



T.Y.B.COM.
SEMESTER - V(CBCS)

**FINANCIAL ACCOUNTING AND
AUDITING -VIII
COST ACCOUNTING**

SUBJECT CODE : 23107

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***Revised Syllabus of Courses of B.Com. Programme at Semester V
with Effect from the Academic Year***

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group A: Advanced Accountancy

2. Financial Accounting and Auditing Paper-VIII:

Cost Accounting

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Cost Accounting	10
2	Material Cost	10
3	Labour Cost	10
4	Overheads	10
5	Classification of Costs and Cost Sheet	10
6	Reconciliation of cost and financial accounts	10
Total		60

Sr. No.	Modules / Units
1	Introduction to Cost Accounting
	(a) Objectives and scope of Cost Accounting (b) Cost centres and Cost units (c) Cost classification for stock valuation, Profit measurement, Decision making and control (d) Coding systems (e) Elements of Cost (f) Cost behaviour pattern, Separating the components of semi- variable costs
2	Material Cost
	(i) Procurement procedures—Store procedures and documentation in respect of receipts and issue of stock, Stock verification (ii) Inventory control —Techniques of fixing of minimum, maximum and reorder levels, Economic Order Quantity, ABC classification; Stocktaking and perpetual inventory (iii) Inventory accounting Note- Simple practical problems based on Calculation of EOQ, Raw Material Turnover ratio, Preparation of stock ledger and Valuation of Inventories, based on FIFO and Weighted average cost.
3	Labour Cost
	(i) Attendance and payroll procedures, Overview of statutory requirements, Overtime, Idle time and Incentives (ii) Labour turnover (iii) Utilisation of labour, Direct and indirect labour, Charging of labour cost, Identifying labour hours with work orders or batches or capital jobs (iv) Efficiency rating procedures (v) Remuneration systems and incentive schemes. Note- Simple practical problems based on Preparation of labour cost statement Remuneration and incentive systems based on Piece work plan, Haley Premium Plan, Rowan system, Gantt's Task
4	Overheads
	Functional analysis — Factory, Administration, Selling and Distribution Behavioural analysis — Fixed, Variable, Semi-variable cost Note- Simple practical problems on Departmentalization and apportionment of primary overheads, Computation of overhead rates including Machine overhead rates Basic concepts of treatment of over/under absorption of overheads- Direct Labour method and Prime Cost method
5	Classification of Costs and Cost Sheet
	Classification of costs, Cost of Sales, Cost Centre, Cost Unit, Profit Centre and Investment Centre Cost Sheet, Total Costs and Unit Costs, Different Costs for different purpose Note- Simple practical problems on preparation of cost sheet
6	Reconciliation of cost and financial accounts
	Practical problems based on Reconciliation of cost and Financial accounts.

INTRODUCTION TO COST ACCOUNTING

Unit Structure

- 1.0 Objectives
- 1.1 Definition and Meaning of Cost Accounting
- 1.2 Concept of Cost
- 1.3 Objectives of Cost Accounting
- 1.4 Importance and Advantages of Cost Accounting
- 1.5 Limitations of Cost Accounting
- 1.6 Type of Cost

1.0 OBJECTIVES

After studying this module, you will be able to

- State the meaning and objectives of cost accounting
- Explain the merits and demerits of cost accounting
- Differentiate between cost and financial accounting
- Understand the meaning of cost centers, cost units etc.
- Know the various types of costs

1.1 DEFINITION AND MEANING OF COST ACCOUNTING

Cost Accounting is the process of accounting for all costs incurred by an organization. It is a process which begins with the recording of incomes and expenditures and ends with the preparation of the periodical accounts and statements. It accounts for cost classification and its analysis which will assist in finding out the total costs incurred for manufacturing and producing a particular unit of output with a significant amount of accuracy. In short, cost accountancy involves the gamut of identifying all costs, classifying all costs and recording them for appropriate presentation. In other words, it is the formal mechanism of computing costs incurred in the production of units or provision of services.

According to The Chartered Institute of Management Accountants (CIMA), London, Cost Accounting is ‘the establishment of budgets, standard costs and actual costs of operations, processes, activities or products and the analysis of variances, profitability or the social use of funds’.

Management is not just interested in finding the total costs incurred in making of a product or providing of a service. Management is also interested in knowing the cost incurred behind raw materials, the expenses incurred in conversion of raw materials into finished goods by usage of labour and all the costs incurred in overhead or miscellaneous expenses right from start of manufacturing upto the time the goods are sold. To identify all these elements, cost accounting comes into picture as it exactly tells the quantitative aspects of the costs. This identification helps the management to decide the future course of action and proper decision making with respect to that particular product.

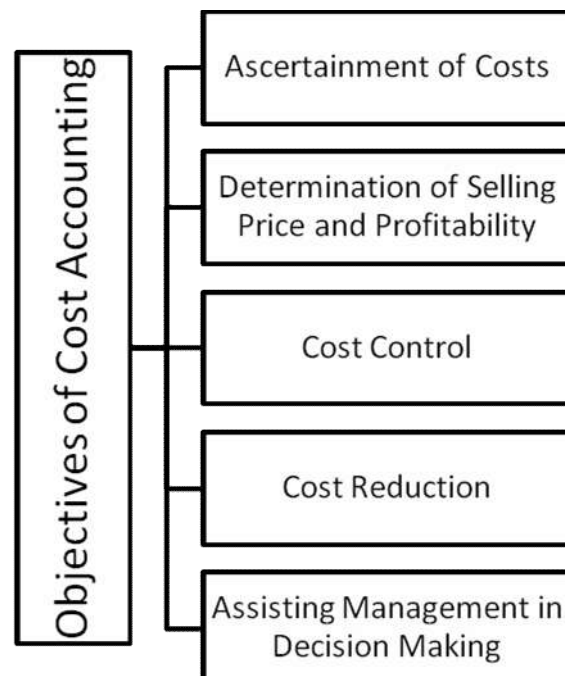
1.2 CONCEPT OF COST

The Chartered Institute of Management Accountants (CIMA), London defines cost as ‘the amount of expenditure (actual or notional) incurred on or attributable to a specified thing or activity’.

Cost is the amount of resources invested in exchanging of goods or services.

The concept of cost consists of ascertaining total cost and also cost per unit. However, arriving at an exact total or per unit cost is very difficult and a time consuming process. By the time an exact cost is arrived at, the very purpose of finding the cost will lose all its value. Hence, cost accounting is based on estimates of costs rather than exact costs.

1.3 OBJECTIVES OF COST ACCOUNTING



1. Ascertainment of Costs

The main objective of Cost Accounting is cost ascertainment for each cost object. This cost object may be a unit of manufacture, a particular job or an operation or a process of manufacture, or a department or a service.

2. Determination of Selling Price and Profitability

Cost Accounting helps in determining the total cost. Management can then decide the estimated and expected profits on the costs and arrive at the selling price. Price fixation becomes possible due to cost accounting.

3. Cost Control

Once the costs are identified, management can maintain a proper discipline in expenditures. Management can set a bar on expenses and any deviation from the pre-determined parameter can be controlled immediately. Desired results can be achieved by controlling of costs.

4. Cost Reduction

Identification of costs which are not necessary in the manufacturing process can help in reducing or totally eliminating these costs. All activities which do not add value to the process of manufacture can be eliminated without affecting the basic characteristics of the entire product or process.

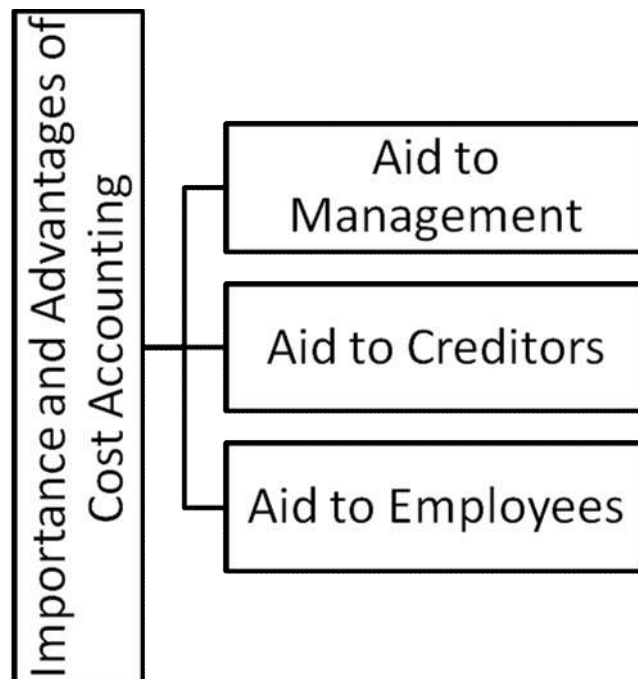
5. Assisting Management in Decision Making

Cost Accounting provides the management with relevant information thereby assisting them in planning, implementing, measuring, controlling and evaluating the activities of the concern.

Test Yourself

1. _____ accounting assists in identifying and controlling costs
 - a. Financial Accounting
 - b. Cost Accounting
 - c. Management Accounting
 - d. None of the above
2. The objectives of cost accounting are
 - a. Ascertainment of Costs
 - b. Identification of Costs
 - c. Determination of Selling Price
 - d. All of the above
3. Cost Accounting is based on
 - a. Actual Costs
 - b. Estimated Costs
 - c. Both Estimated and Actual Costs
 - d. None of the above

1.4 IMPORTANCE AND ADVANTAGES OF COST ACCOUNTING



1. Aid to Management

- a) Cost Accounting helps in periods of trade depression when the organization cannot afford to incur losses unchecked.
- b) It also helps organisations at the time of stiff competition from peers which helps in survival and growth of the organization. At this time, cost control plays a significant role.
- c) It helps the management in making estimates of costs well in advance so that proper price fixation can be done and profitability be maintained at all points in time.
- d) Wastages can be avoided and unnecessary costs can be eliminated by the help of cost accounting
- e) Intra-firm costs can be compared if there is a robust cost accounting policy followed by the organization. Costs can be channelized to a product which gives higher returns to the organization as compared to those products which yields lesser returns.
- f) Efficiency of the overall organization can be improved with the help of cost accounting.

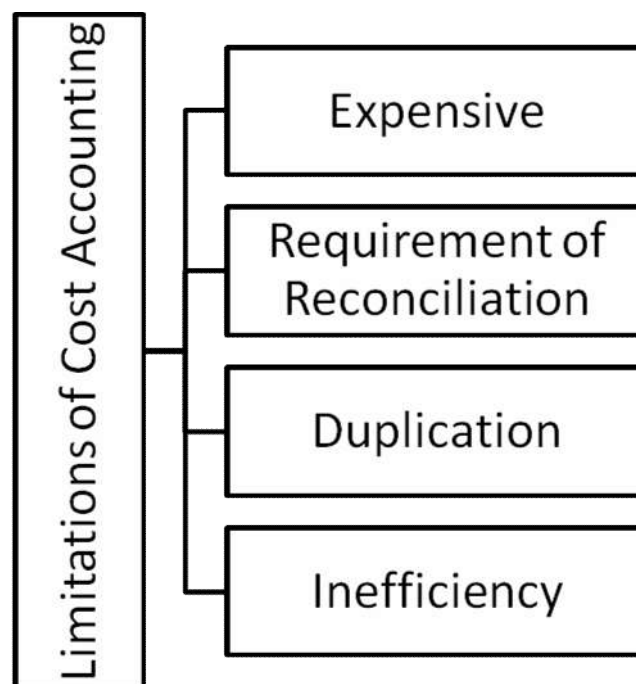
2. Aid to Creditors

Creditors and Lenders are interested in cost accounting policies followed by the organization because that helps them to form a base about the company's stability and practices with regards to costs. A proper decision can be taken by the creditors and lenders about loans and credit period to be offered to the organization.

3. Aid to Employees

If the costs in the organization are reduced, the ultimate benefit is reaped by the employees. It is in the interest of the employees that cost accounting is followed by all organisations.

1.5 LIMITATIONS OF COST ACCOUNTING



1. Expensive

It is a costly affair because analysis, allocation of costs require a significant amount of extra work which in turn results in excess money.

2. Requirement of Reconciliation

The results shown by cost accountants differ from those shown by financial accountants as the policies followed by them differ to a great extent. It is therefore important to reconcile the differences at each stage of accounting.

3. Duplication

Financial Accountancy and Cost Accountancy are different branches of accountancy indicating the same things about an organization i.e profits, costs and efficiency. Hence, introduction of cost accounting itself leads to duplication of work by the accounts department.

4. Inefficiency

Before implementing a robust cost accounting system in the organization, the employees and the management must be thoroughly trained in cost accounting. Costing itself does not control costs, but proper usage of costing does. Sometimes, due to lack of expert knowledge about cost accounting leads to inefficient system in the organization.

Test Yourself

1. What are the advantages of cost accounting from the following?
 - a. Helps in cost control
 - b. Helps in inventory control
 - c. Elimination of wastages
 - d. All of the above

2. Identify the limitations of cost accounting:
 - a. Assists creditors in decision making
 - b. Assists management in decision making
 - c. Expensive process
 - d. Is important for the National Economy

3. What are the drawbacks of cost accounting?
 - a. Results of financial and cost accounting may differ
 - b. Costing system itself does not control costs
 - c. There is duplication and multiplicity of work
 - d. All of the above

Difference between Financial Accounting and Cost Accounting

Sr. No.	Point of Distinction	Financial Accounting	Cost Accounting
1	Objectives	It provides information about the operational performance and financial position of the business	It provides information of ascertainment of cost to control it and make proper decisions
2	Recording of transactions	It classifies, records and analyses the transactions in a subjective manner i.e according to the nature of expense	It records the expenditure in an objective manner i.e. according to the purpose for which the costs are incurred
3	Recording of data	It records historical data. It deals with actual facts and figures.	It makes use of both historical and pre-determined estimated costs. It deals with partial facts and partial estimates.

4	Users of information	Financial Accounts is used by Government, Shareholders, Creditors, Financial Analysts etc.	Cost Accounts is used by internal management generally. However, there may be instances when regulatory authorities may also seek such information.
5	Analysis of Costs and Profits	It gives the final profits or losses of the organization.	It provides a detailed bifurcation of cost and profit of each product, process, job, contract etc.
6	Time Period	Financial Accounts and Statements are prepared usually for a year	Cost Accounts and Statements are prepared as and when the need arises.
7	Presentation of Information	A set format (as prescribed by the regulatory authorities) is used for presentation of financial information	There are no set formats. The presentation of information may differ from organization to organization, sector to sector.
8	Valuation of stock	Stocks are valued at cost or market value, whichever is lower	Stocks are valued at cost only

Test Yourself

- Which of the following deals with the accounts of the entire business?
 - Financial Accounting
 - Cost Accounting
- Which of the following provides a detailed system of control for materials, labour and overhead expenses?
 - Financial Accounting
 - Cost Accounting
- In which accounting method are accounts kept as per Companies Act, 2013 and Income Tax Act, 1961?
 - Financial Accounting
 - Cost Accounting

Cost Object

It is anything for which a separate measurement and analysis of cost is required. It may be for a service, a project, a customer, a new brand of product etc.

Cost Unit

It is a device for the purpose of breaking up or separating of costs into smaller sub-divisions for a particular good or service. It is the unit of quantity of product or service.

For example, in an automobile sector, number of vehicles is the cost unit. In a power company, kilowatt hour is the cost unit. Similarly, for a hospital, patient days is the cost unit and for cable wires, metres or kilometres becomes the cost unit.

Cost Centre

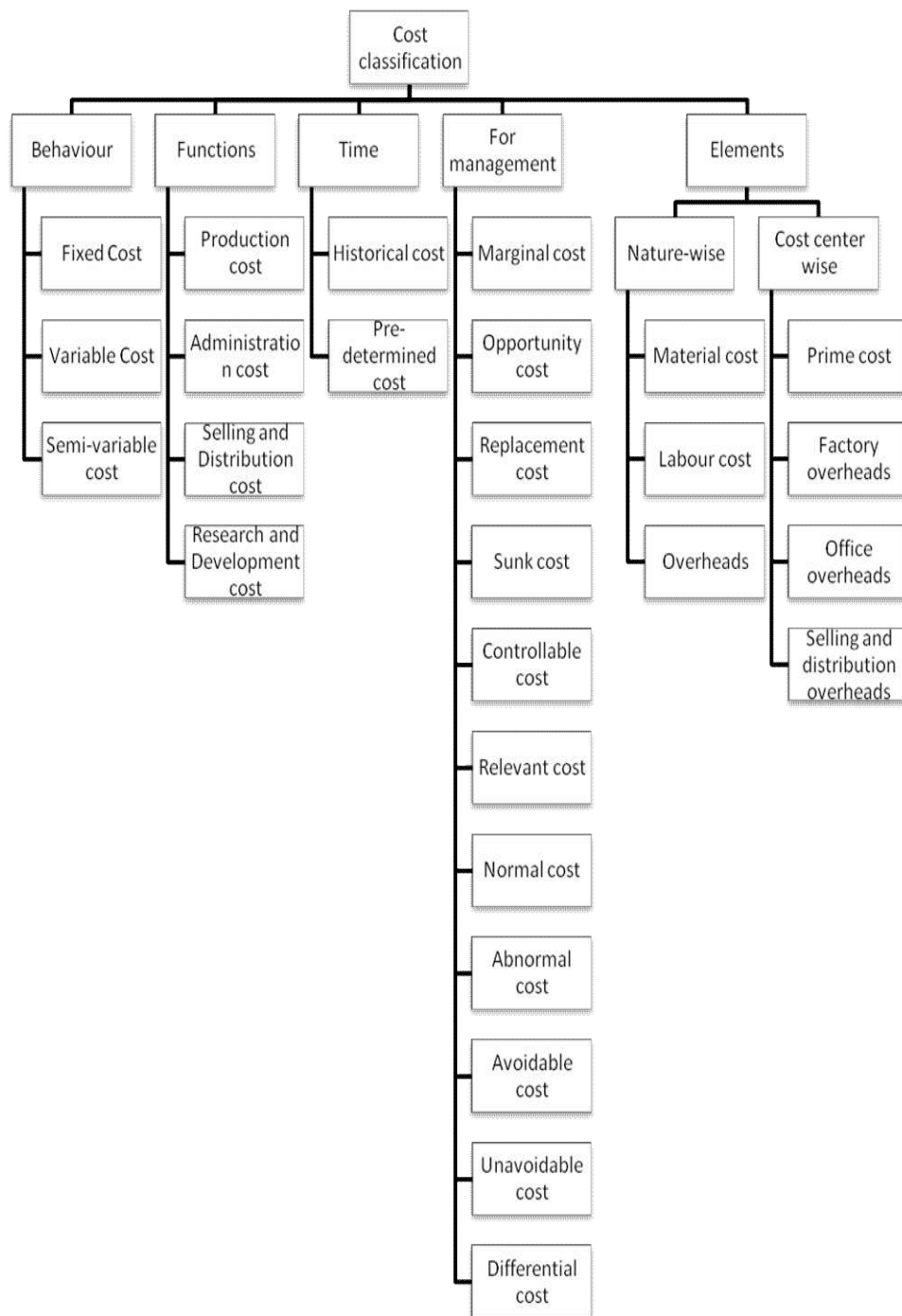
Cost Centre refers to a particular area of activity which adds some cost to the product. It is like a separate department or sub-department for an organization. It is a location or an item of equipment or a group of these for which cost may be ascertained and used for the purpose of cost control.

Cost Drivers

Total cost of any product depends on cost drivers. It is a factor or variable which affects the level of cost. There may be different types of cost drivers such as number of units etc. A slight increase or decrease in a cost driver will result in increase or decrease in the total cost of the product.

For example, number of purchase orders or number of tests performed are cost drivers since the higher number of orders or tests, higher will be the cost incurred.

1.6 TYPES OF COSTS



Costs based on Behaviour:

1. Fixed Costs

These costs do not vary with the change in the volume of production in the short run. They are not affected in the temporary period of time. They are also known as period costs. For example, rent, depreciation etc.

2. Variable Costs

These costs vary with the level of output. Any increase or decrease in the level of activity will lead to simultaneous increase or decrease in costs. For example, direct material, direct labour etc.

3. Semi Variable Costs

These costs are a mix of both fixed and variable costs. Thus, they vary partly due to fluctuations. Fixed component remains unchanged whereas variable component increases in proportion to the output. For example, telephone bill, gas and electricity bills etc.

Costs based on Functions:

1. Production Costs

These costs are indirect expenses incurred in the factory and for the running of the factory. For example, rent of factory, power incurred in the factory premises etc.

2. Administration Costs

These costs are incurred in conjunction with management and administration of business. For example, office rent, office electricity bills etc.

3. Selling and Distribution Costs

These are indirect costs relating to selling and marketing of goods. For example, salaries and commission to salesman, expenses on advertisements etc.

4. Research and Development Costs

These costs are incurred for undertaking research to make new products or improvements in the existing products. For example, costs for solving technical problems in the products, costs for commercialization of a product etc.

Costs based on Time:

1. Historical Costs

They are costs already incurred in the past in relation to the product.

2. Pre-determined Costs

These are costs estimated in advance of computed well before production commences.

Costs for Management:

1. Marginal Cost

It is the total of all variable costs. It is the additional cost incurred for one additional unit of output.

2. Opportunity Cost

Opportunity Cost is the opportunity lost. It is the value of the next best alternative foregone for manufacturing the foremost alternative. For

example, if a property is used for production instead of earning money by giving it on rent, the rent foregone is opportunity cost.

3. Replacement Cost

It is the cost of an asset in the current market for replacing the product. It is the amount of money a business entity must spend to replace an essential asset of the organization like a property etc.

4. Sunk Cost

These costs are already incurred in the past and play no significant role while decision making. However, the management makes an effort to recover these costs over a span of time to break even.

5. Controllable Cost

Costs that can be typically controlled by a cost accountant are known as controllable costs. For example, costs incurred on material and labour can be controlled by the factory or shop manager i.e. the immediate supervisor.

6. Relevant Cost

It is the cost which is relevant for a specific purpose or a particular product. Only relevant costs are analysed by management while taking decisions.

7. Normal Cost

It is the cost which is usually incurred by an organization to manufacture a given level of output under normal circumstances.

8. Abnormal Cost

It is not normally incurred under normal situations. It is a sudden unexpected cost incurred by an organization during the process of manufacturing. Such costs are not usually accounted for, right at the beginning. It is charged to costing profit and loss account.

9. Avoidable Cost

Avoidable costs are those costs which should not have been normally incurred if the performance of the company is at its optimum level.

10. Unavoidable Cost

Such costs cannot be explicitly avoided. They are incurred even if the organization works at its optimum level with highest efficiency.

11. Differential Cost

It is the difference between the costs that an organization would incur between 2 alternative decisions or proposals or due to a change in the output levels of manufacturing.

Costs based on Nature:

1. Material Costs

Materials which are present in the finished product or which can be significantly identified in the product is known as material costs. For example, plastic used in plastic toys.

2. Labour Costs

Costs paid to the labour force for working directly on the manufacture of the product is known as labour costs. For example, wages paid to workers.

3. Overhead Costs

These costs may not be directly attributable to the product but incurred to support the business activity of the product. For example, lighting, oil expenses etc.

Costs based on cost-center:

1. Prime Costs

It is the sum total of direct materials, direct labour and direct expenses incurred by an organization.

2. Factory Overheads

All costs incurred in the factory premises viz factory rent, factory electricity etc are factory overheads.

3. Office Overheads

All costs incurred in the administrative office of an organization viz office stationery, office electricity etc. are office overheads.

4. Selling and Distribution Overheads

All costs incurred to sell a product viz. advertisement costs, depreciation on delivery vehicle etc. are selling and distribution overheads.

Test Yourself:

1. Depreciation is an example of
 - a. Fixed Cost
 - b. Variable Cost
 - c. Semi-variable Cost
 - d. None of the above
2. Which cost increases with the level of output?
 - a. Fixed Cost
 - b. Variable Cost
 - c. Historical Cost
 - d. Sunk Cost
3. Office peons salary will fall under
 - a. Factory Cost
 - b. Prime Cost
 - c. Selling and Distribution Cost
 - d. Administration Cost



MATERIAL COST

(INVENTORY CONTROL)

Unit structure

- 2.0 Objectives
- 2.1 Material Cost: The Concept
- 2.2 Material Control Procedure
- 2.3 Documentation : Material Requisition
- 2.4 Stock Ledger, Bin Card
- 2.5 Stock Levels
- 2.6 Inventory Control Systems : Economic Order Quantity (EOQ)
- 2.7 Summary
- 2.8 Exercise

2.0 OBJECTIVES

After studying the unit the students will be able to

- Define the concept of inventory and material costing and explain the various costs related to Inventory.
- Explain the material purchase procedure.
- Discuss about the function in storing the material.
- Know the techniques of Material Control.
- Solve the practical problems related to Stock Levels, EOQ and Inventory Turnover Ratio.

