      |                |                |
| Power            | 2500  |      |      |      |                |                |
| Depreciation     | 1000  |      |      |      |                |                |
| Other overheads  | 9000  |      |      |      |                |                |

Additional Information

| Item                        | A    | B    | C    | S1   | S2   |
|-----------------------------|------|------|------|------|------|
| Area Sq.m.                  | 1000 | 500  | 1000 | 500  | 1000 |
| Value of Assets (Rs. Lakhs) | 20   | 40   | 20   | 10   | 10   |
| Machine Hours               | 1000 | 2000 | 4000 | 1000 | 1000 |
| Horse power of Machinery    | 50   | 40   | 20   | 15   | 25   |

Expenses of Service departments are apportioned as follows:

|                         | A   | B   | C   | S1 | S2  |
|-------------------------|-----|-----|-----|----|-----|
| Service Department (S1) | 45% | 15% | 30% | -  | 10% |
| Service Department (S2) | 60% | 35% | -   | 5% | -   |

Show (1) Statement showing Distribution of Overheads

(2) Statement showing redistribution of expenses of service departments to production departments.

5. A company has three production departments P<sub>1</sub>, P<sub>2</sub>, and P<sub>3</sub> and two service departments S<sub>1</sub> and S<sub>2</sub>. The overhead costs to each department after primary distribution are :

| Departments    | Rs.    |
|----------------|--------|
| P <sub>1</sub> | 12,000 |
| P <sub>2</sub> | 19,500 |
| P <sub>3</sub> | 26,000 |
| S <sub>1</sub> | 6,800  |
| S <sub>2</sub> | 2,700  |

Information regarding apportionment of service department are:

| Departments          | S <sub>1</sub> | S <sub>2</sub> | P <sub>1</sub> | P <sub>2</sub> | P <sub>3</sub> |
|----------------------|----------------|----------------|----------------|----------------|----------------|
| Capital Values (Rs.) | 15000          | 10000          | 55000          | 76000          | 64000          |
| Proportion           | -              | 5%             | 25%            | 38%            | 32%            |
| No. of requisitions  | 900            | -              | 2400           | 1620           | 1080           |
| Proportion           | 15%            | -              | 40%            | 27%            | 18%            |

Prepare a statement of overhead distribution by step method.

6. A company has three production departments and two service departments. The overhead distribution sheet showed the following totals:

| <i>Production Departments</i> | <i>Rs.</i> |
|-------------------------------|------------|
| A                             | 2500       |
| B                             | 3100       |
| C                             | 2800       |
| <i>Service Departments</i>    |            |
| S <sub>1</sub>                | 800        |
| S <sub>2</sub>                | 1390       |

The cost of the service departments are to be distributed using the following basis of apportionment.

|                           | <i>A</i> | <i>B</i> | <i>C</i> | <i>S<sub>1</sub></i> | <i>S<sub>2</sub></i> |
|---------------------------|----------|----------|----------|----------------------|----------------------|
| Department S <sub>1</sub> | 30%      | 20%      | 40%      | -                    | 10%                  |
| Department S <sub>2</sub> | 40%      | 15%      | 25%      | 20%                  | -                    |

Show the statement showing distribution of overhead expenses of service departments to production departments by

- (1) Repeated Distribution Method.
- (2) Simultaneous Equation Method.

[Ans. A - 3430, B - 3545, C - 3615]

## 10.12 SUMMARY

Total Expenses may be divided into direct and indirect costs. Direct materials, direct wages and direct expenses together are known as direct cost. Indirect materials, indirect wages and indirect expenses together constitute overheads.

Generally costs are classified on the basis of their common characteristics. Classification means estimation of costs, cost control and cost analysis. Direct costs can be allocated directly to cost centres. But indirect costs can not be allocated in this way. They are distributed to various cost centres on proper basis.

## 10.13 TERMINOLOGY

**Overheads Classification :** It is the process of grouping cost according to their common characteristics

**Cost Allocation :** The allotment of whole item of cost of cost centres or cost units.

**Cost-Apportionment :** The allotment of expenses which cannot identified wholly with a particular department. Expenses common to more than one cost centre or unit will be distributed to the various cost centres on a suitable basis.

**Primary Distribution of Overheads :** The process of distributing common expenses over the departments on some equitable basis is known as “Primary Distribution”.

## 10.14 SELF ASSESSMENT QUESTIONS

### Five Marks Questions

1. Fixed overheads.
2. Variable Overheads.
3. Step Distribution Methods.
4. Primary Distribution, Secondary Distribution.

### Ten Marks Questions

1. What is meant by overheads? Explain fixed and variable overheads with suitable examples.
2. Explain the methods of estimating indirect costs.
3. Explain allocation and apportionment of overheads.
4. Discuss the bases of overhead apportionment used by a manufacturing concern.

### Twenty Marks Questions

1. Define overheads. Explain classification of overheads.
2. Explain various methods of apportionment of overheads and explain their merits and demerits.
3. Explain the principles followed by a cost accountant for the apportionment of overheads.

## 10.15 REFERENCE BOOKS

|   |                            |
|---|----------------------------|
| Practical Costing                       | Khanna, Pandey, Ahuja      |
| Cost Accounting                         | Jain & Narang              |
| Cost Accounting                         | S.P.Iyenger                |
| Advanced Cost and Management Accounting | V.K.Saxena and C.D.Vashist |

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**Lesson - 11****ABSORPTION OF OVERHEADS****11.0 OBJECTIVES**

After going through this lesson student can know

- Absorption of overhead.
- Various methods of absorption of overhead.

**Structure**

- 11.1 Introduction**
- 11.2 Overhead Absorption Rates**
- 11.3 Methods of Absorption of Manufacturing Overhead**
- 11.4 Choice of an Overhead Rate**
- 11.5 Exercise**
- 11.6 Summary**
- 11.7 Terminology**
- 11.8 Self Assessment Questions**
- 11.9 Reference Books**

**11.1 INTRODUCTION**

After learning the principles to be followed for allocation and apportionment of overhead costs to producing cost centres, now it is required to learn the next step in the accounting of manufacturing overhead i.e., how to recover this cost from the cost of the production. The method of spreading of overhead expenses to the cost centres or cost units is known as overhead absorption (also referred to as levy, recovery, or application of overheads). It is necessary to charge each unit of production with its share of overhead expenses to ascertain the total cost of each unit. The charge made to each job to recover indirect cost is known as absorption of overhead. Absorption actually means the distribution of the overhead expenses allotted to a particular department over the units produced in that department. Overhead absorption is accomplished by overhead rates.

**11.2 OVERHEAD ABSORPTION RATES**

Overhead relates to suitable bases or factors must be determined in order to absorb the overhead in costs of jobs, processes or products. The basic procedure for the calculation of overhead rate is to divide the amount of overhead expenses by the total number of units of the base selected as units of products, direct labour hours, machine hours etc. In order to arrive at the cost of each unit of production the rate so calculated is multiplied to the units of the base contained in each individual product, job, process etc. In simple terms, the rate and overhead to be absorbed in a product can be calculated as below:

$$\text{Overhead Rate} = \frac{\text{Overhead Expenses}}{\text{Total quantum of basis (quantity or value)}}$$

Overhead absorbed in a product = Overhead rate x Units of the base contained in the product.

Clerical cost and degree of accuracy are two important factors which determine the rate to be calculated in a particular concern. The following are the main overhead rates usually referred in cost accounting literature.

1. Actual Overhead Rate : This rate is obtained by dividing the overhead expenses incurred during the accounting period by the actual quantum of the base selected. Monthly rates can be calculated on the basis of the following formula:

$$\text{Overhead Rate(actual)} = \frac{\text{Actual expenditure during the month}}{\text{Actual quantity or value of the base related to the total production in the month}}$$

Recovery should be made on actual basis in order to charge the expenses directly to production, jobs, operations, processes etc. It is, however, not desirable to adopt actual rate in practice.

Limitations:

- i. Actual rate cannot be determined unless the accounting year/period is over and the relevant data is available for the purpose of calculation of such rate. This delays the determination of the cost of products.
- ii. Some of the costs like leave wages, repairs and maintenance etc. are not uniformly spread over all the accounting period. Certain other payments like insurance premium, rent etc., are made only periodically. The actual volume of activity is also affected by the seasonal or cyclical fluctuations because of number of days to be worked in a calendar month are not uniform and actual overhead cost will vary from month to month. Because of these reasons the actual rate is liable to wide fluctuations and this makes the cost comparison from period to period difficult.
- iii. Actual cost is generally used for comparison with the predetermined figures for the purpose of control. Thus, it is useful only when compared with the established norms or standards.

2. Predetermined Overhead Rate: Predetermined rate is determined in advance of the actual production and is computed by dividing the budgeted overhead expenses for the accounting period by the budgeted base for the period i.e.

$$\text{Overhead Rate (pre-determined)} = \frac{\text{Budgeted overhead expenses for the period}}{\text{Budgeted base of the period}}$$

The computation of a predetermined overhead rate is more practical and useful as the rate related to a particular accounting period is available for costing purposes well in advance and helps in cost control. This helps in quick preparation of cost estimates and fixing rate prices especially in case of cost plus

contracts. In those concerns where the budgetary control system is in operation, all the data for the purpose of calculation of predetermined overhead rate is available without any extra clerical cost. Overhead rate can also be calculated in those concerns by estimating the overhead cost and the basis where the system of budgetary control is not used.

Limitation :

It may give rise to over and under-absorption of overhead.

3. Blanket Overhead Rate : When a single overhead rate is computed for the factory as a whole it is known as single or blanket or plant wide rate. It is calculated as under

$$\text{Blanket rate} = \frac{\text{Overhead cost for the entire factory}}{\text{Total quantum of the base selected}}$$

Blanket rate is calculated in small concerns where only one product is manufactured or where all the products pass through all the operations or departments and the incidence of overhead is uniform on all the departments. These rates are easy to compute and require less clerical cost but have a very limited use.

Limitations:

- i. Such rate may give erroneous and misleading results where several products are manufactured and are required to be passed through various production departments. Such departments may have different overhead expenses, and the product base and the productive time for different products may also differ.
- ii. As the performance of the individual department cannot be assessed properly with this rate, so no satisfactory managerial control is possible.
- iii. Such rate may render the valuation of work-in-progress erroneous.

4. Multiple Overhead Rate : When different rates are computed for each producing department, service department, cost centre, each product or product line, each production factor and for fixed overhead, and variable overhead, then they are known as multiple rates. It is calculated as under:

$$\text{Overhead rate} = \frac{\text{Overhead cost allocated and apportioned to each cost centre}}{\text{Corresponding Base}}$$

5. Normal Overhead Rate: Under this method overhead rate is a predetermined rate calculated with reference to normal capacity. It is determined by the following formula.

$$\text{Normal Overhead Rate} = \frac{\text{Normal Overhead}}{\text{Base at normal capacity}}$$

6. Supplementary Overhead Rates : These rates are used to carry out adjustment between overhead absorbed and overhead incurred. These are used in addition to some other rates and is calculated as under:

$$\text{Supplementary Overhead Rate} = \frac{\text{Actual overhead incurred - absorbed overhead}}{\text{Base (hours or units etc.)}}$$



**Moving Average Rate :** This rate is a compromise between the actual rate and predetermined rate. This rate no doubt removes to some extent the shortcomings of the overhead rate fixed on actual basis by equating the wide fluctuations but it cannot avoid them, Overhead expenses may increase or decrease because of change in the production activity and recovery on the basis of actual rate would result in excess or less charging of overhead to cost of production, the estimated expenses for the period are not taken into consideration.

**Frequency of Rate Revision :** The frequency of determination of revision of the overhead rates may vary from concern to concern. Some concerns may compute the rate on annual, half yearly, quarterly or monthly basis. In case of seasonal factories annual rate smoothens the wide fluctuations and normalises the cost. It is also less expensive. But, on the other hand, if the rate is determined for a shorter period, it ensures accuracy especially where there are frequent changes in the pattern of the overhead expenses and the base to which rate is related.

## 11.3 METHODS OF ABSORPTION OF MANUFACTURING OVERHEAD

### 1. Direct Material Cost Method

Under this method percentage of factory expenses to value of direct materials consumed in production is calculated to absorb manufacturing overheads. The formula is

$$\text{Overhead rate} = \frac{\text{Overhead expenses budgeted}}{\text{Anticipated direct material cost}}$$

This method is simple and can be adopted under the following circumstances:

- i. Where output is uniform i.e., where only one kind of article is produced, the quantity and cost of material charged to each unit being the same
- ii. Where the prices of materials are stable.

Where the proportion of overhead to the total cost is significant.

#### Advantages

The following are the main advantages of this method:

- i. The calculation of overhead rate is simple as the cost of direct materials is easily available from the materials issue analysis and no additional records are required to be maintained.
- ii. This method is more suitable when prices of the materials are fairly stable and the material used per hour and material mix are constant.
- iii. Overhead cost pertaining to upkeep and handling of materials can be absorbed equitably by this method.

#### Disadvantages

The following are the disadvantages of this method:

- i. Fluctuations in prices of raw materials are not accompanied by similar fluctuations in overhead expenses. So the basis is unstable.

- ii. Usually cheap materials will result in more overhead expenses than expensive materials. The method is said to be illogical and inaccurate as the incidence of overhead cost is not related to the cost of materials.
- iii. Most of the factory expenses accrue on the basis of time. The time factor is completely ignored when the cost of materials is used as the basis for absorption.
- iv. No distinction is drawn between the jobs using skilled labour and those using unskilled labour. A skilled worker takes less time to complete a job than an unskilled worker. The charge of overhead will be the same for both the jobs.
- v. No distinction is drawn between the production of hand workers and that of machine workers.
- vi. No distinction is drawn between fixed and variable expenses. Both are allocated on the same basis though the latter vary with the volume of production.

## II. Direct Labour Cost (or Direct Wages) Method.

This is a simple and easy method and widely used in most of the concerns. The overhead rate is calculated as under:

$$\text{Overhead Rate} = \frac{\text{Overhead Expenses}}{\text{Direct Labour Cost}}$$

Suppose in the year 1990, direct wages paid in a factory Rs.60,000 and the factory expenses amounted Rs.30,000.

$$\text{Overhead Rate} = \frac{30,000}{60,000} \times 100 = 50\%$$

### Advantages

The following are the advantages of this method:

- i. Automatic consideration is given to the time factor as wages paid are normally proportional to the time worked.
- ii. Labour rates are more stable than material prices.
- iii. The charge to production is related to the amount of wages paid which is proportional to the number of workers.
- iv. Basic data required for calculation of this rate is easily available from the wages analysis statement and no extra labour cost is involved.

### Disadvantages

The following are the disadvantages:

- i. No distinction is drawn between skilled and unskilled labour and differences in rates of pay.
- ii. Time factor is completely ignored if workers are paid on piece rate basis.
- iii. No distinction is drawn between the production of hand workers and that of machine workers.

- iv. No distinction is made between fixed and variable expenses.
- v. It ignores the important factors like extensive use of plant and equipment.

### III. Prime Cost Method

Under this method the recovery rate is calculated by dividing the budgeted overhead expenses by the aggregate of direct materials and direct labour cost of all the products of a cost centre. The formula is :

$$\text{Overhead Recovery Rate} = \frac{\text{Budgeted Overhead Expenses}}{\text{Anticipated Direct Materials and Direct Labour}}$$

Suppose if the budgeted overheads are Rs.50,000 and the estimated values of direct materials and direct labour are Rs.30,000 and Rs.20,000, then overhead recovery rate will be 100% i.e.,

$$\frac{50,000}{30,000 + 20,000} \times 100$$

Limitations:

- i. Where the cost of materials is predominating item of prime cost and adequate consideration is not given to the time factor.
- ii. No distinction is drawn between the production of hand workers and machine workers.
- iii. As is the case with the other percentage methods, no distinction is drawn between fixed and variable expenses.
- iv. It combines the shortcomings of both direct materials and direct labour methods.
- v. It gives equal importance to both direct materials and direct labour for the purpose of calculation of overhead rate, which, of course, is more related to labour cost than material cost.

### IV Direct Labour (or Production) Hour Method

This rate is obtained by dividing the overhead expenses by the aggregate of the productive hours of direct workers. The formula is

$$\text{overhead rate} = \frac{\text{Overhead Expenses}}{\text{Direct Labour Hours}}$$

If in a particular period the overhead expenses are Rs.50,000 and direct labour hours are 1,00,000, then overhead labour rate will be Rs.0.50(i.e., Rs.50,000 ÷ 1,00,000).

Limitations

- i. This method does not take into consideration the factors of production other than labour and may lead to faulty distribution of overhead to product cost.
- ii. Where piece rate system is in use, the data required for calculation of this rate is not available as no record of time is kept. Moreover, if the information is to be collected, it will require more clerical work.

iii. It fails to take into consideration the expenses which are not dependent on labour hours such as power, depreciation, fuel, insurance, etc.

**Example :** A company has three production departments and one service department. There are twenty five working days in a month, 8 hours of work per day.

| <i>Item</i>        | <i>Total</i> | <i>Service Departments</i> | <i>Production Departments</i> |           |           |
|--------------------|--------------|----------------------------|-------------------------------|-----------|-----------|
|                    |              | <i>SI</i>                  | <i>P1</i>                     | <i>P2</i> | <i>P3</i> |
| Power              | 4400         | 960                        | 800                           | 1200      | 1440      |
| Supervisors Salary | 8000         | -                          | -                             | -         | -         |
| Rent               | 2000         | -                          | -                             | -         | -         |
| Welfare            | 1200         | -                          | -                             | -         | -         |
| Miscellaneous      | 2400         | 400                        | 400                           | 800       | 800       |
|                    | 18000        |                            |                               |           |           |

**Other Information :**

|  | <i>SI</i> | <i>P1</i> | <i>P2</i> | <i>P3</i> |
|--|-----------|-----------|-----------|-----------|
| Supervisors Salary   | 20%       | 30%       | 30%       | 20%       |
| Number of Labourers  | 10        | 30        | 40        | 20        |
| Area Sq.m.   | 500       | 600       | 800       | 600       |
| Service provided by Service Departments to Production Department | -         | 50%       | 30%       | 20%       |

**Compute :**

Labour rate per hour for production departments.

**Solution:**

| Item  | Basis               | Total | Production Departments |       |       | Service Department |
|---|---------------------|-------|------------------------|-------|-------|--------------------|
|   |                     |       | P1                     | P2    | P3    | S1                 |
| Power   | As directed         | 4400  | 960                    | 800   | 1200  | 1440               |
| Supervisor Salary   | As directed         | 8000  | 1600                   | 2400  | 2400  | 1600               |
| Rent  | Area                | 2000  | 400                    | 480   | 640   | 480                |
| Welfare   | Number of Labourers | 1200  | 120                    | 360   | 480   | 240                |
| Miscellaneous   | As directed         | 2400  | 400                    | 400   | 800   | 800                |
| Total   |                     | 18000 | 3480                   | 4440  | 5520  | 4560               |
| Apportioned   | 5 : 3 : 2           |       | 2280                   | 1368  | 912   | -4560              |
| Total Overheads --(1)                                       |                     | 18000 | 5760                   | 5808  | 6432  |                    |
| Total Labour hours --(2)<br>8 x 25 = 200 x No. of Labourers |                     | --    | 6000                   | 8000  | 4000  |                    |
|   |                     |       | 0.95p                  | 0.73p | 1.61p |                    |

**V Machine Hour Rate**

Under this method, actual or predetermined overhead rate is calculated by dividing overhead to be absorbed by the number of hours for which a machine is operated or expected to operate. This method is used when production is machine based. This method is recognised as a most reliable method of overhead absorption.

Machine hour rate = Overhead to be absorbed ÷ Machine hours.

If overhead to be absorbed is Rs.12,000 and number of machine hours is 4,000 then

$$\text{Machine hour rate} = \frac{12000}{4000} = \text{Rs.3 per hour.}$$

The machine hour rate is of three types.

(a) Ordinary Machine Hour Rate : It is computed by taking into account all the indirect expenses which are directly attributable to the machine running. The expenses to be considered for this purpose fall into two categories.

(1) those proportionate to the running time of the machine. They are Power, fuel, repairs and maintenance and depreciation.

(2) those having no relation to the operating time. They are insurance, taxes, lubricants, etc.

All these expenses are totalled and the aggregated and is divided by machine hours to determine the machine hour rate.

(b) Composite Machine Hour Rate : This rate taken into account not only the expenses directly connected with the machine but also other expenses like supervision, rent, lighting, heating, etc. These indirect expenses are known as standing charges. The standing charges apportioned to each machine are divided by working hours of that machine during that period to arrive at machine hour rate for standing charges. When the machine hour rate for standing charges are added to the ordinary machine hour rate, we get the composite machine hour rate.

(c) Group Machine Hour Rate : This is determined for a cost centre which comprises a specific machine or a group of machines. So this method is applicable where identical machines are grouped as a machine centre. All direct expenses like depreciation, fuel, power etc are allocated to the cost centre. All indirect expenses such as rent, rates, insurance and electricity as apportioned to each group of machines on an appropriate basis.

Following list describes the various bases that may be adopted for apportioning the expenses to each machine.

| Expenses                                 | Basis   |
|--|---|
| <u>Standing Charges :</u>                |   |
| 1. Rent and Rates                        | Area occupied by each machine   |
| 2. Heating and Lighting                  | Area occupied by each machine (or)<br>Number of light or heat points. |
| 3. Supervision                           | Time spent by supervisory staff on each machine.                      |
| 4. Lubricating oil and Consumable stores | On the basis of past experience                                       |
| 5. Insurance                             | Insurable value of each machine .                                     |
| 6. Miscellaneous expenses                | Basis depending upon facts  |
| <u>Machine Expenses</u>                  |   |
| 1. Depreciation                          | Cost of machine less residual value spread over its working life.     |
| 2. Power                                 | Actual consumption as shown by meter readings.                        |
| 3. Repairs                               | Cost of repairs spread over its working life.                         |

From the data given below, calculate the machine-hour rate.

per annum Rs.

|   |      |
|---|------|
| Rent of the department<br>(space occupied by machine<br>1/5th of the department)  | 780  |
| Lighting  |      |
| Insurance   | 36   |
| Cotton waste, oil etc.  | 60   |
| Salary of foremen (one fourth of the<br>forman's time is spent to this machine<br>and the remaining time spent to the other two machines equally) | 6000 |

The cost of the machine is Rs.9,200 and it has an estimated scrap value of Rs.200.

It is ascertained from the past experience (1) that the machine will work for 1800 hours per annum. (2) it will incur expenditure of Rs.1125 in respect of repairs and maintenance. (3) it consumes 5 units of power per hour at the cost of 6 paise per unit. (4) the working life of the machine will be Rs.18,000 hours.

**Solution :**

| Computation of Machine Hour Rate       |                          |                         |
|--|--------------------------|-------------------------|
|  | <i>Per annum<br/>Rs.</i> | <i>Per hour<br/>Rs.</i> |
| <u>Standing Charges</u>                |                          |                         |
| Rent (780 x 1/5)                       | 156.00                   |                         |
| Lighting (288 x 2/12)                  | 48.00                    |                         |
| Foreman's Salary (6000 x 1/4)          | 1500.00                  |                         |
| Insurance                              | 36.00                    |                         |
| Cotton Waste                           | 60.00                    |                         |
| Hourly rate (1800 / 1800)              | <b>1800.00</b>           | <b>1.00</b>             |
| <u>Variable Expenses</u>               |                          |                         |
| Depreciation $\frac{(9200-200)}{1800}$ |                          | 0.50                    |
| Repairs $[(1125 / 1800) \times 10]$    |                          | 0.06                    |
| Power (5 units x 0.06p)                |                          | 0.30                    |
| Machine hour rate                      |                          | <b>1.86</b>             |

**Example :** A department is having 3 machines. The figures indicate the departmental expenses. Calculate the machine hour rate in respect of these machines from the information given below:

|                           |                      |
|---------------------------|----------------------|
|                           | Rs.                  |
| Depreciation of Machinery | 12,000               |
| Depreciation of building  | 2,880                |
| Repairs to machinery      | 4,000                |
| Insurance of machinery    | 800                  |
| Indirect Wages            | 6,000                |
| Power                     | 6,000                |
| Lighting                  | 800                  |
| Miscellaneous Expenses    | <u>4,200</u>         |
|                           | <b><u>36,680</u></b> |

|                   | <i>Machine I</i> | <i>Machine II</i> | <i>Machine III</i> |
|-------------------|------------------|-------------------|--------------------|
| Direct Wages      | Rs. 1200         | Rs. 2400          | Rs. 2400           |
| Power Units       | 30,000           | 1,10,000          | 20,000             |
| Number of Workers | 4                | 8                 | 8                  |
| Light Points      | 8                | 24                | 48                 |
| Space             | 400 Sq.ft.       | 800 Sq.ft.        | 800 Sq.ft.         |
| Cost of Machine   | Rs.3,00,000      | Rs.1,20,000       | Rs.1,80,000        |
| Hours worked      | 200              | 300               | 300                |

Solution :

| <b>Machine Hour Rate</b>                                 |                  |              |                  |                   |                    |
|--|------------------|--------------|------------------|-------------------|--------------------|
| <i>Item</i>  | <i>Basis</i>     | <i>Total</i> | <i>Machine I</i> | <i>Machine II</i> | <i>Machine III</i> |
| Depreciation of machinery                                | Value of machine | 12000        | 6000             | 2400              | 3600               |
| Depreciation of building                                 | Space            | 2880         | 576              | 1152              | 1152               |
| Repairs to Machine                                       | Value of Machine | 4000         | 2000             | 800               | 1200               |
| Insurance  | Value of Machine | 800          | 400              | 160               | 240                |
| Indirect Wages   | No. of Workers   | 6000         | 1200             | 2400              | 2400               |
| Power  | Power Units      | 6000         | 3000             | 1000              | 2000               |
| Lighting   | Light Points     | 800          | 80               | 240               | 480                |
| Miscellaneous Expenses                                   | Direct Wages     | 4200         | 840              | 1680              | 1680               |
| <b>Total</b>   |                  | <b>36680</b> | <b>14096</b>     | <b>9832</b>       | <b>12752</b>       |
| Hours worked   |                  | 300          | 200              | 300               | 300                |
| Machine hour rate  |                  |              | Rs.70.48         | 32.77             | 42.51              |
| Comprehensive machine hour rate (including direct wages) |                  |              | Rs.76.48         | 40.77             | 50.51              |



## VI Rate per unit of Production

This method is simple, direct and easy. It is suitable for mining and other extractive industries, foundries, brick laying industries where the output is measured in convenient physical units like number, weight, volume, etc. The rate is calculated as under:

$$\text{Overhead Rate} = \frac{\text{Overhead expenses (budgeted)}}{\text{Budgeted Production}}$$

For example, if the overhead expenses (budgeted) are Rs.60,000 and budgeted production is 10,000 tonnes then overhead rate.

$$\frac{60,000}{10,000} = \text{Rs. } 6$$

## VII Sale Price Method

Under this method budgeted overhead expenses are divided by the sale price of units of production in order to calculate the overhead recovery rate. The formula is

$$\text{Overhead Recovery Rate} = \frac{\text{Budgeted overhead expenses}}{\text{Sale price of units of production}}$$

This method is more suitable for the application of administration, selling and distribution, research, development and design costs to costs of products. It can also be used with advantages for the preparation of joint products costs.