2.1 MATERIAL COST: THE CONCEPT

Material means stock of items kept in reserve for certain period of time. It includes raw materials, work-in-progress or semi-finished goods, finished goods and spare parts for the maintenance of equipment etc. Raw materials are those inputs that are converted into finished products. Work in progress represents semi-finished goods that requires some work before they are ready for sale. Finished products are those which are ready for sale.

Inventory is the physical stock of items that a business or production organisation keeps in hand for efficient running of its production function.

2.1.1 Definition of Inventory

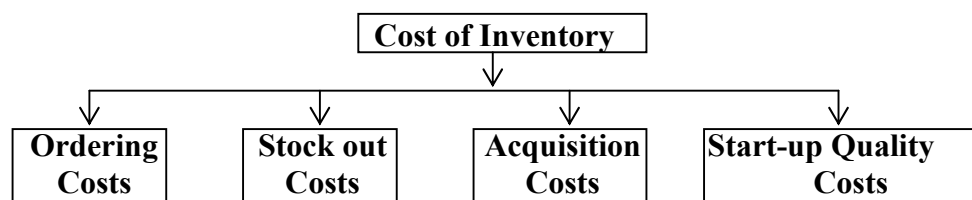
According to **Gordon B. Carson**, inventory includes raw materials and component parts. Inventories consist of raw material, component parts, supplies and finished assemblies which an organisation purchases from an outside source and parts, assemblies and finished products which the company manufactures itself. In simple words inventory means 'stock items' or items in stock.

It is very essential that material of the correct quantity and quality is made available as and when required, with due regard to economy in storage and ordering costs, purchase prices and working capital. Inventory control involves (i) Assessing the items to be held in stock. (ii) Deciding the extent of stock holding of items individually and collectively. (iii) Regulating the input of stock into the store houses and (iv) Regulating the issue of stock from the stores houses.

2.1.2 COST OF INVENTORY / COST OF MATERIAL

Inventory control is generally concerned with the procurement of raw-materials and purchased parts (i.e. components) and their supply to the production departments. Supplies and stores are the indirect materials. They do not form a part of the finished products. They are closely related to the maintenance services and so they should be controlled by the maintenance department. Work-in-progress is primarily concerned with the manufacturing department, because it is results from the various operations performed on the shop. It is proper to assign the control functions of work-in-progress to manufacturing department.

Every business organisation, however big or small, has to maintain inventory and it constitutes as integral part of the working capital. It has been estimated that inventory in Indian industries constitutes more than 60% of current assets. Inventories are significant elements in cost process. Inventories require a significant investment, not only in acquiring them but also in holding them. The various types of cost of inventory are as follows :



1. Ordering Costs: Each time we purchase a batch of raw material from a supplier, a cost is incurred for processing the purchase order, expediting, record keeping, and receiving the order into the warehouse. Each time we produce a production lot, a changeover cost is incurred for changing production over from a previous product to the next one. The larger the lot sizes, the more inventory we hold, but we order fewer times during the year and annual ordering costs are lower.

2. Stock out Costs: Each time we run out of raw materials or finished-goods inventory, costs may be incurred. In finished-goods inventory, stockout costs can include lost sales and dissatisfied customers. In raw-materials inventory, stockout costs can include the cost of disruptions to production and sometimes even lost sales and dissatisfied customers. Additional inventory, called **safety stock**, can be carried to provide insurance against excessive stockouts.

3. Acquisition Costs: For purchased materials, ordering larger batches may increase raw-materials inventories, but unit costs may be lower because of quantity discounts and lower freight and materials-handling costs. For produced materials, larger lot sizes increase in-process or finished-goods inventories, but average unit costs may be lower because changeover costs are amortized over larger lots.

4. Start-up Quality Costs: When we first begin a production lot, the risk of defectives is great. Workers may be learning, materials may not feed properly, machine settings may need adjustment, and a few products may need to be produced before conditions stabilize. Larger lot sizes mean fewer changeovers per year and less scrap.

2.1.3 IMPLICATIONS OF HOLDING INVENTORIES :

Certain costs increase with higher levels of inventories. The main implications of holding inventories are as follows :-

1. Carrying Costs : Interest on debt, interest income foregone, warehouse rent, cooling, heating, lighting, cleaning, repairing, protecting, shipping, receiving, materials handling, taxes, insurance, and management are some of the costs incurred to insure, finance, store, handle, and manage larger inventories.

2. Cost of Customer Responsiveness : Large in-process inventories clog production systems. The time required to produce and deliver customer orders is increased, and our ability to respond to changes in customer orders diminishes.

3. Cost of Coordinating Production : Because large inventories clog the production process, more people are needed to unsnarl traffic jams, solve congestion-related production problems, and coordinate schedules.

4. Cost of Return on Investment (ROI) : Inventories are assets, and large inventories reduce return on investment. Reduced return on investment adds to the finance costs of the firm by increasing interest rates on debt and reducing stock prices.

5. Reduced-Capacity Costs : Inventory represents a form of waste. Materials that are ordered, held, and produced before they are needed waste production capacity.

6. Large-Lot Quality Cost : Producing large production lots results in large inventories. On rare occasions, something goes wrong and a large part of a production lot is defective. In such situations, smaller lot sizes can reduce the number of defective products.

7. Cost of Production Problems : Higher in-process inventories camouflage underlying production problems. Problems like machine breakdowns, poor product quality, and material shortages never get solved.

2.2 MATERIAL CONTROL PROCEDURE

There is a purchase department which carries out the function of purchases of materials. The purchase manager is responsible for ensuring the items ordered are of the standard quality, lower cost and received in time.

2.2.1 MATERIAL PURCHASE PROCEDURE

The purchase procedure vary with different business firms. The purchase procedure is given below:

a) Purchase Requisition:

Purchase requisition is the formal request made by the storekeeper to the purchase department for giving order of raw materials or stores. It serves the dual purpose of authorizing the purchase department to make purchases and provides a record of the description and quantity of materials required. It also fixes the responsibility of the department or personnel making purchase requisition.

b) Purchase order:-

After receiving the duly approved requisition, the purchase department has to place an order with a supplier. It is an offer to buy certain materials at stated price and terms. For routine purchases, the order is placed through established supplies. In other cases, the purchase department may ask for bids or send out request for quotation before placing an order. The purchase order is a formal contract for the supply of materials. Copies of the purchase order are sent to the departments concerned.

c) Receiving and Inspection of materials:

The stores department is responsible for taking delivery of packages and to get a physical verification of the contents. When the materials are received, the stores official gets the packages, open them and make a detailed verification of the contents. After the contents of the packages are checked, the details are entered into a Goods Received Note. Copies of the G.R.Note are issued to the supplier, purchase and accounts department, where the factory has to test the materials received for quality and specifications. It has to ensure that the quality of materials is as per purchase order.

d) Approval of Invoices and Payment

Invoice received by the purchase department is forwarded to the Accounts department for payment with their recommendation. Accounts department has to check the authenticity, arithmetical accuracy and G. R. Note in order to make sure that the goods are as per purchase order. When it is found that everything is in order, it is passed for payment by the Accountant. Then the cashier will draw the cheque as per terms and

conditions of the purchase order and invoice and finally payment is made to the supplier.

2.2.2 STORAGE OF MATERIALS

After purchase, receipt and inspection of materials, the next important step is storage of materials. It is known as storekeeping. It is physical storage of materials. The storekeeper is appointed to look after this work in the stores department. The storekeeper should have the technical knowledge and experience in stores routine and storekeeping. He has to ensure regular supply event overstocking and under stocking and minimize the cost of materials. The storekeeper has to perform the following functions:

- i) Receipts of materials.
- ii) Issue purchase requisitions.
- iii) Maintain proper record of receipt, issue and balance stock of materials.
- iv) Placing and arranging materials at proper place.
- v) Issue of materials against proper authorization.
- vi) Minimizing storage handling and maintaining costs.
- vii) Ensure that the stock neither exceed maximum level or go below the minimum level.

2.3 DOCUMENTATION

MATERIAL REQUISITION

Department	Serial No.....
Job No.	Date
Code No. Description Quantity Weight Bin Card No. Stores Ledger Folio Rate Amount	
Rs.	
Authorised by	Received by.....
Storekeeper's Signature	Checked by

2.4 STOCK LEDGER CARDS & BIN CARD

STOCK LEDGER CARD: It is also known as Stores Ledger Cards/ Material Ledger Cards. It refers to tracking the inventory levels in the company during a given period of time. It provides a complete details as to the date, time, value, vendor, types of materials flowing in and out of the company. It is maintained on continuous basis by the cost accountant.

FORMAT OF STOCK/ STORES/ MATERIAL LEDGER ACCOUNT:

STORES LEDGER

Name of the Article..... Minimum Qty.
 SymbolUnit.....
 Maximum Qty.
 Bin No. Previous Year's
 Bin Card No. Consumption.....
 Period of Delivery.....

ORDERED					QUANTITY			AMOUNT							
Quantity	Order No. & Date	Date Received	Date	Reference	Receipt	Issue	Balance	Receipt		Issue		Balance		Rate	Remarks
								₹.	P.	₹.	P.	₹.	P.		
RESERVED															
Quantity	Job No.	Date Issued													

Source: Image downloaded from <https://commerceiats.com/perpetual-inventory-system/>

BIN CARD: It is maintained by the storekeeper providing details where the material is kept ie. The shelf number, the box number with labelling codes. It shows the various quantities of the given material of each type with receipt and issued details. It also refers to sorting of the material into different categories and bins for easy accessibility.

FORMAT OF BIN CARD:

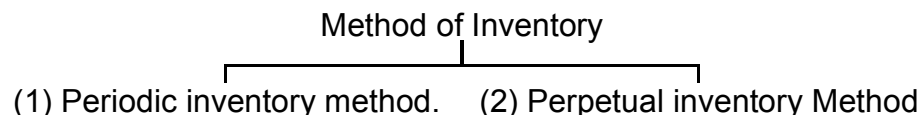
Bin Card Material Code: Material Description: Location: Unit of Measurement: Maximum Level: Minimum Level: Reorder Level:						
Date	Doc No.	Received from/Issued to	Receipt	Issue	Balance	Verification with SL Date & Verified by

Source: Image downloaded from <https://commerceiats.com/perpetual-inventory-system/>

NOTE: Stock Ledger Cards are maintained by the cost accountant involving quantity and value both while Bin Card is maintained by storekeeper maintain quantities alone.

2.4.1 METHODS OF STOCK TAKING

Methods of taking inventories / stock



1. Periodic inventory method :

Under this method of taking inventories, value of stock is determined by physical counting of the stock on the accounting date of preparation of the final accounts. It is possible that stock taking may take a week or so in large enterprises and purchases and sales may have to be suspended for that period to get correct figure of closing inventory. This method of ascertaining the value of stock at the end of the year is also known as annual stock taking. Thus this method is based physical stock taking. It provides data once in a year is simple and economical method of stocktaking can be adopted in small concerns, but it does not provide basis for control.

2. Perpetual Inventory Method :

Perpetual inventory defined as a system if records maintained by the controlling department, which reflects the physical movements of stock and their current balance. Under this method stock registers are maintained to make a record of the physical movements of stock and their current balance. Stores ledger is maintained to keep a record of the receipt and issue of the materials and also reflects the balance in store. Similarly, work-in-progress ledger is maintained to give the value of work-in-progress on hand and a finished goods ledger is maintained to know the value of finished goods on hand. Thus this system provides a running record of inventories on hand at any time. To ensure the accuracy of perpetual inventory records physical verification of the inventory is made by a program of continuous stock taking.

It is possible that the balance of stock by the perpetual inventory may differ from the actual balance of stock as ascertained by physical verification. Any difference noted between actual stocks as disclosed by the physical verification and the stocks shown by stock records should be investigated and rectification made then and there. If the physical verification reveals that actual balance of stock, is more than the balance shown by the stores ledger or work-in-progress ledger or finished goods ledger debit note is prepared and stock record are adjusted accordingly so that balance may reconcile with actual balance. A Stock Adjustment Accounts is prepared and debited with the shortage of stock and credited with surplus.

Continuous stock taking is an essential feature of the perpetual inventory system. But the two terms, perpetual inventory and continuous stock taking should not be taken as one; perpetual means the system of stock records and continuous stock taking whereas continuous stock taking means only the physical verification of stock records with actual stocks.

In continuous stock taking, physical verification is spread throughout the year. Every day 10 to 15 items are taken at rotation and checked so that surprise, element in short verification is maintained and each item is checked for a number of times during the year. On the other hand, surprise element is missing in case of periodical checking because checking is usually done at the end of the year. In short this method is based on records. It requires a lot of recording and is thus expensive. It can be adopted only in big concerns. It provides data on running basis and thus facilitates the preparation of financial statements at shorter intervals. It also provides basis for control by investigation the basis for control by investigation the discrepancies arising from the comparison of physical stock with their book values.

Difference between Periodic inventory and Perpetual inventory.

The following are the main differences between the two methods of taking inventory.

Periodic Inventory	Perpetual Inventory
1. It is based on physical stocktaking	1. It is based on records.
2. It provides data periodically i.e. once in year.	2. It provides the data on running basis and thus facilitates the preparation of financial statements at shorter intervals.
3. It does not provide basis control.	3. It provides basis for control by investigating the discrepancies arising from the comparison of physical stock with book values.
4. It is simple and economical method of taking inventory and can be adopted in small concern.	4. It is expensive as it requires a lot of recording due to an elaborate method of taking inventory. It can be adopted by big concerns only.

2.5 STOCK LEVELS

Regular availability of required stocks act as a bridge between production and sales department. To ensure the company is neither overstocked or falls under stock at any given point of time maintaining optimum stock level is important. A manufacturing concern maintains three types of stock

i.e raw materials, work in process and finished goods while a trading concern generally deals with stock of finished goods alone. While deciding on the stock levels to be maintained factors such as storage space, cost of inventory, lead time, carrying costs etc too are considered.

The four different stock levels are as follows:

1. Re-Order Level: It refers to that level of point where the required stock is reordered. It generally lies between the minimum and maximum stock levels to avoid abnormal situations or stock outs. The formula is as below-

Reorder level of stock = Maximum Re-Order period x Maximum Usage

OR

Reorder level of stock = Minimum Level + (Average rate of consumption x Average lead time)

2. Minimum Level: It refers to that level of stock which needs to be maintained throughout to ensure there are no hindrances in the production process.

Minimum Stock Level = Re-Order Level - (Average rate of consumption x Average lead time)

OR

Minimum Stock = Reordering Level – (Normal Consumption x Normal Reordering Period)

3. Maximum Level: As the name itself suggests it is the maximum level of stock quantity held by the company at the given point of time. It is the upper threshold limit. **Maximum Stock Level = Reordering Level + Reordering Quantity – (Minimum Consumption x Minimum Reordering period)**

4. Danger Level: It refers to that level below which the quantity of stock should not fall. **Danger Level = Average Consumption x Lead time for emergency purchases.**

5. Safety/ Buffer Stock: It refers to that contingency stock that shall be maintained to meet unwarranted or last minute emergencies.

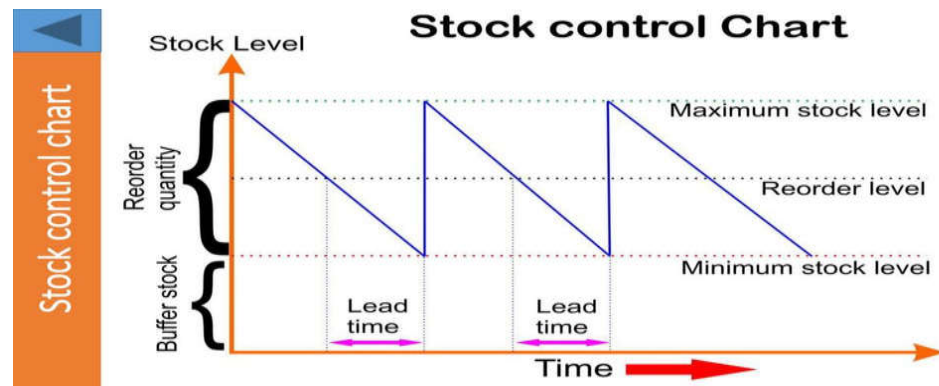
6. Lead Time / Re-order Period: It refers to time gap between placing an order and receiving an order.

Other Terms:

1. Average Consumption: $\frac{\text{Minimum Consumption} + \text{Maximum Consumption}}{2}$

2. Average Lead Time = $\frac{\text{Minimum Lead time} + \text{Maximum Lead time}}{2}$

2.5.1 STOCK CONTROL CHART



Source: <https://resource.cdn.icaai.org/38596bos28170mod1-cp2.pdf>

2.5.2 ILLUSTRATIONS

1. Calculate minimum stock level, maximum stock level, and re-ordering level:
 - a. Maximum Consumption = 450 units per day
 - b. Minimum Consumption = 270 units per day
 - c. Normal Consumption = 285 units per day
 - d. Reorder period = 10-15 days
 - e. Reorder quantity = 3,000 units
 - f. Normal reorder period = 13 days.

Solution:

1. Reordering Level = Maximum Consumption x Maximum Reorder period
 $= 450 \text{ units} \times 15 = 6,750 \text{ units}$
2. Minimum Stock = Reordering Level – (Normal Consumption x Normal Reordering Period)
 $= 6,750 - (285 \times 13) = 6,750 - 3,705 = 3,045 \text{ units}$
3. Maximum Stock Level = Reordering Level + Reorder Quantity – (Minimum Consumption x Reorder period)
 $= 6,750 + 3,000 - (270 \times 10) = 6,750 + 3,000 - 2,700 = 7,050 \text{ units.}$

2. Calculate for each component: Minimum Stock Level, Maximum Stock Level, Average Stock.

Material Cost

	Component A	Component B
Normal Usage	35 units per week	30 units per week
Maximum Usage	50 units per week	40 units per week
Minimum Usage	25 units per week	20 units per week
Re-Order quantity	150	100
Re- order Period	4-6 weeks	2-4 Weeks

Solution:

- Reordering Level = Maximum Consumption x Maximum Reorder period
Component A = 50 units X 6 = 300 units
Component B = 40 units X 4 = 200 units
- Minimum Stock = Reordering Level – (Normal Consumption x Normal Reordering Period)
Component A = 300 – (35 X 5)* = 125 units
Component B = 200 units - (30 X 3)= 110units
(Note when normal re-ordering period is not given use average lead time i.e (Minimum lead time + Maximum lead time)/2 i.e. Component A (4+6)/2 = 5 weeks.
- Maximum Stock Level = Reordering Level + Reorder Quantity – (Minimum Consumption x Reorder period)
Component A = 300 + 150 units – (25 X 5)* = 325 units
Component B = 200 + 100 units - (20 X 3) = 240 units
- Average Stock = $\frac{\text{Minimum Stock} + \text{Maximum Stock}}{2}$

Component A = (125 + 325)/2 units = 225 units

Component B = (110 + 240)/2 units = 175 units

2.6 INVENTORY CONTROL SYSTEMS OR TECHNIQUES:

Various techniques are used in controlling the inventories. Some popular and important techniques are as under :

- Re-order Point (ROP).
- Economic Ordering Quantity (EOQ).
- ABC Analysis.

A. RE-ORDER POINT (ROP) :

Receiving and issuing of inventories are the common and recurring phenomena in a manufacturing organisation. When the inventories fall below a particular point, they are replenished by the fresh purchases. Re-order point (ROP) is the point when the inventories have to be replenished by fresh order. It fundamentally deals with 'when to order' or to replenish the inventories.

Re-order point is a stock level at which fresh supplies of materials should be ordered. The level is fixed somewhere between minimum level and maximum level. It is fixed in such a way that fresh supply of materials are received before the level reaches the minimum level. The re-order point also called re-order level depends upon two factors:

(a) Maximum consumption and (b) Lead time i.e. the anticipated time lag between the dates of issuing orders and receiving supplies. The formula for calculating re-order level is :

Re-order Level = Maximum usage $\times$ Minimum re-order period.

Re-order Quantity : Re-order quantity is the quantity for which an order is placed when stock reaches the re-order level. The term is used generally in synonymous with the Economic Order Quantity since order is placed only in such size which will be economical for the enterprise in all respect.

B. ECONOMIC ORDER QUANTITY :

The Economic Order Quantity (also known as re-order quantity) refers to the size of the order which gives the maximum economy in purchasing any material. It is an optimum or standard order size. When the stock reaches the recorder level, the company should give a fresh order of optimum size.

This quantity is also called "Economic Purchase Quantity, or Economic lot size, or optimum lot size or Minimum Cost Inventory."

In fixing the economic order quantity, the following costs are considered:

1. Ordering Cost : This is the cost of placing an order with the supplier and includes cost of stationery, salary of those who are engaged in placing a order and in receiving and inspecting the materials. It is a fixed cost and therefore cost of placing an order varies from time to time depending upon the number of order placed and the quantity of items ordered. The number of orders increase, the ordering cost goes up and vice-versa.

2. Inventory Carrying Cost : It is the cost of holding the stock in storage and includes interest on investment, obsolescence losses, store keeping cost, such as rent of warehouse, salary of store keeper, stationery used in maintaining records of stores, etc, insurance cost, deterioration and wastage of material. The larger the volume of inventory, the great will the inventory carrying cost and vice-versa.

The above two costs are of opposite nature. If for example, an attempt is made to reduce of inventory carrying cost by holding the stores as low as possible, the number of orders will increase and consequently the ordering cost will go up. On the other hand, if orders are placed for a larger quantity, the inventory carrying cost will increase and ordering cost, the economic order quantity (EOQ) is fixed to keep the aggregate cost to the minimum.

Assumptions of Economic Order Quantity (EOQ) : The EOQ model is based on the following assumptions:

(i) There is only one product involved; (ii) Annual usage (demand) requirements are known; (iii) Usage is spread evenly throughout the year so that the usage rate is reasonably constant; (iv) Lead time does not vary; (v) Each order is received in a single delivery and (vi) There are no quantity discounts.

Precautions in Applying EOQ : The following precautions are necessary in applying E.O.Q.

1. Simplification of Routine : If the E.O.Q. formula tells us that 13 orders have to be placed in a year, we may place 12 orders, i.e. once a month.

2. Ordering in Package Sizes : Many goods are packed in units of one gross. If figure shows a quantity of 11 dozens, it should be changed to 12 dozens.

3. Economical Freight Rates : If the mathematical figure gives 9/10th of a lorry or rail wagon load, it is better to increase the quantity to have one full lorry load or one full wagon load. This would be cheaper, because the full wagon load rates would be lower than transporting the material as smalls.

4. Perishable Articles : For perishable articles whose shelf-life is very low, E.O.Q. should be very much less than the theoretical figure and should be based on practical considerations.

5. Seasonal Articles : For articles of a seasonal nature, e.g., cotton or groundnuts or oilseeds, bulk purchases during the season will be cheaper than purchases based on E.O.Q.

6. Bulk Purchases : In certain cases, considerable discounts would be available for bulk purchases. This should be compared to the savings as a result of the application of E.O.Q. formula and a decision should be taken based on which is cheaper.

7. Import of Materials : E.O.Q. cannot be successfully applied in the case of imports of materials which is based on import licences.

Importance of Economic Order Quantity (EOQ) : If re-order quantity is determined in advance and adjusted it ensures the following advantages

1. The cost of storage can be kept at a minimum.
2. Purchase orders can be easily prepared at intervals.
3. The advantages of placing large orders can be derived as far as possible.

Limitations of Economic Order Quantity (EOQ) : The following are the limitations of EOQ:

- (a) Where rate of consumption fluctuates very often ordering a fixed quantity may lead to over or under stocking.
- (b) Very often, consumption rate cannot be anticipated because of certain unavoidable reasons such as power failure, slackening of customers' demand etc.
- (c) Sometimes, estimating of carrying cost and ordering cost in advance is not easy.

C. A.B.C. ANALYSIS:

A most useful guide to devising stock control system is often known as 'Pareto Analysis' (after the name of an Italian Philosopher). The term is also known as ABC analysis because it analyses the range of stock items held into three sectors, known as A, B and C.