This method is arbitrary and recovery made by this method is inequitable because overhead costs have practically no relationship with the sale price of the products. The apportionment is made on the basis of benefits rather than on their ability to bear the costs.

## 11.4 CHOICE OF AN OVERHEAD RATE

The method adopted for overhead absorption varies from industry to industry and one undertaking to another. Some firms use separate overhead rates for each type after classifying the overhead expenses into several types.

The following factors should be taken into consideration before formulating overhead rates or deciding upon the basis for applying overheads to products.

1. **Adequacy:** The overhead rate should be such that overhead should be equitably apportioned to the cost centres or cost units. The amount of overhead recovered should also be equivalent to the amount of overheads incurred.
2. **Convenience:** The overhead rate should be simple to calculate and easy to understand. It should be convenient in application. It should not require unnecessary or additional clerical work.
3. **Time Factor:** Overhead rate should have some relation to the time taken by various jobs for completion. Thus, if a job takes twice as much time as another job, the first job should be charged twice the amount charged to the second job. It is because of this reason that direct wages percentage rate is preferred over direct material cost percentage rate.

4. **Manual or Machine Work:** The work done by manual labour should be distinguished from work done by machines and different overhead rates should be applied for manual and machine work. For example, when work is done by manual labour, it should not be charged for anything in respect of machine expenses like depreciation, repairs, maintenance etc.

5. **Different overhead rates:** Different overhead rates should be ascertained for different departments where the nature of the work done by one department is different from the work done by other department or departments.

6. **Information:** The selection of most appropriate overhead rate depends on the extent of information available or recorded. For example, labour hour rate can only be applied where labour time cards are maintained to record time spent by workers on each job, process or product.

## 11.5 EXERCISE

1. Computer the Machine Hours Rate from the following data.

|   |          |
|---|----------|
|   | Rs.      |
| Cost of Machine   | 1,00,000 |
| Installation Charges  | 10,000   |
| Estimated Scrap value (life period 15 years)                                  | 5,000    |
| Rent and Rates for the month  | 200      |
| General lighting for the month  | 300      |
| Insurance premium per annum   | 960      |
| Repairs and maintenance per annum   | 1000     |
| Power consumption - 10 units per hour   |          |
| Rate of power per 100 units   | 20       |
| Estimated working hours per annum<br>(including setting up time of 200 hours) | 2200     |
| Supervisors salary per month  | 600      |

The machine occupies 1/4th of the total area of the shop. The supervisor is expected to devote 1/5th of his time for supervising the machine.

[Ans. Rs.7.95]

[B.Com.(Hons.) Delhi]

2. The production department of a factory furnishes the following information for the month of December.

|  |        |
|--|--------|
|  | Rs.    |
| Material used                          | 54,000 |
| Direct Wages                           | 45,000 |
| Overheads Chargeable to the department | 36,000 |
| Labour hours works                     | 36,000 |
| Hours of machine operation             | 30,000 |

For an order executed by the department during the period, the relevant information was as under:

|                            |         |
|----------------------------|---------|
| Material used              | Rs.6000 |
| Direct wages               | Rs.3200 |
| Labour hours worked        | 3200    |
| Hours of machine operation | 2400    |

Compute the overhead charges by the following methods. 1. Labour hour rate 2. Machine hour rate.

[Ans. (1)Rs.3200 at Re.1. (2) Rs.2880 at Rs.1.20]

3. Calculate the machine hour rate from the following data.

|   |                                      |                  |
|---|--------------------------------------|------------------|
| a) Cost of Machine  | Rs.16000                             |                  |
| b) Estimated Scrap value  | Rs. 1000                             |                  |
| c) Working life   | 10,000 hours                         |                  |
| d) Running time per four weekly period                                    | 160 hours                            |                  |
| e) Average cost of repairs and maintenance charges per four weekly period | Rs.120                               |                  |
| f) Standing Charges   | Rs.40                                |                  |
| g) Power used by machine  | 4 units per hour at 5 paise per hour | [ Ans. Rs.2.55 ] |

[ B . C o m .

Andhra]

4. Machine costing Rs.10,000 is expected to run for ten years, its scrap value is likely to be Rs.900. Repairs and maintenances are expected to be Rs.1800 and the machine is expected to run 4380 hours per year on an averages.

Its electricity consumption is 15 units per hour, the rate per unit being 5 paise. The machine occupies one fourth of the area of the department and two points out of a total of ten for lighting. The foreman has to devote about 1/3 of his time to the machine.

The monthly rent of the department is Rs.300 and lighting charges amount to Rs.80 per month. The foreman is paid a monthly salary of Rs.480. Compute the machine hour rate assuming insurance is at 1% per annum and expenses on oil etc., are Rs.9 per month.

[Ans. 1.74]

[B.Com. (Hons) Delhi]

## 11.6 SUMMARY

Charging the overhead costs to production departments is known as absorption of overheads.

The overhead costs are absorbed on the basis of nature of overhead costs and position of departments.

Methods of absorption of Manufacturing Overhead :

(1) Direct material Cost Method.

(2) Direct Labour Cost Method.

- (3) Prime Cost Method.
- (4) Direct Labour Hour Method.
- (5) Machine Hour Rate.
- (6) Rate per unit of Production.
- (7) Sale Price Method.

### **11.7 TERMINOLOGY**

1. Actual overhead Rate : It is adopted to charge the expenses directly to production, jobs, processes etc.
2. Predetermined Overhead Rate : Most useful and practical rate which helps in cost control.
3. Direct Material Cost Method : It is more suitable when prices of materials are fairly stable, material used per hour and material mix are constant.
4. Prime Cost Method: It is adopted where a standard article is produced requiring a constant quantity of materials and number of hours spent upon its production.
5. Machine Hour Rate: It is adopted where the job is predominantly performed in machines.
6. Direct Labour Hour Method : It is adopted where the job is labour oriented.

### **11.8 SELF ASSESSMENT QUESTIONS**

#### **Five Marks Questions**

1. Direct Material Cost Method.
2. Machine Hour Rate.
3. Direct Labour Hour Rate.
4. Overheads absorption.

#### **Ten Marks Questions.**

1. Explain the bases for adopting Machine Hour Rate.
2. Explain the advantages and disadvantages of Direct Labour Cost Method.
3. Explain Direct Labour Hour Method and Machine Hour Rate Method.

#### **Twenty Marks Questions**

1. What is meant by overhead absorption? Explain various overhead absorption methods.
2. Explain the factors considered in selecting a particular method for computing overhead rates for a factory.

## 11.9 REFERENCE BOOKS

|  |                       |
|--|-----------------------|
| Cost Accounting                            | Jain & Narang         |
| Cost Accounting - Principles and Practices | S.P.Iyenger           |
| A Text Book of Cost Accounting             | M.N.Arrora            |
| Practical Costing                          | Khanna, Pandey, Ahuja |

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**Lesson - 12****UNIT COSTING**

- 12.1 Introduction**
- 12.2 Features**
- 12.3 Cost Accumulation**
- 12.4 Cost Sheet or Statement of Cost**
- 12.5 Advantages of Cost Sheet**
- 12.6 Specimen of Cost Sheet**
- 12.7 Tenders or Quotations**
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- 12.12 Self Assessment Questions**
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**12.1 Introduction**

There are only two basic methods of costing. They are (1) specific order costing and (2) operation costing.

Operation Costing : “The category of basic costing methods applicable where standardised goods or services result from a sequence of repetitive and more or less continuous operations or processes to which costs are charged before being averaged over the units produced during the period”.

From the above, unit costing is also known as single costing, output costing.

**12.2 Features**

Unit costing is a method of costing by unit of production. It is adopted by concerns producing a single article on a large scale, by a continuous process of manufacture, and all the units produced are identical and homogeneous. The units of production are capable of being expressed in convenient units of measurements. In a large number of cases, the unit of measurement will itself be the cost unit. Where this is not possible, convenient units are chosen from the cost accounting point of view.

The popular cost units are: one unit, 1000 units, one gross, a litre, a tonne, a bag, a kilogram etc. The cost per unit is arrived at by dividing the total cost by the total quantity or the number of units produced.

**12.3 Cost Accumulation**

Under this method of costing, costs are accumulated and analysed under the various elements and the total of each element is divided by the total number or the quantity produced. It is only when the article is produced in different grades or sizes, a detailed analysis of expenditure might become necessary.

**Materials** : Materials consumed is ascertained by adopting the normal stores procedure. To ensure the availability of materials for continuous flow of production and to prevent over or under-stocking, stock levels should be set and re-order quantity determined. Issues should be made against authorised requisitions only.

Analysis of the requisitions will give us the quantity of direct and indirect materials issued for production and their values also. Normal loss should be recovered by inflating the issue rate. Abnormal losses should be charged to the costing profit and loss account.

**Labour** : For purposes of accounting and control of labour cost, it is necessary to record the timing of arrival and departure of workers. The labour costs are collected periodically through payrolls which are prepared separately for each section of the work. Labour-direct and indirect should be identified separately. The direct labour costs are collected separately and forms a part of prime cost where as indirect labour is charged to the factory overheads.

**Overheads** : The financial records, which give the details of actual overhead expenses incurred are analysed under manufacturing and administrative overheads selling and distribution overheads and added to prime cost. These are usually charged at predetermined rates.

**Treatment of Scrap** : Materials drawn from stores but rendered useless for production, or the residue in the course of manufacture, are known as scrap. Scrap includes broken, spoiled or materials which have not undergone processing. Scrap returned to stores or sold reduces the cost of materials consumed. Cost of scrap has to be deducted from the works cost on the basis of the sale value.

## 12.4 Cost Sheet or Statement of Cost

Cost sheet is a statement designed to show the output of a particular accounting period alongwith the break-up of costs. The data incorporated in cost sheet are collected from various statements of accounts which have been written in cost accounts, either day-to-day or regular records.

There is no fixed form for preparation of cost sheet but in order to make the cost sheet more useful it is generally presented in columnar form. The information to be incorporated in costsheet would depend upon the requirement of management for the purpose of control.

## 12.5 Advantages of Cost Sheet

- (1) It discloses the total cost and the cost per unit of the units produced during the given period.
- (2) It enables a manufacturer to keep as close watch and control over the cost of production.
- (3) By providing a comparative study of the various elements of current cost with the past results and standard costs, it is possible to find out the causes of variations in costs and to eliminate the adverse factors and conditions which increases the total cost.
- (4) It acts as a guide to the manufacturer and helps him in formulating a definite useful production policy.
- (5) It helps in fixing up the selling price more accurately.
- (6) It helps the businessman to minimise the cost of production when there is a cut throat competition.
- (7) It helps the businessman to submit quotations with reasonable degree of accuracy against tenders for the supply of goods.

## 12.6 Specimen of Cost Sheet

| <i>Total Output in Units</i>                    | <i>Total Cost<br/>Rs.</i> | <i>Cost per Unit<br/>Rs.</i> |
|---|---------------------------|------------------------------|
| Direct Material                                 |                           |                              |
| Direct Labour                                   |                           |                              |
| Prime Cost                                      |                           |                              |
| <u>Add</u> : Works Overheads                    |                           |                              |
| Works Cost                                      |                           |                              |
| <u>Add</u> : Administrative Overheads           |                           |                              |
| Cost of Production                              |                           |                              |
| <u>Add</u> : Selling and Distribution Overheads |                           |                              |
| Total Cost or Cost of Sales                     |                           |                              |

## 12.7 Tenders or Quotations

A producer submits a tender or a quotation price for the supply of the commodities he produces or for completing a job. A tender has to be prepared very carefully as the receipts of orders depend upon the acceptance or quotations supplied by the manufactures. The preparation of tenders requires information regarding Prime Cost, Works, Administration and Selling overheads and profit of the preceeding period. The manufacturer has to ascertain and find out the possible changes in prices and costs. He must have a reasonable amount of profit by taking into consideration the maket condition.

## 12.8 Examples

1. Prepare Cost Statement for the year ended 31 Dec. 2005 from the following information

|                          | <i>Rs.</i> |
|--------------------------|------------|
| Direct Materials         | 40,000     |
| Direct Wages             | 30,000     |
| Direct Expenses          | 5,000      |
| Factory Overheads        | 10,000     |
| Administrative Overheads | 7,500      |
| Distribution Overheads   | 3,000      |
| Profit 20% on total Cost |            |



**Solution :**

Cost Sheet of a Company for the year ended 31-12-2004

|                          | <i>Rs.</i>      |
|--------------------------|-----------------|
| Direct Materials         | 40,000          |
| Direct Wages             | 30,000          |
| Direct Expenses          | 5,000           |
| Prime Cost               | 75,000          |
| Factory Overheads        | 10,000          |
| Factory Cost             | 85,000          |
| Administrative Overheads | 7,500           |
| Production Cost          | 92,500          |
| Distribution Overheads   | 3,000           |
| Total Cost               | 95,500          |
| Profit (20% on 95,500)   | 19,100          |
| Sales                    | <b>1,14,600</b> |

**Example 2:**

Direct Materials                      1,00,000

Direct Wages                              65,000

Works Overheads: 60% of Direct Wages

Office Overheads: 80% of Factory Cost

Selling Overheads : 10% of Factory Cost

Profit 20% on Sales.

**Solution :**

| <b>Cost Sheet</b>                                      |                 |
|--|-----------------|
|  | <i>Rs.</i>      |
| Direct Materials                                       | 1,00,000        |
| Direct Wages   | 65,000          |
| Prime Cost   | 1,65,000        |
| Works Overheads ( $65,000 \times \frac{60}{100}$ )     | 39,000          |
| Work Cost  | 2,04,000        |
| Office Overheads ( $2,04,000 \times \frac{80}{100}$ )  | 1,63,200        |
| Cost of Production                                     | 3,67,200        |
| Selling Overheads ( $2,04,000 \times \frac{10}{100}$ ) | 20,400          |
| Cost of Goods sold                                     | 3,87,600        |
| Profit $3,87,600 \times \frac{20}{80}$                 | 96,900          |
| Sales  | <b>4,84,500</b> |

**Examples 3:**

From the following information prepare cost statement.

|                           | Rs.      | Rs.        |
|---------------------------|----------|------------|
|                           | 1-1-2004 | 31-12-2004 |
| Balance of Materials      | 50,000   | 65,000     |
| Stock of Work-in-progress | 15,000   | 20,000     |
| Stock of Finished goods   | 64,000   | 42,000     |

**Transactions during the Year**

|                       | Rs.    |                           |       |
|-----------------------|--------|---------------------------|-------|
| Materials Purchased   | 75,000 | Depreciation on Machinery | 2,600 |
| Carriage on Purchases | 2,000  | Advertisement             | 5,800 |
| Direct Expenses       | 3,500  | Warehouse Rent            | 1,100 |

|                   |          |                 |       |
|-------------------|----------|-----------------|-------|
| Direct Wages      | 45,000   | Office Expenses | 4,700 |
| Factory Expenses  | 18,500   | Salaries        | 9,900 |
| Indirect Wages    | 7,600    | Rent, Rates     | 8,300 |
| Carriage on Sales | 2,000    |                 |       |
| Sales             | 3,05,000 |                 |       |

## Statement of Cost for the year ending 31-12-2004

|  | Rs.             | Rs.             |
|--|-----------------|-----------------|
| Materials (Opening)                      | 50,000          |                 |
| Add : Purchase of Materials              | 75,000          |                 |
|  | <u>1,25,000</u> |                 |
| Carriage on Purchase                     | 2,000           |                 |
|  | <u>1,27,000</u> |                 |
| Less: Closing Balance of Materials       | 65,000          |                 |
| Materials consumed                       |                 | 62,000          |
| Direct Wages                             |                 | 45,000          |
| Direct Expenses                          |                 | <u>3,500</u>    |
| Prime Cost                               |                 | 1,10,500        |
| Add : Factory Overheads :                |                 |                 |
| Factory Expenses                         | 18,500          |                 |
| Indirect Wages                           | 7,600           |                 |
| Depreciation on Machinery                | <u>2,600</u>    | 28,700          |
|  |                 | <u>1,39,200</u> |
| Add : Opening Stock of Work-in-progress  |                 | 15,000          |
|  |                 | <u>1,54,200</u> |
| Less : Closing Stock of Work-in-progress |                 | 20,000          |
| Factory Cost                             |                 | <u>1,34,200</u> |
| Add : Office Overheads                   |                 |                 |
| Salaries                                 | 9900            |                 |
|  | 4700            |                 |
| Rent, Rates                              | <u>8300</u>     | 22,900          |
| Cost of Production of Goods manufactured |                 | <u>1,57,100</u> |
| Add : Opening Stock of finished goods    |                 | 64,000          |
|  |                 | <u>2,21,000</u> |
| Less: Closing Stock of finished goods    |                 | 42,000          |
| Cost of Production of goods sold         |                 | <u>1,79,000</u> |
| Add : Selling & distribution overheads:  |                 |                 |
| Advertisement                            | 5800            |                 |
|  | 1100            |                 |
|  | <u>2000</u>     | 8900            |
| Cost of Sales                            |                 | <u>1,88,000</u> |
| Add : Profit                             |                 | <u>1,17,000</u> |
| Sales                                    |                 | <u>3,05,000</u> |

**Example 4:**

From the following information related to a company for the year 2004, what price should the product be sold. So as to earn same rate of profit on the selling price as in 2004.

|                        | Rs.      |
|------------------------|----------|
| Cost of Materials      | 6,00,000 |
| Wages                  | 5,00,000 |
| Factory Overhead       | 3,00,000 |
| Administration Charges | 3,36,000 |
| Selling Charges        | 2,24,000 |
| Distribution Charges   | 1,40,000 |
| Profit                 | 4,20,000 |

A work order has been executed in 2005 and the following expenses have been incurred.

Materials Rs.8000, Wages Rs.5000.

Assuming that the rate of factory overhead has gone up by 20%, distribution charges have gone down by 10%, selling and Administrative charges have each gone up by 12 1/2%.

Factory overhead is based on Direct Labour and Administration, Selling and Distribution charges on factory cost.

**Solution:****Statement of Cost for the year 2004**

|   |                      |                         |
|---|----------------------|-------------------------|
| Materials                               | 6,00,000             |                         |
| Wages                                   | <u>5,00,000</u>      |                         |
|   | Prime Cost           | 11,00,000               |
| Factory Overheads                       | <u>3,00,000</u>      |                         |
|   | Factory Cost         | 14,00,000               |
| Administrative Overheads                | <u>3,36,000</u>      |                         |
|   | Office Cost          | 17,36,000               |
| Selling Charges                         | 2,24,000             |                         |
| Distribution Charges                    | <u>1,40,000</u>      | <u>3,64,000</u>         |
|   | Total Cost           | 21,00,000               |
| Profit (20% on Cost 21,00,000 x 20/100) |                      | <u>4,20,000</u>         |
|   | <b>Selling Price</b> | <b><u>25,20,000</u></b> |

Working Notes :

$$\text{Percentage of Factory overhead on Direct Labour} = \frac{3,00,000}{5,00,000} \times 100 = 60\%$$

$$\text{Percentage of Administration Charges on Factory Cost} = \frac{3,36,000}{14,00,000} \times 100 = 24\%$$

$$\text{Percentage of Selling Charges on Factory Cost} = \frac{2,24,000}{14,00,000} \times 100 = 16\%$$

$$\text{Percentage of distribution charges on Factory Cost} = \frac{1,40,000}{14,00,000} \times 100 = 10\%$$

**Statement of Selling Price of the Work Order**

|   | Rs.        | Rs.                |
|---|------------|--------------------|
| Materials   |            | 8,000              |
| Wages   |            | <u>5,000</u>       |
|   |            | 13,000             |
|   |            | Prime Cost         |
| Add: Factory Overhead   |            |                    |
| 60% of Wages $\left(5000 \times \frac{60}{100}\right)$          | 3,000      |                    |
| Add: 20% increase $\left(3000 \times \frac{20}{100}\right)$     | <u>600</u> | <u>3,600</u>       |
|   |            | 16,600             |
|   |            | Factory Cost       |
| Add: Administration Overhead                                    |            |                    |
| 24% of Factory Cost $\left(16600 \times \frac{24}{100}\right)$  | 3,984      |                    |
| Add: 12 1/2% increase $\left(3984 \times \frac{25}{200}\right)$ | <u>498</u> | <u>4,482</u>       |
|   |            | 21,082             |
|   |            | Cost of Production |
| Add: Selling Charges  |            |                    |
| 10% of Factory Cost $\left(16600 \times \frac{10}{100}\right)$  | 2,656      |                    |
| 12 1/2% increase $\left(2656 \times \frac{25}{200}\right)$      | <u>332</u> | 2,988              |
| Add: Distribution Charges                                       |            |                    |

|  |            |               |
|--|------------|---------------|
| 10% of Factory Cost $\left(16600 \times \frac{10}{100}\right)$     | 1,660      |               |
| Less: 10% Decrease $\left(1660 \times \frac{10}{100}\right)$       | <u>166</u> | <u>1,494</u>  |
| Total Cost   |            | 25,564        |
| Add: Profit 20% on Cost $\left(25564 \times \frac{20}{100}\right)$ |            | <u>5,113</u>  |
|  |            | <b>30,677</b> |

**Example 5 :**

An engineering company limited manufactured and sold 1000 radio sets in 2004. The following are particulars regarding the radios sold and manufactured by them.

|                        |          |
|------------------------|----------|
| Cost of Materials      | 80,000   |
| Wages                  | 1,20,000 |
| Manufacturing Expenses | 50,000   |
| Salaries               | 60,000   |
| Rent and Rates         | 10,000   |
| Selling Expenses       | 30,000   |
| General Expenses       | 20,000   |
| Sales                  | 4,00,000 |

The company desires to supply 200 radio sets to a commercial concern. You are required to prepare a statement showing the price at which Radios should be sold so as to show a profit of 10% on selling price. The following additional information is supplied to you.

1. The price of materials will rise by 20% on previous year level.
2. Wage will rise up by 5%.
3. Manufacturing expenses will rise up by 10%.
4. Office and selling expenses per unit remain the same.

**Solution:**

Cost Statement for the year ended 2004 [output of 1000 radio sets]

|                           | Total Cost      | Cost per Unit |
|---------------------------|-----------------|---------------|
|                           | Rs.             | Rs.           |
| Materials                 | 80,000          | 80            |
| Wages                     | <u>1,20,000</u> | <u>120</u>    |
| <b>Prime Cost</b>         | <b>2,00,000</b> | <b>200</b>    |
| Factory Overheads :       |                 |               |
| Manufacturing Expenses    | <u>50,000</u>   | <u>50</u>     |
| <b>Factory Cost</b>       | <b>2,50,000</b> | <b>250</b>    |
| Office Overheads :        |                 |               |
| Salaries                  | 60,000          | 60            |
| Rent and Rates            | 10,000          | 10            |
| General Expenses          | <u>20,000</u>   | <u>20</u>     |
| <b>Cost of Production</b> | <b>3,40,000</b> | <b>340</b>    |
| Selling Expenses          | <u>30,000</u>   | <u>30</u>     |
| <b>Total Cost</b>         | <b>3,70,000</b> | <b>370</b>    |
| Profit                    | <u>30,000</u>   | <u>30</u>     |
| Sales                     | 4,00,000        | 400           |

**Statement Showing the Estimated Price (200 Radios)**

|                                      |           | Cost per Unit | Total Cost    |
|--------------------------------------|-----------|---------------|---------------|
|                                      |           | Rs.           | Rs.           |
| Material                             | 80        |               |               |
| Add: Price rise by 20% (80 x 20/100) | <u>16</u> | 96            | 19,200        |
| Wages                                | 120       |               |               |
| Add: Rise by 5% (120 x 5/100)        | <u>6</u>  | <u>126</u>    | <u>25,200</u> |
| <b>Prime Cost</b>                    |           | <b>222</b>    | <b>44,400</b> |
| Add: Factory Overheads:              |           |               |               |
| Manufacturing Expenses               | 50        |               |               |
| Add: Rise by 10% (50x10/100)         | <u>5</u>  | <u>55</u>     | <u>11,000</u> |
| <b>Factory Cost</b>                  |           | <b>277</b>    | <b>55,400</b> |
| Add: Office Overheads                |           |               |               |
| Salaries                             |           | 60            | 12,000        |
| Rent & Rates                         |           | 10            | 2,000         |
| General Expenses                     |           | <u>20</u>     | <u>4,000</u>  |
| <b>Cost of Production</b>            |           | <b>367</b>    | <b>73,400</b> |
| Add: Selling Expenses                |           | <u>30</u>     | <u>6,000</u>  |
| <b>Total Cost</b>                    |           | <b>397</b>    | <b>79,400</b> |

|  |               |               |
|--|---------------|---------------|
| Add: Profit 11 1/9% or 1/9 on Cost Price | <u>44-11</u>  | <u>8,822</u>  |
| <b>Selling Price</b>                     | <b>441-11</b> | <b>88,222</b> |

Working Note :

Profit 10% on Selling Price

If sale price is Rs.100 - Profit is Rs.10

If Cost price is Rs.90 - Profit is Rs.10

Cost price is Rs.100 -  $\frac{10}{90} \times 100 = 11\frac{1}{9}\%$  on Cost Price or  $\frac{1}{9}$

**Example 6:**

From the following information prepare a production Account showing the components of cost of production.

|                                    |           |
|------------------------------------|-----------|
| Stock of finished goods 31-12-2005 | 73,000    |
| Stock of Raw materials 31-12-2005  | 35,000    |
| Purchase of Raw materials          | 7,60,000  |
| Productive Wages                   | 5,20,000  |
| Stock of finished goods 1-12-2006  | 82,500    |
| Stock of Raw materials 31-12-2006  | 37,500    |
| Sale of finished Goods             | 15,45,800 |
| Works overhead charges             | 1,30,200  |
| Office and general charges         | 69,700    |

Production Account for the year ending 31-12-2006

| Particulars                        | Rs.              | Particulars                        | Rs.              |
|------------------------------------|------------------|------------------------------------|------------------|
| To Opening Stock of Raw materials  | 35,000           | By Closing stock of Raw Materials  | 37,500           |
| To Purchases                       | <u>7,60,000</u>  | By Material Consumed               | <u>7,57,500</u>  |
|                                    | <u>7,95,000</u>  |                                    | <u>7,95,000</u>  |
| To Material Consumed               | 7,57,500         | By Prime Cost                      | 12,77,500        |
| To Wages                           | <u>5,20,000</u>  |                                    | <u>12,77,500</u> |
|                                    | <u>12,77,500</u> | By Factory Cost                    | 14,07,700        |
| To Prime Cost                      | 12,77,500        |                                    | <u>14,07,700</u> |
| To Works overhead                  | <u>1,30,200</u>  | By Cost of Production              | 14,77,400        |
|                                    | <u>14,07,700</u> |                                    | <u>14,77,400</u> |
| To Factory Cost                    | 14,07,700        | By Closing Stock of finished goods | 82,500           |
| To Office Oveaheads                | <u>69,700</u>    | By Cost of Sales                   | <u>14,67,900</u> |
|                                    | <u>14,77,400</u> |                                    | <u>15,50,400</u> |
| To Cost of Production              | 14,77,400        |                                    |                  |
| To Opening Stock of finished goods | <u>73,000</u>    |                                    |                  |
|                                    | <u>15,50,400</u> |                                    |                  |



|                  |                         |          |                         |
|------------------|-------------------------|----------|-------------------------|
| To Cost of Sales | 14,67,900               | By Sales | 15,45,800               |
| To Profit        | <u>77,900</u>           |          |                         |
|                  | <b><u>15,45,800</u></b> |          | <b><u>15,45,800</u></b> |

**12.9 Exercise**

1. Prepare Cost Sheet for the following data.

|                          | 01.01.2004<br>Rs. | 31-12-2004<br>Rs. |
|--------------------------|-------------------|-------------------|
| Raw materials            | 60,000            | 50,000            |
| Work-in-progress         | 24,000            | 30,000            |
| Finished Goods           | 1,20,000          | 1,10,000          |
| Materials purchased      | 9,00,000          |                   |
| Wages                    | 5,00,000          |                   |
| Factory Overheads        | 2,00,000          |                   |
| Administrative Overheads | 50,000            |                   |
| Selling Expenses         | 30,000            |                   |
| Sales                    | 20,00,000         |                   |

Ans: Profit Rs.3,06,000

2. A factory uses job costing. Following data is obtained from its books for the year ended. 31 Dec., 2004

|                          |        |                   |        |
|--------------------------|--------|-------------------|--------|
|                          | Rs.    |                   | Rs.    |
| Direct Materials         | 90,000 | Direct Wages      | 75,000 |
| Profit                   | 60,900 | Selling Overheads | 52,500 |
| Administrative Overheads | 42,000 | Factory Overheads | 45,000 |

In 2005, the factory receives an order for a number of jobs. It is estimated that the direct materials required will be Rs.1,20,000 and direct labour will cost Rs.75,000. What should be the price for these jobs if the factory intends to earn the same rate of profit on sales assuming that the selling and distribution overheads has gone up by 15%. Factory overhead is recovered on direct wages and all other overhead on factory cost.

Ans. Estimated Selling Price Rs.4,28,400.

3. On 30th April 2004, a manufacturer was required to quote for a contract to supply 1000 electric

stoves. From the following data prepare a statement showing the price to be quoted to give the same percentage of net profit on turnover as was realised during the six months to 31 March 2004.

|  |           | Rs.      |
|--|-----------|----------|
| Stock of Materials                             | 1-10-2003 | 35,000   |
| Stock of Materials                             | 31-3-2004 | 4,900    |
| Purchase of materials, six months to 31-3-2004 |           | 52,500   |
| Factory Wages                                  |           | 95,000   |
| Establishment Expenses                         |           | 10,000   |
| Completed Stock on hand 1-10-2003              |           | Nil      |
| Completed Stock                                | 31-3-2004 | 35,000   |
| Sales  |           | 1,89,000 |

The number of stoves manufactured during six months was 4000 including those sold and those on stock at the close of the period. The stoves to be quoted are of uniform quality and make and similar to those manufactured during six months. From April 1, 2004 cost of materials gone up by 15% and wages by 10%.

**Ans:** Quotation price for 1000 stoves Rs.63,053.

4. The directors of manufacturing company require an account showing the production results of a business for the month of April, 2005. The cost accounts give the following information.

|   | Rs.    |
|---|--------|
| Stock of Materials (1-4-2005)           | 25,000 |
| Stock of finished goods (1-4-2005)      | 17,360 |
| Stock of Materials (30-4-2005)          | 26,250 |
| Finished goods - 30% of goods produced. |        |
| Purchased of Materials                  | 21,900 |
| Work-in-progress(1-4-2005)              | 8,220  |
| Work in progress(30-4-2005)             | 9,100  |
| Sales                                   | 72,310 |
| Direct Wages                            | 17,150 |
| Works Expenses                          | 8,340  |
| Office Expenses                         | 6,670  |
| Selling and Distribution Expenses       | 4,210  |

Sale of Scrap

330

Ans. : Profit Rs. 14,620/-

## 12.10 Summary

Unit Costing is applied in industries manufacturing products or rendering service such as collieries, brick making, flour mills, cement, paper, iron and steel, sugar breweries etc.

This method of costing is applied to ascertain the total and per unit cost.

## 12.11 Terminology

Materials : Cost of material charged directly to the production.

Labour : Direct labour costs forms apart of prime cost where as indirect labour cost is charged to the factory overheads.

Overheads : Indirect expenses are known as overheads. They are usually charged at a predetermined rate.

Statement of Cost : It gives total cost and cost per unit.

## 12.12 Self Assessment Questions

### Five Marks Questions

1. Cost Statement.
2. Production Account.
3. Unit Costing.
4. Tender Price.

### Ten Marks Questions

1. What is meant by Unit Costing? Explain its features?
2. What is Cost Sheet? Explain its advantages.

### Twenty marks Questions

1. Show the sepcimen Cost Sheet and explain the items of Cost Sheet.

## 12.13 Reference Books

|                 |               |
|-----------------|---------------|
| Cost Accounting | M.N.Arrora    |
| Cost Accounting | Jain & Narang |
| Cost Accounting | Lal Nigam     |

- Ch. Neela Krishnaveni



**Lesson - 13****JOB COSTING****13.0 OBJECTIVES**

After going through this lesson, student can understand.

- Meaning of Job Costing
- Features of Job Costing
- Merits and Demerits of job Costing
- Procedure of Job Costing System
- Batch Costing.

**Structure****13.1 Introduction****13.2 Job Costing****13.2.1 Features of Job Costing****13.2.2 Advantages, Disadvantages of Job Costing****13.2.3 Procedure of Job Cost System.****13.2.4 Examples****13.3 Batch Costing****13.3.1 Examples****13.4 Summary****13.5 Terminology****13.6 Self Assessment Questions****13.7 Reference Books****13.1 Introduction**

There are different methods of costing.

- (i) Specific order costing (or job/ terminal costing)
- (ii) Operation costing (or process/ period costing)

i. Specific order costing is the category of basic costing methods applicable where the work consists of separate jobs, batches or contracts each of which is authorised by a specific order or contract. In this category are included job costing consisting batch costing and contract costing. This is discussed in detail in this lesson.

ii. Operation costing is the category of basic costing method applicable where standardised goods or services result from a sequence of repetitive and more or less continuous operations or process to which costs are charged before being averaged over the units produced during the period. In this category we include process costing and service costing.

## 13.2 Job Costing

Job Costing is that form of specific order costing which applies where the work is undertaken as an identifiable unit.

Under this method each order is of comparatively short duration. The work is usually carried out within a factory or workshop and moved through processes and operations as a continuously identifiable unit. The term may also be applied to work such as property repairs and the method may be used in the costing of internal capital expenditure jobs.

The main purposes of job costing are to establish the profit or loss on each job and to provide a valuation of W/P.

### 13.2.1 Features of Job Costing

Under the method, costs are collected and accumulated for each job, work order or project separately. Each job can be separately identified and hence it becomes essential to analyse the costs according to each job. The industries where this method of costing is applied, must possess these features i.e. : (i) The production is generally against customer's order but may be for stock. (ii) Each job has its own characteristics and needs special treatment. (iii) There is no uniformity in the flow of production from department to department. The nature of the job determines the departments through which the job has to be processed. (iv) The work-in-progress differs from period to period according to the number of jobs in hand. Thus cost is ascertained for each job separately. This method is applicable to printers, machine tools manufacturers, foundries and general engineering workshops.

### 13.2.2 Advantages, Disadvantages of Job Costing

A cost accounting system should be so designed that it should be able to provide the necessary information for achieving control of cost and performance. The advantages of job order cost accounting are: (i) It provides a detailed analysis of cost of materials, wages and overhead classified by functions, departments and nature of expenses which enable management to determine the operating efficiency of the different factors of production, production centres and the functional units. (ii) It enables the management to ascertain which of the jobs are more profitable than the others, which are less profitable and which are incurring losses. (iii) It provides a basis for estimating the cost of similar jobs taken up in future and thus helps in future production planning. (iv) Determination of predetermined overhead rates in job costing necessitates the application of a system of budgetary control of overheads with all its advantages. (v) Identification of spoilage and defectives with the respective production orders and departments may enable the management to take effective steps in reducing these to the minimum. (vi) The detailed records of the past years be used for statistical purposes in their determination of the trends of cost of the different types of jobs and their relative efficiencies.

The disadvantages or weakness of job order cost accounting are: (i) It involves a great deal of clerical work in recording daily the cost of materials issued, wages expended and overheads, chargeable to each job or work order which adds to the cost of jobs and also increase the chances of errors. (ii) Determination of overhead rates may involve budgeting of overhead expenses and the bases of overhead apportionment and absorption but unless such budgeting is complete i.e., extended to material, labour and expenses, its advantages are considerably reduced. (iii) Job costing is a historical costing which ascertain the cost of a job or product after it has been manufactured. It does not facilitate control of cost unless it is used with standard or estimated costing.

### 13.2.3 Procedure of Job Cost System.

Job order cost system is designed to show in detail their cost components of the total cost of executing a job which may take the form of either a special order, or a batch of orders.

1. **Production Order** : For any job, the cost involved is estimated and on the basis of this estimate price is quoted to the customers. If the job is accepted, a Production Order is made by the Planning Department. It is in the form of instructions issued to the foreman to proceed with the manufacture of the product. It forms an authority for starting the work. It contains all the information regarding production.

When an order is received, the Production Control Department allots a Production Order Number to it. Sometimes, the work may be sub-divided and sub-numbers may also be allotted to various works constituting it, in addition to one master number.

2. **Recording of Costs** : The costs are collected and recorded for each job under separate Production Order Number. Generally, Job Cost Sheet is maintained for each job. This is a document which is used to record direct material, direct wages and overheads applicable to respective jobs. The basis of collection costs are:

(a) **Materials**. Materials Requisition, Bill of Materials or Materials Issue Analysis Sheet.

(b) **Wages**. Operation Schedule, Job Card or Wages Analysis Sheet.

(c) **Direct Expenses**. Direct expenses vouchers.

(d) **Overheads**. Standing Order Numbers or Cost Account Numbers.

All the basic documents will contain cross reference to respective production order numbers for convenience in collection of costs.

3. **Completion of Job** : On completion of a job, a completion report is sent to costing department. The expenditure under each element of cost is totalled and the total job cost is ascertained. The actual cost is compared with the estimated cost so as to reveal efficiency or inefficiency in operation.

4. **Profit or Loss on Job** : It is determined by comparing the actual expenditure of cost with the price obtained.

### 13.2.4 Examples

**Example 1:** A factory uses job costing. The following cost data is obtained from its books for the year ended 31 December, 2004.

|                        |        |                          |        |
|------------------------|--------|--------------------------|--------|
|                        | Rs.    |                          | Rs.    |
| Direct Materials       | 90,000 | Direct Wages             | 75,000 |
| Selling & Distribution | 52,500 | Administrative Overheads | 42,000 |
| Factory Overheads      | 45,000 | Profit                   | 60,900 |

Prepare Job cost sheet showing prime cost, works cost, cost of production, cost of sales and sale price.

In 2005, Factory got new job orders.

Direct Materials Rs. 1,20,000

Direct Wages Rs. 75,000

Selling & Distribution Overheads increases 15% on the basis of previous rates factory overheads are charged as percentage on direct wages administrative overheads on factory cost and selling and distribution overheads as percentage on Factory Cost.

| <b>Cost Sheet as on 31st December, 2004</b> |                    | Rs.                    |
|---|--------------------|------------------------|
| Direct Materials                            |                    | 90,000                 |
| Direct Wages                                |                    | <u>75,000</u>          |
|   | Prime Cost         | 1,65,000               |
| Factory Overheads                           |                    | <u>45,000</u>          |
|   | Factory Cost       | 2,10,000               |
| Administrative Overheads                    |                    | <u>42,000</u>          |
|   | Cost of Production | 2,52,000               |
| Selling & Distribution Overheads            |                    | <u>52,500</u>          |
| Total Cost                                  |                    | 3,04,500               |
| Profit                                      |                    | <u>60,900</u>          |
|   | Selling Price      | <u><b>3,65,400</b></u> |

| <b>Estimated Job Cost Sheet as on 31st December, 2005</b>   |                    | Rs.                    |
|---|--------------------|------------------------|
| Direct Materials  |                    | 1,20,000               |
| Direct Wages  |                    | <u>75,000</u>          |
|   | Prime Cost         | 1,75,000               |
| Factory Overheads- 60% on Direct Wages  |                    | <u>45,000</u>          |
|   | Factory Cost       | 2,40,000               |
| Administrative Overheads-20% on Factory Cost  |                    | <u>48,000</u>          |
|   | Cost of Production | 2,88,000               |
| Selling & Distribution Overheads-<br>25% on Factory Cost and 15% increase<br>(2,40,000 x 25/100 = 60,000 x 15/100 = 9000) |                    | <u>69,000</u>          |
| Total Cost  |                    | 3,57,000               |
| 1/6 of Cost of Sales or 1/5 of Selling Price  |                    | <u>71,400</u>          |
|   | Selling Price      | <u><b>4,28,400</b></u> |



**Example 2 :** A shop floor supervisor of a small factory presented the following cost for a job to determine the selling price.

|   | per unit Rs. |
|---|--------------|
| Materials   | 70           |
| Direct wages 18 hrs at 2.50<br>(Dept X - X - 8hrs, Y - 6 hrs, Z - 4hrs) | 45           |
| Chargeable expenses<br>(Special stores items)                           | <u>5</u>     |
|   | 120          |
| Add: 33 1/3% for expenses   | <u>40</u>    |
| Cost  | <u>160</u>   |

|                      | Rs.           |                    | Rs.      |
|----------------------|---------------|--------------------|----------|
| Materials            | 1,50,000      | Seles less Returns | 2,50,000 |
| Direct Wages :       |               |                    |          |
| Dept. X 10,000       |               |                    |          |
| Dept. Y 12,000       |               |                    |          |
| Dept. Z <u>8,000</u> | 30,000        |                    |          |
| Special Stores item  | 4,000         |                    |          |
| Overheads :          |               |                    |          |
| Dept. X 5000         |               |                    |          |
| Dept. Y 9000         |               |                    |          |
| Dept. Z <u>2000</u>  | <u>16,000</u> |                    |          |
| Works Cost           | 2,00,000      |                    |          |
| Gross Profit C/d     | 50,000        |                    |          |
|                      | 2,50,000      |                    | 2,50,000 |
| Selling expenses     | 20,000        | Gross Profit b/d   | 50,000   |
| Net Profit           | 30,000        |                    |          |
|                      | 50,000        |                    | 50,000   |

It is also noted that average hourly rates for 3 departments are similar.

- (1) Draw up a job cost sheet.
- (2) Draw up the entire revised cost sheet.
- (3) Add 20% to otal cost to determine selling price.

Solution :

**Job Cost Sheet**

|  | Rs.         | Rs.                  |
|--|-------------|----------------------|
| Direct Materials                                   |             | 70.00                |
| Direct Wages:                                      |             |                      |
| Dept. X - 2.50 x 8 hrs = 20.00                     |             |                      |
| Dept. Y - 2.50 x 6 hrs = 15.00                     |             |                      |
| Dept. Z - 2.50 x 4 hrs = <u>10.00</u>              |             | 45.00                |
| Chargeable Expenses                                |             | <u>5.00</u>          |
| Prime Cost   |             | 120.00               |
| Overheads  |             |                      |
| Dept. X - 5000/ 1000 = 50% of Rs.20                | 10.00       |                      |
| Dept. Y - 9000/ 12000 = 75% of Rs.15               | 11.25       |                      |
| Dept. Z - 9000/ 8000 = 25% of Rs.10                | <u>2.50</u> | <u>23.75</u>         |
| Works Cost   |             | 143.75               |
| Selling Cost = 20000/ 2,00,000 = 10% on Works Cost |             | <u>14.38</u>         |
| Total Cost   |             | 158.13               |
| Profit 20% of total cost                           |             | <u>31.63</u>         |
| Selling Price                                      |             | <b><u>189.76</u></b> |

**Example 3**

Following information is obtained from the books of a factory for the year ended 31st Dec., 2004.

|                                 | Completed jobs (Rs.) | Work-in-Progress (Rs.) |
|---------------------------------|----------------------|------------------------|
| Raw material from stores        | 90,000               | 30,000                 |
| Wages                           | 1,00,000             | 40,000                 |
| Chargeable Expenses             | 10,000               | 4,000                  |
| Materials transferred to WIP    | 2,000                |                        |
| Materials transferred to stores | 1,000                |                        |

Factory overheads and office overheads are charged at 80% of wages and 25% of factory cost respectively. The value of completed job during 2004 was Rs. 4,10,000.

Prepare consolidated completed job account and consolidated work-in-progress account.

Consolidated Job Account

|  | Rs.           |                       | Rs.      |
|--|---------------|-----------------------|----------|
| To Materials                                       | 90,000        | By Contractee Account |          |
| Less: Transferred to WIP                           | <u>2,000</u>  |                       |          |
|  | 80,000        |                       |          |
| Less: Returned to Stores                           | <u>1,000</u>  |                       |          |
|  | 87,000        |                       |          |
| Wages  | 1,00,000      |                       |          |
| Chargeable expenses                                | 10,000        |                       |          |
| Factory overheads (80% of wages)                   | <u>80,000</u> |                       |          |
| Factory Cost                                       | 2,77,000      |                       |          |
| Administrative Overheads<br>(25% of Factory Cost)  | 69,500        |                       |          |
| Net Profit transferred to<br>Profit & Loss Account | 63,750        |                       |          |
|  | 4,10,000      |                       | 4,10,000 |

Consolidated Work-in-Progress

|   | Rs.           |                | Rs.      |
|---|---------------|----------------|----------|
| To Materials                                      | 30,000        | By Balance c/d | 1,35,000 |
| Less: Transferred from<br>Completed job           | <u>2,000</u>  |                |          |
|   | 32,000        |                |          |
| Wages   | 40,000        |                |          |
| Chargeable expenses                               | 4,000         |                |          |
| Factory overheads (80% of<br>wages)               | <u>32,000</u> |                |          |
| Factory Cost                                      | 1,08,000      |                |          |
| Administrative Overheads<br>(25% of Factory Cost) | 27,000        |                |          |
|   | 1,35,000      |                | 1,35,000 |

### 13.3 Batch Costing

Batch Costing is a form of specific order costing. Job costing refers to costing of jobs that are executed against specific orders whereas in batch costing items are manufactured for stock of continuing of production during lean season or production should be based on sales order. A finished product may require different components for assembly and may be manufactured in economical batch lots. When orders are received from different customers, there are common products among orders, then production orders may be issued for batches, consisting a pre-determined quantity of each type of product.

Determination of the economic lot size is important in industries where batch costing is employed. The need for determining economic lot size arises as

1. Every time a product is to be made, setting up of the tool is involved. Because of this some loss in product time will be there. Therefore maximum number of units are produced once the machine is set in order to reduce the cost per unit.
2. Such large product at one run will lead to accumulation of inventory and the costs related thereto.
3. Thus there is a quantity for which reduced cost of production is just offset by costs carrying the quantity inventory.

The determination of most economical batch quantity requires consideration of many related factors of costs and economies. The factors that influence the decision in this respect are

- (1) Set up
- (2) Manufacturing Cost
- (3) Interest on Capital
- (4) Storage Cost
- (5) Rate of Consumption

The formula to be used to calculate economic lot size

$$Q = \sqrt{\frac{2US}{C}}$$

Where Q = Quantity or units of products in the economic batch.

U = Total number of units to be produced in the year.

S = Set up cost per batch.

C = Carrying cost per unit of production.

### 13.3.1 Examples

**Example 1:** The demand of an item is uniform at a rate of 25 units p.m. The fixed or set up cost is Rs.30 each time a production is made. The production cost is Rs.3 per item and inventory carrying cost is 50 paise per unit p.m. If the shortage cost is Rs.3 per item p.m. Determine how often to make a production run and of what size and also calculate Re-order level.

**Solution :** Economic batch quantity or  $EBQ = \sqrt{\frac{2US}{C}}$

$$= \sqrt{\frac{2 \times 300 \times 30}{50 \times 12}}$$

$$= 55 \text{ Units}$$

$$\begin{aligned} \text{Duration} &= \frac{\text{Production run size}}{\text{Monthly demand}} \times 30 \\ &= \frac{55}{25} \times 30 = 66 \text{ days} \\ &= \frac{55}{25} \times 25 = 55 \text{ working days} \end{aligned}$$

$$\begin{aligned} \text{Re-order level} &= \left[ \text{EBQ} \times \frac{\text{Shortage Cost}}{\text{Carrying Cost per unit} + \text{Shortage Cost}} \right] - \text{Monthly demand} \\ &= \left[ 55 \times \frac{3}{50 + 3} \right] - 25 \\ &= 47 - 25 \\ &= 22 \text{ Units} \end{aligned}$$

**Example 2 :** The annual demand of a product is 24,000 units. It is produced in batches and largest size of single batch is 6000 units. After each batch is complete the set up cost is Rs.750. The annual carrying cost is Rs.2.25 per unit.