ABC analysis is a new technique of classifying and controlling production and store inventories both purchased and manufactured in accordance with value of the item. It is the starting point for material management. It is the basic analytical management tool which enables top management to place the effort where the results will be greatest. The technique is popularly known as Always Better Control or the Alphabetical approach. The technique tries to analyse the distribution of any characteristic by money value of importance in order to determine its priority. In materials management the technique has been applied in areas needing selective control such as inventory, criticality of items, obsolete stocks, purchasing orders, receipt of materials, inspection, store-keeping and verification of bills.

ABC analysis or classification is the principle of Selective Control of inventories and a technique of grouping thousands of stock items handled by an organisation. The principle involved is that the degree of control on stock items and amount of safety stock carried should vary directly with the consumption value of the item involved.

Advantages of ABC Analysis : The following are the advantages of ABC Analysis :

- 1. Selective Control :** This approach helps the materials manager to exercise selective control and focus his attention only on a few items when he is concerned with lakhs of store items.

2. Control Inventories : By concentrating on 'A' class items, the materials manager is able to control inventories and show visible results in a short span of item.

3. Obsolete Stocks : By controlling the 'A' items obsolete stocks are automatically pin pointed.

4. Clerical Cost : The system also helps in reducing the clerical cost and better planning and improved inventory turnover.

5. Equal Attention : ABC Analysis has to be resorted to because equal attention to A, B and C items will not be worthwhile and would be very expensive.

D. H.M.L. Techniques :

H.M.L. (High, medium, low) technique is the opposite of ABC concept of selective inventory control technique. It also follows the same procedure of distribution of inventory items by money value. The only difference in the application of ABC (Always Better Control) analysis in H.M.L. technique is that the unit value is the criterion and not the annual consumption value. The items should be listed out in descending order of unit value and management may fix limits for deciding the three categories.

Example : Management may for example decide that all items of the unit value above Rs.500/- will be H items, between Rs.100 to 500 will be M items and below Rs.100 will be L items. On this basis, management may delegate authorities to various subordinate officers to purchase petty cash items. Management may decide that items of the value above a unit value of Rs.500 are H items and may decide that all such items will only be sanction by the purchase manager.

E.V.E.D. Classification

V.E.D. is the acronym for vital (V) essential (E) and (D) desirable. This type of classification is mostly applicable in the case of spare parts. Spare parts do not have a materials. The requirements of spare parts are age of machine. Older machines require frequent maintenance and replacement of spare parts. To get over this difficulty, V.E.D. classification is used. Here, the categorisation is made in terms of the importance or critically of the part to the operation of the plant. It is very vital, it is given a V classification and D part. How such a classification is done will depend upon the machinery or equipment involved and one's own experience, case of availability of the items etc. For examine, if the items was available off the shelf from the supplier's showroom, there would be no purpose in categorising it as V. If on the other hand, a minor imported item might automatically get a V classification, for V items, a reasonably large quantum of stocks might be necessary, while for D items, no stocks need perhaps be kept, especially if that item also happens to be in the A or B classification. For V items of A classification, close control should be kept on stock levels, but if it is a C item, then large quantities, may be stored.

F.S.D.E. Classification

This classification is used for source items, those which are difficult to obtain and those which are fairly easy to obtain. If an item is scarce it is taken as an A item, we cannot apply the same procedure or yardstick for its stocking. Take for example, an item which is imported. It would be quite absurd for anyone to say that it should be procured once in six weeks. It would be best to obtain it once in a year, considering the time, effort and expenditure involved in the procedures for import.

A scarce item might be an item which is not easily available in the market and might require source development, or else it might be an item which is very difficult to manufacture or there are only one or two manufacturers who have to be given orders several months in advance, and so on.

Let us take an item which is easy to obtain and it is an A item. One can bestow on it all the care required for treatment of A items. But if it is a C item, the inventory controller really does not have to bother very much.

G. G.O.L.F. Classification :

This classification is used for Government-ordinary-local and foreign. There are many imported items which are channelised through the State Trading Corporation, MMTC, Indian Drugs and Pharmaceuticals Ltd., Metals to be followed for procuring such item. As such, ordinary procedures of inventory control may not work in respect of these materials and they would require special treatment.

Items which are available within the country could be treated differently if they were available locally, compared to their being available only in very distant towns or where they have to be specially manufactured. Imported items would be a special class by themselves and have to be accorded a treatment quite unique.

H. F.S.N. Classification

F-S-N Stands for fast-moving, slow-moving and non-moving. This classification comes in very handy when we desire to control obsolescence. Items classified as S and N require very great attention, especially N items. There may be several reasons why an item has got into the N category. There might have been a change in technology or change in the specification of a particular spare part or the item might no longer be in use. When an F.S.N. classification is made, all such information stand out prominently enabling managers to act on the information in the best interests of the organisation.

I. S-O-S Classification

Some of the item required may be seasonal in nature and may require special purchasing and stocking strategies. Many commodities, especially of agricultural origin and seasonal in character, have to be purchased at the best time. One cannot apply E.O.Q. here for example, inventories at the time of procurement will be extremely high but this cannot be helped.

A buying and stocking strategy for seasonal items would depend on a large number of factors and more and more sophistication is taking place in this matter. Operational research techniques would have to be used to obtain optimum results.

J. X-Y-Z Classification

This classification is based on the value of inventory stored. If the values are high, special efforts should be made to reduce them. This exercise can be done once in a year.

The different types of classifications suggested would give an executive a clear idea as to what are the implications and this would give him the necessary clues as to how to act and what decisions to take. It will also be clear that none of these classifications should be used in isolation. A person should take an integrated view and decide the best course that will give the best overall results.

2.6.1 ILLUSTRATIONS (EOQ METHOD)

1. Calculate Economic Order Quantity from the following information. Also state number of orders to be placed in a year.

Consumption of Material per annum	: 20000 kg
Order placing costs per order	: Rs. 100
Cost per kg of materials	: Rs. 5
Storage Costs inventory	: 10% on average

Solution :

$$\text{Annual Consumption (A)} = 20,000 \text{ kg}$$

$$\text{Ordering Cost per order(O)} = \text{Rs.}100$$

$$\text{Carrying Cost (C)} = \text{Cost per kg} \times \text{Carrying Cost \%}$$

$$= \text{Rs. } 5 \times 10 \%$$

$$= \text{Rs. } 0.50 \text{p.kg.p.a.}$$

$$\text{EOQ} = \frac{\sqrt{2AO}}{C}$$

$$= \frac{\sqrt{2 \times 20,000 \times 100}}{0.50}$$

$$= 2,828 \text{ units.approx}$$

2. A manufacturer buys certain equipment from outside suppliers at Rs. 60 per unit. Total annual needs are 2400 units. The following further data are available.

Annual return on investment	:	15%
Rent, insurance, taxes per unit per year	:	Rs. 10
Cost of placing an order	:	Rs. 200
Determine the Economic Order Quantity		

Solution :

$$A = 2400 \text{ units}$$

$$O = \text{Rs. } 200$$

$$C = \text{Cost x Carrying Cost \% + Other costs per unit}$$

$$= \text{Rs. } (60 \times 15 \%) + 6$$

$$= \text{Rs. } 15 \text{ p. u. p. a.}$$

$$\begin{aligned} \text{EOQ} &= \frac{\sqrt{2AO}}{C} \\ &= \frac{\sqrt{2 \times 2400 \times 200}}{15} \\ &= 252.98 \text{ i.e } 253 \text{ units.} \end{aligned}$$

3. Ansemi annualconsumption of a materials is 10,000 units at a price of Rs. 40 per unit. The storage cost is 20% on an average inventory and the cost is placing an order is Rs. 20. How much quantity is to be purchased at a time?

Solution :

$$A = 10000 \times 2 = 20000 \text{ units}$$

(since semi – annual consumption is given , the number of units are to be multiplied by 2, in case of quarter requirements multiply by 4, monthly multiply by 12 and weekly multiply by 52)

$$O = \text{Rs. } 20$$

$$C = \text{Cost x Carrying Cost \%}$$

$$= \text{Rs. } 40 \times 20 \%$$

$$= \text{Rs. } 8 \text{ p. u. p. a.}$$

$$\begin{aligned} \text{EOQ} &= \frac{\sqrt{2AO}}{C} \\ &= \frac{\sqrt{2 \times 20000 \times 20}}{8} \\ &= 100 \text{ units.} \end{aligned}$$

4. A company manufactures a special product which requires a component 'GM'. The following particulars are collected for the year 2021 :

Annual Demand of GM : 16,000 units

Cost of placing an order : Rs. 400 per order

Cost per unit of GM : Rs. 600

Carrying cost % p.a.: 12%

The company has been offered a discount of 4% on the purchase price of 'GM', provided the order size is 8,000 components at a time.

Required:

- i) Compute the economic order quantity
- ii) Advise whether the quantity discount offer can be accepted.

Solution :

A = 16,000 units

O = Rs. 400

C = Cost x Carrying Cost %

= Rs. 600 x 12 %

= Rs. 72 p. u. p. a.

$$EOQ = \frac{\sqrt{2AO}}{C}$$

$$= \frac{\sqrt{2 \times 16000 \times 400}}{72}$$

= 421.63 i.e. 422 units.

Total Costs: Total Purchase Cost + Total Ordering Costs + Total carrying Cost

= (Annual Qty * Cost Per Unit) + (Annual Qty/ Ordering Qty * Cost per Order)

+ (Ordering Qty / 2 * Carrying Cost per unit)

= (16000* 600) + (16000/422 * 400) + (422/2 * 72)

= 96,00,000+ 15165.88 + 15192

= 96,30,358 ----- (I)

(Note at EOQ Level : Total Ordering Costs and Total Carrying Costs are equal. In this illustration due to round off the slight changes are visible.)

Ordering qty = 8000 units

Total Costs: Total Purchase Cost + Total Ordering Costs + Total carrying Cost

$$\begin{aligned}
 &= (\text{Annual Qty} * \text{Cost Per Unit}) + (\text{Annual Qty} / \text{Ordering Qty} * \text{Cost per Order}) \\
 &\quad + (\text{Ordering Qty} / 2 * \text{Carrying Cost per unit}) \\
 &= (16000 * 576) + (16000/8000 * 400) + (8000/2 * (72 - 4\%)) \\
 &= 92,16,000 + 800 + 276480 \\
 &= 94,93,280 \text{ ----- (II)}
 \end{aligned}$$

(Note : When discount is offered on bulk qty purchase the not only purchase price reduces but also the carrying cost changes.

When purchase quantity is other than EOQ level, there is tradeoff between Ordering costs and Carrying Costs.

Evaluating option I & II, the total costs is lower when discount if accepted therefore discount should be accepted.

5. MGM Factory consumes 10,000 units of a component per year. The ordering, receiving and handling costs are Rs. 2 per order while the tracking costs are Rs. 4 per order. Further details are as follows :

Interest cost Rs. 0.25 per unit per year

Deterioration and obsolescence cost Rs. 0.05 per unit per year.

Storage cost Rs. 24,000 per year for 20,000 units.

Calculate the Economic Order Quantity.

Solution :

A = 20,000 units

O = Rs. 2 + Rs. 4 = Rs. 6 per order

(Ordering Receiving and Handling Costs + Tracking Costs)

C = 0.25 + 0.05 + 1.2(24000/20000)

(Interest Cost +Deterioration and Obsolescence Costs + Storage Costs

= 1.5pu. pa.

$$\text{EOQ} = \frac{\sqrt{2AO}}{C}$$

$$= \frac{\sqrt{2 \times 20,000 \times 6}}{1.5}$$

= 400units.

Practical Illustration

Material Cost

1. Calculate Economic Order Quantity from the following information. Also state number of orders to be placed in a year.

Consumption of Material per annum	:	10000 kg
Order placing costs per order	:	Rs50
Cost per kg of materials	:	Rs2
Storage Costs inventory	:	8% on average

Solution :

$$A = 10,000 \text{ kg}$$

$$O = \text{Rs. } 50$$

$$C = \text{Cost} \times \text{Carrying Cost \%}$$

$$= \text{Rs. } 2 \times 8 \%$$

$$= \text{Rs. } 0.16 \text{ p.kg.p.a.}$$

$$\begin{aligned} \text{EOQ} &= \frac{\sqrt{2AO}}{C} \\ &= \frac{\sqrt{2 \times 10,000 \times 50}}{0.16} \\ &= 2,500 \text{ units.} \end{aligned}$$

2. A manufacturer buys certain equipment from outside suppliers at Rs30 per unit. Total annual needs are 800 units. The following further data are available.

Annual return on investment	:	10%
Rent, insurance, taxes per unit per year	:	Rs1
Cost of placing an order	:	Rs100
Determine the Economic Order Quantity		

Solution :

$$A = 800 \text{ units}$$

$$O = \text{Rs. } 100$$

$$C = \text{Cost} \times \text{Carrying Cost \%} + 1$$

$$= \text{Rs. } (30 \times 10 \%) + 1$$

$$= \text{Rs. } 4 \text{ p. u. p. a.}$$

$$\begin{aligned} \text{EOQ} &= \frac{\sqrt{2AO}}{C} \\ &= \frac{\sqrt{2 \times 800 \times 100}}{4} \\ &= 200 \text{ units.} \end{aligned}$$

3. An average annual consumption of a materials is 18,250 units at a price of Rs36.50 per unit. The storage cost is 20% on an average inventory and the cost is placing an order is Rs50. How much quantity is to be purchased at a time?

Solution :

A = 18,250 units

O = Rs. 50

C = Cost x Carrying Cost %

= Rs. 36.50 x 20 %

= Rs. 7.30 p. u. p. a.

$$\begin{aligned} \text{EOQ} &= \frac{\sqrt{2AO}}{C} \\ &= \frac{\sqrt{2 \times 18,250 \times 50}}{7.30} \\ &= 500 \text{ units.} \end{aligned}$$

4. A company manufactures a special product which requires a component 'Alpha'. The following particulars are collected for the year 2008 :

- | | | | |
|------|--------------------------|---|-----------------|
| i) | Annual Demand of Alpha | : | 8,000 units |
| ii) | Cost of placing an order | : | Rs200 per order |
| iii) | Cost per unit of Alpha | : | Rs400 |
| iv) | Carrying cost % p.a. | : | 20% |

The company has been offered a quantity discount of 4% on the purchases of 'Alpha', provided the order size is 4,000 components at a time.

Required :

- Compute the economic order quantity
- Advise whether the quantity discount offer can be accepted.

Solution :

Material Cost

$$A = 8,000 \text{ units}$$

$$O = \text{Rs. } 200$$

$$C = \text{Cost} \times \text{Carrying Cost \%}$$

$$= \text{Rs. } 400 \times 20 \%$$

$$= \text{Rs. } 80 \text{ p. u. p. a.}$$

$$\begin{aligned} \text{EOQ} &= \frac{\sqrt{2AO}}{C} \\ &= \frac{\sqrt{2 \times 8000 \times 200}}{80} \\ &= 200 \text{ units.} \end{aligned}$$

$$\begin{aligned} \text{TOC \& TCC} &= \sqrt{2AO} \\ &= \sqrt{2 \times 8000 \times 200} \\ &= \text{Rs. } 16,000 \end{aligned}$$

$$\text{TOC} = 8,000$$

$$\text{TCC} = 8,000$$

Offer = 4% Discount, if Order size = 4,000 units

$$\text{EOQ (Offer)} = 4,000 \text{ units}$$

$$\begin{aligned} N &= A / \text{EOQ} \\ &= 8,000 / 4,000 \\ &= 2 \text{ orders} \end{aligned}$$

$$\begin{aligned} \text{TOC} &= N \times O \\ &= 2 \times 200 \\ &= \text{Rs. } 400 \end{aligned}$$

$$\begin{aligned} \text{TCC} &= \text{EOQ} \times \frac{1}{2} \times C \\ &= 4000 \times \frac{1}{2} \times [(400 - 4\%) \times 20\%] \\ &= 4,000 \times \frac{1}{2} \times 76.80 \\ &= 1,53,600 \end{aligned}$$

Evaluation of EOQ and Offer

Particulars	EOQ	Offer
Annual Demand (A)	8,000	8,000
(X) Cost p.u.	400	400
Purchase Cost	32,00,000	32,00,000
(-) Discount @ 4%	nil	1,28,000
Net Cost	32,00,000	30,72,000
(+) TOC	8,000	400
TCC	8,000	1,53,600
Total Cost	32,16,000	32,26,000

5. A precision Engineering Factory consumes 50,000 units of a component per year. The ordering, receiving and handling costs are Rs3 per order while the tracking costs are Rs12 per order. Further details are as follows :

Interest cost Rs0.06 per unit per year

Deterioration and obsolescence cost Rs0.004 per unit per year.

Storage cost Rs1,000 per year for 50,000 units.

Calculate the Economic Order Quantity.

Solution :

$A = 50,000$ units

$O = \text{Rs. } 3 + \text{Rs. } 12 = \text{Rs. } 15$ per order

$C = 0.06 + 0.004 + 0.02$

$= 0.084$ pu. pa.

$$\begin{aligned}
 \text{EOQ} &= \frac{\sqrt{2AO}}{C} \\
 &= \frac{\sqrt{2 \times 50,000 \times 15}}{0.084} \\
 &= 4,226 \text{ units.}
 \end{aligned}$$

6. A company manufactures a product from a raw material, which is purchased at Rs60 per kt. The company incurs a handling cost of Rs360 plus freight of Rs390 per order. The incremental carrying cost of inventory of raw material is Rs0.50 per kg per month. In addition, the cost of

working capital finance on the investment in inventory of raw material is Rs9 per kg. per annum. The annual production of the product is 1,00,000 units and 2.5 units are obtained from one kg of raw material.

Material Cost

Required :

- i) Calculate the economic order quantity of raw materials.
- ii) Advise, how frequently should order for procurement be placed.

Solution :

$$A = 1\text{kg} \times 1,00,00 \text{ units} / 2.5 \text{ units} = 40,000 \text{ kgs.}$$

$$O = \text{Rs. } 360 + \text{Rs. } 390 = \text{Rs. } 750 \text{ per order}$$

$$C = 9 + (0.50 \times 12)$$

$$= 15 \text{ pu. pa.}$$

$$\begin{aligned} \text{EOQ} &= \frac{\sqrt{2AO}}{C} \\ &= \frac{\sqrt{2 \times 40,000 \times 750}}{15} \\ &= 2,000 \text{ kgs.} \end{aligned}$$

Stock Ledger

(1) The stock in hand of a material as on 1st September 2014 was 500 units at Rs1 per unit. The following purchases and issues were subsequently made.

2019

Purchases	September	6	100 units	at Rs1.10
	September	20	700 units	at Rs1.20
	September	27	400 units	at Rs1.30
	October	13	1,000 units	at Rs1.40
	October	20	500 units	at Rs1.50
	November	17	400 units	at Rs1.60

Issues

	September	9	500 units
	September	22	500 units
	September	30	500 units
	October	15	500 units
	October	22	500 units
	November	11	500 units

Prepare the Stores Ledger Account showing how the value of the issues would be recorded under (i) FIFO method.

Solution :

A) FIFO Method

Date	Receipts			Issues			Balance		
	Units	Price	Amt Rs.	Units	Price	Amt Rs.	Units	Price	Amt Rs.
Sept. 19									
1	OP	-	-	-	-	-	500	1	500
6	100	1.1	110	-	-	-	500	1	500
							100	1.1	110
9	-	-	-	500	1	500	100	1.1	110
20	700	1.2	840	-	-	-	100	1.1	110
							700	1.2	840
22	-	-	-	100	1.1	110			
				400	1.2	480	300	1.2	360
27	400	1.3	520	-	-	-	300	1.2	360
							400	1.3	520
30	-	-	-	300	1.2	360			
				200	1.3	260	200	1.3	260
Oct, 19									
13	1000	1.4	1400	-	-	-	200	1.3	260
							1000	1.4	1400
15	-	-	-	200	1.3	260			

				300	1.4	420	700	1.4	980
20	500	1.5	750	-	-	-	700	1.4	980
							500	1.5	750
22	-	-	-	500	1.4	700	200	1.4	280
							500	1.5	750
Nov, 19									
11	-	-	-	200	1.4	280			
				300	1.5	450	200	1.5	300
17	400	1.6	640	-	-	-	200	1.5	300
							400	1.6	640
Total			4,260			3,820			940

Material Cost

Cost of Goods Sold = OP + Purchases – Clg.

$$500 + 4,260 - 940$$

3,820

(2)The following particulars have been extracted in respect of Material X

2019

Receipts

October	1	Opening Stock	200 units	at Rs3.50 per unit
October	3	Purchased	300 units	at Rs4.00 per unit
October	13	Purchased	900 units	at Rs4.30 per unit
October	23	Purchased	600 units	at Rs3.80 per unit

Issues

October	5	Issued	400 units
October	15	Issued	600 units
October	25	Issued	600 units

Prepare a Stores Ledger Account showing the receipts and issues, pricing the materials issued in the basis of Weighted Average

Solution :

Weighted Average Method

Date	Receipts			Issues			Balance		
	Units	Price	Amt Rs.	Units	Price	Amt Rs.	Units	Price	Amt Rs
Oct, 2019									
1	Op.	-	-	-	-	-	200	3.5	700
3	300	4	1,200	-	-	-	500	3.8	1900
5	-	-	-	400	3.8	1,520	100	3.8	380
13	900	4.3	3,870	-	-	-	1,000	4.25	4,250
15	-	-	-	600	4.25	2,550	400	4.25	1,700
23	600	3.8	2,280	-	-	-	1000	3.98	3,980
25	-	-	-	600	3.98	2,388	400	3.98	1,592
Total			7,350			6,458			1,592

$$\text{COGS} = \text{OP} + \text{Purchase} - \text{Clg}$$

$$= 700 + 7,350 - 1,592$$

$$= 6,458$$

- (3) Enter the following transactions in the Stores Ledger of Material Y using FIFO method.

Material Cost

2019

- January 1 Balance 250 units @ Rs10 per unit
- 3 Issued 50 units on M.R. no. 61
- 6 Received 800 units vide G.R. No.13 @ Rs11 per unit
- 7 Issued 300 units on M.R. No. 63
- 8 Returned to stores 20 units on M.R. No. 6
- 12 Received 300 units per G.R. No. 15 @ Rs12 per unit
- 15 Issued 320 units M.R. No. 83
- 18 Received 100 units, vide G.R. Note No. 77 @ Rs12 per unit
- 20 Issued 120 units M.R. No. 102
- 23 Returned to vendors 40 units from G.R. No. 77 received on 18th instant
- 26 Received 200 units on G.R. No. 96 @ Rs10 per unit
- 30 Issued 250 units on M.R. No. 113

Solution :

A) FIFO Method

Date	Receipts			Issues			Balance		
	Units	Price	Amt Rs.	Units	Price	Amt Rs.	Units	Price	Amt Rs
2019									
Jan. 1	Op.	-	-	-	-	-	250	10	2,500
3	-	-	-	50	10	500	200	10	2,000
6	800	11	8,800	-	-	-	200	10	2,000
							800	11	8,800
7	-	-	-	200	10	2,000			
				100	11	1,100	700	11	7,700
8	20	11	220	-	-	-	700	11	7,700
							20	11	220

Cost Accounting

12	300	12	3,600	-	-	-	700	11	7,700
							20	11	220
							300	12	3,600
15	-	-	-	320	11	3,520	380	11	4,180
							20	11	220
							300	12	3,600
18	100	12	1,200	-	-	-	380	11	4,180
							20	11	220
							300	12	3,600
							100	12	1,200
20	-	-	-	120	11	1,320	260	11	2,860
							20	11	220
							300	12	3,600
							100	12	1,200
23	-	-	-	40	12	480	260	11	2,860
							20	11	220
							300	12	3,600
							60	12	720
26	200	10	2,000	-	-	-	260	11	2,860
							20	11	220
							300	12	3,600
							60	12	720
							200	10	2,000
30	-	-	-	250	11	2,750	10	11	110
							20	11	220
							300	12	3,600
							60	12	720
							200	10	2,000
			15,820			11,670			6,650

B) Weighted Average Method

Material Cost

Date	Receipts			Issues			Balance		
	Units	Price	Amt Rs.	Units	Price	Amt Rs.	Units	Price	Amt Rs
2019									
Jan. 1	Op.	-	-	-	-	-	250	10	2,500
3	-	-	-	50	10	500	200	10	2,000
6	800	11	8,800	-	-	-	1,000	10.8	10,800
7	-	-	-	300	10.8	3,240	700	10.8	7,560
8	20	10.8	216	-	-	-	720	10.8	7,776
12	300	12	3,600	-	-	-	1,020	11.15	11,376
15	-	-	-	320	11.15	3,568	700	11.15	7,808
18	100	12	1,200	-	-	-	800	11.26	9,008
20	-	-	-	120	11.26	1,351	680	11.26	7,657
23	-	-	-	40	12	480	640	11.21	7,177
26	200	10	2,000	-	-	-	840	10.93	9,177
30	-	-	-	250	10.93	2,733	590	10.92	6,444
			15,816			11,872			6,444

(4) Write a short ledger card in the proper form making use of the following particulars, pricing issues on the principle of FIFO.

Date	Transactions		Quantity Units	Rate per unit `
2020				
January	1	Balance	500	20
	2	Issues	300	
	6	Purchases	800	22
	8	Issues	400	

12	Issues	300	
14	Purchases	400	25
20	Issues	600	
24	Purchases	500	28
25	Issues	300	
28	Issues	100	

The stock verifier found a shortage of 10 units in the 30th and left a note.

Solution :

A) FIFO Method

Date	Receipts			Issues			Balance		
	Units	Price	Amt Rs.	Units	Price	Amt Rs.	Units	Price	Amt Rs
2020									
Jan. 1	Op.	-	-	-	-	-	500	20	10,000
2	-	-	-	300	20	6,000	200	20	4,000
6	800	22	17,600	-	-	-	200	20	4,000
							800	22	17,600
8	-	-	-	200	20	4,000			
				200	22	4,400	600	22	13,200
12	-	-	-	300	22	6,600	300	22	6,600
14	400	25	10,000	-	-	-	300	22	6,600
							400	25	10,000
20	-	-	-	300	22	6,600			
				300	25	7,500	100	25	2,500
24	500	28	14,000	-	-	-	100	25	2,500

							500	28	14,000
25	-	-	-	100	25	2,500			
				200	28	5,600	300	28	8,400
28	-	-	-	100	28	2,800	200	28	5,600
30	-	-	-	10	28	280	190	28	5,320
			41,600			40,880			5,320

Material Cost

Inventory Turnover Ratio :

1. From the following data year ended 31st December, 2019 Calculate inventory turnover ratio of two items.

Particulars	Material X	Material Y
Opening stock	20,000	18,000
Purchasing during the year	1,04,000	54,000
Closing stock	12,000	22,000

Solution :

Computation of Inventory Turnover ratio

Particulars	Material X	Material Y
Opening stock	20,000	18,000
Add ;Purchase	1,04,000	54,000
	1,24,000	72,000
Less : Closing stock	12,000	22,000
Cost of Material Consumed	1,12,000	50,000

	Material X	Material Y
$\frac{\text{Avg Stock}}{\frac{\text{Op. Stock} + \text{Clg. Stock}}{2}} =$	$= \frac{20,000 + 12,000}{2}$	$= \frac{18,000 + 22,000}{2}$
	= 16,000	= 20,000
$\frac{\text{ITR}}{\frac{\text{Cost of Material Consumed}}{\text{Average stock}}} =$	$= \frac{1,12,000}{16,000}$	$= \frac{50,000}{20,000}$
	= 7 times	= 2.5 times
$\frac{\text{No. of days the Avg. Inventory held}}{\text{ITR}} = \frac{365}{\text{ITR}}$	$= \frac{365}{7}$	$= \frac{365}{2.5}$
	= 54.14 Days	= 146 Days

2. The following information relates to year 2019-20.

Particulars	Material - I	Material - II
Opening stock	5,00,000	20,00,000
Closing Stock	3,00,000	16,00,000
Net Purchases	42,00,000	50,00,000

Solution :

Computation of Inventory Turnover ratio

Particulars	Material X	Material Y
Opening stock	5,00,000	20,00,000
Add : Purchase	42,00,000	50,00,000
	47,00,000	70,00,000
Less : Closing stock	3,00,000	16,00,000
Cost of Material Consumed	44,00,000	54,00,000

	Material X	Material Y
$\text{Avg Stock} = \frac{\text{Op. Stock} + \text{Clg. Stock}}{2}$	$= \frac{5,00,000 + 3,00,000}{2}$	$= \frac{20,00,000 + 16,00,000}{2}$
	= 4,00,000	= 18,00,000
$\text{ITR} = \frac{\text{Cost of Material Consumed}}{\text{Average stock}}$	$= \frac{44,00,000}{4,00,000}$	$= \frac{54,00,000}{18,00,000}$
	= 11 times	= 3 times
$\text{No. of days the Avg. Inventory held} = \frac{365}{\text{ITR}}$	$= \frac{365}{11}$	$= \frac{365}{3}$
	= 33.18 Days	= 121.67 Days

2.7 SUMMARY

1. Reorder level of stock = Maximum Re-Order period x Maximum Usage
2. Reorder level of stock = Minimum Level + (Average rate of consumption x Average lead time)
3. Minimum Stock Level = Re-Order Level - (Average rate of consumption x Average lead time)
4. Minimum Stock = Reordering Level – (Normal Consumption x Normal Reordering Period)
5. Maximum Stock Level = Reordering Level + Reordering Quantity – (Minimum Consumption x Minimum Reordering period)
6. Danger Level = Average Consumption x Lead time for emergency purchases.
7. Average Consumption:
8.
$$\frac{\text{Minimum Consumption} + \text{Maximum Consumption}}{2}$$
9. Average Lead Time =
$$\frac{\text{Minimum Lead time} + \text{Maximum Lead time}}{2}$$
10.
$$\text{EOQ} = \frac{\sqrt{2AO}}{C}$$
11. Total Purchase Cost = Annual Qty X Cost Per Unit
12. Total Ordering Costs = Annual Qty / Ordering Qty * Cost per Order
13. Total carrying Cost = Ordering Qty / 2 * Carrying Cost per unit

2.8 QUESTIONS

2.8.1 Answer in Brief

1. Define Inventory and explain the various costs of inventory?
2. What are the selecting techniques of inventory control?
3. What is the significance of Economic Order Quantity?
4. Explain the various stock levels in brief.
5. Write short notes on the following:
 - (a) Inventory, (b) Inventory control (c) Cost of inventory, (d) ABC analysis

2.8.2 Solve the Following

1. From the following information, calculate
 - a) Economic order quantity b) Total Annual Costs c) Total Carrying and ordering cost.
 - a. Semi-Annual consumption - 18,000 units
 - b. Purchase price of input unit Rs. 50
 - c. Quarterly carrying cost 2%
 - d. Order cost per order Rs. 75
2. From the following information, calculate a) Economic order quantity b) Total Annual carrying and ordering cost.
 - a) Quarterly consumption 250 units
 - b) Purchase price of input unit Rs. 100
 - c) Semi-Annual carrying cost 4%
 - d) Order cost per order Rs. 20
3. From the following information, calculate a) Economic order quantity b) Total Annual carrying and ordering cost.
 - a) Purchase price of input unit – Rs. 20
 - b) Annual Carrying Cost - 7.5%
 - c) Ordering Cost per order - Rs. 100
 - d) Normal Consumption - 450 units per week.
4. A company manufactures a special product that requires a component 'MGM'. The following particulars are collected for the year 2021 :
 - a. Annual Demand of GM : 4,500 units
 - b. Cost of placing an order : Rs. 100 per order
 - c. Cost per unit of GM : Rs. 300
 - d. Carrying cost % p.a.: 8%

The company has been offered a discount of 5% on the purchase price of 'MGM', provided the order size is 1500 components at a time.

Required:

- Compute the economic order quantity
- Advise whether the quantity discount offer can be accepted.

5. A company manufactures a special product that requires a component 'GM'. The following particulars are collected for the year 2021 :
- Annual Demand of LGM: 48,000 units
 - Cost of placing an order : Rs. 300 per order
 - Cost per unit of L GM: Rs. 200
 - Carrying cost % p.a.: 12%

The company has been offered a discount of 5% on the purchase price of 'LGM', provided the order size is 12,000 components at a time.

Required:

- Compute the economic order quantity
- Advise whether the quantity discount offer can be accepted.

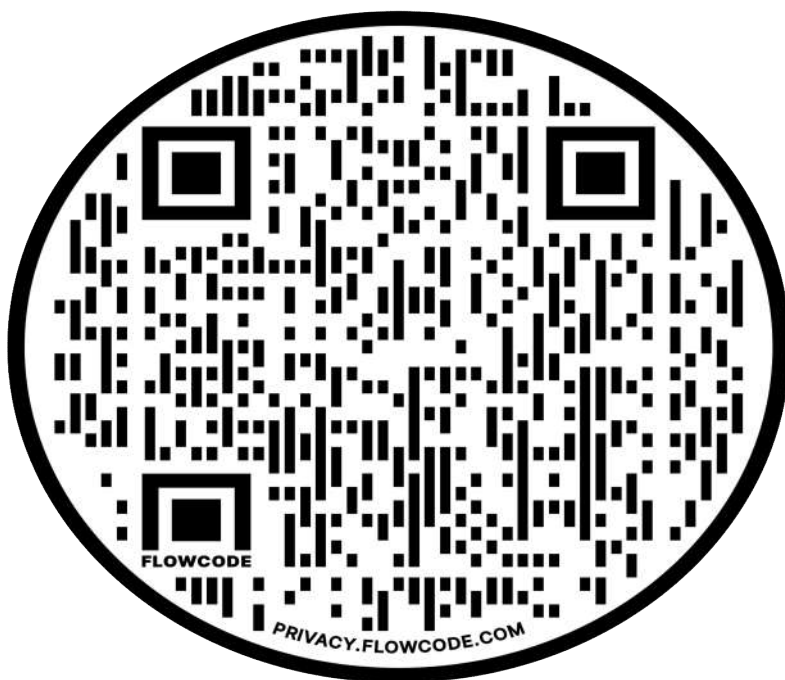
2.8.3 Multiple Choice Question

Sr.No	QUESTION TEXT	A	B	C	D
1	_____ indicates _____ maximum stock to be maintained.	Maximum Level	Minimum Level	Re-Order Level	Danger Level
2	_____ is a periodic statement of wages.	Pay Roll	Pay slip	Job Card	Job Sheet
3	_____ is prepared _____ for individual worker.	Job Card	Pay	Job Sheet	Wages
4	_____ labour cannot be readily identified.	Direct	Indirect	Production	Actual
5	_____ is the application of costing and cost accounting principles, methods and techniques to the art, science and practice of cost control and the ascertainment of profitability.	Cost accounting	Cost accountancy	Cost Control	Cost Ascertainment
6	A cost centre which is engaged in production activity is called	Production cost centre	Process cost centre	Impersonal cost centre	Production unit

7	Cost accounting is a reporting system	Internal	External	Government	Financial
8	Cost ascertainment involves	Ascertainment of cost	Control of cost	Estimation of cost	Fixation of price
9	One of the following is not a costing system	Marginal costing	Uniform costing	Absorption costing	Process costing
10	Product cost means _____	Variable cost	Fixed cost	Prime cost	Indirect cost
11	The resources that have been used for attaining a particular objective is	Revenue	Cost	Profit	Investment
12	Workers who work outside the factory premises are called as _____ works.	Out	Job	Casual	Badli
13	time is paid by the employer.	Idle Time	Overtime	Normal time	Abnormal time
14	is decided on the basis of ordering cost and carrying cost.	EOQ	Maximum Stock Level	Minimum Stock Level	Average Stock Level
15	A Bill of Material serves the purpose of _____	Purchase order	Material requisition	Purchase requisition	Goods received note
16	A document used for time keeping	Job card	Time card	Daily time sheet	Labour sheet
17	Annual demand=12000 units, Ordering Cost per order=Rs. 45, Carrying cost per annum per unit =Rs. 3. EOQ=_____	6000 units	600 units	12000 units	1200 units
18	Economic order quantity is a tool for controlling _____	Inventory	Price	Machinery	Cost

For Additional Reference Reading Scan the QR Code Below or visit website :

Material Cost



<https://resource.cdn.icaai.org/38596bos28170mod1-cp2.pdf>



LABOUR COST

Unit Structure:

- 3.1 Meaning and Classification of Labour Cost
- 3.2 Time Recording
- 3.3 Job Evaluation and Merit Rating
- 3.4 Payroll Department and Overview of Statutory Requirement
- 3.5 Idle Time
- 3.6 Overtime
- 3.7 Wage Payment System
- 3.8 Exercise (Based on Piece Rate & Time Rate System)
- 3.9 Labour Turnover
- 3.10 Calculation of Labour Cost

Learning Objectives:

After studying this unit, student will be able to understand meaning and classification of Labour Cost, attendance and payroll system, Idle time and Overtime, Methods of Labour Turnover, Remuneration and bonus methods (based on piece rate & time rate), this will also help to calculate labour cost.

3.1 MEANING AND CLASSIFICATION OF LABOUR COST:

❖ Meaning:

Labour is an important element of cost. For overall cost reduction and cost control, Labour Cost is one of the important factor for any company.

Any amount which is paid or payable, directly or indirectly, in cash or in kind to the workers is called as labour cost for the company. Labour Cost represent the total expenditure incurred by employer for employment of employee (Labour). The value of labour cost ascertained by taking into account gross pay including all allowances payable along with the cost to the employer of all the benefits.

Example: Mr. Raju who is working as worker at ABC Manufacturing company, with daily wage rate of Rs. 500 and company also provides Tea of Rs. 10 each everyday than the Labour Cost of Mr. Raju for the company will be Rs. 510 per day (Wages Rs. 500 + Tea Rs.10).

❖ Classification of Labour Cost:

There are two types of Labour cost:

1. Direct Labour Cost (Direct Wages)
2. Indirect Labour Cost (Indirect Wages)

1. Direct Labour Cost: Labour Cost in respect of labour directly involved in production process / activity, is called as Direct Labour Cost. Direct wages are the wages of the worker whose service can be identified directly with respective job or process. Direct Labour Cost is the cost that can be identified with a product unit. Example: Worker working on machine, Worker of Assembly Department, etc.

2. Indirect Labour Cost: Labour Cost in respect of labour not directly involved / indirectly involved in production process / activity, is called as Indirect Labour Cost. Indirect wages are the wages of the worker whose service cannot be identified directly with respective job or process. Indirect Labour Cost cannot be identified with a product unit.

Example: Machine Cleaning Worker, Supervisor, etc.

3.2 TIME RECORDING:

It is essential to record the time of worker in factory. Time recording means noting of worker's time of arrival, working and departure. Time recording is of Two types:

1. Time keeping (In and Out time)
2. Time booking (Utilisation of time)

1. Time Keeping: Time keeping is nothing but to record the In and Out time of worker. Recording of worker's entry and exit time is example of time keeping. The function of this department is mainly to maintain the time for which each and every worker has worked including the check-in and check-out time. The records are kept separately for different shift and irregular working periods like overtime period.

2. Time Booking: Time booking is utilisation of worker's time in different department or product. In a day of 8 hours if worker works for 5 hours on product A and 3 hours on product B, so here the time is recoded through time booking on the basis of utilisation of time. The analysis of time spent is not provided under Time Keeping. The recording of time spent by a worker in each job, process or operation is called as Time Booking.

3.3 JOB EVALUATION AND MERIT RATING:

1. Job Evaluation: It is necessary for the management of any organization to establish proper wage and salary structure for various jobs. Job Evaluation is a technique to rank job on a formal basis and measure the work of job for compensation purpose. It aims at providing a rational

and equitable basis for differential salaries and wages for different classes of workers.

2. Merit Rating: Job evaluation is the rating of job, on the other hand Merit Rating is concerned with evaluation and analysis of individual employee based on their merit and performance for compensation purpose.

Difference between Job Evaluation and Merit Rating:

The difference between the Job Evaluation and Merit Rating are as follows:

- Job Evaluation is the assessment of the relative worth of jobs within a business enterprise and Merit Rating is the assessment of the employees with respect to a job.
- Job Evaluation helps in establishing a rational wage structure. On the other hand, Merit Rating helps in fixing fair wages for each worker in terms of his competence and performance.
- Job Evaluation brings uniformity in wages and salaries while Merit Rating aims at providing a fair rate of pay for different workers on the basis of their performance.

3.4 PAYROLL DEPARTMENT AND OVERVIEW OF STATUTORY REQUIREMENT

❖ Payroll Department:

The role of payroll department is very crucial in computing the labour cost and cost control. The responsibility of this department is preparation of payroll using clock card, job ticket or time sheet. Payroll shows the amount of wages payable to each worker considering the gross wages and deductions from gross wages to find net wages payable. They also prepare pay slip at regular interval.

Payroll Procedure:

Following activities and the responsibility to discharge such activities is mentioned as under:

Activity	Responsibility
1. Attendance and time details	1. Time Keeping Department
2. List of Employee and other personal details	2. HR Department
3. Computation of Wages and other incentives	3. Payroll Department
4. Payment to Worker	4. Cost / Accounting Department
5. Discharge of Statutory Liabilities	5. Cost / Accounting Department

❖ Overview of Statutory Requirements:

The government has passed various legislations with regards to labour cost and labour welfare. This may include regulative legislation, wage legislation, security legislation, etc. The employer must aware about those legislation which are important for calculation of wages.

Following is the list of selected legislation which can help pay roll department:

1. Payment of Wages Act, 1963
2. Payment of Bonus Act, 1965
3. Employee Provident Fund Act
4. Employee State Insurance Act, 1948
5. Maternity Benefit Act, 1961
6. Payment of Gratuity Act, 1972.

3.5 IDLE TIME:

Idle Time Cost represents the wages paid for the time lost during which the worker does not work, i.e. time for which wages are paid, but no work is done. When workers are paid on the basis of time, Idle time becomes important factor. The difference between the time for which they are paid and the time spent on production is called as idle time. Time for which wages are paid by employer but no work achieved (done) is also known as idle time. As per CAS-7 (Limited Revision 2017), Idle Time is 'The difference between the time for which the employees are paid/payable to employees and the employees time booked against the cost object'.

1. Normal Idle Time (Unavoidable/uncontrollable)
2. Abnormal Idle Time (Controllable)

1. Normal Idle Time: Normal idle time are those idle time which are generally unavoidable by management. Example: Tea Break, Lunch Break, etc.

2. Abnormal Idle Time: Abnormal idle time are those idle time which can be avoided/ controllable by management with proper control and due care. Example: Machine Breakdown, Raw Material Shortage, Power Failure, waiting for work etc.

Idle Time Preventive Measures:

Idle Time may be eliminated or reduced to a large extent by taking suitable preventive measures such as:

- (a) proper planning of production in advance, thus reducing imbalances in production facilities,
- (b) timely provisioning of materials,
- (c) regular maintenance of machines so as to avoid breakdown,
- (d) careful watch over the labour utilization statement.

3.6 OVERTIME:

If the workers work beyond normal working time, it is called as overtime. Overtime is the extra time worked by a worker over and above the normal working hours. Factories Act provides for payment of overtime wages at double as compare to normal rate of wages. Even where the Act is not applicable, the practice is to pay for overtime work at higher rate usually. The additional amount paid for overtime work is called as overtime premium. Hence, payment of overtime consists of two elements, normal amount and the extra payment, i.e. premium.

Normal Wages = No. of Hours Worked x Rate per hour

Overtime Wages = Overtime Hours x Overtime rate per hour

Total Wages = Normal wages + Overtime wages.

Example:

Normal Working Hours = 8 Hours

Standard Rate = Rs. 20 per hour

Overtime Rate = Rs.40 per hour

In a day of 8 hours Mr. Rohan works for 10 hours. Calculate Normal Wages, Overtime Wages and Total Wages of Mr. Rohan.

Normal Wages = No. of Hours Worked x Rate per hour

$$= 8 \text{ hours} \times 20 \text{ per hour}$$

$$= \text{Rs. } 160/-$$

Overtime Wages = Overtime Hours x Overtime rate per hour

$$= 2 \text{ hours} \times 40 \text{ per hour}$$

$$= \text{Rs. } 80/-$$

Total Wages = Normal Wages + Overtime Wages

$$= 160 + 80$$

$$= \text{Rs. } 240/-$$

3.7 WAGE PAYMENT SYSTEM

1. Time Rate System: When worker is paid wages on the basis of time involved, it is called as Time Rate System. This method is perhaps the oldest one of paying wages to workers. Time rate system is also known as time work, day work, day wages, etc. In this method, the worker is paid specific amount per hour and payment is made on the basis of time worked /involved irrespective of output produced. This method is used where the work requires high skill and quality is more important than the quantity.

Time Rate (TR) = No. of Hours Worked (Actual Time Taken) x Rate Per Hour

Labour Cost

- **Advantages of Time Rate System:**

1. Easily understandable by workers.
2. It has less clerical work and easy to calculate.
3. It has inbuilt advantage of ensuring quality work.
4. Easy to operate and economical.

- **Disadvantages of Time Rate System:**

1. It doesn't encourage worker as the wages paid to efficient and inefficient workers are same.
2. Sometimes it results into high labour cost.
3. Under this method it is difficult to set standard for labour.

2. Piece Rate System: When worker is paid wages on the basis of output given (unit produced), it is called as piece rate system. The wages are paid to worker on the basis of performance. It is also called as payment by result system. In this method, the payment of the worker is calculated on the basis of number of units produced irrespective of the time spent. Thus, if the worker produces higher units, he can earn higher wages. This method is used where quantity is important than the quality.

Piece Rate (PR) = No. of Units Produced (Actual Output) x Rate per unit

- **Advantages of Piece Rate System:**

1. It encourage efficient workers with incentive, while the inefficient workers penalised.
2. Wastage and Idle time can be reduced with this method.
3. It helps to increase level of productivity.
4. Under this method wages being paid on the basis of production; it helps management to identify labour cost per unit.

- **Disadvantages of Piece Rate System:**

1. With view to earn more workers may speed up the work which may affect the quality of product.
2. Method may cause discontentment amongst those who are inefficient.
3. Workers may attempt to increase production, handle the material and machine carelessly.

3. Workers Incentive Scheme:

A. Premium Plan (Bonus): Premium Plan / Premium Bonus Plan which is also known as individual bonus plan. Here bonus is to be paid to the worker on the basis of time saved i.e. difference between time allowed and time taken. Under this method standard time is set to complete the job and standard time allowed is determined by work study engineers. The actual time taken is compared with standard time allowed to find bonus payable to worker in addition to normal wages if the time taken is less

than the time allowed. The individual bonus schemes under Premium Plan are as follows:

I. Halsey Premium Plan:

The plan was introduced by F. A. Halsey an American engineer. Under this plan, bonus is paid on the basis of time saved. Under this plan 50% bonus is paid to the worker on time saved. A worker is assured of time wage on actual time taken and 50% bonus is paid on time saved by him. The formula to compute wages as per Halsey Plan is:

Halsey Premium Plan = Time Rate + 50% (Time Saved x Rate per hour)

II. Rowan Premium Plan:

The plan was introduced by Mr. James Rowan in 1898. Under this plan also bonus is paid on time saved. Here bonus is paid in the proportion of time saved bears to time allowed and it is paid at time rate. The formula to compute wages as per Rowan Plan is:

Rowan Premium Plan = Time Rate + $\frac{\text{Time Saved}}{\text{Time Allowed}}$ (Time Taken x Rate per hour)

B. Differential Piece Rate Plan (DPRS): Under this method piece rate increases as the output increases. The increase in rate may be in proportionate to the increase in output. In other words, a worker is paid higher wages for higher productivity as an incentive. The main objective of this scheme is to reward efficient workers and encourage the less efficient workers. To find the efficiency actual production of worker is compared with standard production. The following are the major systems of differential piece rate system:

(i) Taylor (ii) Merrick (iii) Gantt Task

I. Taylor's Differential Piece Rate System:

The scheme was introduced by F. W. Taylor in USA. Taylor is father of scientific management and according to him there are only two class of workers, efficient and inefficient. He suggests that efficient workers should be encouraged and inefficient worker should be penalized. In order to do this, according to Taylor if the worker is efficient, he should get 120% of normal piece rate and if the worker is inefficient, he should get 80% of normal piece rate. For measuring the efficiency each worker will be given standard production quantity to be produced in given time and actual production should be compared with the same.