Assume average inventory as one-half of the number of units made in each batch. Selecting 4,6,8,12 and 24 batches per annum, determine annual costs of each and state the optimum number of batches minimize the total costs.

**Solution :**

| <i>No. of batches</i> | 4       | 6       | 8    | 12    | 24    |
|-----------------------|---------|---------|------|-------|-------|
| Size of batch units   | 6000    | 4000    | 3000 | 2000  | 1000  |
| Average Stock         | 3000    | 2000    | 1500 | 1000  | 500   |
| Setup Cost            | Rs.3000 | Rs.4500 | 6000 | 9000  | 18000 |
| Carrying Cost         | Rs.6750 | Rs.4500 | 3375 | 2250  | 1125  |
| Total Cost            | 9750    | 9000    | 9375 | 11250 | 19125 |

Optimum number is 6 batches per annum.

$$Q = \sqrt{\frac{2US}{C}}$$

$$Q = \sqrt{\frac{2 \times 24000 \times 750}{2.25}} \quad 4000 \text{ Units}$$

### 13.4 SUMMARY

Job costing is a method of costing where work is undertaken on customer's specific requirement. This method of costing is useful for detailed analysis of overhead classification and ascertainment of more profitable jobs, determining the trends of cost of different types of jobs, estimating the cost of future jobs etc.

Batch Costing is a form of specific order costing. Determination of economic lot size is important in industries where batch costing is employed.

### 13.5 TERMINOLOGY

**Job Costing** : Specific order costing applies to manufacture of products to customers requirements.

**Job Cost Sheet** : A statement for the ascertainment of the cost of each job.

**Batch Costing** : Costing of items manufactured for stock or production in economic batch lots.

### 13.6 SELF ASSESSMENT QUESTIONS

#### Five Marks Questions

1. Explain the features of Job Costing.
2. What is meant by Economic Lot size.

3. Explain  $Q = \sqrt{\frac{2US}{C}}$

#### Ten Marks Questions

1. Draw the model Job Cost Sheet.
2. What is Batch Costing.
3. Explain the merits and demerits of Job Costing.

#### Twenty Marks Questions

1. Explain the procedure of Job Cost System.

### 13.7 REFERENCE BOOKS

Advanced Cost Accounting & Cost Control Techniques

S.P. Jain & K.L.Narang.

Cost Accounting

S.P.Iyenger.

Cost Accounting

N.K.Prasad

**- Ch. Neela Krishnaveni**

**Lesson - 14****CONTRACT COSTING****14.0 OBJECTIVES**

After going through this lesson student can know about

- Contract Costing.
- Valuation of Work-in-Progress.
- Calculation of Profit on Contracts.

**Structure**

- 14.1 Introduction**
- 14.2 Features**
- 14.3 Types of Contracts**
- 14.4 Recording of Costs of Contracts**
- 14.5 Recording of value and Profit on Contracts**
- 14.6 Valuation of Work-in-Progress**
- 14.7 Cost plus Contracts**
- 14.8 Target Costing**
- 14.9 Escalation Clause**
- 14.10 Examples**
- 14.11 Exercise**
- 14.12 Summary**
- 14.13 Terminology**
- 14.14 Self Assessment Questions**
- 14.15 Reference Books**

**14.1 INTRODUCTION**

Contract costing is that form of specific order costing which applies where the work is undertaken to customer's requirements and each order is of long duration. The work is generally of constructional nature. A construction contract is a contract for the construction of an asset or of a combination of assets which together constitute a single substantial project. This covers various activities as construction of plants (including site preparation), bridges, roads, dams, ships, buildings, complex pieces of equipment, production of motion pictures etc. That is why this method is used by builders, civil engineering contractors, constructional and mechanical engineering firms etc. These contracts are negotiated in a number of ways.



## 14.2 FEATURES OF CONTRACT ACCOUNTS

The following are the main distinguishing features of contract accounts:

- (i) Higher proportion of Direct Costs. As most of the items of expenses can be directly identified with a contract, though indirect, are treated as direct expenses. Expenses on telephone installed at site, site power usage, site vehicles, transportation are treated as direct expenses.
- (ii) Low Indirect Cost. The only item of indirect cost may be Head office expenses. Such cost represents only a small proportion of the contract cost and is absorbed usually on some overall basis such as percentage of total contract cost.
- (iii) Difficulties of Cost Control. The large scale of contracts and the size of the site may create some major problems of cost control consuming material usage and losses, pilferage, labour supervision and utilisation, damage to and loss of plant and tools etc.
- (iv) Surplus Materials. Surplus material, if any, will be either credited to the contract account with the cost of material at the end of the contract or will be debited to the new contract account, if directly transferred to another contract. If the material is not required immediately, it will be stored and the cost debited to a stock account.

## 14.3 Types of Contracts

Generally there are three types of contracts:

- (i) Fixed price contracts. Under these contracts both parties agree to a fixed contract price.
- (ii) Fixed price contracts but in some cases subject to escalation clause (discussed afterwards).
- (iii) Cost plus contracts. Under these contracts no fixed price could be settled. The contractor is reimbursed for allowable or otherwise defined costs plus a percentage of these costs or a fixed fee towards profit.

## 14.4 RECORDING OF COST OF CONTRACTS

Each contract is considered as a separate unit of cost and is allotted a distinguishing number. A separate account is kept for each individual contract; usually a greater part of the work is carried out at the contract site itself, so the whole of the expenditure can be charged direct to the contract. However, the overhead relating to the office, central stores require apportionment among the various contracts on some arbitrary basis such as percentage of wages, materials or prime cost.

The recording procedure of the following items may be noted carefully:

1. Materials : Materials purchased directly or supplied from the store or transferred from other contracts will appear on the debit side. Materials returned to store will appear on the credit side. Amount received from the sale of surplus materials will appear on the credit side, any profit or loss arising from the sales will be transferred to the Profit and Loss Account. Materials stolen or destroyed by fire will be transferred to the Profit and Loss Account. Materials in hand at the end of the year will appear on the credit side. Sometimes materials are transferred from one contract to another contract. Contract receiving the material is debited and the contract giving up the material is credited. Normal wastage incurred in stores and

materials should be charged to contracts, by inflating the rates at which materials are priced out. Stores used in the manufacture of tools should be charged to Works Expenses A/c. Sometimes, it happens that the contractee under the terms of the contract, supplies some materials which do not affect the contract price. The value of such material should not be brought into the books but a note will have to be kept to account for the quantity received and issued.

2. Labour Wages. All labour employed at the contracts site should be regarded as direct labour and charged direct to the contract concerned. Where possible, separate wages sheets should be prepared for each contract. Wages accrued or outstanding at the end of the period should appear on the debit side of the contract account.

3. Direct Expenses: All expenses other than materials and wages are charged to individual contract as and when they are incurred.

4. Indirect Expenses. There are certain expenses (such as engineers, surveyors, supervisors, etc. engaged on various contracts) which cannot be directly charged to contracts. Such expenses may be distributed on several contracts on some suitable basis as a percentage of materials or labour.

5. Plant and Machinery. Careful records of plant and machinery must be maintained to ensure that none is lost or improperly disposed of and that the contract is duly charged for the use of plant. There are two methods in use of charging contracts for the use made of plant and machinery.

(i) *Contract account debited with full value of the plant and credited with depreciated value at the end.* The cost price of the plant or book value of the plant, if the plant is old, is debited to the contract, the corresponding credit being given to the plant account. When the plant is returned, the depreciated value is credited to the contract, the corresponding debit being given to the plant account. This method requires the revaluation of the plant at the close of each financial year, so that the depreciated value may be credited to the contract account.

(ii) *Contract account debited with an hourly rate of depreciation.* A charge for the use of the plant may be made to the contract on the basis of the time for which the plant is made use of by the contract. To determine the charge to be made an "Upkeep Account" should be maintained for each plant to which should be debited the cost of maintenance, depreciation, fuel, oil etc. When calculating plant in hand, plant returned to store, plant sold, plant destroyed etc. should be borne in mind.

6. Sub-contracts. Generally work of a specialised character e.g., the installation of lifts and special flooring, is passed out to any other contractor by the main contractor. In such cases the work performed by the sub-contractor forms a direct charge to the contract concerned. Sub-contract cost will be shown on the debit side of the Contract Account.

7. Extra Work. In most of the contracts additional work or variations of the work originally contracted for, are required by the contractee. The additional work, being outside the original contract will be subject to a separate charge. If the additional work is quite substantial, it should be treated as a separate contract and a separate account should be opened for it.

## 14.5 Recording of Value and Profit on Contracts

### 1. Certificate of work done :

It is a normal practice particularly in the case of large contracts for the contractee to pay the contractor sums of money on account during the period of the contract. These sums will be paid against certificates by surveyors or architects acting for the contractee certifying the value of work so far performed. In many cases, the terms of the contract provide that the whole of the amount shown by the certificate shall not be paid immediately but a percentage thereof shall be retained by the contractee until some time after the contract is completed. The sum retained is called retention money. The object of this retention is to place the contractee in a favourable position, should faulty work arise or penalties become payable by reason of later completion of the contract. If the work has not been certified, the contractee would not make any advance on it. Such work which has been done but not certified is called work uncertified i.e., work done since certification. Work certified and work uncertified will appear on the credit side of the contract account under the heading 'work-in-progress'. If the work certified is not given, cash received from the contractee and retention money are given the amount of work certified should be calculated first. For example, if Rs.20,000 is received from the contractee after deducting 20% retention money, work certified will be

$$\text{Rs. } \frac{20,000 \times 100}{80} = \text{Rs. } 25,000$$

On receipt of certificate, one of the following accounting method may be adopted:

- (a) Credit the appropriate contract account with the value mentioned in the certificate and debit personal account of the contractee. Cash received is credited to the contractee's account and the balance is shown as a debtor representing retention money, or
- (b) The contract account is credited with the value of the certificate and the contractee's account is debited with the amount payable immediately and a special Retention Money Account is debited with amount so retained, or
- (c) The contract account is credited with the value of the certified work. Whenever any amount is received from the contractee, cash account is debited and contractee's account is credited. Until contract is completed, amount received from contractee shows advance payments and is deducted from work-in-progress in the Balance Sheet. when contract is completed, contractee's account is debited with the contract price and the contract account is credited.

2. Profit on uncompleted contract (Conventional Approach). Large contracts take a number of years to complete. So their cost can be ascertained only when they are completed. Even after the contract is completed, a proportion of contract price (the retention money) may be still outstanding from the contractee. Therefore, it is not possible to ascertain the profit or loss till the contract is completed and the period fixed for the payment of retention money has expired. The year in which the contract is completed may show unusually large profits and other years may even show losses. Such serious fluctuations in profit may affect the remuneration or dividend payable to owners. So it is felt desirable to take in to account a reasonable proportion of the estimated profit on uncompleted contracts subject to the following principles:

(i) *For contracts which have just started.* Generally if the work completed is 1/4th or less than 1/4th of the total work, no profit shall be transferred to the Profit and Loss Account.

(ii) *For contracts which have sufficiently advanced and covered by architects certificate.* In this case, notional profit is ascertained by deducting the cost of contract covered by surveyor certificate from the value of contract certified by the surveyor. A portion of notional profit is taken to profit and loss account and the balance is carried forward in the same contract as a profit in suspense as a provision. The practice for this is that only 1/3rd of the notional profits are taken. If the work is more than 1/4th complete but less than 1/2nd, and 2/3rd, if the work is half or more than half the formula for computing the proportion of profit is :

$$\text{Notional Profit} \times \frac{2}{3} \times \frac{\text{Cash received}}{\text{Work certified}}$$

For example, the notional profit on the contract comes to Rs.30,000, say the contract is about 2/3rd complete and 75% of the work certified is received in the form of cash. The profit to be transferred to profit and Loss Account shall be ascertained as below:

$$\text{Rs.}30,000 \times \frac{2}{3} \times \frac{3}{4} = \text{Rs.}15,000$$

(iii) *For the contracts which are almost complete.* In this case, the estimated profit is ascertained deducting the aggregate of costs to date and additional expenditure to complete the contract from the contract price. A proportion of this estimated total profit is credited to profit and loss account. This proportion is ascertained by adopting any one of the following formula:

(a) Estimated profit  $\times \frac{\text{Work certified}}{\text{Contract price}}$

(b) Estimated profit  $\times \frac{\text{Work certified}}{\text{Contract price}} \times \frac{\text{Cash received}}{\text{Work certified}}$

(c) Estimated profit  $\times \frac{\text{Cost of work to date}}{\text{Estimated total cost}}$

(d) Estimated profit  $\times \frac{\text{Cost of work to date}}{\text{Estimated total cost}} \times \frac{\text{Cash received}}{\text{Work certified}}$

The formula in (a) is generally used in most concerns.

## 14.6 Valuation of Work-in-Progress

Contracts in progress mean contracts which have not yet been completed. Such uncompleted contracts are also referred to as work-in-progress. All the expenditure incurred on the uncompleted contracts should be shown on the assets side of the Balance Sheet under the heading 'work-in-progress'. Where profit is taken in respect of uncompleted contract, the work-in-progress stated in the Balance Sheet should also include the profit i.e., valuation of work-in-progress is done by adding the profit and loss account to the cost of the contracts.

Alternately, the contractor should prepare Work-in-Progress Account. On the debit side of this account work certified and uncertified is shown and on the credit side profit in reserve i.e., the portion of the profit not transferred to Profit and Loss Account is shown; the difference of debit and credit side is work-in-progress.

## 14.7 Cost Plus Contract

Cost plus contract is a contract in which the value of the contract is ascertained by adding a certain percentage of profit over the total cost of the work. It is generally adopted in those cases where the probable cost of the contract cannot be computed in advance with a reasonable degree of accuracy. Such contracts are undertaken for production of special articles not usually manufactured e.g., production of newly designed aircraft component or in case of urgent repairs of ships, vehicles, power house etc. or in case of construction during war time. Government prefers to give contract on cost plus basis.

From the *manufacturer's point of view*, this method protects him from the risk of fluctuations in market prices of material, labour and other services. He knows in advance, the profit he can expect on the order when completed. Moreover, there is no risk of incurring loss on the contract as all agreed costs are recovered. If the contractor is unscrupulous, he may deliberately inflate cost in order to obtain higher profits. In order to avoid disputes in future, he must settle the admissible costs such as supervision, fixed overhead and losses such as allowances for wastage, scrap, normal loss, etc. When bills are tendered, the burden of proving each item charged, falls on the shoulder of the manufacturer. However, this system may put a premium on inefficiency in so far as the contractor whose costs are highest, obtains highest profit. There is no incentive to find more efficient methods of production or to reduce costs, as the contractor can obtain no benefit from any saving thereby affected.

From buyer's point of view, this method ensures that the price paid will depend on cost rather than on arbitrary commitment to a specific price. Thus in uncertain market the buyer is suitably fortified and he pays only reasonable price. This method is suitable when he provides raw materials, tools etc. to manufacturer. In general, it is observed that the cost to the buyer tends to be higher than the cost which could be obtained by other forms of contract.

## 14.8 TARGET COSTING

Under this method the targets of volume of production and targets of various expenditures of production are fixed before hand and constant efforts are made not to exceed to expenditure targets unless there is a corresponding increase in the volume of production over the target fixed. Thus the contractor receives an agreed sum of profit over his predetermined costs. If actual costs are below the target fixed, the contractor is entitled to a bonus which is a proportion of saving thus made.

## 14.9 ESCALATION CLAUSE

This is a clause which is provided in the contracts to cover up any changes in the price of contract due to changes in price of raw materials and labour or change in utilisation of factor of production. The object of this clause is to safeguard the interest of both sides against unfavourable change in the prices. Thus in a contract with the transport undertaking, the price per ton-mile will increase or decrease for each rise or fall of price of petrol by 10% of the prevailing price. Here the contractor has to produce sufficient proof of excess cost before the customer agrees to reimburse such cost. Moreover, the basis on which the factor prices are based, is laid down in the contract.

**14.10 EXAMPLES****Completed Contract****Example 1:**

If contract work is started and completed in the same year. Profit or loss should be transferred to profit and loss account, contract price is to be credited to contract account, balance of materials, plant are to be returned to stores. cash received is to be debited to cash account and credited to contract account.

1. Following information is related to contract completed by 31st December, 2004.

|                              |                      |
|------------------------------|----------------------|
| Materials purchased          | Rs.1,50,000          |
| Materials issued from stores | Rs.50,000            |
| Wages                        | Rs.2,44,000          |
| Direct expenses              | Rs.29,400            |
| Contract price               | Rs.6,00,000          |
| Materials returned to stores | Rs.24,000            |
| Works on Cost                | - 25% on wages.      |
| Office on Cost               | - 10% on price cost. |

Prepare contract account and contractee account.

**Solution :**

Contract Account for the year ending 2004

**CONTRACT ACCOUNT**

| Dr.                                   | Rs.           | Rs.           |                       | Cr.      |
|---------------------------------------|---------------|---------------|-----------------------|----------|
| To Materials purchased                | 1,50,000      |               | By Contractee Account | 6,00,000 |
| Stores                                | <u>50,000</u> |               |                       |          |
|                                       | 2,00,000      |               |                       |          |
| Less Returns                          | <u>24,000</u> | 1,76,000      |                       |          |
| Wages                                 |               | 2,44,000      |                       |          |
| Direct expenses                       |               | <u>29,400</u> |                       |          |
|                                       |               | 4,49,400      |                       |          |
| Works on Cost<br>(25% on wages)       |               | 61,000        |                       |          |
| Office on Cost<br>(10% on Prime Cost) |               | 44,940        |                       |          |
| Profit and Loss Account               |               | 44,660        |                       |          |
|                                       |               | 6,00,000      |                       | 6,00,000 |

## CONTRACTEE ACCOUNT

| Dr.              | Rs.      |         | Cr       |
|------------------|----------|---------|----------|
| To Contract A/c. | 6,00,000 | By Cash | 6,00,000 |
|                  | 6,00,000 |         | 6,00,000 |

**Example 2:** A contractor under took a contract on 1-1-2004. The expenses related to the contracts were as under.

|                     |             |
|---------------------|-------------|
| Contract Price      | Rs.1,00,000 |
| Materials issued    | Rs.6,000    |
| Materials purchased | Rs.25,000   |
| Wages               | Rs.12,000   |
| Direct exepnses     | Rs.10,000   |
| Plant               | Rs.10,000   |
| Materials on hand   | Rs.1,000    |

The contract was completed by 30-6-2004. The contract price was received in cash. Depreciate plant by 10% and provide 20% on wages for indirect expenses.

**Solution :**

## CONTRACT ACCOUNT

| Dr.   | Rs.      |                    | Cr       |
|---|----------|--------------------|----------|
| To Materials purchased                          | 25,000   | By Materials       | 1,000    |
| To Materials issued                             | 6,000    | By Contractee A/c. | 1,00,000 |
| To Wages  | 12,000   |                    |          |
| To Direct expenses                              | 10,000   |                    |          |
| To Plant  | 10,000   |                    |          |
| To Depreciation on plant<br>(10,000 x 10 / 100) | 1,000    |                    |          |
| To Indirect expenses<br>(12,000 x 20 / 100)     | 2,400    |                    |          |
| To Profit and Loss A/c.                         | 34,600   |                    |          |
|   | 1,01,000 |                    | 1,01,000 |

Note: The contract was completed on the year of commencement, the profit transferred to profit and loss account.

**Incomplete Contracts****1/4th or less than 1/4th work of the contract completed:**

**Example :** A builder took a contract on 1-1-2004 its agreed cost price is Rs.4,00,000. The expenses related to contract for the year was:

|                              |           |
|------------------------------|-----------|
| Materials purchased          | Rs.20,000 |
| Materials issued from stores | Rs.5,000  |
| Direct Labour                | Rs.15,000 |
| Plant purchased              | Rs.40,000 |
| Indirect expenses            | Rs.10,000 |

**Additional Information**

|                             |           |
|-----------------------------|-----------|
| Value of plant (31-12-2004) | Rs.30,000 |
| Materials (31-12-2004)      | Rs. 5,000 |
| material returned to stores | Rs. 1,000 |
| Work certified              | Rs.75,000 |
| Work uncertified            | Rs. 4,000 |
| Cash received               | Rs.10,000 |

Prepare the contract account.

**Solution :****CONTRACT ACCOUNT**

| Dr.                            |          |                                 | Cr       |
|--------------------------------|----------|---------------------------------|----------|
|                                | Rs.      |                                 | Rs.      |
| To Material purchased          | 20,000   | By Materials returned to stores | 1,000    |
| To Material from stores        | 5,000    | By Materials                    | 5,000    |
| To Direct labour               | 15,000   |                                 | 30,000   |
| To Plant                       | 40,000   |                                 |          |
| To Indirect expenses           | 10,000   | By Work certified               | 75,000   |
| To Notional Profit c/d.        | 25,000   | By Work uncertified             | 4,000    |
|                                | 1,15,000 |                                 | 1,15,000 |
| To transferred to Reserve A/c. | 25,000   | By Notional Profit b/d          | 25,000   |
|                                | 25,000   |                                 | 25,000   |

**Note :** Work completed was less than 1/4th of the contract, hence the profit should be transferred to Reserve.



Value of work in Progress:

**Work-in-Progress A/c.**

| Dr.              | Rs.    |                  | Cr         |
|------------------|--------|------------------|------------|
| To Contract A/c  |        | By Contract A/c. | Rs. 25,000 |
| Work certified   | 75,000 |                  |            |
| Work uncertified | 4,000  | By Bal C/d       | 54,000     |
|                  | 79,000 |                  | 79,000     |

**Balance Sheet as on 31-12-2004**

| Dr.         | Rs. | Assets                       | Cr        |
|-------------|-----|------------------------------|-----------|
| Liabilities |     | Materials                    | Rs. 5,000 |
|             |     | Materials returned to stores | 1,000     |
|             |     | Plant                        | 30,000    |
|             |     | Work-in-progress             | 54,000    |
|             |     | Less: Cash received          | 10,000    |
|             |     |                              | 44,000    |

**Example :** A building contractor undertook a contract on 1-4-2003 at an agreed price of Rs,32,00,000. The expenses during the year were.

|                       |             |
|-----------------------|-------------|
| Materials             | Rs.80,000   |
| Materials from stores | Rs.1,20,000 |
| Labour                | Rs.1,20,000 |
| Machinery             | Rs.3,20,000 |
| Direct expenses       | Rs.80,000   |

Other information :

|                              |             |
|------------------------------|-------------|
| Machinery 31-3-2004          | Rs.2,40,000 |
| Materials 31-3-2004          | Rs.40,000   |
| Materials returned to stores | Rs.8000     |
| Work certified               | Rs.6,00,000 |
| Work uncertified             | Rs.32,000   |
| Cash received                | Rs.5,60,000 |

**CONTRACT ACCOUNT**

| Dr.                        | Rs.      |                       | Cr       |
|----------------------------|----------|-----------------------|----------|
| To Materials               | 80,000   | By Materials returned | 8,000    |
| To Materials from stores   | 1,20,000 | By Materials          | 40,000   |
| To Labour                  | 1,20,000 | By Machinery          | 2,40,000 |
| To Machinery               | 3,20,000 | By Work-in-progress   |          |
|                            |          | Work certified        | 6,00,000 |
| To Direct Expenses         | 80,000   | Work uncertified      | 32,000   |
| To Reserve account balance | 2,00,000 |                       |          |
|                            | 9,20,000 |                       | 9,20,000 |

Note: Work certified is less than 1/4th of the contract price. Hence, total estimated profit is transferred to Reserve account.

**Work in Progress Account**

| Dr.                 | Rs.      |                     | Cr       |
|---------------------|----------|---------------------|----------|
| To Work certified   | 6,00,000 | By Reserve Account. | 2,00,000 |
| To Work uncertified | 32,000   | By Balance c/d      | 4,32,000 |
|                     | 6,32,000 |                     | 6,32,000 |

**BALANCE SHEET**

| Dr.                | Rs.      | Assets                       | Rs.      |
|--------------------|----------|------------------------------|----------|
| Liabilities        |          | Assets                       |          |
| Contractee Account | 5,60,000 | Materials                    | 40,000   |
|                    |          | Materials returned to stores | 8,000    |
|                    |          | Machinery                    | 2,40,000 |
|                    |          | Work-in Progress             | 4,32,000 |

**Example** : A construction company started business on 1-1-2004. The company furnished the following information

|                                |              |
|--------------------------------|--------------|
| Contract price                 | Rs.12,00,000 |
| Materials received from stores | Rs.2,00,000  |
| Materials purchased            | Rs.1,80,000  |
| Plant                          | Rs.1,40,000  |
| Wages                          | Rs.2,00,000  |
| Direct expenses                | Rs.40,000    |
| Outstanding wages 31-12-2004   | Rs.1,60,000  |
| Outstanding direct expenses    | Rs.10,000    |
| Office expenses                | Rs.20,000    |

Plant worth of Rs.4000 and materials worth of Rs.3000 were lost. Part of the materials purchased for Rs.4000 were sold for Rs.5000. Plant costing Rs.4000 returned to stores on December 31 and plant worth of Rs.400 become useless. Work certified was Rs.4,80,000 and work uncertified was Rs.2000. Contractee paid Rs.3,84,000 as an advance. Depreciation plant by 10%. Prepare contract account and show how the items could appear in the Balance Sheet.