Taylor's DPRS:

Labour Cost

Efficiency	Differential Piece Rate (DPR)
< 100%	80% of Normal Piece Rate
$\geq 100\%$	120% of Normal Piece Rate

II. Merrick's Differential Piece Rate System:

This plan is modification of Taylor's system. In this system Merrick use three rates for remuneration and it is less harsh on the worker as Merrick doesn't penalise any worker. According to Merrick if the worker produces output which less than 83.33% of standard output, he should get 100% of normal piece rate, if the output is between 83.33% - 100% of standard output he should get 110% of normal piece rate and if the output is above 100% of standard output, he should get 120% of normal piece rate.

Merrick's DPRS:

Efficiency	Differential Piece Rate (DPR)
<83.33%	100% of Normal Piece Rate
$83.33\% \leq 100\%$	110% of Normal Piece Rate
> 100%	120% of Normal Piece Rate

III. Gantt Task Bonus Plan:

This method is combination of Time Rate and Piece Rate. This plan providing incentive to efficient workers and encouraging the less skill workers who fails to complete the work in given time. Under this plan if the worker produces output which is less than 100% of standard output, he should get wages as per Time Rate, if the output is equal to 100% of standard output, he should get Time Rate plus 20% bonus and if the output is above 100% of standard output, he should get 120% normal piece rate (High Piece Rate).

Gantt Task Bonus Plan:

Efficiency	Wages / Remuneration Payable
<100%	Time Rate
100%	Time Rate + 20% Bonus
> 100%	120% of Normal Piece Rate

- **Formula to Calculate Efficiency and Piece Rate (if not available in question):**

$$\text{Efficiency} = \frac{\text{Actual Output}}{\text{Standard Output}} \times 100$$

$$\text{Piece Rate (Rate Per Unit)} = \frac{\text{Amount Per Hour}}{\text{Units Per Hour}}$$

3.8 EXERCISE (BASED ON PIECE RATE AND TIME RATE SYSTEM):

Q.1. You are required to calculate the wages of Bhavesh and Nilesh under straight piece rate and Taylor's differential piece rate system with the help of following details:

- Standard output 7 units per hour
- Normal time rate Rs. 49 per hour
- Differential to be applied are:

80 % of piece rate below standard. 120 % of piece rate at or above standard

- In a 9 hour day, Bhavesh produced 56units whereas Nilesh produced 80units.

Solution:

- Standard Output for 9 Hours = 9 hours × 7 units per hour = 63 units
- Piece Rate = Amount Per Hour ÷ Units Per Hour = Rs. 49 ÷ 7units = 7 per unit.
- Straight Piece Rate = Number of Units Produced × Rate Per Unit (Piece Rate)
 Bhavesh = 56 units × 7 = Rs. 392/-
 Nilesh = 80 units × 7 = Rs. 560/-
- Taylor's DPRS = Number of Units Produced × Differential Rate Per Unit
 Bhavesh = 56 Units × 5.6 (7 × 80%) = Rs. 313.6/-
 Nilesh = 80 units × 8.4 (7 × 120%) = Rs. 672/-

Q.2. From the following particulars, calculate the earnings of worker A and B for a day according to straight piece rate and Taylor's differential piece rate system.

Standard time allowed: 10 units per hour

Normal time rate per hour: Rs. 40

Differential to be applied

Labour Cost

80% of piece rate when below standard and 120% of piece rate when at or above standard

Hours of day: 8

Output A : 75 units

B : 100 units.

Solution:

1. Standard Output for 8 Hours = 8 hours $\times$ 10 units per hour = 80 units
2. Piece Rate = Amount Per Hour $\div$ Units Per Hour = Rs. 40 $\div$ 10units = 4 per unit.
3. Straight Piece Rate = Number of Units Produced $\times$ Rate Per Unit (Piece Rate)
A = 75 units $\times$ 4 = Rs. 300/-
B = 100 units $\times$ 4 = Rs. 400/-
4. Taylor's DPRS = Number of Units Produced $\times$ Differential Rate Per Unit
A = 75 Units $\times$ 3.6 (4 $\times$ 80%) = Rs. 240/-
B = 100 units $\times$ 4.8 (4 $\times$ 120%) = Rs. 480/-

Q.3. Calculate earning of workers Ram and Shyam under straight piece rate and Taylor's differential piece rate plan from the following particulars.

Standard time: One hour30units

Normal rate: Rs 750 per hour

Differential piece rate:

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

In a day of 8hours,Ram produced 200units and Shyam produced 300units.

Solution:

1. Standard Output for 8 Hours = 8 hours $\times$ 30 units per hour = 240 units
2. Piece Rate = Amount Per Hour $\div$ Units Per Hour = Rs. 750 $\div$ 30units = 25 per unit.
3. Straight Piece Rate = Number of Units Produced $\times$ Rate Per Unit (Piece Rate)
Ram = 200 units $\times$ 25 = Rs. 5,000/-
Shyam = 300 units $\times$ 25 = Rs. 7,500/-
4. Taylor's DPRS = Number of Units Produced $\times$ Differential Rate Per Unit
Ram = 200 Units $\times$ 20 (25 $\times$ 80%) = Rs. 4,000/-
Shyam = 300 units $\times$ 30 (25 $\times$ 120%) = Rs. 9,000/-

Q.4. You are furnished with the following information regarding a job:

- a) Standard production per hour is 6 units.
- b) The normal rate is 240 per hour.
- c) During an eight-hour day, output of Hitesh was 32 units, Amit 42 units, and Jay 55 units.

You are asked to calculate the wages of all the three workers under straight piece rate and Merrick Differential Piece rate system.

Solution:

1. Standard Output for 8 Hours = 8 hours $\times$ 6 units per hour = 48 units
2. Piece Rate = Amount Per Hour $\div$ Units Per Hour = Rs. 240 $\div$ 6 units = 40 per unit.
3. Straight Piece Rate = Number of Units Produced $\times$ Rate Per Unit (Piece Rate)
 Hitesh = 32 units $\times$ 40 = Rs. 1,280/-
 Amit = 42 units $\times$ 40 = Rs. 1,680/-
 Jay = 55 Units $\times$ 40 = Rs. 2,200/-
4. Efficiency = (Actual Output $\div$ Standard Output) $\times$ 100
 Hitesh = (32 $\div$ 48) $\times$ 100 = 66.67%
 Amit = (42 $\div$ 48) $\times$ 100 = 87.5%
 Jay = (55 $\div$ 48) $\times$ 100 = 114.58%
5. Merrick's DPRS = Number of Units Produced $\times$ Differential Rate Per Unit
 Hitesh = 32 Units $\times$ 40 (40 $\times$ 100%) = Rs. 1,280/-
 Amit = 42 units $\times$ 44 (40 $\times$ 110%) = Rs. 1,848/-
 Jay = 55 units $\times$ 48 (40 $\times$ 120%) = Rs. 2,640/-

Q.5. Calculate earnings of worker A, B & C under Merrick's multiple piece rate system from the following:

Normal rate per hour: Rs. 540

Standard time per unit: 1 minute

Output per day:

X 390 units

Y 450 units

Z 600 units

Working hours per day 8 hours.

Solution:

1. Standard Output for 8 Hours: 8 hours $\times$ 60 units per hour [60mins $\times$ 1 unit per minute] = 480 units

2. Piece Rate = Amount Per Hour $\div$ Units Per Hour = Rs. 540 $\div$ 60units
= 9 per unit.
3. Straight Piece Rate = Number of Units Produced $\times$ Rate Per Unit
(Piece Rate)
X = 390 units $\times$ 9 = Rs. 3,510/-
Y = 450 units $\times$ 9 = Rs. 4,050/-
Z = 600 Units $\times$ 9 = Rs. 5,400/-
4. Efficiency = (Actual Output $\div$ Standard Output) $\times$ 100
X = (390 $\div$ 480) $\times$ 100 = 81.25%
Y = (450 $\div$ 480) $\times$ 100 = 93.75%
Z = (600 $\div$ 480) $\times$ 100 = 125%
5. Merrick's DPRS = Number of Units Produced $\times$ Differential Rate Per Unit
X = 390 Units $\times$ 9 (9 $\times$ 100%) = Rs. 3,510/-
Y = 450 units $\times$ 9.9 (9 $\times$ 110%) = Rs. 4,455/-
Z = 600 units $\times$ 10.8 (9 $\times$ 120%) = Rs. 6,480/-

Q.6. From the following particulars calculate the total earning of the works under Merrick DPRS:

Normal rate per hour Rs.300

Standard production per hour 10 units.

In a 8 hours day:

A Produced - 70 units

B Produced - 90 units

C Produced - 60 units

D Produced - 110 units.

Solution:

1. Standard Output for 8 Hours: 8 hours $\times$ 10 units per hour = 80 units
2. Piece Rate = Amount Per Hour $\div$ Units Per Hour = Rs. 300 $\div$ 10
units = 30 per unit.
3. Efficiency = (Actual Output $\div$ Standard Output) $\times$ 100
A = (70 $\div$ 80) $\times$ 100 = 87.5%
B = (90 $\div$ 80) $\times$ 100 = 112.5%
C = (60 $\div$ 80) $\times$ 100 = 75%
D = (110 $\div$ 80) $\times$ 100 = 137.5%
4. Merrick's DPRS = Number of Units Produced $\times$ Differential Rate Per Unit
A = 70 Units $\times$ 33 (30 $\times$ 110%) = Rs. 2,310/-
B = 90 units $\times$ 36 (30 $\times$ 120%) = Rs. 3,240/-

$$C = 60 \text{ units} \times 30 (30 \times 100\%) = \text{Rs. } 1,800/-$$

$$D = 110 \text{ units} \times 36 (30 \times 120\%) = \text{Rs. } 3,960/-$$

Q.7 Calculate the earnings of worker Ramu, Shamu & Tinku as per Gantt Task Bonus Plan from the following:

Standard Rate per hour	Rs. 30 per hour
Standard Rate per unit	Rs. 1.5 per unit
Normal output per hour	20 units
In a day of 8 hours,	
Ramu produced	150 Units
Shamu Produced	160 Units
Tinku Produced	175 Units

Solution:

- Standard Output for 8 Hours = 8 Hours $\times$ 20 units per hour = 160 units
- Piece Rate = Amount Per Hour $\div$ Units Per Hour = Rs. 30 $\div$ 20 units = 1.5 per unit
- Efficiency = (Actual Output $\div$ Standard Output) $\times$ 100
 Ramu = $(150 \div 160) \times 100 = 93.75\%$
 Shamu = $(160 \div 160) \times 100 = 100\%$
 Tinku = $(175 \div 160) \times 100 = 109.375\%$
- Gantt Task Bonus Plan:
 Ramu = Time Rate = No. of Hours Worked $\times$ Rate Per Hour = 8 Hours $\times$ Rs. 30 = Rs. 240/-
 Shamu = Time Rate + 20% Bonus = Rs. 240 + 20% = Rs. 288/-
 Tinku = No. of Units Produced $\times$ 120% of Piece Rate = 175 units $\times$ 1.8 per unit = 315/-

Q.8. From the following particular, you are required to work out the earnings of a worker for a week under:

- Straight piece rate
- Differential piece rate
- Halsey premium scheme (50% sharing)
- Rowan premium plan

Weekly working hours	48
Hourly wage rate	Rs. 7.50
Piece rate per unit	Rs. 3.00
Normal time taken per piece	24 minutes
Normal output per week	120 pieces
Actual output per week	150 pieces

Differential piece rate 80% of piece rate when output below normal and 120% of piece rate when output above normal.

Labour Cost

Solution:

1. Straight Piece Rate = No. of Units Produced x Rate per unit (Piece Rate)

$$= 150 \times 3$$

$$= \text{Rs. } 450/-$$
2. Differential Piece Rate = No. of Units Produced x Differential Piece Rate

$$= 150 \times 3.6 (3 \times 120\%)$$

$$= 540/-$$
3. Standard Time Required for 150 units = 150 Units $\times$ 24 Mins per unit

$$= 3600 \text{ mins} / 60 \text{ mins} = 60 \text{ Hours}$$
4. Time saved = Time Allowed – Time Taken

$$= 60 \text{ hours} - 48 \text{ hours}$$

$$= 12 \text{ Hours}$$
5. Halsey Premium Plan = Time Rate + 50% (Time saved x Rate per Hr.)

$$= (48 \text{ Hrs.} \times 7.5 \text{ per hr.}) + 50\% (12 \text{ Hrs.} \times 7.5 \text{ per hr.})$$

$$= 360 + 50\% (90)$$

$$= 360 + 45$$

$$= 405/-$$
6. Rowan's Premium Plan = Time Rate + $\frac{\text{Time Saved}}{\text{Time Allowed}}$ (Time Taken x Rate Per Hr.)

$$= (48 \text{ Hrs.} \times 7.5 \text{ per hr.}) + \frac{12}{60} (48 \text{ Hrs.} \times 7.5 \text{ per hr.})$$

$$= 360 + 0.2(360)$$

$$= 360 + 72$$

$$= 432/-$$

Q.9. A worker wages for a guaranteed 45 hours week is Rs 15 per hour. The estimated time to produce one article is 30 minutes and under an incentive plan, the time allowed is increased by 20%. During a week a worker produced 100 articles. Calculate the wages under each of the following methods:

- A) Time Rate
- B) Halsey system
- C) Rowan system

Solutions:

1. Time Rate = No. of Hours Worked x Rate per Hour

$$= 45 \text{ Hrs.} \times 15 \text{ per hr.}$$

$$= \text{Rs. } 675/-$$

2. Standard time for 1 article and 100 articles under incentive scheme:

For 1 unit = 30 Mins. + 20%

= 36 Mins per unit

For 100 units = 100 units × 36 mins per unit = 3600 mins / 60 mins
= 60 Hours.

3. Time Saved = Time Allowed – Time Taken

= 60 hours – 45 hours

= 15 Hours.

4. Halsey Premium Plan = Time Rate + 50% (Time Saved x Rate Per Hr.)

= (45 Hrs. x 15 per hr.) + 50% (15 x 15 per hr.)

= 675 + 50% (225)

= 675 + 112.5

= Rs. 787.5/-

5. Rowan Premium Plan = Time Rate + $\frac{\text{Time Saved}}{\text{Time Allowed}}$ (Time Taken x Rate Per Hr.)

= (45 Hrs. x 15 per hr.) + $\frac{15}{60}$ (45 Hrs. x 15 per hr.)

= 675 + $\frac{15}{60}$ (675)

= 675 + 168.75

= Rs. 843.75/-

Q.10. In Engineers India company, the standard time for a job is 18 hours and the basic wage is Rs. 40 per hour. Calculate the wages as per Time Rate, Halsey Plan and Rowan Plan if the job is completed in:

A. 10 hours

B. 13 hours

Solution:

1. Time Saved = Time Allowed – Time Taken

A = 18 – 10 = 8 Hrs.

B = 18 – 13 = 5 Hrs.

2. Halsey Premium Plan = Time Rate + 50% (Time Saved x Rate per hr.)

A = (10 Hrs. x 40 per hr.) + 50% (8 Hrs. x 40 per hr.)

= 400 + 50% (320)

= 400 + 160

= Rs. 560/-

B = (13 Hrs. x 40 per hr.) + 50% (5 Hrs. x 40 per hr.)

= 520 + 50% (200)

= 520 + 100

= Rs. 620/-

3. Rowan's Premium Plan = Time Rate + $\frac{\text{Time Saved}}{\text{Time Allowed}}$ (Time Taken x Rate Per Hr.)

Labour Cost

$$A = (10 \text{ Hrs.} \times 40 \text{ per hr.}) + \frac{8}{18} (10 \text{ Hrs.} \times 40 \text{ per hr.})$$

$$= 400 + \frac{8}{18} (400)$$

$$= 400 + 177.78$$

= Rs. 577.78/- or Rs. 578/-

$$B = (13 \text{ Hrs.} \times 40 \text{ per hr.}) + \frac{5}{18} (13 \text{ Hrs.} \times 40 \text{ per hr.})$$

$$= 520 + \frac{5}{18} (520)$$

$$= 520 + 144.44$$

$$= \text{Rs. } 664.44/- \text{ or Rs. } 664/-$$

Q.11. Calculate the total earning and effective rate of earnings per hour of two operators. Ramesh and Suresh under:

A) Halsey plan

B) Rowan plan

The standard time fixed for producing 100 articles is 50 hours

The rate of wages is Rs 1.50 per unit

The actual time taken for producing 100 articles is as under:

Ramesh 42 hours

Suresh 38 hours

Solution:

1. Standard Output Per Hour = 100 article $\times$ 1 hour $\div$ 50 hours = 2 articles.

2. Calculation of Rate per Hour:

$$\text{Rate Per Unit} = \frac{\text{Amount Per Hour}}{\text{Units Per Hour}}$$

$$1.5 = \frac{\text{Amt. Per Hr.}}{2 \text{ units}}$$

$$1.5 \times 2 = \text{Amount Per Hour}$$

Amount Per Hour = Rs. 3 per hour.

3. Times Saved = Time Allowed – Time Taken

Ramesh = 50 Hrs. – 42 Hrs. = 8 hours

Suresh = 50 Hrs. – 38 Hrs. = 12 hours

4. Halsey Premium Plan = Time Rate + 50% (Time Saved x Rate Per Hr.)

$$\begin{aligned}\text{Ramesh} &= (42 \text{ Hrs.} \times 3 \text{ per hr.}) + 50\% (8 \text{ Hrs.} \times 3 \text{ per hr.}) \\ &= 126 + 50\% (24) \\ &= 126 + 12 \\ &= 138/-\end{aligned}$$

$$\begin{aligned}\text{Suresh} &= (38 \text{ Hrs.} \times 3 \text{ per hr.}) + 50\% (12 \text{ Hrs.} \times 3 \text{ per hr.}) \\ &= 114 + 50\% (36) \\ &= 114 + 18 \\ &= 132/-\end{aligned}$$

5. Rowan Premium Plan = Time Rate + $\frac{\text{Time Saved}}{\text{Time Allowed}}$ (Time Taken x Rate Per Hr.)

$$\begin{aligned}\text{Ramesh} &= (42 \text{ Hrs.} \times 3 \text{ per hr.}) + \frac{8}{50} (42 \text{ Hrs.} \times 3 \text{ per hr.}) \\ &= 126 + 20.16 \\ &= 146.16/-\end{aligned}$$

$$\begin{aligned}\text{Suresh} &= (38 \text{ Hrs.} \times 3 \text{ per hr.}) + \frac{12}{50} (38 \text{ Hrs.} \times 3 \text{ per hr.}) \\ &= 114 + 27.36 \\ &= 141.36/-\end{aligned}$$

6. Effective Rate of earning per hour:

Employee Name	Halsey Premium Plan	Rowan Premium Plan
Ramesh	= 138 / 42 hours = 3.29 per hour	= 146.16 / 42 hours = 3.48 per hour
Suresh	= 132 / 38 hours = 3.47 per hour	= 141.36 / 38 hours = 3.72 per hour

3.9 LABOUR TURNOVER:

Labour Turnover refer to rate of change in labour force of an organisation during specific period. In an organisation some of the existing staff leave and some new staff join the organisation, this phenomenon is known as labour turnover.

Causes of Labour Turnover:

1. **Avoidable Causes:** Low pay and allowance, Unsatisfactory working condition, Lack of amenities, etc.
2. **Unavoidable Causes:** Discharge due to long absence, Discharge on disciplinary ground, Economic and social factors, etc.
3. **Personal Causes:** Dislike of Job, Retirement due to age, Death, etc.

Measurement of Labour Turnover:

Labour Cost

1) Separation Method: Under this method, number of employees left / separated during the period is taken into consideration for computing the Labour Turnover.

$$\text{Labour Turnover} = \frac{\text{No. of workers separated during the year}}{\text{Avg. No. of workers on roll during the year}} \times 100$$

Where,

$$\text{Average No. of workers on roll during the year} = \frac{\text{Opening No. of Workers} + \text{Closing No. of Workers}}{2}$$

2) Replacement Method: In this method number of employee replaced is taken into consideration for Labour Turnover.

$$\text{Labour Turnover} = \frac{\text{No. of workers replaced during the year}}{\text{Avg. No. of workers on roll during the year}} \times 100$$

3) New Recruitment Method: Under this method number of new employees added for new work is taken into consideration for Labour turnover.

$$\text{Labour Turnover} = \frac{\text{No. of new recruitment}}{\text{Avg. No. of worker on roll during the year}} \times 100$$

4) Flux Method: This method is combination of employee separated and relaced during the year, is taken into consideration for Labour turnover.

$$\text{Labour Turnover} = \frac{\text{No. of seperation} + \text{No. of Replacement}}{\text{Avg. No. of workers on roll During the year}} \times 100$$

Separation = No. of workers left whether voluntary or not.
Replacement = New worker in place of existing worker.
New Recruitment = New worker for new job.

Q.12. From the following information calculate labour turnover by different methods:

No. of workers as on 01. 04. 2020 = 7,600

No. of workers as on 31. 03. 2021 = 8,400

During the year 80 workers left while 320 were discharged, 1500 workers were recruited during the year of these 300 were recruited because of exits and the rest were recruited in accordance with expansion plans.

Solution:

$$\text{Separation} = 80 + 320 = 400$$

$$\text{Replacement} = 300$$

$$\text{New Recruitment} = 1200 (1500 - 300)$$

$$\text{Average No. Workers on Roll During Year} = (\text{Opening Worker} + \text{Closing Workers}) \div 2$$

$$= (7,600 + 8,400) \div 2$$

$$= 8,000$$

1) Separation Method:

$$\text{Labour Turnover} = \frac{\text{No. of Separation}}{\text{Avg. No. of workers}} \times 100$$

$$= \frac{400 (80+320)}{8000} \times 100$$

$$= 5\%$$

2) Replacement Method:

$$\text{Labour Turnover} = \frac{\text{No. of Replacement}}{\text{Avg. No. of workers}} \times 100$$

$$= \frac{300}{8000} \times 100$$

$$= 3.75\%$$

3) New Recruitment Method:

$$\text{Labour Turnover} = \frac{\text{No. of new recruitment}}{\text{Avg. No. of Workers}} \times 100$$

$$= \frac{1200(1500-300)}{8000} \times 100$$

$$= 15\%$$

4) Flux Method:

$$\text{Labour Turnover} = \frac{\text{No. of Separation} + \text{No. of Replacement}}{\text{Avg. No. of workers}} \times 100$$

$$= \frac{400+300}{8000} \times 100$$

$$= 8.75\%$$

Q.13 During October 2015, the following information is obtained from the Personnel Department of a manufacturing company. Labour force at the beginning of the month 1900 and at the end of the month 2100. During the month, 25 people left while 40 persons were discharged. 280 workers were engaged out of which only 30 were appointed in the vacancy created

by the number of workers separated and the rest on account of expansion scheme. Calculate the Labour Turnover by different methods.

Labour Cost

Solution:

$$\text{Separation} = 25 + 40 = 65$$

$$\text{Replacement} = 30$$

$$\text{New Recruitment} = 250 (280 - 30)$$

$$\text{Average No. Workers on Roll During Year} = (\text{Opening Worker} + \text{Closing Workers}) \div 2$$

$$= (1,900 + 2,100) \div 2$$

$$= 2,000$$

1) Separation Method:

$$\text{Labour Turnover} = \frac{\text{No. of Separation}}{\text{Avg. No. of workers}} \times 100$$

$$= \frac{65 (25+40)}{2000} \times 100$$
$$= 3.25\%$$

2) Replacement Method:

$$\text{Labour Turnover} = \frac{\text{No. of Replacement}}{\text{Avg. No. of workers}} \times 100$$

$$= \frac{30}{2000} \times 100$$
$$= 1.5\%$$

3) New Recruitment Method:

$$\text{Labour Turnover} = \frac{\text{No. of new recruitment}}{\text{Avg. No. of Workers}} \times 100$$

$$= \frac{250(280-30)}{2000} \times 100$$
$$= 12.5\%$$

4) Flux Method:

$$\text{Labour Turnover} = \frac{\text{No. of Separation} + \text{No. of Replacement}}{\text{Avg. No. of workers}} \times 100$$

$$= \frac{65+30}{2000} \times 100$$
$$= 4.75\%$$

3.10 CALCULATION OF LABOUR COST:

Labour cost is sum total of all consideration paid, payable and provisions made for future payments. Consideration includes wages, salary,

contractual payment, benefits as applicable and any payment made on behalf of employee.

Element of Wages: Basic Pay, DA, HRA, Overtime Allowance, Other Allowance, Bonus, Employer's Contribution to PF / ESI, etc.

Q.14 From the following monthly information prepare a statement showing cost per day of 8 hours and also find out labour cost per hour:

1) Basic pay	Rs. 10,000
2) D. A.	100% of basic
3) Leave salary	10% of basic
4) Employer's contribution to P. F.	12% of basic & DA
5) Employer's contribution to ESI	4.75% of basic & DA
6) Pro rata expenditure on labour welfare p.m.	Rs. 1000
7) No of working hours in a month	2,000

Solution:

Statement Showing Labour Cost

Particulars	Rs.
Basic Pay	10,000
DA (100% of Basic)	10,000
Leave Salary (10% of Basic)	1,000
Employers Contribution to PF (12% of Basic & DA)	2,400
Employer's Contribution to ESI (4.75% of Basic & DA)	950
Pro Rata Expenditure on labour welfare per month	1,000
Total Labour Cost	25,350
÷ No. of Working Hours	2000 Hrs.
Labour Cost Per Hour	12.675

Cost Per Day of 8 Hours = 8 Hrs. x 12.675 per hour

= Rs. 101.4/-

Q.15 Mr. Lokhande an employee of L & T Company gets the following emoluments:

1) Salary per month	Rs. 5000
2) D.A.	
On 1 st Rs. 2,000 of salary	Rs. 4000
On next Rs. 2,000 of salary	Rs. 2000
On Balance every Rs 1000 or part thereof.	Rs. 2000

- 3) Employer's contribution to Provident fund 12% of salary and DA
- 4) Employer's contribution to ESI 4.75 of salary and DA
- 5) Bonus 20% of salary and DA
- 6) Other allowances RS 27,750 p.a.
- 7) Mr. Lokhande works for 2400 hours p.a. out of which 400 hours are normal idle time.

Labour Cost

Find out the effective hourly cost of Mr. Lokhande.

Solution:

Statement Showing Labour Cost of Mr. Lokhande

Particulars	Rs.	Rs.
Salary Per Month		5,000
DA:		
On 1 st 2,000 of Salary	4,000	
On next 2,000 of Salary	2,000	
On balance every 1000 or part thereof	2,000	8,000
Salary & DA per month		13,000
Labour Cost Per Annum		
Salary & DA per annum (Rs. 13,000 x 12 months)		1,56,000
Employer's Contribution to PF (12% of Salary and DA)		18,720
Employer's Contribution to ESI (4.75% of Salary and DA)		7,410
Bonus (20% of Salary and DA)		31,200
Other Allowances		27,750
Total Labour Cost		2,41,080
÷ Effective No. Of Hours (2400 – 400)		2,000
Effective Labour cost per Hour		120.54

❖ **Exercises (Practical Problem):**

1. Calculate labour cost using Halsey Premium Plan (50%) and Rowan Premium Plan:

Time Allowed: 15 hours

Time Taken: 13 hours

Wage Rate: Rs. 45 per hour

(Answer: Halsey Premium Plan Rs. 630/- & Rowan Premium Plan Rs. 663/-)

2. A worker is allowed 75 hours to complete job on guaranteed wage of Rs. 50 per hour. He completes the job in 60 hours. Calculate wages of worker as per Halsey Premium Plan (50%) and Rowan Premium Plan.
(Answer: Halsey Premium Plan Rs. 3,375/- and Rowan Premium Plan Rs. 3,600/-)

3. From the following information calculate the wages of worker A and B as per Halsey Premium Plan (50%) and Rowan Premium Plan:
Time allowed to complete the Job 100 hours

Wages per hour Rs. 30

Time Taken to complete the job:

A 60 hours
B 75 hours

[Answer: Halsey Plan (A – Rs. 2,400/- & B – Rs. 2,625/-) and Rowan Plan (A – Rs. 2,520/- & B – Rs. 2,812.5/-)]

4. Using **Taylor's differential piece rate** calculate the earnings of X and Y from the following particulars:

Standard time per unit 20minutes
Normal Rate Rs. 9 per unit
In a day of 9 hours:
X Produced 25 Units
Y Produced 30 Units

(Answer: X Rs. 180/- and Y Rs. 324/-)

5. From the following particulars, calculate the earnings of A & B using **Straight Piece rate and Taylor's differential piece rate**:

Standard time allowed: 20 units per hour
Normal Time Rate: Rs. 30 per hour
Differential Rate to be applied:
80% of piece rate when below standard
120% of piece rate at or above standard

In a particular day of 8 hours, A produces 140 units while B produces 165 units.

(Answer: Straight Piece Rate: A Rs. 210/-, B Rs. 247.5/- and Taylor's DPRS: A Rs. 168/-, B Rs. 297/-)

6. Calculate earnings of worker A, B & C under **Merrick's Multiple Piece Rate System** from the following:

Normal rate per hour Rs.150
Standard units per hour 50units

Output per day:

Labour Cost

A	320 units
B	380 units
C	450 units

Working hours per day 8 hours.

(Answer: A Rs. 960/-, B = Rs. 1,254/- and C = Rs. 1,620/-)

7. The following particulars apply to a particular job:

Standard production per hour - 6 units

Normal rate per hour –Rs. 120

In a particular day of 8 hours,

Mohan produced 32 units

Ram produces 42 units

Prasad produces 50 units

Calculate the wages of these workers under Merrick Differential Piece Rate System.

(Answer: Mohan Rs. 640/-, Ram Rs. 924/- and Prasad Rs. 1,200/-)

8. Calculate the earnings of worker X, Y & C as per **Gantt Task Bonus Plan** from the following:

Standard Rate per hour	Rs.50 per hour
Standard Rate per unit	Rs. 2 per unit
Normal output per hour	25 units
In a day of 9 hours,	
X produced	175 Units
Y Produced	225 Units
Z Produced	275 Units

(Answer: X Rs. 450/-, Y Rs. 540/- and Z Rs. 720/-)

9. The following information relates to workforce in a factory during the year 2019-20:

Number of workers on 01/04/2019	2,350
Number of workers on 31/03/2020	2,850
Number of workers who quit on their own	200
Number of workers availed golden handshake (replacement)	100
Number of workers employed due to expansion	400

Calculate the Labour Turnover by different methods.

(Answer: Separation Method 7.69%, Replacement Method 3.85%, New Recruitment Method 15.38% and Flux Method 11.54%)

10. Mr. Bhavesh of XYZ Ltd. Gets the following emoluments and benefits:

a.	Basic Salary	Rs. 75,000 p.a.
b.	Dearness Allowance	Rs. 1,57,500 p.a.
c.	Employer's Contribution to PF	8% of Basic Salary and DA
d.	Employer's Contribution to ESI	4% of Basic Salary and DA

- | | | |
|----|------------------|----------------------------|
| e. | Bonus | 20% of Basic Salary and DA |
| f. | Other Allowances | Rs. 68,100 |

Mr. Bhavesh works for 2,200 hours per annum, out of which 200 hours are non-productive.

Find out the effective hourly cost of Mr. Bhavesh.

(Answer: Total Labour Cost Rs. 3,75,000 and Effective Labour Cost per Hour Rs. 187.5)

❖ **Multiple Choice Questions:**

1. The flux rate method of labour turnover considers _____.
a. Employee Left
c. Employee Joined & Left
d. Employee Replaced
2. Taylor's Differential piece rate plan penalised _____.
a. Efficient Workers
b. Inefficient Workers
c. Average workers
d. None of the above
3. The difference between hours paid and hours worked is called _____.
a. Idle Time
b. Standard Time
c. Normal Time
d. Time Saved
4. A worker is allowed 60 hours to complete a job on a guaranteed wage of Rs 10 per hour. He completes the job in 48 hours. How much will he earn under Rowan Plan?
a. Rs. 450
c. Rs. 576
b. Rs. 640
d. Rs. 700
5. Gantt Task is example of _____.
a. Time Rate System
c. Combination of Time & Piece Rate
b. Piece Rate System
d. Overheads
6. Under _____ system output of worker is not relevant.
a. Merrick's Plan
b. Time Rate
c. Taylor Plan
d. Piece rate
7. The workers who are entitled to wages on the basis of their output are called as _____.
a. Piece Workers
b. Casula Workers
c. Time Workers
d. Out Workers
8. Wage sheet is prepared by
a. time keeping department
c. payroll department
b. personnel department
d. engineering department

9. Labour Turnover is

- | | |
|---------------------------|----------------------------------|
| a. Productivity of Labour | b. Change in labour force |
| c. Efficiency of Labour | d. Total cost of the labour |

10. Halsey premium plan is

- | | |
|---------------------------------------|-----------------------------------|
| a. individual incentive scheme | b. group incentive scheme |
| c. time and piece wage system | d. differential piece rate system |

❖ **State whether following statements are True or False:**

1. In Taylor's Differential Piece Rate, Time wages are guaranteed to each worker.
2. When wages are paid on piece basis, the quality of work declines.
3. Job evaluation is the comparative appraisal of workers on different jobs.
4. Idle time is the difference between time clocked and time booked.
5. Direct wages is fixed cost.
6. Merrick's Differential Piece Rate is less punitive (punished) than Taylor's Differential Piece Rate.
7. Under Rowan plan, bonus is fixed percentage.
8. Cost of normal idle time is treated as production cost.
9. Idle time arises when workers are paid on piece rate basis.
10. Efficiency of workers is measured on the basis of Time Taken for performance of a job.

(Answer: True 2,4,6,8,10 and False 1,3,5,7,9)

❖ **Short Notes:**

1. What is Labour Turnover? How do you measure Labour Turnover?
2. What are the various wage payment methods?
3. Job Evaluation
4. Merit Rating
5. Straight Piece Rate v/s Differential Piece Rate
6. Halsey Plan
7. Rowan Plan
8. Time Recording
9. Idle time and types of Idle time.
10. Payroll Accounting and Payroll Procedure.



OVERHEADS

Unit structure

4.0 Objectives

4.1 Introduction

4.2 Overheads the Concept

4.3 Basis of Apportionment or Distribution of Overheads

4.4 Solved Problems

4.5 Exercise

4.0 OBJECTIVES

After studying the unit the students will be able to:

- Understand the meaning and composition of overheads.
- Explain the procedure of Overhead Accounting.
- Discuss about the basics of apportionment and absorption of overheads.
- Solve the practical problems.

4.1 INTRODUCTION

Total cost of product involves direct and indirect cost. Direct Cost can be directly identified with manufacturing of product. It includes Direct Material, Labour and expenses. Indirect Cost is identified with non-production / manufacturing of goods. The indirect cost is referred to as overheads or loading or supplementary cost.

4.2 OVERHEADS- THE CONCEPT

4.2.1 MEANING

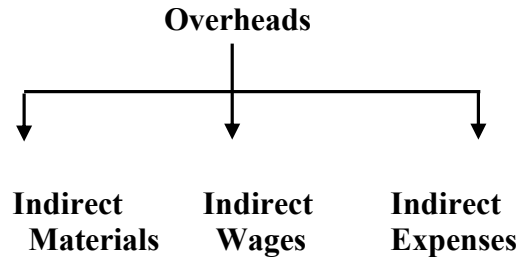
Overhead Costs are operating cost of business enterprise which cannot be traced directly to a particular unit of output. The term overhead is used interchangeably with such terms as 'burden', 'supplementary costs', 'manufacturing expenses' and 'indirect expenses'. **Blocker and Wellmer.**

'In Cost accounting all indirect, costs are termed as 'Overhead'. **W W. Bigg.**

“The Aggregate of Indirect Material Costs, indirect wages (labourcost)and indirect expenses”.**The Institute of Cost and Management Accountants, London.**

Overheads

4.2.2 Composition of Overheads :



4.2.3 Overheads Accounting:

Overheads comprises of indirect materials, indirect wages and indirect expenses which are not directly identified or allocated to cost object in an economically feasible way.

Overheads accounting aims at absorbing the overload in product unit produced by the firm or company. It involves the following:

- i) Collection, Classification and Codification of Overheads.
- ii) Allocation, Apportionment and Reapportionment of Overheads.
- iii) Absorption of Overheads.

1. Collection of overheads: It means the collection of items of expenses from the Books of account and other records regarding to their nature and purposes. E.g. Store Issue Note, Purchase Voucher, Pay Roll Sheet, Time Sheet, Cash Book, Journals other reports.

2. Codification of Overheads:-It means giving a code number to each item of overheads for easy identification from different heads of overhead. It may be done numerically alphabetically.

For Example -

Turning Department. A1 or A

Grinding Department. A2 or B

Component of Manufacturing - 101

Maintenance - 102

3. Classification of Overheads:-It means the process of grouping overheads according their common features or characteristics or nature.

It can be classified in the following ways.

- a) On the Basis of Behaviour -
 - Fixed and Variable Overheads

b) On The Basis of Function -

- Production Overheads, Selling and Distribution Overheads and Administration Overheads.

4. Allocation of Overheads :-It means Charging the whole items of cost to suitable and identifiable cost centers or cost units. It is transfer of the cost of goods or services from primary account to one or more secondary accounts.

5. Apportionment of Overheads:- It means distribution of cost over several periods of time in proportion to anticipated benefits. It consists of dividing a joint or common cost between two or more cost objectives. It means distribution of overheads to more than one cost centers on some equitable basis. This also known as 'departmentalisation of overheads'.

6. Absorption of Overheads:It means charging of overheads from cost centers to product or service by means of absorption rate for each cost centre.

$$\text{Overhead Absorption Rate} = \frac{\text{Total Overhead of the Cost Centre}}{\text{Total Quantum of Unit or Base}}$$

It means the expensing the cost of Job, products, process or unit, i.e. recovery by the product. The cost absorption process involves the recognition of expenses under the conditions of physical movement, benefit yielded and period of charges, etc.

4.3 BASIS OF APPORTIONMENT OR DISTRIBUTION OF OVERHEADS

There are some items of expenses which cannot be allocated easily to a specific department and it needs equitable apportionments on the basis of benefit received. It is done on the basis of floor area occupied, labour hours, machine hours, kilowatt hours, capital value or value of assets, technical estimate, etc.

The Table Shows the Apportionment of Overheads.

	Overheads / Expenses	Basis of Apportionment
1)	Rent, Rates, Taxes, Air Conditioning	Floor Area Occupied
2)	Labour Welfare Expenses, Perquisites, Time Keeping, Personnel Office, Supervision	No. of Workers
3)	Compensation to Workers, Holiday Pay, ESI and PF Contribution	Direct Wages
4)	Depreciation on P & M, Repair & Maintenance of P & M	Capital Value or Value of Assets
5)	Insurance of Stock	Stock Value

6)	Lighting expenses, electric power	No. of light points or area occupied or material unit or house power of machine or No. of machine hours or value of machine or consumption of unit.
7)	Material landing and store overheads	Weight of materials or volume of material or value of materials or unit of materials
8)	Delivery expenses	Weight, volume or tone mile
9)	Telephone expenses.	No. of Calls or No. of telephone machine
10)	Audit fees	Sales or total cost
11)	Advertising	Actual expenses or % of sales
12)	Store keeping	Weight or value of materials
13)	Recreation	No. of employees or total wages

b)	Cost of Service Department	Basis of Apportionment
1)	Purchases	No. of purchases or value of purchases
2)	Account	No. of employees or value of purchases
3)	Maintained, repairs of shop, planning & progress, tool room	Direct Labour Hour, Machine Hours, Direct Labour Wages
4)	Canteen & welfare, hospital (medical), dispensary, personal department, time keeping	No. of workers, No. of employees
5)	Computer Section	No. of Card punched, computer hour, specific allocation to departments
6)	Power House (electric lighting cost)	Floor area, cubic content, No. of electric points, wattage
7)	Power House (electric power cost)	Horse power, KWH, Horse Power x Machine Hours KWH x Machine Hours
8)	Store Department	value or weight of material issued
9)	Transport Department	Crane hours, truck hours, truck mileage, truck tonnage, truck non-hours, tonnage handled, No. of packages of standard size.
10)	Fire Protection	Capital value of assets
11)	Inspection / Quality	Inspection labours
12)	Purchase Departments	No. of purchase order, value of purchases

4.4 SOLVED PROBLEMS

Illustration : 1

A Limited Company has Three Manufacturing Departments 'A', 'B' and 'C' and one service Department 'S'. The following Figures are available of 25 working days of 8 hours each day. All These Departments Work for all the days and with full attendance.

Expenditure	Departments				Total
	A Rs	B Rs	C Rs	S Rs	Rs
Power and Lighting	200	300	360	240	1,100
Supervisor's Salary	-	-	-	-	2,000
Rent	-	-	-	-	1,000
Welfare	-	-	-	-	900
Other Expenses	200	400	400	200	1,200
Total	-	-	-	-	5,400
Supervisor's Salary	30%	30%	20%	20%	100%
No. of Workers	30	40	20	10	100
Floor area (Sq Ft)	600	800	600	500	2500
Service rendered by Service Dept	50%	30%	20%	-	100%

Calculate Labour hour rate for each department A, B & C.

Solution:

Statement Showing Distribution of Overheads

Expenditures	Base	Departments				Total
		A (Rs')	B (Rs')	C (Rs')	S (Rs')	Rs
Power & Lighting	Given	200	300	360	240	1,100
Supervisor's Salary	% age	600	600	400	400	2,000
Rent	Floor Area	240	320	240	200	1,000
Welfare	No. of Workers	270	360	180	90	900
Other Expenses.	Given	200	400	400	200	1,200
Total		1,510	1,980	1,580	1,130	6,200
Allocation of Expenses of Service Dept to Manu. Dept	% age	565	339	226	(1,130)	
		2,075	2,319	1,806	--	6,200

1) No. of Hours in a Month = $25 \times 8 = 200$ hours

2) Total Labour hours in each Dept

Dept A = 200×30 Hrs = 6000Hrs

B = 200×40 Hrs = 8000Hrs

C = 200×20 Hrs = 4000Hrs

3) Labour Hour Rate For Department

A - $\frac{2075}{6000} = 0.3458 = \text{Rs}0.35 \text{ Paise}$

B - $\frac{2319}{8000} = 0.289 = \text{Rs}0.29 \text{ Paise}$

C - $\frac{1806}{4000} = 0.451 = \text{Rs}0.45 \text{ Paise}$

Illustration : 2

You are Supplied with the following information and required to work out the production hour rate of recovery of overhead in Departments, A, B and C.

Particulars	Production Dept				Service Dept	
	Total (Rs)	A (Rs)	B (Rs)	C (Rs)	D (Rs)	E (Rs)
Rent	12,000	2,400	4,800	2,000	2,000	800
Electricity	4,000	800	2,000	500	400	300
Indirect Labour	6,000	1,200	2,000	1,000	800	1,000
Depreciation on Machinery	5,000	2,500	1,600	200	500	200
Sundries	4,500	910	2,143	847	300	300
Estimated Working Hours		1,000	2,500	1,400	--	--

Expense of Service Departments D and E are apportioned as follows:

	A	B	C	D	E
D	30%	40%	20%	--	10%
E	10%	20%	50%	20%	--

Solution:**Statement of Overhead Distribution**

Particulars	Total	Production Department			Service Department	
		A	B	C	D	E
Rent	12,000	2,400	4,800	2,000	2,000	800
Electricity	4,000	800	2,000	500	400	300
Indirect Labour	6,000	1,200	2,000	1,000	800	1,000
Depreciation on Machinery	5,000	2,500	1,600	200	500	200
Sundries	4,500	910	2,143	847	300	300
Total	31,500	7,810	12,543	4,547	4,000	2,600
Dept. D		1,200	1,600	800	(4000)	400
		9,010	14,143	5,347	00	3,000
E		300	600	1,500	600	(3,000)
		9,310	14,743	6,847	600	00
D		180	240	120	(600)	60
		9,490	14,983	6,967	00	60
E		6	12	30	12	(60)
		9,496	14,995	6,997	12	00
D		4	5	3	(12)	--
Total		9,500	15,000	7,000	00	--
Estimated Working Hrs		1,000	2,500	1,400	--	--
Rate Per Hour		<u>9,500</u> 1,000	<u>15000</u> 2500	<u>7000</u> 1400	-	-
Rate per hour		9.50	6.00	5.00	-	-

Illustration : 3

Overheads

In a Light Engineering Factory, Mumbai Andheri (West), a Machine shop consists of three cost centers (A, B and C) each having three district set of Machines. Following are the details of estimates for year 2016.

Particulars	Departments			Total
	A	B	C	
No. of Workers	200	200	400	800
No. of Machine Hours	30,000	30,000	40,000	1,00,000
% age of Horse Power	40	25	35	100
Value of Assets (Rs)	10,00,000	16,00,000	14,00,000	40,00,000
Direct Wages (Rs)	8,00,000	10,00,000	12,00,000	30,00,000
Depreciation (Rs)				4,00,000
Indirect Labour (Rs)				9,00,000
Insurance Charges (Rs)				2,00,000
Electricity (Rs)				3,00,000
Supervisory Salary (Rs)				1,60,000
Staff Welfare Expenses (Rs)				3,00,000
Other Expenses (Rs)				6,00,000

Work out a composite machine hour rate for each of the three cost centre indicate clearly the basis of apportionment of expenses between three cost centers.

Solution:**Computation of Composite Machine Hour Rate**

Particulars	Base	Cost Centers			Total (Rs)
		A (Rs)	B (Rs)	C (Rs)	
Direct Wages	Given	8,00,000	10,00,000	12,00,000	30,00,000
Depreciation	Value of Assets	1,00,000	1,60,000	1,40,000	4,00,000
Indirect Labour	Direct Wages	2,40,000	3,00,000	3,60,000	9,00,000
Insurance Charges	Value of Assets	50,000	80,000	70,000	2,00,000

Electricity	Horse Power %	1,20,000	75,000	1,05,000	3,00,000
Supervisory Salary	No. of Workers	40,000	40,000	80,000	1,60,000
Staff Welfare	No. of Workers	75,000	75,000	1,50,000	3,00,000
Other Expenses	No. of Machine Hours	1,80,000	1,80,000	2,40,000	6,00,000
Total	a)	16,05,000	19,10,000	23,45,000	58,60,000
No. of Machine Hours	b)	30,000	30,000	40,000	1,00,000
Machine Hour Rate	a ÷ b	53.50	63.666 or 63.67	58.625 or 58.63	- -

Illustration : 4

In a factory there are three production departments and two service departments i.e. A, B, C, R and S respectively. In a March 2015, the departmental expenses were as follows:

Production Department			Service Department	
A	B	C	R	S
(Rs) 46,000	12,000	13,000	9,000	4,000

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

particulars	Production Dept.			Service Dept.	
	A	B	C	R	S
Service Dept R	40%	30%	20%	--	10%
Service Dept S	30%	30%	20%	20%	--

You are required to apportion the cost of service department to production department under Repeated Distribution Method.

Solution:

Overheads

Particulars	Base of allocation	Prod. Dept. A Rs	Prod. Dept. B Rs	Prod. Dept. C Rs	Service Dept. R Rs	Service Dept. S Rs
Primary Distribution of Overheads		46,000	12,000	13,000	9,000	4,000
Dept. 'R' Overhead	4:3:2:1	3,600	2,700	1,800	-9,000	900
Dept. 'S' Overheads	3:3:2:2	1,470	1,470	980	980	-4900
Dept. 'R' Overheads	4:3:2:1	396	294	196	-980	98
Dept. 'S' overheads	3:3:2:2	30	30	20	18	-98
Dept. 'R' Overheads	4:3:2:1	8	6	4	-18	-
Total		51,500	16,500	16,000	—	—

4.5 EXERCISES:-

01. The overhead expenses of a company are recovered by the cost accountant according to the production departments 'X' and 'Y' and service department 'S'. From the following information prepare a primary distribution schedule.

	Expenses	Rs.	
	Indirect Wages	8,000	
	Rent and Rates	15,000	
Power	4,500		
Light	3,200		
Depreciation on Machinery	24,000		
Sundries	20,000		
Following information is also available for department :			
Particulars	‘X’	‘Y’	‘S’
Working Hours	4,000	3,500	3,600
H.P.of Machine	15	25	05
Direct Wages (Rs)	12,000	4,000	4,000
Value of Machinery (Rs)	100,000	80,000	60,000
Floorspace area (Sq. ft.)	600	500	400
Light Points	10	05	05

(Ans :Dept. X-Rs.35,900; dept. Y- Rs 21,900 and Dept. S- Rs 20,900)

02. A Ltd. furnish you the following half yearly budgeted data for for the half year ended 31st March 2015. Distribute the overheads by most equitable method.