**CONTRACT ACCOUNT**

| Dr.  |                 |                 |                                    | Cr          |                 |
|--|-----------------|-----------------|------------------------------------|-------------|-----------------|
|  | Rs.             | Rs.             |                                    |             | Rs.             |
| To Materials from stores                                 |                 | 2,00,000        | By Profit & Loss account:          |             |                 |
| To Materials purchased                                   |                 | 1,80,000        | Loss on plant                      | 4400        |                 |
| To Wages   | 2,00,000        |                 | (4000 + 400)                       |             |                 |
| Add: Outstanding   | <u>1,60,000</u> | 3,60,000        | Loss on material                   | <u>3000</u> | 7400            |
| To Direct expenses                                       | 40,000          |                 |                                    |             | 5000            |
| Add: Outstanding   | <u>10,000</u>   | <u>50,000</u>   | By Plant returned to stores        | 4400        |                 |
| To Plant   |                 | 1,40,000        | Less: Depreciation                 | <u>400</u>  | 3600            |
| To Office expenses                                       |                 | 26,000          | By plant (bal. fig.)               |             | 1,18,400        |
| To Profit & Loss account<br>(Profit on sale of material) |                 | 1,000           | By Work in progress.               |             |                 |
|  |                 |                 | Work certified                     |             | 4,80,000        |
|  |                 |                 |                                    |             | 2,000           |
|  |                 |                 | By Profit & Loss account<br>(Loss) |             | 3,40,500        |
|  |                 | <u>9,57,000</u> |                                    |             | <u>9,57,000</u> |

**Balance Sheet as on 31-12-200**

| Liabilities                 | Rs.      | Assets                   | Rs.             |
|-----------------------------|----------|--------------------------|-----------------|
| Outstanding Wages           | 1,60,000 | Plant                    | 1,18,000        |
| Outstanding direct expenses | 10,000   | Work-in-Progress         |                 |
|                             |          | Work certified           | 4,80,000        |
|                             |          | Work uncertified         | <u>2,000</u>    |
|                             |          | Less:                    | 4,82,000        |
|                             |          | Cash received            | <u>3,84,000</u> |
|                             |          | Profit & Loss Account    | 98,000          |
|                             |          | (3,40,560,+7,400 - 1000) | 3,46,960        |

**Work completed is more than 1/4 or less than 1/2 or 1/2 of the contract:**

In this circumstance 1/3 of the estimated profit is to be transferred to profit and loss account, the remaining profit to reserve account. The profit to be transferred to reserve account can be calculated as follows:

$$\text{Estimated Profit} \times \frac{1}{3} \times \frac{\text{Cash received}}{\text{Work certified}}$$

**Example:** X and Co. agreed to construct a building. The contract price is Rs.20,00,000. The estimated cost of contract is Rs.18,40,000. Cash received at the end of the year is Rs.7,20,000. This is equal to 90% of work certified work uncertified Rs.20,000 expenses on the contract were

Materials Rs.2,00,000

Labour Rs.5,00,000

Machinery Rs.40,000

Material lost worth Rs.10,000.

Depreciate machinery by 25%. Show the Contract Account.

**CONTRACT ACCOUNT**

| Dr.                    |                 |   |               | Cr              |
|------------------------|-----------------|---|---------------|-----------------|
|                        | Rs.             |   |               | Rs.             |
| To Materials           | 2,00,000        | By Profit & Loss A/c.<br>(materials loss) |               | 10,000          |
| To Labour              | 5,00,000        | By Machinery                              | 40,000        |                 |
| To Machinery           | 40,000          |   | <u>10,000</u> | 30,000          |
| To Notional Profit c/d | 1,20,000        | By Work-in-Progress...                    |               |                 |
|                        |                 | Work certified                            | 8,00,000      |                 |
|                        |                 | Work uncertified                          | <u>20,000</u> | 8,20,000        |
|                        | <u>8,60,000</u> |   |               | <u>8,60,000</u> |
| To Profit & Loss A/c.  | 36,000          | By Notional Profit b/d                    |               | 1,20,000        |
| To Reserve A/c.        | 84,000          |   |               |                 |
|                        | <u>1,20,000</u> |   |               | <u>1,20,000</u> |

Working Notes :

1. Profit transferred to Profit and Loss account.

$$\text{Estimated Profit} \times \frac{1}{3} \times \frac{\text{Cash received}}{\text{Work certified}}$$

$$1,20,000 \times \frac{1}{3} \times \frac{7,20,000}{8,00,000} = \text{Rs.}36,000$$

2. Work Certified

Work certified is 90% equal to cash received Rs.7,20,000.

$$\text{Work certified} = 7,20,000 \times \frac{100}{90} = \text{Rs.}8,00,000$$

**Example :** Following information is related to contract No.51 on 30 June, 2002.

|                                       | Rs.      |
|---------------------------------------|----------|
| Material Purchased                    | 90,000   |
| Materials issued from stores          | 25,000   |
| Plant                                 | 80,000   |
| Wages                                 | 1,22,000 |
| Direct expenses                       | 12,000   |
| Overhed expenses                      | 27,000   |
| Contract price                        | 7,50,000 |
| Cash received (80% of work certified) | 2,90,000 |
| Materials in hand                     | 7,500    |
| Depreciation on Machinery             | 8,000    |

Prepare the contract account.

#### CONTRACT NO. 51 ACCOUNT

| Dr.                      |          |                         |        | Cr       |
|--------------------------|----------|-------------------------|--------|----------|
|                          | Rs.      |                         |        | Rs.      |
| To Materials purchased   | 90,000   | By Material in hand     |        | 7,500    |
| To Materials from stores | 25,000   | By Plant                | 80,000 |          |
| To Plant                 | 80,000   | Less: Depreciation      | 8,000  | 72,000   |
| To Wages                 | 1,22,000 | By Work in Progress:... |        | 3,62,500 |
| To Direct Expenses       | 12,000   | Work certified          |        |          |
| To Overheads             | 27,000   | Work uncertified        |        |          |
| To Notional Profit c/d   | 86,000   |                         |        |          |
|                          | 4,42,000 |                         |        | 4,42,000 |
| To Profit & Loss A/c.    | 22,933   | By Notional Profit b/d  |        | 86,000   |
| To Reserve A/c.          | 63,067   |                         |        |          |
|                          | 86,000   |                         |        | 86,000   |

Working Note :

$$1. \text{ Work in progress} = 2,90,000 \times \frac{100}{80} = \text{Rs.} 3,62,500$$

2. Profit to be transferred to Profit & Loss account

$$\text{Notional Profit} \times \frac{1}{3} \times \frac{\text{Cash received}}{\text{Work certified}} = 86,000 \times \frac{1}{3} \times \frac{2,90,000}{3,62,500} = \text{Rs.} 22,933$$

**Work completed is 1/2 or more than 1/2 of the Contract.**

Work certified is 1/2 or more than 1/2 of the contract then 2/3 of the estimated profit is to be transferred to profit and loss account and remaining to the reserve account.

Profit to be transferred to profit and loss account:

$$\text{Notional Profit} \times \frac{2}{3} \times \frac{\text{Cash received}}{\text{Work certified}}$$

**Example :** From the following information. Prepare contract account for the year ending 30-4-2002.

|                              | Rs.             |
|------------------------------|-----------------|
| Contract price               | 1,00,000        |
| Materials supplied           | 32,250          |
| Labour, Wages                | 27,400          |
| Plant                        | 5,650           |
| Work certified               | 71,500          |
| Cash received                | 65,000          |
| Plant value 30-4-2002        | 4,100           |
| Work uncertified             | 1,700           |
| Direct expenses              | 1,200           |
| Establishment expenses       | 1,625           |
| Outstanding wages 30-4-2002  | 900             |
| Materials in hand 30-4-2002  | 700             |
| Outstanding direct expenses  | 100 (30-4-2002) |
| Materials returned to stores | 200             |

**CONTRACT ACCOUNT**

| Dr.                       |            | Rs.           |                       | Rs.Cr.        |
|---------------------------|------------|---------------|-----------------------|---------------|
| To Materials              |            | 32,250        | By Materials returned | 200           |
| To Labour                 | 27,400     |               | By Materials in hand  | 700           |
| Add: Outstanding Wages    | 900        | 28,300        | By Plant              | 4,100         |
| To Direct expenses        | 1200       |               | By Work Certified     | 71,500        |
| Add: Outstanding          |            |               | By Work Uncertified   | 1,700         |
|                           | <u>100</u> | 1,300         |                       |               |
| To Establishment expenses |            | 1,625         |                       |               |
| To Plant                  |            | 5,650         |                       |               |
| To Notional Profit c/d    |            | 9075          |                       |               |
|                           |            | <u>78,200</u> |                       | <u>78,200</u> |
| To Profit                 |            | 5,500         |                       |               |
| To Reserve A/c.           |            | 3,575         | By Notional Profit    | 9,075         |
|                           |            | <u>9,075</u>  |                       | <u>9,075</u>  |

**CONTRACTEE ACCOUNT**

| Dr.            |        |                 | Cr     |
|----------------|--------|-----------------|--------|
|                | Rs.    |                 | Rs.    |
| To Balance c/d | 65,000 | By Cash Account | 65,000 |
|                | 65,000 | By Balance b/d  | 65,000 |

**BALANCE SHEET**

| Liabilities                 | Rs.   | Assets              | Rs.           |
|-----------------------------|-------|---------------------|---------------|
| Outstanding Wages           | 900   | Plant               | 4,100         |
| Outstanding Direct expenses | 100   | Materials in hand   | 700           |
| Profit & Loss Account       | 5,500 | Materials in stores | 200           |
|                             |       | Work-in-Progress    | 8,000         |
|                             |       | Work certified      | 71,500        |
|                             |       | Work uncertified    | <u>1,700</u>  |
|                             |       |                     | 73,200        |
|                             |       | Less :              |               |
|                             |       | Cash recieved       | <u>65,000</u> |
|                             |       |                     | 8,200         |
|                             |       | Less: Reserve       | 3,575         |
|                             |       |                     | 4,625         |

Working Note :

Profit transferred to Profit and Loss Account :

$$\text{Estimated Profit} \times \frac{2}{3} \times \frac{\text{Cash received}}{\text{Work certified}}$$

$$9,075 \times \frac{2}{3} \times \frac{65,000}{71,500} = \text{Rs.} 5,500$$

**14.11 EXERCISE**

1. A building contractor, having undertaken construction work at a contract price of Rs.6,00,000 began the execution of the work on 1st January, 2003. The following are the particulars of the contract upto 31st December, 2003.

|                              | Rs.      |
|------------------------------|----------|
| Materials issued from stores | 4,000    |
| Materials purchased          | 1,20,000 |
| Labour at site               | 1,00,000 |

|  |          |
|--|----------|
| Indirect expenses                        | 36,000   |
| Plant                                    | 1,40,000 |
| Materials returned to store              | 8,000    |
| Materials lost by fire                   | 2,000    |
| Materials at site on 31st December, 2003 | 4,000    |
| Plant at site on 31st December, 2003     | 1,20,000 |

Cash received on account upto 31st December amounted to Rs.2,24,000 representing 80 percent of the work certified. The remaining 20 percent being retained until completion. The work finished but not certified was Rs.40,000. Prepare the Contract A/c. and state the proportion of profit the contractor would be justified in taking to the credit of the P & LA/c. Also prepare contractee's A/c.

[Ans. Notional Profit Rs.54,000; Profit credited to P & LA/c. Rs.14,400]

2. A PWD Contractor's accounting year ends on 31st December every year. The following particulars relate to contract No.714, which remains incomplete on 31st December, 2004.

|   | Rs.      |
|---|----------|
| Wages paid                                      | 81,000   |
| Materials used                                  | 84,000   |
| Plant sent to site                              | 12,400   |
| Direct expenses paid                            | 4,600    |
| Value of plant on 31-12-2004                    | 10,000   |
| Work Certified by Engineer                      | 2,00,000 |
| Cost of work not yet certified                  | 3,300    |
| Agreed contract price                           | 2,50,000 |
| Cash received                                   | 1,80,000 |
| Wages accrued on 31-12-2004                     | 1,560    |
| Direct expenses accrued on 31-12-2004           | 320      |
| Establishment charges applicable to work no.714 | 13,680   |
| Materials on hand on 31-12-2004                 | 2,260    |

Prepare contract account crediting P & LA/c. with two thirds of profit as reduced to the cash received.

[Ans. Notional Profit Rs.18,000; Profit credited to P & LA/c. Rs.10,800]

(B.Com. Osm)

3. A firm of building contractors began to trade on 1-4-2003. The following was the expenditure on the contract for Rs.3,00,000.



|                              | Rs.    |
|------------------------------|--------|
| Materials issued to contract | 51,000 |
| Plant used for contract      | 15,000 |
| Wages incurred               | 81,000 |
| Other expenses               | 5,000  |

Cash received on account to 31-3-2004, amounted to Rs.1,28,000 being 80% of the work certified. Of the plant and materials charged to the contract, plant, which cost Rs.3,000, and materials which cost Rs.2,500 were lost. On 31-3-2004 plant which cost Rs.2,000 was returned to stores, the cost of work done but uncertified was Rs.1,000 and materials costing Rs.2,300 were in hand on site. Charge 15% depreciation on plant and take to the profit and loss account  $\frac{2}{3}$  of the profit received. Prepare a contract account and balance sheet from the above particulars.

[Ans. Notional Profit Rs.27,000; Profit Rs.14,400] [Hint : Depreciation on Plant Rs.1,800]

(B.Com.Andhra, Nagarjuna, SKU)

#### 14.12 SUMMARY

The contract cost accounting is applicable to those business establishments that undertake big contracts eg: Construction of buildings, bridges, roads etc. The object is to ascertain the cost of each contract separately and at different stages of production. A contract ledger is maintained in which a separate account is opened for each contract undertaken by the contractor.

#### 14.13 TERMINOLOGY

1. Work Certified : The work approved by the contractee's Architect or Surveyor. Generally contractee advances on the basis on this work certified.
2. Work uncertified: The work completed but not certified by the Architect or Surveyor.
3. Retention money: The amount so retained by the contractee till the completion of the contract.
4. Escalation Clause: It is provided in the contract to adjust the contract price to changes in material rates and labour rates during the contract period.
5. Work-in-progress: It is the value of incomplete contract. It includes value of work certified and work uncertified.
6. Cost Plus Contracts : It is a contract in which the value of the contract is ascertained by adding a certain percentage of profit over the total cost of the work.

#### 14.14 SELF ASSESSMENT QUESTIONS

##### Five Marks Questions.

1. Retention Money
2. Escalation Clause
3. Sub-contracts
4. Cost plus contracts.

**Ten marks Questions**

1. Explain work-in-progress.
2. Explain the procedure for preparing contract account.

**Twenty Marks Questions**

1. Explain features of Contract Costing.
2. What is contract costing. Explain the basic principles to be followed in determining the amount of profit on incomplete contracts.

**14.15 REFERENCE BOOKS**

|   |                        |
|---|------------------------|
| Cost Accounting & Cost Control Techniques | S.P. Jain & K.L.Narang |
| Cost Accounting Principles and Practice   | S.P.Iyenger            |
| Text book of Cost Accountaning            | M.N.Arora              |
| Practical Costing                         | Khanna, Pandey & Ahuja |

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**LESSON - 15****FINANCIAL STATEMENTS**

**15.0 Objective :** After going through this lesson the student can know what are financial statements ? What are their features ? What is the need for preparation for the financial statements ? And different types of financial statements.

**Structure :**

- 15.1. Introduction.**
- 15.2. Definition.**
- 15.3. Nature of Financial statements.**
- 15.4. Characteristics of Financial statements.**
- 15.5. Different types of Financial statements.**
- 15.6. Form and content of Balance Sheet.**
- 15.7. Form and content of Income statement.**
- 15.8. Importance of Financial statements.**
- 15.9. Limitations of Financial statements.**
- 15.10. Summary.**
- 15.11. Self Assessment questions.**
- 15.12. Recommended books.**

**15.1. Introduction :**

Accounting is the process of recording, classifying and summarising various business transactions. These business transactions are summarised in the form of financial statements i.e. Profit & Loss account and Balance sheet. These statements are the sources of information on the basis of which conclusions are drawn about the profitability and the financial position of a concern. Financial statements are the basis for decision making by the management as well as all other outsiders who are interested in the affairs of the firm such as investors, creditors, customers, suppliers, financial institutions, employees, government and the general public.

**15.2. Definition:**

John N. Myer defined financial statements as "The financial statements provide summary of the accounts of a business enterprise, the balance sheet reflecting the assets, liabilities and capital as on a certain date and the income statement showing the results of operations during a certain period".

Smith and Asburne define financial statements as "The end product of financial accounting is a set of financial statements prepared by the accountant of a business enterprise - that purport to reveal the financial position of the enterprise, the result of its recent activities and an analysis of what has been done with earnings."

After going through the above definitions we may conclude, that financial statements are the outcome of summarising process of accounting. They are in the form of two statements i.e. 1) Profit and loss account, to know the operating results, 2) Balance sheet, to know the financial position of a firm by management and other interested out-siders.

### 15.3. Nature of Financial statements :

The financial statements are prepared on the basis of recorded facts. These recorded facts are those which can be expressed in monetary terms. These statements are prepared periodically, generally for the accounting period.

The American Institute of certified public Accountants states the nature of financial statements as "Financial statements are prepared for the purpose of presenting a periodical review of report on progress by the management and deal with the status of investment in the business and the results achieved during the period under review. They reflect a combination of recorded facts, accounting principles and personal judgements".

According to John N.Myer" The financial statements are composed of data which are the result of a combinations of 1) recorded facts concerning the business transactions 2) conventions adopted to facilitate the accounting technique, 3) Postulates or assumptions made to and 4) Personal judgements used in the application of the conventions and postulates".

For the better understanding of the above definitions and nature of financial statements, the following points will help us.

**1. Recorded Facts :** The term 'recorded facts' refers to the data taken out from the accounting records. The records are maintained on the basis of actual cost data. The figures of various accounts such as cash in hand and at bank, Bills receivable, sundry debtors, fixed assets etc. are taken as per the figures recorded in the accounting books. The assets purchased at different times and at different prices are put together and shown at cost prices. As financial statement are not based on replacement costs they do not show current financial condition of the concern.

**2. Accounting conventions :** Certain accounting conventions are followed while preparing financial statements. Such as cost less depreciation principle, for valuation of fixed assets, cost or market price whichever is lower, for valuation of stock, convention of materiality in case of small items like pencils, pens, postage stamps etc. The use of accounting conventions makes financial statements comparable, simple and realistic.

**3. Assumptions :** The accountant makes certain assumptions while making accounting records. For example the concern is treated as a going concern. Another important assumption is to presume that the value of money will remain the same in different periods. Though there is drastic change in purchasing power of money.

**4. Personal judgements :** Personal judgements of the accountant plays an important role in the preparation of financial statements. For example : there are a number of methods for valuing stock viz; LIFO, FIFO, Average cost method, standard cost, base stock method etc, the accountant will use one of these methods for valuing materials. The selection of depreciation method, determination of period for writing off the intangible assets are some of the examples where judgement of the accountant will play an important role in choosing the most appropriate course of action.

### 15.4. Characteristics of Financial statements:

The financial statements are prepared with a view to show financial position of the concern. A proper analysis and interpretation of these statements enables a person to judge the profitability and financial position. The financial statements should be prepared in such a way that they are able to give a clear and true picture of the concern. The ideal financial statements have the following characteristics.

**1) Show true financial position :** The information contained in the financial statements should be such that a true and correct idea is taken about the financial position of the concern. No material information should be withheld while preparing these statements.

**2) Easy and effective presentation :** The financial statements should be presented in a single way so as to make them easily understandable. A person who is not well versed with accounting terminology should also be able to understand. A person who is not well versed with accounting terminology should also be able to understand the statements without much difficulty. This characteristic will enhance the utility of these statements.

**3) Relevance :** Financial statements should be relevant to the objectives of the enterprise. This will be possible when the person preparing these statements is able to properly utilise the accounting information. The information which is not relevant to the statements should be avoided.

**4) Attractive :** The financial statements should be prepared in such a way that important information is underlined to attract the reader.

**5) Concise :** Financial statements should be prepared in a concise form. The calculation work should be minimum possible, while preparing these statements. The size of the statements should not be very large. The columns to be used for giving the information should also be less.

**6) Comparability :** The comparable figures will make the statements more useful. The financial statements should be prepared in such a way to compare the current year figures with previous year. The statement can also be compared with the figures of other concerns of the same nature.

**7) Analytical Representation :** The information should be analysed in such a way that similar data is presented at the same place. This will be helpful in analysis and interpretation of data.

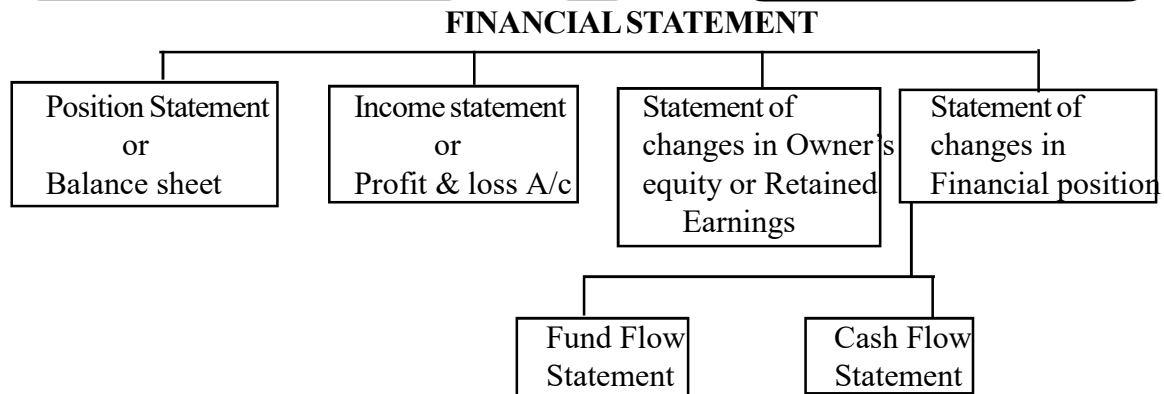
**8) Brief :** The financial statement should be presented in Brief. So the reader will form an idea about the figures.

**9) Promptness :** The financial statements should be prepared and presented at the earliest possible i.e. immediately at the end of the financial year.

### 15.5. Different types of Financial statements :

Financial statements primarily comprise two basic statements 1) position statement or balance sheet 2) Income statement or the profit and loss account. However, generally accepted accounting principles specify that a complete set of financial statements must include.

- 1) A balance sheet.
- 2) An income statement.
- 3) A statement of changes in owner's account.
- 4) A statement of changes in financial position.



Let us now briefly explain the meaning and significance of each of these statements.

**A) Balance Sheet :** The American Institute of certified Public Accountants defines Balance sheet as “A tabular statement of summary of balances carried forward after an actual and constructive closing of books of account and kept according to principles of accounting”. The purpose of 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.

The balance sheet is prepared on a particular date. The right hand side shows assets and the left hand side shows the 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.

### **2. Profit and Loss Account :**

Income statement or profit and loss Account is prepared to know the operating results of the concern for an year, whether it earned a profit or suffered a loss. It is a statement of revenues earned and the expenses incurred for earning that revenue. If there is excess of revenues over expenditure it will show a profit and if the expenditures are more than the income then there will be a loss.

The income statement may be prepared in the form of manufacturing account to find out the cost of production, in the form of Trading Account to determine gross profit or gross loss, in the form of a profit and loss account to determine net profit or net loss. A statement of Retained Earnings may also be prepared to show the distribution of profits.

### **3. Statement of changes in owner’s Equity :**

The term ‘owner’s Equity’ refers to the claims of the owners of the business i.e. shareholders against the assets of the firm. It consists of two elements 1) paid-up share capital i.e. the initial amount of funds invested by the shareholders; and 2) retained earnings, reserves and surplus representing undistributed profits.

A statement of retained earnings is also known as profit and loss Appropriation Account or Income Disposal statement. As the name suggests it shows appropriations of earnings. The previous year’s balance is first brought forward. The net profit during the current year is added to this balance. On the debit side, appropriations like interim dividend paid, proposed dividend, amounts transferred to various reserve accounts are shown. The balance in this account. Will show the amount of profit retained in hand and carried forward.