Particulars Dept.	Production Dept.			Service	
	A	B	C	D	
E					
Direct Wages (Rs)	40,000	60,000	80,000	20,000	
40,000					
Direct Materials (Rs in lacs)	1	2	4	2	1
No. of employees	10	15	15	05	05
Electricity (MWH)	8,000	6,000	4,000	2,000	2,000
Light Point	5	8	2	3	2
Asset Value (Rs in lacs)	12	8	6	2	2
Area occupied, (Sq. meters.)	150	250	100	50	50

The overheads for the above period were :

Particulars	Rs	Particulars	Rs
Motive Power	17,500	Lighting	
1,600			
Store Expenses	20,000	Staff Welfare Expenses	4,000
Depreciation	30,000	Repairs	15,000
Rent, Rates and Taxes	12,000	General Expenses	12,000

03. A company is having two production departments namely A and B and two service departments S-1 and S-2. The expenses incurred during the of March,2014 are as following :

Expenses	Rs
Electricity	3,600
Insurance on Assets	9,000
Power	15,000
Rent and Taxes	28,000
Depreciation	18,000
Canteen expenses	5,400

The following information is also available for the above departments.

Particulars	A	B	S-1	S-2
Floor Space (sq. ft.)	6,000	4,000	2,000	2,000
No. of Workers	100	50	50	25
H. P. of Machine	120	30	30	15
Direct wages	10,000	10,000	5,000	3,000
Value of Assets (Rs. in thousands)	10	4	3	1
Direct Materials	15,000	10,000	5,000	-
No. of Light Points	30	15	15	5

Prepare statement showing primary distribution of overheads.

04. The following data were obtained from the books of Four Square Engineering for the following half year ended 30th June , 2014. Prepare overhead distribution summary.

Overheads

Items	Production Dept.		Service Dept.		
	A	B	C	X	Y
Direct Wages (Rs)	7,000	6,000	5,000	1,000	1,000
Direct Materials (Rs)	3,000	2,500	2,000	1,500	1,000
Employees (Nos.)	200	150	150	50	50
Electricity(kwh)	8,000	6,000	6,000	2,000	3,000
Light Points (Nos)	10	15	15	5	5
Assets Value (Rs)	50,000	30,000	20,000	10,000	10,000
Area Occupied (Sq. Mtrs.)	800	600	600	200	200

Expenses for the 6 months were as follows:

Expenses	Rs	Expenses	Rs
Stores overheads	400	Depreciation	6,000
Motive power	1,500	Repairs and Maintenance	1,200
Electric Power	200	General Expenses	10,000
Labour Welfare	3,000	Rent and Taxes	600

Apportion the expenses of Department X in the ratio of 4:3:3 and that of Department Y in proportion to direct wages, to department A, B and c respectively.

(Answer : Dept. A – Rs 11,396; Dept. B- Rs 8,663 ; Dept. C- Rs 7,341)

4.6 COMPUTATION OF OVERHEAD RATES

OBJECTIVES

After studying the unit the students will be able to:

- Calculate the overhead absorption rate.
- Understand the methods of absorption of overheads.
- Solve the related practical problems.

INTRODUCTION

We have seen the methods of apportionment of overheads in the earlier chapter. The next step is to see how overheads are absorbed in the cost of production. Absorption of overheads means recovery of overhead in the cost of production.

It means charging of overheads to cost centers in such a manner that are the cost of production of such unit includes an appropriate or equal share of overheads of cost centers.

OVERHEADS ABSORPTION RATES

The overhead absorption rate is determined for the purpose of absorption of overheads in cost of job, products, etc. There are several methods of determination of overheads absorption rate.

Overhead absorption rate is the relation between amount of overheads and total numbers of units of the base selected.

$$\text{Overhead Absorption Rate} = \frac{\text{Amount of Overheads}}{\text{Quantile or Value Base}}$$

Actual Rate:

Actual Rate is determined by dividing actual overheads incurred during the period by actual quantity or value of base selected.

$$\text{Actual Rate} = \frac{\text{Actual Overhead Expenses Incurred During the Period}}{\text{Actual Quantity or Value of The Base Related to Production during the period}}$$

Pre - Determined Rate:

This is rate is decided on the basis of budgeted overheads and the budgeted base for the certain period.

$$\text{Pre - Determined Rate} = \frac{\text{Budgeted Overhead for The Period}}{\text{Budgeted Base for The Period}}$$

This ratio facilitates calculation of cost in advance and helps while preparing bills promptly. No extra clerical staff is required.

Blanket Rate:

This is the single or general overheads rates applicable to the whole factory. This rate is suitable in those fortifies where several products passes through many departments.

$$\text{Blanket Rate} = \frac{\text{Overhead Cost for Entire Factory}}{\text{Total Quantum of Base Selected}}$$

Multiple Rate:-

A concern may use multiple overhead rates separately for each producing department, for each service department for each cost centers and for each product line. It is determined where the product lines are varied or machinery is used for varying degrees in different department. It means the incidents of overhead cost each department is different.

This calculated as follows.

$$\text{Multiple Overhead Rate} = \frac{\text{Each Depatment Cost Centres or Product}}{\text{Corresponding Base}}$$

METHODS OF ADSORPTION OF OVERHEAD

Overheads

Following are the various method adapted for absorption of overhead.

1. Machine Hour Rate:

It is the cost of running a machine for one hour. Under this method, machines are used as the basis of overhead absorption rate.

$$\text{Machine Hour Rate} = \frac{\text{Production Overhead}}{\text{Machine Hours}}$$

This method is suitable where major portion of production of goods is performed with the help of machine. Machine Hour Rate facilitates the calculation of correct and reliable cost. Relative efficiencies of Machines can be compared. It helps management to understand the difference between usefulness of machine and Manual Work.

It is not suitable where major work is done by manual labour. It requires detailed record of machines for each job. It is difficult to understand and operate and also difficult to calculate machine hour in advance.

Computation of Machine Hour Rate:

Computation of Machine Hour Rate involves the following:

- i) Consider each machine or a group as a separate cost centre.
- ii) Compute fixed or Standing Charges which vary with line and not with Machine.

Fixed / Standing Charges	Base of Apportionment
a) Rent	Area Occupied
b) Heating & Lighting	No. of Light Point or Floor Area Occupied
c) Supervision Charges	Time devoted by Supervisor
d) Insurance	Insured Value of each Machine
e) Cleaning Materials	No. of Machines
f) Miscellaneous Expenses	Based on the facts

- iii) Computation of Machine Hours

a) No. of Effective Working Days	xxx
b) No. of Working Hours Per Day	xxx
c) Total Working Hours (a x b)	xxx
d) Less: No Hours required for machine and repairs	xxx

e) Effective Machine Hours (c - d)	xxx
f) Unproductive setup time	xxx
g) Effective Machine Hours (e - f)	xxx

iv) Standing Charges per hour II / III xxx

v) Running Charges for Each Machine

Running Charges	Base of Apportionment
a) Depreciation	Value / Useful Life
b) Repairs and Maintenance	Machine Hours
c) Power	Meter Reading / HD / Machine Hours
d) Miscellaneous expenses	Equitable basis based on factor.

vi) Hourly Running Charges for each Machine.

$$\text{Hourly Running Charges Per Machine} = \frac{\text{Total Running Charges}}{\text{Machine Hours}}$$

vii) Machine Hour Rate (IV + VI) xxx

Format for Computation of Machine Hour Rate

	`	`
A) Standing Charges:		
i) Rent & Rates	xxx	
ii) Heating & Lighting	xxx	
iii) Supervision Charges	xxx	
iv) Insurance	xxx	
v) Miscellaneous Expenses / Overheads	xxx	
	xxx	
Standing Charges Per Hour = $\frac{\text{Standing Charges}}{\text{Effective Machine Hours}}$		xxx
B) Running Charges / Expenses Per Hour		
i) Depreciation		xxx
ii) Power		xxx

iii) Repair & Maintenance		XXX
iv) Consumers & Lubricants		XXX
v) Miscellaneous Expenses		XXX
C) Machine Hour Rate		XXX

Overheads

2. Labour Hour Rate:

This method is referred to production hour rate method and adopted in those factors where labour prominent. This rate express the relation between the expenses incurred other than wages paid to workers and number of machine hours put by the workers during the period.

$$\text{Labour Rate} = \frac{\text{Budgeted or Actual Overheads} - \text{Expenses}}{\text{Budgeted or Actual Labour Hours}}$$

$$\text{Budgeted Labour Hour} = \left(\begin{array}{l} \text{No - 4 workers} \\ \text{employed during} \\ \text{the period} \end{array} \right) \times \left(\begin{array}{l} \text{No. Hours for} \\ \text{which factor} \\ \text{workes each day} \end{array} \right)$$

3. Percentage of Prime Cost Method:

This method shows relationship between budgeted actual overheads and prime cost. This method is used where standard product requires constant quality of materials and number of labour hour produced.

$$\text{Percentage on Prime Cost} = \frac{\text{Budgeted Actual Overheads}}{\text{Budgeted Prime Cost}} \times 100$$

4. Percentage of Direct Material Cost Method:-

Under this method, the cost of Material consumed in production is considered as base of overhead absorption. This method gives relationship between actual budgeted overheads and budgeted or actual direct materials cost in percentage.

$$\text{Direct Materi Cost Rate} = \frac{\text{Budgeted or Actual Overhead}}{\text{Actual Direct Materials}} \times 100$$

5. Percentage of Direct Labour Method:-

Under this method, Labour Overheads are recovered on the basis of actual rate. This method is useful where production is in uniform nature and all workers are more or less the same hourly rate and Labour is predominant.

$$\text{Direct Labour Rate} = \frac{\text{Factory Overheads}}{\text{Direct Labour}} \times 100$$

6. Combined Machine Hour and Labour Hour Rate:

This method is useful where company having various department in which work is completed by Machine work and Labour work (Manual). This method is used where separate allocation of running charges is not possible and are allocated on the basis of machine labour rate and other expenses, which are not directly related to machines, are allocated on the basis of labour rate.

SOLVED PROBLEMS**Illustration : 1**

Calculate the Machine Hour Rate from the following:

Particulars	Rs
Cost of Machine	12,000
Cost of Installation	3,000
Scrap Value	3,000
Rent, Rates for a quarter for the shop	300
General Lighting	20 P.M.
Supervisor's Salary for Shop	600 per quarter
Insurance Premium for Machine	60 p.a.
Estimate Repairs	400 p.a.

Power 2 units per hour @ Rs 5 per 100 units. Estimate working hours p.a. 2,000. The machine occupies $\frac{1}{4}$ th of the total area of the shop. The supervisor is expected to devote $\frac{1}{6}$ th of his time for supervising the machine. General lighting expenses are to be apportioned on the basis of the floor area.

Solution:

Overheads

Statement Showing Machine Hour Rate

Particulars	Working	P.A. `	Per Hour `
Standing Charges			
Rent & Rates	$\left(\frac{1}{4} \times 300 \times 4\right)$	300	
General Lighting	$\left(20 \times \frac{1}{4} \times 12\right)$	60	
Shop Supervisor's Salary	$6000 \times \frac{1}{6} \times 4$	400	
Insurance Premium		60	
		820	
Standing Charges	$= \left(\frac{820}{2000 \text{ Hrs}}\right)$		0.41
<u>Running Changes</u>	$\frac{12000 + 3000 - 3000}{20000 \text{ Hrs}}$		0.60
Depreciation			
Repairs	$\left(\frac{400}{2000}\right)$		0.20
Power	$\left(\frac{2 \text{ units} \times 05}{100}\right)$		0.10
Machine Hour Rate			1.31

Illustration : 2

From the following information, Calculate Machine Hour Rate.

Cost of Machine	Rs 45,000
Scrap Value	Rs 5,000
Rent for workshop	Rs 30,000
General Lighting	Rs 200 PM.
Power Consumption 20 Units Per Hour	@ Rs 20 per every 100 units
Administrative Expenses	Rs 4,000 p.a.
Repairs and Maintenance	75% of Depreciation
Workshop Supervisor's Salary	Rs 4,000 P.M.
Estimated Working Time per year	50 weeks of 40 hours each
Selling up time for production	200 hours per year
Effective Life of Machine	10 Years

The Machine Occupies $\frac{1}{4}$ th area of workshop. The supervisor is expected to $\frac{1}{4}$ th of time in supervising the machine.

Solution:

Calculation of Machine Hour Rate

Particulars	Working	P.A. Rs	Per Hour Rs
Standing Charges			
Rent	$(30,000 \div 4)$	7,500	
General Lighting	$(200 \times 12 \div 4)$	600	
Administrative Expenses	(4000 for years)	4,000	
Workshop Supervisor's Salary	$(4,000 \times 12 \div 4)$	12,000	
		24,100	
Standing Charges Per Hours	$(24,100 \div 2,000)$		12.05
Running Charges			
Depreciation	$\left(\frac{45,000 - 5,000}{10} = \frac{40,000}{10} = \frac{4,000}{2,000} \right)$		2.00
Repairs & Maintenance	$\left(4,000 \times \frac{75}{100} \times \frac{1}{2,000} \right)$		1.50
Power	$\left(\frac{20 \times 20 \times 1,800}{100 \times 200} \right)$		3.60
Machine Hour Rate			<u>19.15</u>

Note:

Machine Hours = $50^w \times 40^H = 2000 \text{ Hrs}$. It is presumed that no current is used by the machine devising setting up time.

Illustration : 3

Overheads

Computer the Machine Hour Rate from the following data.

Particulars	Rs
- Cost of Machine	- 1,10,000
- Installations Charges	- 10,000
- Estimated Scrap value after expire of 15 years life	- 5,000
- Rate and Rates for the shop per month in	- 200
- Governal Lighting for the shop per month	- 800
- Insurance Premium for Machine per annum	- 1,000
- Repairs and Maintenance Expenses per annum	- 1,000
- Consumption of Power to units per hours	- 10
- Rate of Power per 100 units	- 30
- Estimated Working Hours Per Annum	- 2,200
- This includes non-productive setting up time of 200 hours.	
- Shop Supervisor Salary P.M.	- 600

The Machine occupies $\frac{1}{4}$ th of the total area of the shop: Supervisor is expected to devote $\frac{1}{5}$ th of his time for supervising the machine.

Solution:

Computation of Machine Hour Rate

	Particulars	Working	P.A. Rs	Per Hour Rs
a)	Standing Charges			
	Rent and Rates	$(200 \times 12 \div 4)$	600	
	General Lighting	$(800 \times 12 \div 4)$	2,400	
	Insurance Premium	-	1,000	
	Shop Supervisor's Salary	$\left(600 \times 12 \times \frac{1}{5}\right)$	1,440	
			5,440	
	Standing Charges Per Hour	$(5,440 \div 2,000)$		2.72
b)	Running Charges			
	Power	$(30 \times 10 \div 100)$		3.00
	Repairs & Machine	$(1,000 \div 2,000)$		0.50
	Depreciation	$\left(\frac{1,10,000 + 10,000 - 5,000}{2,000 \times 15}\right)$		3.83
	Machine Hour Rate			10.05

Note:

$$\begin{aligned}\text{Machine Hour} &= 2,200 \text{ Hrs.} - 200 \text{ Non - Productive Selling Time} \\ &= 2,000 \text{ Hrs.}\end{aligned}$$

Illustration : 4

From the following figures, compute the machine Hour Rates for Machines A, B and C for a 4-week prior repeatedly. Each machine is expected to be working 200 hours.

Particulars	Per Annum Rs
Rent and Taxes	3,000
Lighting and halting	400
Depreciation	1,000
Indirect Wages	1,500
Power	600
Sundries	1,750
Canteen Expenses	1,200
Repairs and Maintenance	500

Four the above three machine in the factory, the necessary particulars are as follows:

Particulars	Machine A	Machine B	Machine C
Area Space Occupied (Sq. ft.)	100	200	300
No. of Light Points	1	3	--
Cost of Machine (Rs)	25,000	15,000	10,000
No of Workers	1	2	3
Power (Rs)	250	150	200
Direct Wages (Rs)	2,000	3,000	5,000

Solution:

Overheads

Machine Hour Rate

Particulars	Base of Apportionment	Machines		
		A Rs	B Rs	C Rs
a) Standing Charges				
Rent and Taxes	(1:2:3)	500	1,000	1,500
Lighting and Heating	(1:3:0)	100	300	-
Indirect Wages	(2:3:5)	300	450	750
Sundries	(2:3:5)	350	525	875
Canteen Expenses	(1:2:3)	200	400	600
Total		1,450	2,675	3,725
b) Running Charges				
Depreciation	(5:3:2)	500	300	200
Power	(Actual)	250	150	200
Repairs & Maintenance	(5:3:2)	250	150	100
Total		1,000	600	500
c) Total Charges (a + b)		2,450	3,275	4,225
Machine Hour Rate = $C \div \text{Machine Working Hour}$		12.25	16.25	21.13

Illustration : 5

The following expenses have been incurred in respect of a shop having four indelicate machine.

Rent and Rates	Rs	6,000 p.a.
Power Consumed by the shop at 10 paise per unit	Rs	4,800 p.a.
Repairs for 4 Machine	Rs	2,500 p.a.
Lighting for shop per machine	Rs	150 p.a.
Lubricants etc.	Rs	150 p.a.
Depreciation per machine	Rs	600 p.a.

Supervisor's Salary:

Working after 4 Machines and Paid Rs 650 p.m.

Attendants : 2 attendants looking after five machines paid

Rs 60 p.m.each

Each Machine consumes 10 units of power per hour.

Calculate Machine hour rate.

Solution:

W. Note:-

$$\text{i) No. of Units Consumed} = \frac{\text{Rs.}4800 \times 100}{100} = 48,000 \text{ units}$$

$$\text{No. of units per machine} = 48000/4 = 12,000 \text{ units}$$

$$\text{Hours in a year} = 12000/10 = 1,200 \text{ hours}$$

$$\text{ii) Wages to attendant 5 Machine} = 2 \text{ attendant} \times \text{Rs } 60 \text{ each}$$

$$= (60 \times 2) \times 12$$

$$= 1440$$

$$\therefore \text{Wages for 4 Machines} = 1440 \times \frac{4}{5} = \text{Rs.}1152$$

Particulars		P.A. Rs
a) Standing Charges	Rent & Rates	6,000
	Wages to attendant (Note. II)	1,152
	Supervisor's Salary (650 x 12)	7,800
		14,952

b) Running Charges	Power	4,800	Overheads
	Repairs	2,500	
	Lighting (150 x 04)	600	
	Lubricants	150	
	Depreciation (600x4)	2,400	
		10,450	
c) Total Expenses (a + b)		25,402	
d) Machine Hour Rate =	$\frac{C}{\text{Working Hours}} = \frac{25,402}{1,200}$	21.17	

Illustrations : 6

The following information is extracted from the budget of Amar Co. Ltd for the 2016.

Factory Overheads	Rs 93,000
Direct Labour Cost	Rs1,50,000
Directed Labour Hours	2,32,500
Machines Hours	75,000
Direct Material Cost	Rs3,00,000

The following details are available for job 205:

Direct Material Cost	Rs 45
Direct Labour Cost	Rs 50
Direct Labour Hours	40
Machine Hours	30

You are required to workout overhead application rates and ascertain the cost of Job 205 by using the following methods of overhead application.

- Direct Labour Hour Rate.
- Direct Labour Cost.
- Machine Hour Rate.
- Prime Cost.
- Direct Material Cost

Solution:

$$\text{i) Direct Labour Hour Rate} = \frac{\text{Overhead of the Dept}}{\text{Laour Hours}}$$

$$= \frac{93,000}{2,32,500}$$

$$= \text{Rs}0.40 \text{ per hour}$$

$$\text{ii) Direct Labour Cost} = \frac{\text{Overhead of the Dept}}{\text{Direct Labour Cost}} \times 100$$

$$= \frac{93,000}{1,50,000} \times 100$$

$$= 62\%$$

$$\text{iv) Machine Hour Rate} = \frac{\text{Overhead of the Dept}}{\text{Machine hours}}$$

$$= \frac{93,000}{75,000}$$

$$= \text{Rs } 1.24 \text{ Per Hour.}$$

$$\text{iv) Prime Cost} = \frac{\text{Overhead of the Dept}}{\text{Prime Cost}} \times 100$$

$$= \frac{93,000}{1,50,000 + 3,00,000} \times 100$$

$$= \frac{93,000}{4,50,000} \times 100$$

$$= 20.67\%$$

$$\text{v) Direct Material cost} = \frac{\text{Overheads of the dept}}{\text{Direct Material Cost}} \times 100$$

$$= \frac{93,000}{3,00,000} \times 100$$

$$= 31\%$$

Statement Showing Job Cost of Job No.205

Overheads

Particulars	1	2	3	4	5
Material Cost	45.00	45.00	45.00	45.00	45.00
Labour Cost	50.00	50.00	50.00	50.00	50.00
Overheads Cost	16.00	31.00	37.20	19.63	13.95
	111.00	126.00	132.20	114.63	108.95

Working Notes Overheads:

- 1) $D L H \times D L R = 40 \times 0.40 = \text{Rs } 16$
- 2) $62\% \text{ of Labour Cost} = \frac{50 \times 62}{100} = \text{Rs } 31$
- 3) $\text{Machine Hours} \times \text{MHR} = 30 \times 1.24 = \text{Rs } 37.20$
- 4) $\text{Prime Cost} \times \frac{20.67}{100} = \frac{95 \times 20.67}{100} = \text{Rs } 19.63$
- 5) $\text{Material Cost} \times \frac{31}{100} = \frac{45 \times 31}{100} = \text{Rs } 13.95$

UNDER AND OVER ABSORPTION OF OVERHEADS

MEANING

Under absorption of Overhead means the amount of overheads absorbed in production is less than the actual overheads incurred and over absorption of overheads means the overheads absorbed in the production is more than the actual overheads incurred. This is made understand by the following example.

Overheads	Recovered in Costing `	Actual Incurred `	Over/Under Absorption `
Factory Overheads	50,000	75,000	25,000 under
Office Overheads	80,000	60,000	20,000 Over

Over or under absorption may arise due to the following reasons.

- a) Errors in estimation of overhead expenses.
- b) Errors in estimation of production level.
- c) Errors in estimation of machine hours.

- d) Sudden Changes in method of productive.
- e) Seasonable changes in overhead expenses.

ACCOUNTING TREATMENT:

Under or over absorption of overheads may be disposed by following any one of the methods stated:

a) Use of Supplementary Rate:

This method is used when the amount of over or under absorption of overheads is quite large and is due to normal circumstances i.e. increase in material price and labour rate. This can be calculated by the following formula.

$$\text{Supplimentary Rate} = \frac{\text{Amount of Under or Over Absorbing of Overheads}}{\text{Actual Base}}$$

b) Writing Off to Costing Profit and Loss A/c:

This method is used where the amount of under or over absorption of overhead is not large or arises due to abnormal circumstances i.e. defective planning, idle capacity. Under absorbed overhead amount is debited to costing P & L A/c and over absorbed amount of overhead is credited to costing P & L A/c.

c) Carry Forwarded to Next Accounting Period:

Logically this method is not recommended as it is inconsistent with accounting standard. Amount of under absorption of overhead is transferred to debit side of Reserve A/c or Suspense A/c and amount of over absorption of overhead is credited to suspense A/c or Reserve A/c.

Illustration

Factory Overhead Cost of Four Production Department of ABC Ltd as are as follows .

Depts.	Overheads
	Rs
P	18,300
Q	4,300
R	4,000
S	1,900

Overheads has been applied as under:

- P - 15000 Machine hour @ Rs 1.50 per hour.
- Q - 3000 Labour Hours @ Rs1.30 per hour

R - 80% of Direct Labour Cost of Rs6,000

S - 950 Pieces @ Rs 2 per piece

Calculate department wise under or over absorbed overheads.

Solution:

Calculation of Overhead absorbed

P -14000 Hrs @ Rs1.50 per hour = Rs21,000

Q -3000 Labour hours @ Rs1.30 per L. H. = Rs 3,900

R-80% of Rs 6,000 = 6,000 x 80/100= Rs 4,800

S -950 Pieces @ Rs 2 per Piece = 950 x 2 = Rs 1,900

Statement showing under over absorption of overheads.