**4) Statement of changes in Financial position :** The basic financial statements i.e., the balance sheet and the profit and loss account or income statement of a business reveal the net effect of the various transactions on the operational and financial position of the company. The balance sheet gives a static view of the resources of a business and the uses to which these resources have been put. The profit and loss account indicates the resources provided by operations. But there are many transactions that do not operate through profit and loss account. Thus, for a better understanding another statement called statement of changes in financial position has to be prepared to show the changes in assets and liabilities from the end of one period to the end of another period of time. The objective of this statement is to show the movement of funds (working capital) during a particular period. The statement of changes in financial position may take any of the following two forms.

**a) Funds Flow statement :** The funds flow statement is designed to analyse the changes in the financial condition of a business enterprise between two periods. The word 'Fund' is used to denote working capital. This statement will show the sources from which the funds are received and the uses to which these have been put. This statement enables the management to have an idea about the sources of funds and their uses for various purposes. This statement helps the management in policy formulation and performance appraisal.

**Cash Flow statement :** A statement of changes in the financial position of a firm on cash basis is called Cash Flow statement. It summarises the causes of changes in cash position of a business enterprise between dates of two balance sheets. This statement is very much similar to the statement of changes in working capital i.e. Funds Flow statement. A cash flow statement focuses attention on cash changes only. It describes the sources of cash and its uses.

## 15.6. 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 can be prepared either on the basis of liquidity or on the basis of permanency.

When the balance sheet is prepared on the basis of liquidity, on the assets side, more liquid assets like cash in hand, cash at bank, investments etc., are shown first and the least liquid assets will be shown at last. On the liabilities side, the liabilities to be paid in the short period are shown first, long-term liabilities next and capital on the last. It is suitable to financial companies.

When the balance sheet is prepared on permanency basis, on asset 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, 1956 has prescribed a form for the preparation of Balance sheet. This form is set out in part I of schedule VI. The balance sheet of a company may be either in A/. in Horizontal or B/. vertical form.

## Schedule VI - PART - I

## Part (A) : Horizontal Form of Balance Sheet

## Balance Sheet of .....(name of the company)

As at ..... (date on which balance sheet is prepared)

| (1)<br><i>Figures for<br/>the previous<br/>year<br/>(Rs.)</i> | (2)<br><i>Liabilities</i>   | (3)<br><i>Figures for<br/>the current<br/>year<br/>(Rs.)</i> | (4)<br><i>Figures<br/>previous<br/>year<br/>(Rs.)</i> | (5)<br><i>Assets</i>   | (1)<br><i>Figures<br/>current<br/>year<br/>(Rs.)</i> |
|---|---|--|---|--|--|
|   | <b>Share capital</b><br>Authorised :<br>Shares of Rs... each<br>Issued :<br>Preference Share of<br>Rs.... each<br>Equity Shares of Rs....each<br>Subscribed :<br>Preference Shares of<br>Rs..... each<br>Equity Shares of Rs.... each<br>Less Calls Unpaid<br><b>Reserves and Surplus</b><br>Capital Reserve<br>Capital Redemption<br>Reserve<br>Share Premium<br>Other Reserves<br>Profit and Loss Account<br><b>Secured Loans</b><br>Debentures<br>Loan and Advances from<br>Banks<br>Loans and Advances from<br>Subsidiary<br>Other Loans and Advances<br>Unsecured<br>Loans<br>Fixed Deposits<br>Short term<br>Loans and Advances<br>Other Loan and Advances<br><b>Current Liabilities and</b><br>Provisions<br><b>A Current Liabilities</b><br>Acceptances<br>Sundry Creditors |  |   | <b>Fixed Assets</b><br>Good will<br>Land<br>Building<br>Households<br>Railway Sidings<br>Plant and Machinery<br>Furniture<br>Patents & Trade Marks<br>Livestock<br>Vehicles<br><b>Investments</b><br>Govt. or Trust<br>Securities<br>Shares, Debentures, Bonds<br><b>Current Assets</b><br><b>Loans and Advances</b><br><b>A. Current Assets</b><br>Interest Accrued<br>Stores and Spare parts<br>Loose Tools<br>Stock in Trade<br>Work in Progress<br>Sundry Debtors<br>Cash and Bank Balances<br><b>B. Loans and Advances</b><br>Advances and Loans to<br>Subsidiary<br>Bills Receivables<br>Advance Payments<br>Miscellaneous Expenditure<br>Preliminary Expenses<br>Discount on issue of shares<br>and debentures<br>Other Deferred Expenses<br>Profit and Loss Account<br>(Debit Balance) |  |



| (1)<br><i>Figures for<br/>the previous<br/>year<br/>(Rs.)</i> | (2)<br><i>Liabilities</i>  | (3)<br><i>Figures for<br/>the current<br/>year<br/>(Rs.)</i> | (4)<br><i>Figures<br/>previous<br/>year<br/>(Rs.)</i> | (5)<br><i>Assets</i> | (1)<br><i>Figures<br/>current<br/>year<br/>(Rs.)</i> |
|---|--|--|---|----------------------|--|
|   | Outstanding Expenses<br><b>B. Provisions</b><br>Provision for Taxation<br>Proposed Dividends<br>For Contingencies<br>For Provident Funds Scheme<br>For insurances, pension and<br>other benefits |  |   |                      |  |

**Part I (B) : Vertical Form of Balance Sheet**

Name of the Company .....

Balance Sheet as at .....

|   | <i>Schedule<br/>No.</i> | <i>Figures as at the<br/>end of current<br/>financial year (Rs.)</i> | <i>Figures as at the<br/>end of previous<br/>financial year (Rs.)</i> |
|---|-------------------------|--|---|
| I. <i>Source of Funds</i><br>1. Shareholder's Funds<br>(a) Capital<br>(b) Reserves and Surpluses<br>2. Loans Funds<br>(a) Secured Loans<br>(b) Unsecured Loans<br><b>Total :</b><br>II. <i>Application of Funds</i><br>1. Fixed Assets<br>(a) Gross Block<br>(b) Less : Depreciation<br>(c) Net Block<br>(d) Capital Work-in-Progress<br>2. Investments<br>3. Current Assets, Loans and Advances<br>(a) Inventories<br>(b) Sundry Debtors<br>(c) Cash and Bank Balances<br>(d) Other Current Assets<br>(e) Loans and Advances<br>Less : Current Liabilities and Provisions<br>(a) Liabilities<br>(b) Provisions<br>Net Current Assets<br>4. (a) Miscellaneous Expenditure to the extent<br>not written<br>(b) Profit and Loss Account (debit)<br><b>Total :</b> |                         |  |   |

**Schedules :** The details of various items are shown separately in schedules. The schedules will incorporate all the information required under part 1A 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.

**Explanation of Balance sheet Items :** 1) *Share capital* : The share capital is shown as a first item on the liabilities side of the balance sheet. Authorised and issued capital is shown giving the number of shares and their amount. The number of shares for which public has applied 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.

2) *Reserves and surplus* : Under this heading all those reserves which have been created out of undistributed profits are shown. 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 capital reserves, capital redemption reserve, share premium account, other reserves, surplus i.e. P & L A/c, Sinking Fund etc. The word “Fund” is used to indicate that reserve is for a specific purpose and the amount is invested outside the concern.

3) *Secured loans* : All those loans against which securities are given are shown under this category. Debentures are shown under this heading.

4) *Unsecured loans* : These are the loans and advances against which the company has not given any security.

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 :** i) Acceptances ii) Sundry creditors iii) Subsidiary companies iv) Advance payments v) unclaimed dividends vi) other liabilities if any viii) Interest accrued but not paid on loans.

**B) Provisions :** Following items are included under provisions.

viii) Provisions 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. xii) Other provisions.

**Assets 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. Fixed assets are shown distinctly from each other e.g : goodwill, land and buildings, plant and machinery, Furniture etc. These assets are shown at their original cost. Any additions and deductions during the year are shown separately. The amount of depreciation upto 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.

**3) Current Assets :** Current assets are the assets which can be convertible into cash within a period of twelve months. They are cash in hand and at bank, debtors, stock. The stock is valued at cost or market price whichever is less, debtors are shown after providing provision, debtors of more than six months old should be shown separately. The amount owed by directors should also be shown separately.

**4) Miscellaneous Expenditures :** Deferred expenditures are shown 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 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.

### 15.7. Form and content of Income statement :

In case of sole proprietary and partnership concerns there are no prescribed forms for income statement. The preparation of this statement is not compulsory but desirable. In case of joint stock companies the preparation of income statement for every financial year is compulsory. Sec 211 of the Act prescribes the contents to be disclosed in this statement. It says that profit and loss account of a company shall give a true and fair view of the profit and loss of the company for the financial year and shall comply with the requirements of part II of schedule VI.

The manufacturing, Trading and profit and loss Accounts are generally prepared in T form. The general forms of these accounts are given as follows.

In case of joint stock companies, the heading of the account is profit and loss account and same information which is given above is given here. Some items like provision for taxation, interest on debentures etc are also shown as expenses in Profit and Loss Account. The figures of profit and loss account of the previous year are also given along with the current figures.

Jointstock companies prepare profit and loss Appropriation Account also. This account is also known as retained earnings account. This account is prepared to show how the profit of the company have been used. The form of this account is given as follows :

### 15.8. Importance of Financial statements :

The financial statements reflects the financial position and operating strength or weakness of the concern. These statements are useful to management, investors, creditors, bankers, workers, government and public at large. The utility of financial statements to different parties is discussed in detail as follows :

**1) Management :** The management is able to exercise cost control through these statements as these are useful for assessing the efficiency for different cost centres. The efficient and inefficient spots can be located and the management is able to take necessary actions.

**2) Creditors :** The trade creditors are interested in current solvency of the concern. The calculation of current ratio and liquid ratio will enable the creditors to assess the current financial position of the concern.

**3) Bankers :** The Banker is interested to see that the loan amount is secure and customer is also able to pay the interest regularly. For this purpose he analyse the balance sheet to determine the financial strength of the concern.

**4) Investors :** The investors include both short-term and long-term investors. They are interested in the security of the principal amount of loan and regular interest payments by the concern. The investors will study the long-term solvency of the concern with the help of financial statements.

**5) Government :** The financial statements are used to assess tax liability of business enterprises. These statements enable the government to find out whether business is followed various rules and regulations or not.

**6) Trade Associations :** These associations provide service and protection to the members. They may analyse these statements for the purpose of providing facilities to their members.

**7) Stock Exchange :** The stock exchanges deal in purchase and sale of securities of different companies. The financial statements enable the stock brokers to judge the financial position of different concerns.

### **15.9. Limitations of Financial statements :**

Though financial statements are relevant and useful for the concern, they are suffering from the following limitations.

1) These statements do not give a final picture of the concern. The actual position can only be known when the business is sold or liquidated.

2) The financial statements are expressed in monetary values, so they appear to give final and accurate position. The value of fixed assets in the balance sheet neither represents the value for which fixed assets can be sold nor the amount which will be required to replace these assets. The balance sheet is prepared on the presumption of a going concern as a result of it, it is not giving the exact position.

3) The financial statement are prepared on the basis of historical costs. The value of assets decreases with the passage of time, current price changes are not taken into account.

4) The impact of Non-monetary factors such as reputation of management, co-operation of the employees etc are totally ignored because they can not expressed in monetary terms even though they influence the profits.

### **15.10. Summary :**

All the business concerns are interested to know the operating results and their financial position at the end of the period. For the purpose of knowing the operating results in a particular year whether it is a profit or loss they prepare the profit and loss account. For the purpose of ascertaining the financial position, they prepare Balance Sheet. All the transactions or matters which can be measurable in monetary value are included in these statements. By going through these statement a reader can easily understood the strengths and weaknesses of the concern. These statements will serve to different sectors of the society.

**15.11. Self Assessment 5 questions :**

- 1) What are financial statements ? Define.
- 2) Describe the features of financial statements.
- 3) What are the characteristics of financial statements.
- 4) Describe various financial statements.
- 5) What is the importance of financial statements.
- 6) List out the limitations of financial statements.

**15.12. Reference Books:**

1. Sharma, Gupta – Management Accounting.
2. I.M. Pande - Management Accounting
3. Manmohan & Goyal – Principles of Management Accounting.
4. Hom Green - Introduction to Management Accounting.

**- Dr. Ch. Suravinda**

**LESSON - 16****FINANCIAL STATEMENTS ANALYSIS**

**16. Objective :** After going through this lesson the student can know what is Financial Statement analysis? What are the tools that are available to the management to Analyse Financial Statements etc.

**Structure :**

- 16.1 Introduction.**
- 16.2 Definition of Financial Analysis.**
- 16.3 Types of Financial Analysis**
- 16.4 Procedure of Financial Statements Analysis**
- 16.5 Tools of Financial Analysis**
- 16.6 Comparative Statements**
- 16.6.1 Comparative Balance Sheet**
- 16.6.2 Comparative Income Statement**
- 16.7 Trend Analysis**
- 16.8 Common-size Statements**
- 16.8.1 Common-size Balance Sheet.**
- 16.8.2 Common-size Income Statements**
- 16.9 Limitations of Financial Analysis**
- 16.10 Summary**
- 16.11 Self Assessment Questions**
- 16.12 Exercises**
- 16.13 Reference Books.**

**16.1. Introduction**

Financial Statements are prepared primarily for decision making. But the information provided in the financial statements alone cannot help to draw meaningful conclusions. However, the information provided in the financial statements is of immense use in making decisions through analysis and interpretation of financial statements. Financial analysis is the process of identifying the financial strengths and weaknesses of the firm. There are various methods to analyse the financial statements, such as comparative statements, trend analysis, common size statements, schedule of changes in working capital, Funds Flow and Cash Flow analysis, cost – volume – profit analysis and ratio analysis.

**16.2 Meaning and Concept of Financial Analysis:**

The term ‘financial analysis, also known as analysis and interpretation of financial statements.

Metcalf and Titrad defines financial analysis as “analysing financial statements is a process of evaluating the relationship between component parts of a financial statement to obtain a better understanding of a firm’s position and performance”.

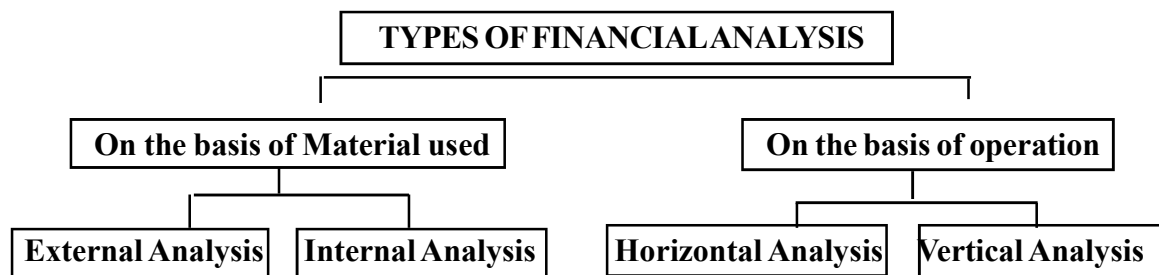
Myers define it as “Financial Statement Analysis is largely a study of relationship among the various financial factors in a business as disclosed by a single set of statements ,and a study of the trend of these factors as shown in a series of statements”.

After going through the above definitions we may conclude that the purpose of financial analysis is to diagnose the information contained in financial statements so as to judge the profitability and financial soundness of the firm. Financial statement analysis is an attempt to determine the significance and meaning of the financial statement data so that forecast may be made of the future earnings, ability to pay interest and profitability.

The term ‘financial statement analysis’ include both ‘analysis’, and ‘interpretation’. A distinction should, therefore, be made between the two terms. While the term ‘analysis’ is used to mean the simplification of financial data by methodical classification of the data given in the financial statements , ‘interpretation’ means, ‘explaining the meaning and significance of the data so simplified. Analysis and interpretation are interlinked and complimentary to each other. Analysis is useless without interpretation and interpretation without analysis is difficult or even impossible.

### 16.3 Types of Financial Analysis:

Financial Analysis can be classified on the basis of 1. Material used 2. On the basis of method of operation.



On the basis of material used financial analysis can be of two types i.e. 1) External analysis b) Internal analysis.

#### a) External Analysis:

This analysis is done by outsiders who do not have access to the detailed internal accounting records of the business firm. These outsiders include investors, potential investors, creditors, government agencies and the general public. For financial analysis, these parties depend on the published financial statements.

#### b) Internal Analysis:

The persons who have access to the internal accounting records conduct this internal analysis. These people are the executives and employees of the organisation as well as government agencies which have statutory powers vested in them.

#### 2) On the basis of method of operation:

According to the method of operation followed in the analysis financial analysis can be of two types .a) horizontal analysis b) vertical analysis.

**a) Horizontal Analysis:**

Horizontal analysis refers to the comparison of financial data of a company for several years. The figures for this type of analysis are presented horizontally over a number of columns. The figures of the various years are compared with standard or base year. A base year is a year chosen as beginning point. The horizontal analysis makes it possible to focus attention on items that have changed significantly during the period under review. Comparison of an item over several periods with a base year may show a trend developing.

**b) Vertical Analysis:**

Vertical Analysis refers to the study of relationship of the various items in the financial statement of one accounting period. In this type of analysis the figures from financial statements of a year are compared with a base selected from the same year's statement. Common-size financial statements and financial ratios are the two tools employed in vertical analysis.

**16.4 Procedure of Financial Statements Analysis:**

In the analysis of financial statements three steps are involved.

They are 1) selection 2) classification and 3) interpretation.

In the first step the data or information which is relevant to analyse the financial statements is selected. In the second step this data is classified into groups and later in the third step conclusions are formed.

The following procedure is adopted for the analysis and interpretation of financial statements:

- 1) The analysis should be well versed with the concepts and principles of accounting. He should know the plans and policies of the management so that he may be able to find out whether these plans are properly executed or not.
- 2) He should know the object or aim of analysis to decide the sphere of work. If the aim is to find out the earning capacity of the enterprise then analysis of income statement will be undertaken. If financial position is to be studied then Balance Sheet analysis is required.
- 3) The data given in the financial statements should be re-organised and re-arranged into similar groups.
- 4) A relationship is established among financial statements with the help of tools and techniques of analysis such as ratios, trends, common size, Funds Flow etc.
- 5) The information is interpreted in a simple and understandable way.
- 6) The conclusion drawn from interpretation are presented to the management in the form of reports.

**16.5 Methods of Financial Analysis:**

The analysis and interpretation of financial statements is used to determine the financial position and results of operations as well. A number of methods are used to study the relationship between different statements. The following methods of analysis are generally used:

1. Comparative Statements ;
2. Trend Analysis;



3. Common-size Statements;
4. Funds Flow Analysis;
5. Cash Flow Analysis;
6. Ratio Analysis;
7. Cost Volume Profit Analysis.

The first three methods i.e., comparative statements, trend analysis and common -size statements are discussed in this lesson.

### **1. Comparative Statements:**

The comparative financial statements are statements of the financial position at different periods of time. The elements of financial position are shown in a comparative form so as to give an idea of financial position at two or more periods. Any statement prepared in a comparative form will be covered in comparative statements. From practical point of view, generally, two financial statements i.e., balance sheet and income statement are prepared in comparative form for financial analysis purposes. Not only the comparison of the figures of two periods but also the relationship between balance sheet and income statement enables an in depth study of financial position and operative results. The two comparative statements are 1) Balance Sheet and 2) Income Statement.

#### **6.1 Comparative Balance Sheet:**

The comparative balance sheet analysis is the study of the trend of the same items, group of items and computed items in two or more balance sheets of the same business enterprise on different dates. The changes in periodic balance sheet items reflect the conduct of a business. The changes can be observed by comparison of the balance sheet at the beginning and at the end of a period and these changes can help in forming an opinion about the progress of an enterprise. The comparative balance sheet has four columns, the first two columns for the data of balance sheets. Third column is used to show increases in figures. The fourth column may be added for giving percentages of increases or decreases.

#### **Guidelines for Interpretation of Comparative Balance Sheet:**

While interpretation comparative Balance Sheet the interpreting is expected to study the following aspects:

- 1) Current financial position and liquidity position.
- 2) Long-term financial position.
- 3) Profitability of the concern.

For studying current financial position or short-term financial position of a concern, one should see the working capital in both the years. The excess of current assets over current liabilities will give the figures of working capital. The increase in working capital will mean improvement in the current financial

position of the business. An increase in current assets accompanied by the increase in current liabilities of the same amount will not show any improvement in the short-term financial position. A student should study the increase or decrease in current asset and current liabilities and this will enable him to analyse the current financial position. The second aspect which should be studied in current financial position is the liability position of the concern. If liquid assets like cash in hand, cash at bank, bills receivables, debtors etc; show an increase in the second year over the first year, this will improve the liquidity position of the concern. The increase in inventory can be on account of accumulation of stocks for want of customers, decrease in demand or inadequate sales promotion efforts. An increase in inventory may increase working capital of the business but it will not be good for the business.

The long-term financial position of the concern can be analysed by studying the changes in fixed assets, long-term liabilities and capital. The proper financial policy of concern will be to finance fixed assets by the issue of either long-term securities such as debentures, bonds, loans from financial institutions or issue of fresh share capital. An increase in fixed assets should be compared to the increase in long-term loans and capital. If the increase in fixed assets is more than the increase in long term securities then part of fixed assets has been financed from the working capital. On the other hand, if the increase in the long-term securities is more than the increase in fixed assets then fixed assets have not only been financed from long-term sources but part of working capital has also been financed from long-term sources. A wise policy will be to finance fixed assets by raising long-term funds.

The nature of assets which have increased or decreased should also be studied to form an opinion about the future production possibilities. The increase in plant and machinery will increase production capacity of the concern. On the liabilities side, the increase in loaned funds will mean an increase in interest liability whereas an increase in share capital will not increase any liability for paying interest. An opinion about the longterm financial position should be formed after taking into consideration the above mentioned aspects.

The study of increase or decrease in retained earnings, various resources and surpluses etc will enable the interpreter to see whether the profitability has improved or not. An increase in the balance of profit and loss account and other resources created from profits will mean an increase in profitability of the concern. The decrease in such accounts may mean issue of dividend, issue of bonus shares or deterioration in profitability of the concern.

After studying various assets and liabilities an opinion should be formed about the financial position of the concern. One cannot say if short-term financial position is good then long term financial position will also be good or vice – versa. A conclusion word about the overall financial position must be given at the end.

#### **Illustration I:**

The following are the Balance sheets of a concern for the year 2007 and 2008. Prepare a comparative Balance sheet and study the financial position of the concern.

**BALANCE SHEET AS ON 31ST DECEMBER**

|                                 | <b>2007<br/>Rs.</b> | <b>2008<br/>Rs.</b> |                             | <b>2007<br/>Rs.</b> | <b>2008<br/>Rs.</b> |
|---------------------------------|---------------------|---------------------|-----------------------------|---------------------|---------------------|
| Equity                          |                     |                     | Land & Buildings            | 7,40,000            | 5,40,000            |
| Share Capital                   | 12,00,000           | 16,00,000           | Plant & Machinery           | 8,00,000            | 12,00,000           |
| Reserves &<br>Surpluses         | 6,60,000            | 4,44,000            | Furniture &<br>Fixtures     | 40,000              | 50,000              |
| Debentures                      | 4,00,000            | 6,00,000            | Other Fixed Assets          | 50,000              | 60,000              |
| Long -term<br>Loans on Mortgage | 3,00,000            | 4,00,000            | Cash in hand<br>and at Bank | 40,000              | 1,60,000            |
| Bills payable                   | 1,00,000            | 90,000              | Bills Receivable            | 3,00,000            | 1,80,000            |
| Sundry Creditors                | 2,00,000            | 2,40,000            | Sundry Debtors              | 4,00,000            | 5,00,000            |
| Other Current<br>Liabilities    | 10,000              | 20,000              | Stock                       | 5,00,000            | 7,00,000            |
|                                 |                     |                     | Prepaid Expenses            | -                   | 4,000               |
|                                 | <b>28,70,000</b>    | <b>33,94,000</b>    |                             | <b>28,70,000</b>    | <b>33,94,000</b>    |

**Solution :**

Comparative Balance Sheet of a company for the year ending December 31, 2007 and 2008.

|                             | <b>Year ending<br/>31 December</b> |                     | <b>Increase/<br/>Or<br/>Decrease<br/>Amount in<br/>Rs.</b> | <b>Increase<br/>Or<br/>Decrease<br/>(Percentage)</b> |
|-----------------------------|------------------------------------|---------------------|--|--|
|                             | <b>2007<br/>Rs.</b>                | <b>2008<br/>Rs.</b> |  |  |
| <b>Assets :</b>             |                                    |                     |  |  |
| Current Assets :            |                                    |                     |  |  |
| Cash in hand and at Bank    | 40,000                             | 1,60,000            | + 1,20,000   | + 300  |
| Bills Receivables           | 3,00,000                           | 1,80,000            | -1,20,000  | -40  |
| Sundry Debtors              | 4,00,000                           | 5,00,000            | + 1,00,000   | + 25   |
| Stock                       | 5,00,000                           | 7,00,000            | + 2,00,000   | + 40   |
| Prepaid Expenses            | -                                  | 4,000               | + 4,000  |  |
| <b>Total Current Assets</b> | <b>12,40,000</b>                   | <b>15,44,000</b>    | <b>+ 3,04,000</b>  | <b>+ 24.52</b>                                       |
| Fixed Assets :              |                                    |                     |  |  |
| Land & Buildings            | 7,40,000                           | 5,40,000            | -2,00,000  | -27.03   |
| Plant & Machinery           | 8,00,000                           | 12,00,000           | + 4,00,000   | + 50.00  |
| Furniture & Fixtures        | 40,000                             | 50,000              | +10,000  | +25.00   |
| Other fixed Assets          | 50,000                             | 60,000              | +10,000  | +20.00   |
| Total Fixed Assets          | 16,30,000                          | 18,50,000           | +2,20,000  | +13.49   |
| <b>Total Assets</b>         | <b>28,70,000</b>                   | <b>33,94,000</b>    | <b>+5,24,000</b>   | <b>+ 18.26</b>                                       |

**Liabilities & Capital :**

Current liabilities :

|                                  |                  |                  |                  |               |
|----------------------------------|------------------|------------------|------------------|---------------|
| Bills payable                    | 1,00,000         | 90,000           | -10,000          | -10           |
| Sundry Creditors                 | 2,00,000         | 2,40,000         | + 40,000         | + 20          |
| Other Current Liabilities        | 10,000           | 20,000           | +10,000          | +100          |
| <b>Total Current Liabilities</b> | <b>3,10,000</b>  | <b>3,50,000</b>  | <b>+40,000</b>   | <b>+ 12.9</b> |
| Debentures                       | 4,00,000         | 6,00,000         | +2,00,000        | +50           |
| Long-term loans on Mortgage      | 3,00,000         | 4,00,000         | +1,00,000        | +33           |
| <b>Total Liabilities</b>         | <b>7,00,000</b>  | <b>10,00,000</b> | <b>+3,40,000</b> | <b>+33.66</b> |
| Equity share capital             | 12,00,000        | 16,00,000        | +4,00,000        | + 33          |
| Reserves & Surpluses             | 6,60,000         | 4,44,000         | -2,16,000        | -32.73        |
| <b>Total</b>                     | <b>28,70,000</b> | <b>33,94,000</b> | <b>+5,24,000</b> | <b>+18.26</b> |

**Interpretation:**

1. The comparative balance sheet of the company reveals that during 2008 there has been an increased in fixed assets of Rs. 2,20,000 i.e. 13.49% while long – term liabilities to outsiders have relatively increased by Rs. 3,00,000 and equity share capital has increased by Rs. 4 lakhs. This fact depicts that the policy of the company is to purchase fixed assets from the long – term sources of finance thereby not affecting working capital.
2. The current assets have increased by Rs. 3,04,000 i.e. 24.52% and cash has increased by Rs.1,20,000 on the other hand, there has been an increase in inventories amounting to Rs. 2 lakhs. The current liabilities have increased only by Rs. 40,000 i.e. 12.9%. This further confirms that the company has raised long – term finances even for the current assets resulting into an improvement in the liquidity position of the company.
3. Reserves and surpluses have decreased from Rs. 6,60,000 to Rs. 4,44,000 i.e. 32.73% which shows that the company has utilised reserves and surpluses for the payment of dividend to shareholders either in cash or by the issue of bonus shares.
4. The overall financial position of the company is satisfactory.

**16.2. Comparative Income Statement:**

The income statement gives the results of the operation of a business. The comparative income statement gives an idea of the progress of a business over a period of time. The changes in absolute data in money values and percentages can be determined to analyse the profitability of the business. Like comparative balance sheet, income statement also has four columns. First two columns give figures of various items for two years. Third and fourth columns are used to show increase or decrease in figures in absolute amounts and percentages respectively.

Guidelines for Interpretation of Income statements:

The analysis and interpretation of Income statement will involve the following steps:

1. The increase or decrease in sales should be compared with the increase or decrease in cost of goods sold. An increase in sales will not always mean an increase in profit. The profitability will improve if increase in sales is more than the increase in cost of goods sold. The amount of gross profit should be studied in the first step.
2. The second step of analysis should be the study of operational profits. The operating expenses such as office and administrative expenses, selling and distribution expenses should be deducted from gross profit to find out operating profits. An increase in operating profit will result from the increase in sale position and control of operating expenses. A decrease in operating profit may be due to an increase in operating expenses or decrease in sales. The change in individual expenses should also be studied. Some expenses may increase due to expansion of business activities while others may go up due to managerial inefficiency.
3. The increase or decrease in net profit will give an idea about the overall profitability of the concern. Non-operating expenses such as interest paid, losses from sale of assets, writing off of deferred expenses, payment of tax etc; decrease the figure of operating profit. When all non-operating expenses are deducted from operational profit, we get a figure of net profit. Some non-operating incomes may also be there which will increase net profit. An increase in net profit will give us an idea about the progress of the concern.
4. An opinion should be formed about profitability of the concern and it should be given at the end. It should be mentioned whether the overall profitability is good or not.

We will examine these things with the following illustrations.

### Illustration 2:

The income statements of a concern are given for the year ending on 31<sup>st</sup> Dec 2007 and 2008. Re-arrange the figures in a comparative form and study the profitability position of the concern.

|                                     | <b>2007</b> | <b>2008</b> |
|-------------------------------------|-------------|-------------|
|                                     | Rs.(000)    | Rs.(000)    |
| Net Sales                           | 3140        | 3600        |
| Cost of goods sold                  | 1800        | 2000        |
| Operating Expenses :                |             |             |
| General and administrative expenses | 280         | 288         |
| Selling expenses                    | 320         | 360         |
| Non-operating Expenses :            |             |             |
| Interest paid                       | 100         | 120         |
| Income - tax                        | 280         | 320         |

**Solution :**

Comparative Income Statement for the year ended December 31, 2007 and 2008.

|  | Year ending<br>31 December |                        | Increase/(+)<br>Or<br>Decrease(-)<br>Amount in<br>Rs. ( ,000) | Increase(+)<br>Or<br>Decrease(-)<br>(Percentage) |
|--|----------------------------|------------------------|---|--|
|  | 2007<br>Rs.<br>( ,000)     | 2008<br>Rs.<br>( ,000) |   |  |
| Net Sales                                    | 3140                       | 3600                   | + 460   | + 14.6   |
| <u>Less : Cost of goods sold</u>             | 1800                       | 2000                   | + 200   | + 11.0   |
| Gross Profit                                 | 1840                       | 1600                   | + 260   | + 19.40  |
| Operating Expenses :                         |                            |                        |   |  |
| General & Administrative<br>Expenses         | 280                        | 288                    | + 8   | + 28   |
| Selling Expenses                             | 320                        | 360                    | + 40  | + 12.5   |
| Total Operating Expenses                     | 600                        | 648                    | + 48  | + 8.0  |
| Operating Profit                             | 740                        | 952                    | + 212   | + 28.65  |
| <u>Less : Other deductions interest paid</u> | 100                        | 120                    | + 20  | + 20.00  |
| Net Profit before tax                        | 640                        | 832                    | + 192   | + 30.00  |
| <u>Less : Income Tax</u>                     | 280                        | 320                    | + 40  | + 14.3   |
| Net Profit After tax                         | 360                        | 512                    | + 152   | + 42.22  |

**Interpretation:**

The comparative income statement given above reveals that there has been an increase in net sales of 14.65% while the cost of goods sold has increased nearly by 11% there by resulting in an increase in the gross profit of 19.4%. Although the operating expenses have increased by 8% the increase in gross profit is sufficient to compensate for the increase in operating expenses and hence there has been an overall increase in operational profits amounting to Rs.2,12,000 i.e.28.65% in spite of an increase in financial expenses of Rs.20,000 for interest and Rs.40,000 for Income tax. There is an increase in net profits after tax amounting to Rs1,52,000 i.e.42.22%. It may be concluded that there is a sufficient progress in the company and the overall profitability of the company is good.

**Illustration 3:**

Prepare comparative statements from the following data:

|                    | 2007           | 2008 |
|--------------------|----------------|------|
|                    | (Rs. In lakhs) |      |
| Net Sales          | 1200           | 1500 |
| Cost of goods sold | 800            | 1200 |
| Admn. Expenses     | 40             | 40   |

|                             |                |             |
|-----------------------------|----------------|-------------|
| Selling Expenses            | 20             | 20          |
| Net Profit                  | 340            | 240         |
|                             | <b>2007</b>    | <b>2008</b> |
| Balance Sheets              | (Rs. In lakhs) |             |
| Equity capital              | 800            | 800         |
| 6% preference share capital | 600            | 600         |
| Reserves                    | 400            | 490         |
| 6% Debentures               | 200            | 300         |
| Bill payable                | 100            | 150         |
| Creditors                   | 300            | 400         |
| Tax Payable                 | 200            | 300         |
|                             | <b>2600</b>    | <b>3040</b> |
| Land                        | 200            | 200         |
| Buildings                   | 600            | 540         |
| Plant                       | 600            | 540         |
| Furniture                   | 200            | 280         |
| Stock                       | 400            | 600         |
| Cash                        | ?              | ?           |
|                             | <b>2600</b>    | <b>3040</b> |

**Solution :**

Comparative Income Statement for the year ended 2007 and 2008.

|                                  | Year ending<br>31 December |                        | Increase (+)<br>Decrease (-)<br>Rs.Lakhs | Increase<br>Decrease (-)<br>(Percentage) |
|----------------------------------|----------------------------|------------------------|--|--|
|                                  | 2007<br>Rs. (in lakhs)     | 2008<br>Rs. (in lakhs) |  |  |
| Net Sales                        | 1200                       | 1500                   | + 300                                    | + 25                                     |
| <u>Less</u> : Cost of goods sold | 800                        | 1200                   | + 400                                    | + 50                                     |
| a/. Gross Profit                 | 400                        | 300                    | - 100                                    | - 25                                     |
| Operating Expenses :             |                            |                        |  |  |
| Administrative Expenses          | 40                         | 40                     | -  | -  |
| Selling Expenses                 | 20                         | 20                     | -  | -  |
| Total Operating Expenses         | 60                         | 60                     | -  | -  |
| Operating Profit (a – b)         | 340                        | 240                    | - 100                                    | - 29.41                                  |
|                                  |                            |                        |  |  |

|                       |     |     |       |         |
|-----------------------|-----|-----|-------|---------|
| Less : Other Expenses | –   | –   | –     | –       |
| Net Profit            | 340 | 240 | – 100 | – 29.41 |

Comparative Balance Sheet for the year ended December 31, 2007 and 2008.

|                                  | Year ending<br>31 December |                        | Increase/<br>Or<br>Decrease<br>Amount in<br>Rs. (in lakhs) | Increase<br>Or<br>Decrease<br>(Percentage)<br>Assets : |
|----------------------------------|----------------------------|------------------------|--|--|
|                                  | 2007<br>Rs. (in lakhs)     | 2008<br>Rs. (in lakhs) |  |  |
| Current Assets :                 |                            |                        |  |  |
| Cash                             | 600                        | 880                    | + 280  | + 46.67  |
| Stock                            | 400                        | 600                    | + 200  | + 50.00  |
| <b>Total Current Assets</b>      | <b>1,000</b>               | <b>1,480</b>           | <b>+ 480</b>   | <b>+ 48.00</b>   |
| Fixed Assets :                   |                            |                        |  |  |
| Land                             | 200                        | 200                    | –  | –  |
| Buildings                        | 600                        | 540                    | – 60   | – 10   |
| Plant                            | 600                        | 540                    | – 60   | – 10   |
| Furniture                        | 200                        | 280                    | + 80   | + 40   |
| <b>Total Fixed Assets</b>        | <b>2600</b>                | <b>3040</b>            | <b>+ 440</b>   | <b>+ 16.92</b>   |
| Liabilities and Capital          |                            |                        |  |  |
| Current Liabilities :            |                            |                        |  |  |
| Bills Payable                    | 100                        | 150                    | + 50   | + 50.0   |
| Creditors                        | 300                        | 400                    | + 100  | + 33.3   |
| Tax Payable                      | 200                        | 300                    | + 100  | + 50.0   |
| <b>Total Current liabilities</b> | <b>600</b>                 | <b>850</b>             | <b>+ 250</b>   | <b>+ 41.67</b>   |
| Debentures                       | 200                        | 300                    | + 100  | + 50.0   |
| <b>Total Liabilities</b>         | <b>800</b>                 | <b>1150</b>            | <b>+ 350</b>   | <b>+ 43.75</b>   |
| Equity share capital             | 800                        | 800                    | –  | –  |
| 6% pref. Share capital           | 600                        | 600                    | –  | –  |
| Reserve                          | 400                        | 490                    | + 90   | + 22.5   |
| <b>Total</b>                     | <b>2600</b>                | <b>3040</b>            | <b>+ 440</b>   | <b>+ 16.92</b>   |



**Interpretation:**

a) The comparative income statement reveals that there has been increase in not sales of 25% while the cost of goods sold has increased disproportionately by 50% thereby resulting in a decrease of gross profit of 25%. Although the operating expenses have remained constant, there has been decrease in net profit of 29.41%. The company needs to take into the causes of increase in cost of goods sold and control the same.

b) The comparative balance sheet of the company reveals that during 2008 there has been decrease in fixed assets of Rs.40 lakhs, i.e.2.5% while long-term liabilities to outsiders have increased by Rs100 lakhs, i.e.50%. There has also been increase of Rs.90 lakhs, i.e 22.5% in reserves of the company. Thus, the company has used long-term resources to finance additional working capital.

The current assets have increased by Rs.480 lakhs in 2008 i.e.48%. There has been sufficient increase in balance of cash as well as stock. On the other hand current liabilities have increased by only Rs.250 lakhs i.e.41.67%. This further confirms that the company has raised long-term finances even for the current assets resulting into an improvement in the liquidity position of the company.

**16.7 Trend Analysis:**

The financial statements may be analysed by computing trends of series of information. This method determines the direction upwards or downwards and involves the computation of the percentage relationship that each statement item bears to same item in base year. The figures of the base year are taken as 100 and trend ratios for other years are calculated on the basis of base year.

**Procedure for calculating Trends:**

1. One year is taken as a base year, generally, the first year is taken as base year.
2. The figures of base year are taken as 100.
3. Trend percentages are calculated in relation to base year.

The interpretation of trend analysis involves a cautious study. The mere increase or decrease in trend percentage may give misleading results if studied in isolation. An increase of 10% in current assets may be treated favourable. If this increase in current assets is accompanied by an equivalent increase in current liabilities, then this increase will be unsatisfactory. The increase in sales may not increase profits if the cost of production has also gone up.

The base period should be carefully selected, it should always be a normal period. The accounting procedures and conventions used for collecting data and preparation of financial statements should be similar, otherwise the figures will not be comparable.

**Illustration 4:**

Calculate the trend percentages from the following figures of X ltd. taking 2004 as the base and interpret them:

| Year | Sales  | Stock | Rs. in Lakhs<br>Profit before tax |
|------|--------|-------|-----------------------------------|
| 2004 | 5,643  | 2,127 | 963                               |
| 2005 | 7,020  | 2,343 | 1,305                             |
| 2006 | 7,965  | 2,448 | 1,374                             |
| 2007 | 9,063  | 2,832 | 1,581                             |
| 2008 | 11,304 | 3,462 | 2,016                             |

**Solution :**

**Trend percentages. (Base year 2004 = 100)**

| Year | Sales                |                     | Stock              |                     | Profit Before tax  |                     |
|------|----------------------|---------------------|--------------------|---------------------|--------------------|---------------------|
|      | (Amount<br>Rs.Lakhs) | Trend<br>Percentage | Amount<br>Rs.Lakhs | Trend<br>Percentage | Amount<br>Rs.Lakhs | Trend<br>Percentage |
| 2004 | 5,643                | 100                 | 2,127              | 100                 | 963                | 100                 |
| 2005 | 7,020                | 124                 | 2,343              | 110                 | 1,305              | 136                 |
| 2006 | 7,965                | 141                 | 2,448              | 115                 | 1,374              | 143                 |
| 2007 | 9,063                | 161                 | 2,832              | 133                 | 1,581              | 164                 |
| 2008 | 11,304               | 200                 | 3,462              | 162                 | 2,016              | 209                 |

**Interpretation:**

1. The sales have continuously increased in all the years up to 2008. The percentage in 2008 is 200 as compared to 100 in 2004. The increase in sales is quite satisfactory.
2. The figures of stock have also increased from 2004 to 2008. The increase in stocks is more in 2007 and 2008 as compared to earlier years.
3. Profit before tax has substantially increased. In five years period it has more than doubled. The comparative increase in profits is much higher in 2007 and 2008, as compared to 2006.

The expansion of the firm is good and it has doubled its sales and profits in just five years time. The profits have increased more than sales which shows that there is a proper control over cost of goods sold, the overall performance of the concern is good.

**3) COMMON SIZE STATEMENT:**

The common-size statements, balance sheet and income statement, are shown in analytical percentages. The figures are shown as percentages of total assets, total liabilities and total sales. The total assets are taken as 100 and different assets are expressed as a percentage of the total. Similarly, various liabilities are taken as a part of total liabilities. The short – comings in comparative statements and trend percentages where changes in items could not be compared with the totals have been covered up. The analyst is able to assess the figures in relation to total values. The common – size statements may be prepared in the following ways.

1. The totals of assets or liabilities are taken as 100.
2. The individual assets are expressed as a percentage of total assets, i.e., 100 and different liabilities are calculated in relation to total liabilities. For example, if total assets are Rs. 10 lakhs and venture value is Rs. 1 lakh, then it will be 10% of total assets.

$$\frac{1,00,000}{10,00,000} \times 100$$

## 1. COMMON SIZE-BALANCE SHEET

A statement in which balance sheet items are expressed as the ratio of each asset to total assets and the ratio of each liability is expressed as a ratio of total liabilities is called common-size balance sheet.

The common-size balance sheet can be used to compare companies of differing size. The comparison of figures in different periods is not useful because total figures may be affected by a number of factors.

### Illustration 5:

The Balance Sheet of C & Co. and V & Co. or given has follows.

#### Balance Sheet as on Dec 31, 2008

|                          | C & Co<br>Rs. ,000 | V & Co<br>Rs. ,000 |
|--------------------------|--------------------|--------------------|
| Liabilities :            |                    |                    |
| Preference share capital | 960                | 1280               |
| Equity share capital     | 1200               | 3200               |
| Reserves & surpluses     | 112                | 144                |
| Long - term loans        | 920                | 1040               |
| Bills payable            | 16                 | -                  |
| Sundry Creditors         | 96                 | 32                 |
| Outstanding Expenses     | 120                | 48                 |
| Proposed dividend.       | 80                 | 720                |
|                          | <b>3,504</b>       | <b>6,464</b>       |
| Land and Buildings       | 640                | 984                |
| Plant and Machinery      | 2,672              | 4,800              |
| Temporary Investments    | 8                  | 320                |
| Inventories              | 80                 | 200                |
| Book- Debts              | 32                 | 64                 |
| Prepaid expenses         | 8                  | 16                 |
| Cash and Bank Balances   | 64                 | 80                 |
|                          | <b>3,504</b>       | <b>6,464</b>       |

Solution :

**COMMON SIZE BALANCE SHEETS**

|                                     | C.CO<br>Amount<br>(Rs.000) | %             | V & Co.<br>Amount<br>(Rs.000) | %             |
|-------------------------------------|----------------------------|---------------|-------------------------------|---------------|
| <b>Assets :</b>                     |                            |               |                               |               |
| Fixed Assets :                      |                            |               |                               |               |
| Land, Buildings                     | 640                        | 18.26         | 984                           | 15.22         |
| Plants & Machinery                  | 2,672                      | 76.24         | 4,800                         | 74.62         |
| <b>Total Fixed Assets</b>           | <b>3,312</b>               | <b>94.52</b>  | <b>5,784</b>                  | <b>89.48</b>  |
| Current Assets :                    |                            |               |                               |               |
| Temporary Investments               | 8                          | 0.23          | 320                           | 4.95          |
| Inventories                         | 80                         | 2.28          | 200                           | 3.08          |
| Debtors                             | 32                         | 0.91          | 64                            | 0.99          |
| Prepaid expenses                    | 8                          | 0.23          | 16                            | 0.25          |
| Cash, Bank Balances                 | 64                         | 1.83          | 80                            | 1.25          |
| <b>Total Assets</b>                 | <b>3,504</b>               | <b>100.00</b> | <b>6,464</b>                  | <b>100.00</b> |
| Capital - Reserves :                |                            |               |                               |               |
| Preference capital                  | 960                        | 27.39         | 1,280                         | 19.80         |
| Equity share capital                | 1,200                      | 34.25         | 3,200                         | 49.50         |
| Reserves, surpluses                 | 112                        | 3.19          | 144                           | 2.23          |
| <b>Total Capital &amp; Reserves</b> | <b>2,272</b>               | <b>64.83</b>  | <b>4,624</b>                  | <b>71.53</b>  |
| <b>Long-term loans</b>              | <b>920</b>                 | <b>26.25</b>  | <b>1,040</b>                  | <b>16.09</b>  |
| Current liabilities :               |                            |               |                               |               |
| Bill payable                        | 16                         | 0.46          | –                             | –             |
| Creditors                           | 96                         | 2.74          | 32                            | 0.49          |
| Expenses Payable                    | 120                        | 3.44          | 48                            | 0.74          |
| Preposed Dividend                   | 80                         | 2.28          | 720                           | 11.15         |
| <b>Total Current liabilities</b>    | <b>312</b>                 | <b>8.92</b>   | <b>800</b>                    | <b>12.38</b>  |
| <b>Total liabilities</b>            | <b>3,504</b>               | <b>100.00</b> | <b>6,464</b>                  | <b>100.00</b> |

**Comments:-**

1. an Analysis of pattern of financing of both the companies shows that V & Co. is more traditionally financed as compared to C & Co. The former company has depended more on its own funds

as it shown by balance sheet. Out of total investments, 71.53% of the funds are proprietor's funds and outsider's funds account only for 28.47%. In C & Co., proprietor's funds are 64.83% while outsider's share is 35.17% which shows that this company has depended more upon outsiders funds. In the present day economic world, generally, companies depend more on outsiders funds.

2. Both the companies are suffering from in adequacy of working capital. The percentage of current liabilities is more than the percentage of current assets in both the companies.

3. A close look at the balance sheets shows that investments in fixed assets have been financed from working capital in both the companies.

In C & Co., fixed assets accounts for 94.52% of total assets while long – term funds account for 91.08% of total funds. In V & Co. fixed assets account for 94.52% of total funds. In V & Co., fixed assets account for 89.48% whereas long term funds account for 87.62% of total funds instead of using long term funds for working capital purposes the companies have used working capital for purchasing fixed assets.

4. Both the companies face working capital problem and immediate steps should be taken to issue more capital or raise long-term loans to raise working capital position.

## 2. COMMON SIZE INCOME STATEMENT:-

The items in income statement can be shown as percentages of sales to show the relation of each item to sales. A significant relationship can be established between items of income statement and volume of sales. The increase in sales will certainly increase selling expenses and not administrative or financial expenses. In case the volume of sales increases to a considerable extent, administrative and financial expenses may go up. In case the sales are declining, the selling expenses should be reduced at once. So, a relationship is established between sales and other items in income statement and this relationship is helpful in evaluating operational activities of the enterprise.

### Illustration 6:

Following are the Income statements of a company for the year ending

Dec.31-2007, and 2008.

|                    | 2007         | 2008         |
|--------------------|--------------|--------------|
|                    | (Rs.000)     | (Rs.000)     |
| Sales              | 3,000        | 4,200        |
| Other Incomes      | 120          | 90           |
|                    | <u>3,120</u> | <u>4,290</u> |
| Expenses           |              |              |
| Cost of goods sold | 1950         | 3060         |
| Office expenses    | 120          | 150          |
| Selling expenses   | 180          | 270          |
| Interest           | 150          | 180          |
| Net Profit         | <u>2,400</u> | <u>3,660</u> |
|                    | <u>720</u>   | <u>630</u>   |

**Solution :**

**Common size Income Statement  
for the year ending Dec.2007 and 2008.**

|                                      | 2007         |              | 2008         |              |
|--------------------------------------|--------------|--------------|--------------|--------------|
|                                      | Rs.000       | %            | Rs.100       | %            |
| Net Sales                            | 3,000        | 100.00       | 4,200        | 100.00       |
| <u>Less :</u> Cost of goods sold     | 1,950        | 65.00        | 3,060        | 72.86        |
| Gross Profit                         | <b>2,050</b> | <b>35.00</b> | <b>1,140</b> | <b>27.14</b> |
| <u>Less :</u> Operating expenses     |              |              |              |              |
| Office expenses                      | 120          | 4.00         | 150          | 3.58         |
| Selling expenses                     | 180          | 6.00         | 270          | 6.42         |
| Total operating expenses             | <b>300</b>   | <b>10.00</b> | <b>420</b>   | <b>10.00</b> |
| Operating profit                     | 1,750        | 25.00        | 720          | 17.14        |
| <u>Add :</u> Other Incomes           | 120          | 4.00         | 90           | 2.14         |
| Total Income                         | 1,870        | 29.00        | 810          | 19.28        |
| <u>Less :</u> Non operating expenses |              |              |              |              |
| Interest                             | 150          | 5.00         | 180          | 4.28         |
| Net profit                           | <b>720</b>   | <b>24.00</b> | <b>630</b>   | <b>15.00</b> |

**Interpretation:**

1. In 2008, sales and gross profit has increased in absolute figures when compared to 2007 but the percentage of gross profit to sales has gone down in 2008.
2. The increase in cost of sales as a percentage of sales has brought the profitability from 35 to 27.14%.
3. Operating expenses have remained the same in both the years but non-operating expenses have decreased as a percentage in 2008. A slight decrease in non-operating expenses in the latter year could not help to improve profits.
4. Net profits have decreased both in absolute figures and as a percentage in 2008 as compared to 2007.
5. The overall profitability has decreased in 2008 and the reason is a rise in cost of sales. The company should take immediate steps to control its cost of sales, otherwise the company will be in trouble.

**16.9. Limitations of Financial Analysis:-**

Financial analysis is a powerful mechanism of determining financial strengths and weaknesses of a

firm. The financial analyst has also to be careful about the impact of price level changes, window – dressing of financial statements, changes in accounting policies of a firm, accounting concepts and conventions and personal judgement etc. some of the important limitations of financial analysis are:

1. It is only a study of interim reports.
2. Financial analysis is based upon only monetary information and non-monetary factors are ignored.
3. It does not consider changes in price levels.
4. As the financial statements are prepared on the basis of a going concern, it does not give exact position. Thus this has become as serious limitation to financial analysis.
5. Changes in accounting procedure by a firm may often make financial analysis misleading.
6. Analysis is only a means and not an end in itself. The analyst has to make interpretation and draw his own conclusions. Different people may interpret the same analysis in different ways.

### 16.10. Summary:

Financial statements are prepared primarily for decision-making. By analysing these financial statements one can know the financial strengths and weaknesses of the firm. It is the interpretation of financial statements. On the basis of material used it may be an external and internal. On the basis of operation it may be horizontal and vertical. A number of methods are used to study financial statements. The general methods are

1. Comparative statements
2. Trend Analysis
3. Common-size statements.

### 16.11. Self Assessment Questions:

1. What is financial analysis ?
2. What are the types of financial analysis?
3. What is the procedure of analysis and interpretation of financial statements ?
4. Write a brief note on comparative statements.
5. What is trend analysis?
6. Explain common-size statements.
7. What are the limitations of financial statement analysis?
8. What do you understand by the analysis and interpretation of financial statements ? Discuss their utility and significance to the management ?
9. What are the different methods used for the analysis and interpretation of financial statements ?
10. What is common-size balance sheet and income statement ? Explain the technique of preparing the common-size balance sheet ?
11. Explain the usefulness of trend percentages in interpretation of financial performance of a company.

**16.12. Exercises :**

1. The following are the Income statements of Achut Ltd for the years 2007 and 2008. Prepare a comparative income statement and interpret it.

|                               | 2007<br>(Rs. 000) | 2008<br>(Rs.000) |                  | 2007         | 2008<br>(Rs. 000) |
|-------------------------------|-------------------|------------------|------------------|--------------|-------------------|
| <b>(Rs.000)</b>               |                   |                  |                  |              |                   |
| To Opening Stock              | 170               | 400              | By Sales         | 2,000        | 2,400             |
| To Purchases                  | 1,000             | 1,100            | By Closing Stock | 400          | 450               |
| To Wages                      | 120               | 160              | By Income        |              |                   |
| To Salaries                   | 84                | 128              | from Investments | 24           | 30                |
| To Rent, Rates &<br>Insurance | 70                | 80               | By Dividend      | 10           | 15                |
| To Depreciation               | 80                | 120              |                  |              |                   |
| To Selling expenses           | 24                | 24               |                  |              |                   |
| To Discount                   | 10                | 14               |                  |              |                   |
| To Profit on sale<br>of plant | —                 | 16               |                  |              |                   |
| To Interest paid              | 24                | 48               |                  |              |                   |
| To Net Profit                 | 852               | 825              |                  |              |                   |
|                               | <b>2,434</b>      | <b>2,894</b>     |                  | <b>2,434</b> | <b>2,894</b>      |

2. In the basis of the balance sheets of a company, prepare a comparative Balance sheet and analyse the changes in Assets and liabilities.

|                          | Mar.31, 2007<br>(Rs.000) | Mar 31, 2008<br>(Rs.000) |
|--------------------------|--------------------------|--------------------------|
| Equity share capital     | 1,500                    | 3,000                    |
| Preference share capital | 300                      | 600                      |
| General Reserve          | 300                      | 750                      |
| Expenses Payable         | 150                      | 150                      |
| Bills Payable            | 300                      | 600                      |
| Profit & Loss Account    | 600                      | 900                      |
|                          | <b>3,150</b>             | <b>6,000</b>             |
| Fixed Assets             | 1,200                    | 3,000                    |
| Investments              | 900                      | 300                      |
| Receivables              | 600                      | 1,200                    |



|       |              |              |
|-------|--------------|--------------|
| Stock | 300          | 1,200        |
| Cash  | 150          | 300          |
|       | <b>3,150</b> | <b>6,000</b> |

3. From the following income statements for the years, march 31, 2007 and 2008. Prepare a comparative Income Statement and write your interpretation.

### Income Statements

| Liabilities                  | 2007<br>(Rs.)    | 2008<br>(Rs.)    | Assets                            | 2007<br>(Rs.)    | 2008<br>(Rs.)    |
|------------------------------|------------------|------------------|-----------------------------------|------------------|------------------|
| To Cost of goods sold        | 18,00,000        | 19,00,000        | By Sales                          | 30,50,000        | 34,00,000        |
| To Administrative Expenses   | 1,86,500         | 1,91,980         | By Interest & Dividend            | 15,000           | 12,400           |
| To Selling expenses          | 3,80,000         | 4,18,000         | By Profit on sale of fixed Assets | 12,000           | 16,000           |
| To Interest paid             | 16,000           | 14,000           |                                   |                  |                  |
| To Loss on sale of machinery | 5,000            | 1,600            |                                   |                  |                  |
| To Income tax                | 1,70,000         | 3,36,000         |                                   |                  |                  |
| To Net Profit                | 5,19,500         | 5,66,840         |                                   |                  |                  |
|                              | <b>30,77,000</b> | <b>34,28,400</b> |                                   | <b>30,77,000</b> | <b>34,28,400</b> |

4. From the Balance sheets of the company for the years 2007 and 2008. Prepare a comparative balance sheet and make a comment.

### Balance Sheet

|                          | Mar.31, 2007<br>(Rs.000) | Mar 31, 2008<br>(Rs.000) |
|--------------------------|--------------------------|--------------------------|
| <b>Liabilities :</b>     |                          |                          |
| Preference share capital | 1,500                    | 2,700                    |
| Equity share capital     | 1,800                    | 3,600                    |
| General Reserves         | 1,200                    | 1,500                    |
| Profit & Loss Account    | 600                      | 675                      |
| Long - term loans        | 600                      | 3,000                    |
| Bills Payable            | 240                      | 300                      |
| Creditors                | 60                       | 75                       |
|                          | <b>6,000</b>             | <b>11,850</b>            |
| <b>Assets :</b>          |                          |                          |
| Fixed Assets             | 3,000                    | 7,500                    |
| Investments              | 900                      | 600                      |

## Current Assets :

|                   |              |               |
|-------------------|--------------|---------------|
| Bills Receivables | 600          | 1,050         |
| Stock             | 1,200        | 1,800         |
| Cash              | 300          | 900           |
|                   | <u>6,000</u> | <u>11,850</u> |

5. Convert the following Balance Sheets into common size Balance Sheet and comment for the years 2007 and 2008.

## Balance Sheet

| Liabilities          | 2007<br>(Rs. 000) | 2008<br>(Rs.000) | Assets           | 2007<br>(Rs. 000) | 2008<br>(Rs.000) |
|----------------------|-------------------|------------------|------------------|-------------------|------------------|
| Equity Share capital | 10,000            | 12,000           | Fixed Assets :   |                   |                  |
| Capital Reserve      | 900               | 1,850            | Buildings        | 8,000             | 14,000           |
| General Reserve      | 5,000             | 4,500            | Land             | 1,980             | 3,450            |
| Sinking Fund         | 900               | 1,000            | Furniture        | 770               | 1050             |
| Debentures           | 4,500             | 6,500            | Current Assets : |                   |                  |
| Creditors            | 2,000             | 1,500            | Debtors          | 4,500             | 3,900            |
| Expenses Payable     | 150               | 200              | Cash             | 2,000             | 150              |
|                      |                   |                  | Stock            | 3,200             | 2,500            |
|                      |                   |                  | Investments      | 3,000             | 2,500            |
|                      | <u>23,450</u>     | <u>27,550</u>    |                  | <u>23,450</u>     | <u>27,550</u>    |

6. The Balance Sheets of a company for the years 2007 and 2008 were as follows. Prepare a common size Balance Sheet and make your comments.

## Balance Sheet

| Liabilities       | 2007<br>(Rs. 000) | 2008<br>(Rs.000) | Assets                 | 2007<br>(Rs. 000) | 2008<br>(Rs.000) |
|-------------------|-------------------|------------------|------------------------|-------------------|------------------|
| Share Capital     | 21,00,000         | 23,00,000        | Goodwill               | 3,40,000          | 20,000           |
| Reserves          | 10,08,000         | 10,08,000        | Plant                  | 17,04,000         | 16,52,000        |
| Surplus           | 7,02,140          | 2,32,280         | Patents                | 1,20,000          | 96,000           |
| 9% Debentures     | 5,00,000          | 4,00,000         | Investments            | 4,20,000          | 1,00,000         |
| Interest Payable  | 15,000            | 12,000           | Cash                   | 6,82,600          | 11,51,200        |
| Creditors         | 4,48,000          | 5,72,000         | Debtors                | 5,55,040          | 6,12,000         |
| Dividends Payable | –                 | 1,00,000         | Stock                  | 9,43,200          | 11,50,680        |
| Provision for tax | 32,000            | 1,92,000         | Prepaid expenses       | 12,800            | 18,400           |
|                   |                   |                  | Discount on Debentures | 27,500            | 20,000           |
|                   | <u>48,05,140</u>  | <u>48,20,280</u> |                        | <u>48,05,140</u>  | <u>48,20,280</u> |

**16.13. Reference Books :**

1. **Sharma, Gupta** – **Management Accounting.**
2. **I.M. Pande** - **Management Accounting**
3. **Manmohan & Goyal** – **Principles of Management Accounting.**
4. **Hom Green** - **Introduction to Management Accounting.**

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**LESSON - 17****RATIO ANALYSIS**

**17.0 Objective :** After going through this lesson the student can know what is Ratio Analysis? What is It's Nature? The point which should be considered while analysing the Ratios. How to use Ratios and what are the limitations of Ratio analysis.

**Structure :**

- 17.1. Introduction
- 17.2. Meaning – Nature
- 17.3. Nature
- 17.4. Interpretation of the Ratios
- 17.5. Guide lines for use of Ratio's
- 17.6. Ratio Analysis use and Importance
- 17.7. Limitations of Ratio Analysis
- 17.8. Summary
- 17.9. Self Assessment Questions
- 17.10. Reference Books

**17.1. Introduction**

In the previous lesson we have already studied that there are various methods, or techniques used in analysing financial statements, such as comparative statements, trend analysis common – size statements etc. In the current lesson we learn Ratio Analysis which is one of the most powerful tools of financial analysis. It is the process of establishing and interpreting various ratios. With the help of ratios financial statements can be analysed more clearly.

**17.2 Definition**

A Ratio is a simple arithmetical expression of the relationship of one number to another. According to Accountant's Handbook by Wixon, Kell and Bedford, a ratio "is an expression of the quantitative relationship between two numbers".

According to Kohler, "a ratio is the relation, of the amount a) to another b) expressed as the ratio of a to b; a : b (a is to b); or as a simple fraction, integer, decimal, fraction or percentage".

In simple language ratio is one number expressed in terms of another and can be worked out by dividing one number into the other. For example, if the current assets of a firm on a given date are Rs. 50 lakhs and the current liabilities are Rs. 25 lakhs, then the ratio of current assets to current liabilities is 50lakhs / 25 lakhs i.e., 2. This type of ratios are called simple or pure ratios.

A financial ratio is the relationship between two accounting figures expressed mathematically. A ratio can also be expressed as percentage by simply multiplying the ratio by 100. As in the above example, the ratio is  $2 \times 100$  or 200% or say current assets are 200% of current liabilities. It is also expressed as a proportion for example, ratio of current assets to current liabilities is, say 50,00,000 : 25,00,000 or 2 : 1. some analysts also express ratio as a 'rate' or 'time'. In the above example we can say that the ratio is 2 times. With the help of ratios one can draw conclusions about the exact financial position of a concern.

### 17.3. Nature

Ratio analysis is a technique of analysis and interpretation of financial statements. It is the process of establishing and interpreting various ratios for helping in making certain decisions. However, ratio analysis is not an end in itself. It is only a means of better understanding of financial strengths and weaknesses of a firm. Calculation of mere ratios does not serve any purpose, unless several appropriate ratios are analysed and interpreted. There are a number of ratios which can be calculated from the information given in the financial statements, but the analyst has to select the appropriate ratios after keeping in mind the objective of analysis.

The following are the four steps involved in the ratio analysis:

1. Selection of relevant data from the financial statements depending upon the objective of the analysis.
2. Calculation of appropriate ratios from the above data.
3. Comparison of the calculated ratios with the ratios of the same firm in the past or the ratios of some other firms or with ratios of the industry to which the firm belongs.
4. Interpretation of the ratios.

### 17.4. Interpretation of the Ratios

Calculation of ratios is only a clerical task whereas interpretation needs skill, intelligence and foresightedness while interpreting the ratios the analyst should kept in mind the inherent limitations of ratio analysis and also the impact of factors such as price level changes, change in accounting policies, window dressing etc.

A single ratio in itself does not convey much of the sense. To make ratios useful, they have to be further interpreted. For example, say, the current ratio of 3 : 1 does not convey any sense unless it is interpreted and conclusion is drawn from it regarding the financial condition of the firm as to whether it is very strong, good, questionable or poor. The interpretation of the ratios can be made in the following ways.

#### 1. Single Absolute Ratio :

Generally one cannot draw any meaningful conclusion when a single ratio is considered in isolation. Single ratios may be studied in relation to certain rules of thumb which are based upon well proven conventions as for example 2 : 1 is considered to be a good ratio for current assets to current liabilities.

#### 2. Group of Ratios :

Ratios may be interpreted by calculating a group of related ratios. A single ratio supported by other related ratios becomes more meaningful. For example, the ratio of current assets to current liabilities may be supported by the ratio of liquid assets to liquid liabilities to draw more dependable conclusions.

#### 3. Historical comparison :

One of the easiest and most popular ways of evaluating the performance of the firm is to compare its present ratios with the past ratios called comparison over time. When financial ratios

are compared over a period of time, it gives an indication of the direction of change whether the firm's performance and financial position has improved, deteriorated or remained constant over a period of time. In this method the changes, if any, in the firm's policies and accounting procedures should be carefully observed.

#### **4. Projected Ratios :**

Ratios can also be calculated for future standards based upon the proforma financial statements. These future ratios may be taken as standard for comparison and the ratios calculated on actual financial statements can be compared with the standard ratios to find out variances, if any, such variances help in interpreting and taking corrective action for improvement in future.

#### **5. Inter – firm comparison :**

Ratios of one firm can also be compared with the ratios of some other selected firms in the same industry at the same point of time. This kind of comparison helps in evaluating relative financial position and performance of the firm. But while making use of such comparison one has to be very careful regarding the different accounting methods, policies and procedures adopted by different firms.

### **17.5. Guidelines for use of Ratios :**

Following guide lines may be kept mind while interpreting various ratios.

#### **1. Accuracy of Financial Statements :**

The ratios are calculated from the data available in financial statements. The reliability of ratios is linked to the accuracy of information in these statements. Before calculating ratios one should see whether proper concepts and conventions have been used for preparing financial statements or not. The precautions will establish the reliability of data given in financial statements.

#### **2. Objective or purpose of Analysis :**

The type of ratios to be calculated will depend upon the purpose for which these are required. If the purpose is to study current financial position then ratios relating to current assets and current liabilities will be studied.

#### **3. Selection of Ratios:**

Another precaution in ratio analysis is the proper selection of appropriate ratios. The ratios should match the purpose for which these are required.

#### **4. Use of standards :**

The ratios will give an indication of financial position only when discussed with reference to certain standards. Otherwise one will not be able to reach at conclusions. The comparison of calculated ratios with the standards will help the analyst in forming his opinion about financial situation of the concern.

#### **5. Calibre of the Analyst :**

The ratios are only the tools of analysis and their interpretation will depend upon the caliber and competence of the analyst. The utility of ratios is linked to the expertise of the analyst.

## **6. Ratios provide only a Base :**

The ratios are only guidelines for the analyst, he should not base his decisions entirely on them. The analyst should use the ratios as guide and may try to solicit any other relevant information which helps in reaching a correct decision.

### **17.6. Ratio Analysis – use and importance**

The ratio analysis is one of the most powerful tools of financial analysis. It is used as a device to analyse and interpret the financial condition of enterprise. A ratio is known as a symptom like blood pressure, the pulse rate or the temperature of an individual. It is with the help of ratios that the financial health or weaknesses of an enterprise can be analysed.

The use of ratios is not confined to financial managers only. There are different parties interested in the ratio analysis for knowing the financial position of a firm for different purposes. Ratios have wide applications and are of immense use today. These can be discussed as follows.

#### **a) Managerial uses of Ratio Analysis**

##### **1. Helps in decision making**

Financial statements are prepared primarily for decision – making. But the information provided in financial statements is not an end in itself and no meaningful conclusion can be drawn from these statements alone. Ratio analysis helps in making decisions from the information provided in these financial statements.

##### **2. Helps in financial forecasting and planning**

Ratio Analysis is of much help in financial forecasting and planning. Meaningful conclusions can be drawn for future from these ratios. Thus, ratio analysis helps in forecasting and planning.

##### **3. Helps in communicating**

The financial strength and weakness of a firm are communicated in a more easy and understandable manner by the use of ratios. The information contained in the financial statements is conveyed in a meaningful manner to the one for whom it is meant. Thus, ratios help in communication and enhance the value of the financial statements.

##### **4. Helps in co-ordination :**

Ratios even help in co-ordination which is of utmost importance in effective business management.

##### **5. Helps in control :**

Ratio analysis even helps in making effective control of the business. Standard ratios can be compared with actuals and variances, if any, can be found to take a corrective action at the right time.

##### **6. Other Uses :**

a) There are so many other uses of the ratio analysis. It is an essential part of the budgetary control and standard costing. Ratios are of immense importance in the analysis and interpretation of financial statements.

##### **b) Utility to Shareholders / Investors :**

An investor in the company will like to assess the financial position of the concern where he is

going to invest. His first interest will be the security of his investment and then a return in the form of dividend or interest. For the first purpose he will try to assess the value of fixed assets and the loans raised against them. Long – term solvency ratios will help him in assessing financial position of the concern. Profitability ratios, on the other hand, will be useful to determine profitability position.

**c) Utility to creditors :**

The creditors or suppliers extend short-term credit to the concern. They are interested to know whether financial position of the concern warrants their payments at a specified time or not. The concern pays short – term creditors out of its current assets. If the current assets are quite sufficient to meet current liabilities then the creditor will not hesitate in extending credit facilities. Current and acid test ratios will give an idea about the current financial position of the concern.

**d) Utility to Employees :**

The employees are also interested in the financial position of the concern especially profitability. Their wage increases and amount of fringe benefits are related to the volume of profits earned by the concern. Various profitability ratios relating to gross profit, operating profit, net profit etc. enable employees to put forward their view point for the increase of wages and other benefits.

**e) Utility to government :**

Government is interested to know the overall strength of the industry. Various financial statements published by industrial units are used to calculate ratios for determining short – term, long – term and overall financial position of the concerns. In the absence of the reliable economic information, governmental plans and policies may not prove successful.

**f) Tax Audit Requirements :**

According to section 44AB of Income Tax Act every assessee engaged in any business, if his turnover exceeds Rs. 40 lakhs is required to get the accounts audited by a chartered accountant and submit the tax audit report before the due date for filing the return of income under sec 139(1). In case of a professional, a similar report is required if the gross receipts exceed Rs. 10 lakhs. Income Tax Act requires that the following accounting ratios should be given.

1. Gross profit / Turnover
2. Net profit / Turnover
3. Stock in trade / Turnover
4. Material consumed / Finished goods produced

## **17.6. Limitations of Ratio Analysis :**

Even though ratios are most powerful tools, simple to calculate and easy to understand, they suffer from some serious limitations.

### **1. Limited use of a single Ratio**

A single ratio, usually, does not convey much of a sense. To make a better interpretation a number of ratios have to be calculated.



## **2. Lack of Adequate standards**

There are no well accepted standards or rules of thumb for all ratios which can be accepted as norms. It renders interpretation of the ratios difficult.

## **3. Inherent limitations of Accounting**

Like financial statements, ratios also suffer from the inherent weakness of accounting records such as their historical nature. Ratios of the past are not necessarily true indicators of the future.

## **4. Change of Accounting procedure**

Change in accounting procedure by a firm often makes ratio analysis misleading eg : a change in the valuation of methods of inventories, from FIFO to LIFO increases the cost of sales and reduces the value of closing stock which makes stock turnover ratio and an unfavourable gross profit ratio.

## **5. Window Dressing**

Financial statements can easily be window dressed to present a better picture of its financial and profitability position to outsiders. It is very difficult for an outsider to know about the window dressing made by a firm.

## **6. Personal Bias**

Personal Bias of the analyst will play a role because different people may interpret the same ratio in different ways.

## **7. Uncomparable**

Not only Industries differ in their nature, but also the firms of similar business widely differ in their size and accounting procedures etc. It makes comparison of ratios difficult and misleading.

## **8. Price level changes**

While making ratio analysis, no consideration is made to the changes in price levels and this makes the interpretation of ratios invalid.

## **9. Ratios no substitutes**

Ratio analysis is merely a tool of financial statements. It is not a substitute of them.

## **17.8. Summary**

Ratio analysis is one of the most powerful tools of financial analysis. With the help of ratios the financial statements can be analysed more clearly and decision making is easy and effective. Ratio is a simple arithmetical expression of the relationship of one number to another. Calculation of ratios is only a clerical task whereas interpretation needs skill, intelligence and foresightedness. The interpretation can be made by single absolute Ratio, by group of Ratios, by Historical comparison, by projected Ratio, and by Inter – firm comparison. Different parties are interested in the ratio analysis such as Managers, shareholders, creditors, employees, government, and Tax authorities. Though ratios are simple to calculate and easy to understand, they suffer from some serious limitations.

**17.9 Self Assessment Questions**

1. What is meant by ratio analysis ? Discuss its objects and limitations.
2. What is the significance of ratio analysis ?
3. What are the limitations of ratio analysis ?
4. Write down the guidelines for use of Ratios.
5. How can you interpret ratios ?
6. Who are the parties interested in ratio analysis and why ?

**17.10. Reference Books:**

1. **Sharma, Gupta** – **Management Accounting.**
2. **I.M. Pande** - **Management Accounting**
3. **Manmohan & Goyal** – **Principles of Management Accounting.**
4. **Hom Green** - **Introduction to Management Accounting.**

**- Dr. Ch. Suravinda**

**LESSON - 18****CALCULATION OF RATIOS - ANALYSIS**

**18. Objective:** After going through this lesson the student can know what are the different Ratios calculated? How these ratios help different people ? and How to analyse them.

**Structure :**

- 18.1. Introduction
- 18.2. Classification of Ratios.
- 18.3. Calculation of Ratios.
- 18.4. Liquidity Ratios
- 18.5. Long-term solvently and leverage ratios
- 18.6. Profitability ratios
- 18.7. Leverage Ratios
- 18.8. Summary
- 18.9. Self Assessment Questions
- 18.10. Exercises
- 18.11. Reference books

**18.1. Introduction :**

Different people analyse Ratios for different purposes. For example : The supplier of the concern interested in liquidity of the concern, Longterm creditors are interested in solvency Ratios, share holders are interested in the profitability of the concern etc.,

**18.2. Classification of Ratios.**

Various accounting ratios can be classified on the basis of the following :

**I. Traditional classification or statement Ratios.**

- a) Balance sheet Ratios.
- b) Profit and loss Account Ratios.
- c) Mixed Ratios.

**II. Functional classification or classification According to tests :**

- a) Liquidity Ratios
- b) Leverage Ratios
- c) Activity Ratios
- d) Profitability Ratios.