Departments	Overheads Insured (Actual)	Absorbed Overhead	Absorption	
	Rs	Rs	Under Rs	Over Rs
P	18,300	21,000	-	2,700
Q	4,300	3,900	400	-
R	4,000	4,800	-	800
S	1,900	1,900	-	-

EXERCISE

1. Calculate the machine hour rate, from the following particulars.

Cost of machine - Rs 42,000

Estimated scrap value - Rs 2,000

Estimated working life -10 years Of 2,000 hours each

Running time for a 4 week period -150 hours

Estimated repairs for life - Rs 10,000

Standing charges allocated to this machine for a period-Rs 300

Power consumed per hour -5 units @ 10 paise per unit

(Ans. :Rs 11.00)

2. Compute the machine hour rate from the following data .

Cost of machine : Rs 1,00,000
 Installation charges : Rs 10,000
 Estimated scrap value after the expiry of its life (15 years : Rs 5,000
 Rent and rates for the shop per month: Rs 200
 General lighting for the shop per month : Rs 300
 Insurance premium for thr machine per annum : Rs 960
 Repairs and maintenance expenses per annum : Rs 1,000
 Power consumption – 10 units per hour : -
 Rate of power per 100 units : 20
 Estimated working hours per annum : 2,200
 (This includes non- setting up time of 200 hrs)
 Shop supervisor's salary per month : Rs 600
 The machine occupies $\frac{1}{4}$ th of the total area of the shop. The supervisor is expected to devote $\frac{1}{6}$ th of time for supervising the machine.

(Ans. :Rs 7.83)

3. From the following data of a factory machine room, compute an hourly machinr rate, assuming that machine room will work on 90% capacity throughout the year and that a breakdown of 10% is reasonable. There are three daysholiday at Deepavali, 2 days at Holi and 2 days Christmasexclusive of holidays. The factory works 8 hours a day and 4 hours on Saturday. Number of Machines(each of the same type) – 40.

Expenses per annum	Rs
Power	3,12,000
Light	64,000
Salaries to foreman	1,20,000
Lubrication oil (Assumed fixed)	6,600
Repairs to machine	1,44,600
Depreciation	78,560
(Delhi University 2006)	
(Ans : 9.00)	

Working Notes:	Hrs
• Total hours (365 X 80)	2,920
Less : Saturday only 4 weeks (52X 4)	208
Sundays holiday (52x8)	416
Holidays on Deepawali, Holi and Christmas(3+2+2)	56
Total	680
Machine hours worked	2,240
Less : 10% breakdown (Normal)	224
Effective Machine Hours per Machine	2,016

- Total machine hours = Effective machine hours per machine X
Number Of machines
= 2,016 x 40
= 80,640 Hrs.

4. Compute the machine hour rate from the following details.

Particulars Rs

Cost of machine 1,00,000
Installation chargers 10,000
Scrap value of machine (10 yrs life) 5,000
Rent and taxes p.m. 2,000
General lighting for the shop p.m. 3,000
Insurance premium for shop per quarter 2,400
Repairs and maintenance p.m. 1,000
Power – 10 units per hour – rate per 100 units 20
Estimated working hours p.a. 2,000
Supervisor's salary p.m. 600
Machine occupies 1/4th of the shop area and supervisor gives 1/5th of his time for the looking after the machine.

(Ans Rs 29.15)

5. The following information relates to the activities of a production of a factory for a period.

Direct material used Rs 3,000
Direct wages Rs 7,000
Direct labour worked 12,000 hours (including 2,000 hours on machine)
Overcharged to the department Rs 5,000
For a particular order No. 1.2 carried out in the production department, the relevant data were ;
Direct material used Rs 1,000
Direct wages Rs 1,500
Direct labour worked 240 hours
Calculate the overhead chargeable to Order No. 102 by different cost rates.

(Ans. Prime cost method- 50%, Direct labour rate Rs - 0.417 per hour, Direct labour cost method – 71.43%, Machine hour rate-Rs. 2.50 per hour)

6. The factory overhead cost of four production department of a company engaged in executing job orders, for an accounting year, are as follows :-

Department	Rs
A.	19,800
B.	4,500
C.	4,000
D.	2,000

Overhead has been applied as under :-

- i) Dept. A Rs 3.00 per Machine Hour for 7,000 hours.
- ii) Dept. B Rs 1.30 per Direct labour rate for 3,000 hours.
- iii) Dept. C 70 % of Direct labour cost of Rs 7,000.
- iv) Dept. D Rs 2/- per piece , for 950 pieces.

Find out the amount of department wise Under or Over absorbed factory overheads.

(Dept. A- Over- absorption Rs 1,200 ;

“ B- Under- absorption Rs 600;

“ C- Over- absorption Rs 900;

“ D- Under absorption Rs 100)

7. **Objective Questions:**

A) Multiple Choice Question:

1. Selling and distribution overheads are absorbed on the basis of
 - a) Rate per unit
 - b) Percentage on works cost
 - c) Percentage on selling cost
 - d) Any of these**
2. Charging overheads to individual unit is known as
 - a) Allocation**
 - b) Apportionment
 - c) Absorption
 - d) Collection
3. Assigning code numbers to a group of overheads is called as
 - a) Classification

b) Codification

- c) Analysis
- d) None of the above

4. Store keeping expenses are allocated on the basis of

- a) No. of material requisitions
- b) Area
- c) Direct labour hours

d) None of the above

5. The process by which cost items are charged directly to a cost is called

- a) Absorption
- b) Apportionment
- c) Allocation
- d) Allotment

6. Insurance is apportioned on machine on the basis of

a) Insured value of each machine

- b) Invoice price of each machine
- c) Area
- d) Cost of machine

7. Office overheads are recovered as a % of

- a) Direct materials
- b) Direct wages
- c) Factory cost
- d) None of the above

8. Labour rate is followed when most of the work is done by

a) Labour

- b) Machine
- c) Different group of machine
- d) None of the machine

9. Which of the following is service department

- a) Refining department
 - b) Machining department
 - c) Receiving department
 - d) Finishing department
10. When the amount of under or over absorption is significant, it should be disposed off by
- a) **Transferring to costing profit and loss account**
 - b) The use of supplementary rates
 - c) Carrying over as a deferred charge to the next accounting year
 - d) Either of the three
11. Factory overheads should absorbed on the basis of
- a) Relationship to cost incurred
 - b) Direct labour hour
 - c) Direct labour cost
 - d) Machine hours
12. When the amount of overhead absorbed is less than the amount of overhead incurred, it is called
- a) **Under absorption of overhead**
 - b) Over absorption of overhead
 - c) Proper absorption of overhead
 - d) None of the above
13. What is the basis for distribution of indirect material cost to various department ?
- a) Direct allocation
 - b) Cost of direct materials consumed
 - c) Machine hour worked
 - d) Either of the above

B. Fill in the blanks :

1. _____ rate is calculated by dividing the overhead by the aggregate of the productive hours of direct workers. (The labour hour rate)
2. _____ is the loss in value of asset due to its supervision at a date earlier than that foreseen. (Obsolescence)
3. When amount of Over/Under absorbed overheads is negligible, it is disposed of by Transferring it to _____ (Costing Profit and Loss Account)
4. The process of grouping costs according to their common characteristics is called _____ (Cost classification)
5. _____ means allotment of whole items of cost to cost centers or cost units.(Allocation)
6. Under /over absorption of overheads takes place when rate _____ rate of absorption is Used. (predetermined)
8. The difference between actual and recovered overhead is termed as _____. (under/over Absorbed overheads)
9. Cost which can be controlled is _____ cost. (controllable)
10. Repairs and maintenance is _____ expenses. (Machine)
11. Machine hour rate is suitable when machine is a _____ factor of production. (dominant)
12. Office overhead rate are recovered as a %age of _____ cost. (factory cost)
13. Percentage of direct is suitable when direct _____ is major factor of production. (Labour)
14. Production is suitable when output is _____.(uniform)
15. _____ cost is the aggregate of all kind of consideration paid payable for the service rendered by an employee of an enterprise. (Employee cost)
16. _____ deals with principle and method of determining employee cost . (Cost Accounting Standard-7)

C) True or False :

1. Cost of packing is production overheads.
2. Power cost is allocated over the department on the basis of H.P. of machine.
3. Employee welfare expenses are allocated on the basis of light points.

4. Supervisors salary is allocated on the basis of time spent.
5. Overheads includes indirect materials , labour and expenses.
6. Depreciation should be excluded from cost accounts.
7. Factory overhead includes all production costs other than direct materials and salaries.
8. Carriage inwards is not really an overheads at all, but is a direct cost.
9. The application of predetermined overheads rates is a reason for the difference in costing and financial profit .
10. Cash discount is completely excluded from the the cost.
11. Overhead absorption is the allotment of overhead to cost unit.
12. The use of actual overhead absorption rates results in delay in determining cost of products.
13. Direct labour cost method of absorption of factory overhead is suitable only in those departments where work is done by manual labour.
14. The principle base used for applying factory overhead are ; units of production , material cost, direct wages, direct labour hours and machine hours.
15. Administration overheads are usually absorbed as a %age of prime cost.
16. Time factor is ignored when the cost of material is used as the basic for absorption of overhead.
17. Predetermined rate of absorption of overhead helps in quick preparation of cost of estimates and quoting prices.
18. Machine hour rate is not suitable for absorption of overheads if the work is done mainly by the machine.
19. Departmentalization of overheads facilitates the control objective of cost accounting.
20. A blanket overhead rate is a single overhead rate computed for the entire factory.

**(Ans. - True- 2,5,8,9,10,11,12,14,16,17,19,20
False- 1,3,4,6,7,13,15,18)**

D) a) Match the following

Overheads

Column 'A'	Column 'B'
i) Rent	a) Percentage of sales
ii) Power	b) Capital value
iii) Depreciation	c) H.P. of machine
iv) Advertising	d) Employee expenses
v) CSA-7	e) Indirect labour
vi) Office salary	f) No. of light points
vii) Lighting and heating	g) Floor space area occupied by each machine
viii) Indirect material	h) Cost of catalogue
	i) Insurance

(Ans. i)-g, ii)- c, iii)-b, iv)-a, v) –d. vi)-e, vii)-f, viii)-h)

b) Match the following

Column 'A'	Column 'B'
1) Telephone charges	a) Semi-variable overheads
2) Compensation of workers	b) Cost of each machine insured
3) Stationery	c) Time spent on machine by workers
4) Repeated distribution method	d) On the basis of wages
5) Insurance	e) Indirect material
6) Supervision	f) Method of reapportionment of same dept. cost
7) Rent and rates	g) Floor area occupied
8) Repairs and maintenance	h) Machines hour
9) power	i) Meter reading
10) Depreciation	j) Sales of goods
	k) Useful life of assets
	l) Factory cost

(Ans. : 1)-a, 2)-c, 3)-e, 4)-f, 5)-b, 6)-d, 7)-g, 8)- h, 9)-i, 10)- k

c) Match the following

Column 'A'	Column 'B'
1. Absorption	a. Cost Accounting Standard-3
2. Depreciation of machine	b. Cost Accounting Standard-13
3. Under absorption of overhead	c. No. of employee
4. Machine hour rate	d. Direct wages
5. Labour hour rate	e. Weight of material issued
6. Apportionment	f. Charging overheads to cost unit
7. Service cost centre	g. Machine expenses process
8. Personnel Department	h. Recovery of less overhead
9. ESI and P F contribution	i. Recovery of more overhead
10. Store Department	j. Machine intensive industry
	k. Labour intensive industry
	l. Light points

(Ans. :1-f, 2-g, 3-h, 4-i,5- k, 6-a,7-b, 8-c,9-d,10-e)



CLASSIFICATION OF COSTS AND COST SHEET

Unit Structure

5.1 Background

5.2 Introduction

5.3 Definitions

5.4 Objectives of Cost Accounting

5.5 Problems with Solutions

5.1 BACKGROUND

When a person goes to any shop or groceries and he/she likes something and shows willingness to purchase. What will be the most common Question of that person to shopkeeper?

“What’s the cost of this?”

Even if a person is asking “What’s the Cost?” the shopkeeper will tell that person the Price and not the Cost.

You might be wondering what is the difference between Price and Cost.

Simply, Price is the value at which Seller is willing to Sell its Product and Cost is the value at which Seller buys or makes that 500. Price is the one which Customer pays to Seller and Cost is the one which Seller incurs or pays. The difference between Selling Price and Cost is called Profit or loss.

Let’s take an example,

A shopkeeper buys readymade product at wholesale price ₹ 500 per unit and sells it to Customers at ₹ 700 per unit. Here ₹ 500 is the Cost for the shopkeeper and ₹ 700 is the selling price of that product. On one hand Seller is spending (cost) ₹ 500 and on the other hand he is receiving ₹ 700. His net gain or profit is ₹ 200 per unit.

Therefore, Sales – Cost = Profit.

5.2 INTRODUCTION:

There are broadly two types of businesses for physical goods, namely Manufacturing business and Trading business. In manufacturing business, Raw materials are converted into Finished goods using certain process, such process/activity is called as manufacturing activity. Secondly, in

Trading business, readymade finished goods are purchased and sold by the business entity.

Now we will look at similar but slightly differences words of Cost,

5.3 DEFINITIONS:

Cost:

According to CAS-1 (Cost Accounting Standard 1 on 'Classification of Cost' issued by ICWA, India) defines Cost as, ***“Cost is a measurement, in monetary terms, of the amount of resources used for the purposes of production of goods and rendering services”***. In other words, Cost means all the expenses that the company incur right from buying raw materials, making finished goods and selling them and also includes after sales services cost.

Costing:

Costing means the technique and process of ascertainment of cost (ICMA). In simple words, the process or techniques used by business firms are called as Costing. Costing can be done by identifying different types of cost such as Material cost, labour cost, other overheads etc.

Cost Accounting:

The Chartered Institute of Management Accountants in England (CIMA) has defined Cost Accounting as, ***'the process of accounting for cost from the point at which expenditure is incurred or committed to establishment of its ultimate relationship with cost centres and cost units***.

Cost accounting is bigger concept than Costing. It covers Costing, Recording, Classification, reporting, controlling and analyzing.

5.4 OBJECTIVES OF COST ACCOUNTING:

1. Cost control: The primary and most important function of Cost accounting is to control the cost within the budgetary limitations as set by management for a particular product or service. It is important because management allocates limited resources to specific projects and production processes and every company will always try for controlling the wasteful expenditure.

2. Cost computation: Cost computation is the main source of all the other functions of cost accounting as one can calculate the figures of cost of production or cost of sales per unit for a particular product.

3. Cost reduction: Cost computation assist the company in knowing irrelevant or wasteful expenditure and in turn will focus on reducing those irrelevant cost. Reduction in costs means more profits since the margin will naturally increase. Precautions should be taken while reducing cost. One should not compromise on quality because of reduction in cost.

4. Fixing Selling price: One of the main reasons for calculating cost is to calculate Selling price or to provide quotations or tenders etc. Any businessmen will try cover his cost and add some profit margin to it in order to finalize selling price.

5. Controlling burden of inventory: Every company tries to get rid of its inventory mainly of Finished goods. This is because Stocks are not getting sold easily for many companies due to competition or any other reason.

Classification of Cost:

Classification of Cost by Variability or Behavior:

1. Fixed cost: Cost or expenses which remains fixed irrespective of level of output are called as Fixed cost. E.g. Rent, Salaries etc
2. Variable cost: Cost or Expenses which changes with change in production is said to be as Variable cost. E.g. Raw Material, Wages etc.
3. Semi-variable costs are costs that changes with change in the production or sales, but which do not change in a direct proportion to units. These costs have the features of both fixed and variable costs. It remains fixed upto certain level, then it becomes variable. E.g. Electricity charges, Telephone bill etc.

Classification of Cost by Element:

Material cost refers to the cost of commodities supplied to an undertaking for converting those commodities into usable items i.e. Final Goods (e.g., in the case of a textile mill, the cost of cotton or yarn, in case of Furniture maker wood can be called as Raw materials)

Labour cost refers to the cost of paying employees in the company, which includes salaries, wages, commission etc.

Expenses refer to the cost of services provided to an undertaking and include the notional cost of owned assets (e.g., rent for a building, telephone expenses, depreciation of the owned factory building, depreciation of delivery van, and so on).

Classification of Cost by Time:

1. Historic Cost: Costs which are incurred in past are simple called as Historic cost.
2. Pre-determined Cost: Costs which are determined or estimated in advance are known as pre-determined cost. Pre-determined cost is further classified into a. Standard Cost and b. Estimated Cost

Classification of Cost for Management:

1. Imputed cost
2. Sunk cost
3. Controllable Cost
4. Uncontrollable cost
5. Avoidable Cost
6. Unavoidable cost
7. Marginal cost
8. Opportunity cost
9. Normal Cost
10. Abnormal cost etc.

OUTPUT COSTING & UNIT COSTING:**MEANING AND APPLICABILITY**

When the company produces only a single item the costing method is called output costing or single costing, which is a type of unit costing. Unit costing is used by the company when the manufacturing activity is continuous and the units produced are homogeneous in nature. It is most helpful and important method of costing used by concerns to know the CPU (Cost Per Unit of Production). Unit costing is used by many industries where the output is expressed in various units such as numbers, Litres, Metres, Tonnes, Kilograms etc. Thus, unit costing methods are applicable to various concerns such as Paper Mills, Textiles, Spinning Mills, Sugar Mills, Steel, Mines, Brick Making, Kilns, Cement Works, Flour Mills, Breweries etc. Unit costing method is quite similar to process costing method because in both methods, identical or same item is produced. But, practically Process costing is more complex in nature as compared to unit costing.

DIFFERENT UNITS

Unit	Industries	Product
Kilograms (KG)	Paper Mill Sugar Mills Spinning Mills	Paper Sugar Yarn
Sacks	Wheat Flour mills	Flour
Barrels	Breweries Oil	Beer, Wines Oil
1,000 No. (1k)	Brick Making	Bricks
Metre/ Yards	Textile Mills	Cloth
Tonnes	Steel Collieries Quarries Mines Kilns Sugar Mills Cement	Steel Bars, Ingots Coal Stone Mineral Ore Lime Stones Sugar Cement

The cost per unit is obtained as follow:

$$\text{prime cost per unit} = \frac{\text{total cost}}{\text{total units produced}}$$

What is an Investment Center?

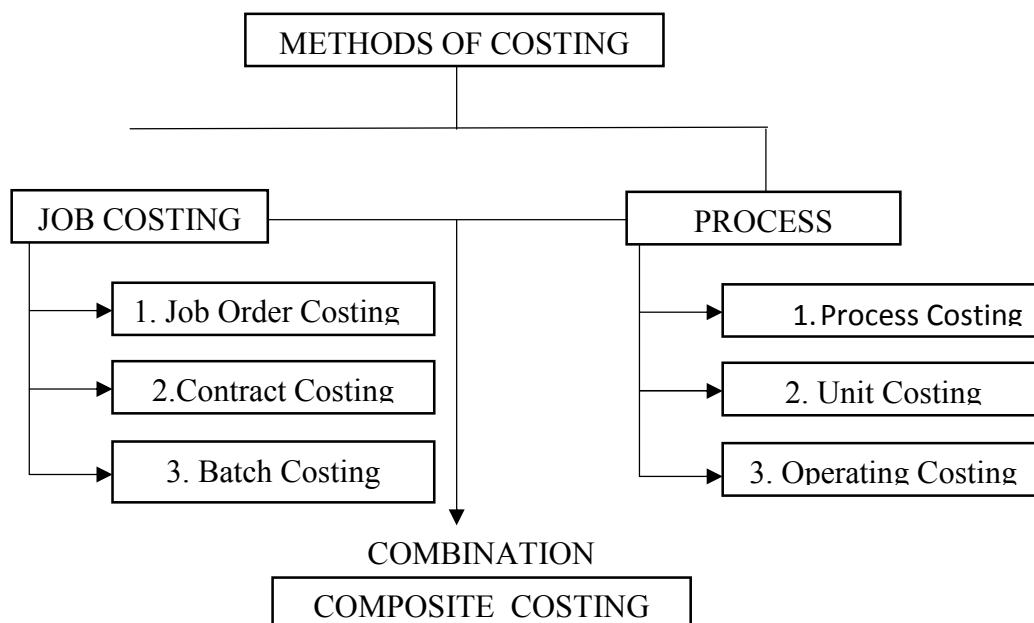
An investment center is a unit of business in a firm that can employ capital for investment, to enhance company's profitability. It gives an additional responsibility for capital investment and gain returns on it. Companies can evaluate the performance of an investment center according to the incomes it brings in through investments in capital assets compared to the relevant expenses. Investment Center will be allotted to a dedicated manager. He will have to take the decisions regarding past, current as well as future investment.

What is Profit centre?

Profit Centre is an individual business unit that is accountable for costs and revenues. Logically, Revenue minus Cost is equal to profit. Some concerns call it profit centre and some call it as cost centre. Many a times, several cost centres are linked with one Profit centre. Profit centre manager will be liable to take the decision regarding purchases and sales and will be expected to do both profitable manner.

An investment center is sometimes called an investment division.

METHODS OF COSTING



Treatment of Scrap

In certain manufacturing companies, scraps arise in the form of cuttings, threading, trimming clothes, metals or timber, etc. Scrap generally can be sold at a price. The realisable value of scrap is deducted from factory expenses after recording WIP (if any) while preparing the cost sheet.

ITEMS EXCLUDED while preparing COST SHEET

Following items are not included while preparing Cost sheet:

Purely financial items such as non-operating incomes and expenses/ losses/ appropriations like transfer to reserve, dividend). Interest paid or received are also not recorded in Cost sheet.

Other items are as follows:

1. Any capital expenditure or receipts
2. Any abnormal/irregular items
3. Discounts
4. Cash discount
5. Transfer to reserves
6. Interest paid
7. Donations
8. Preliminary expenses written off
9. Income-tax paid
10. Dividend paid
11. Provision for taxation
12. Profit / loss on sale of fixed assets
13. Provision for bad debts
14. Damages payable at law, etc.

ADVANTAGES/MERITS OF COST SHEET

A cost sheet has the following advantages:

1. **Selling price:** Selling prices can be decided more accurately with the help of cost data provided by the cost sheet. Determination of Selling prices can help the firm to decide on the profit margin to be kept.
2. **Cost estimates:** Cost estimation possible on the basis of cost data provided by the cost sheet, and the cost estimation may be used in a profitable manner for the preparation and submission of price quotations or tenders.
3. **Cost comparisons:** Comparison can bring various positive changes in the concern. Cost sheet provides the scope for comparisons of current costs with the costs of previous periods or with the pre-determined standards costs. Comparison between departments or firms can also be done with the help of cost sheet. Comparison will lead to identification of discrepancies and appropriate action can be taken at the discretion of management.

4. **Cost per Unit (CPU) :** It helps to know the cost of total output and the cost per unit for the period.
5. **Element-wise cost:** It reveals the break-up or components of the total cost i.e., the different elements or items of cost comprised in the total cost.

FORMAT: COST SHEET

The Format of cost sheet based on the latest, mandatory cost accounting standards would appear as follows:

COST SHEET

Particulars	RS.	RS.
I. DIRECT EXPENSES		
1. Direct materials:		
Opening stock of raw materials	xx	
Add: purchases of raw materials	xx	
Carriage inwards	xx	
expenses on freight etc.	xx	
Less: closing stock of raw materials Raw materials consumed (RMC)	(xx)	xx
2. Direct wages		xx
3. Other Direct expenses		xx
PRIME COST (1+2+3)		xxx
II. INDIRECT EXPENSES:		
	xx	
	(xx)	
1. Works/Factory overheads	xx	
Less: sale of scraps/ waste/ recoveries		
Work in progress:		
Add: opening stock	xx	
Less: closing stock	(xx)	
WORK COST (Prime Cost + Factory)		<u>xx</u>
2. Office/Administrative Expenses		xx
COST OF PRODUCTION		
Add: Opening Stock of Finished Goods		
Less: Closing Stock of Finished Goods		<u>xx</u>
COST OF GOODS SOLD		xx
3. Selling & Distribution Overheads		xx
Total Cost		<u>(xx)</u>
+ Profit / - Loss		xx
Net Sales (Gross sales – Sales returns)		
		<u>xx</u>
		xx
		<u>x</u>
		xxx

5.5 PROBLEMS WITH SOLUTIONS:

Problem No.: 1

From the books of accounts of M/s. Bejaan Enterprises, the following details have been extracted for the year Ending 31-3-2022:

<i>Particulars</i>	<i>Amt.</i>
Opening Stock of Raw Materials	2,30,000
Octroi Duty on Raw materials	10,000
Closing Stock of Materials	3,00,000
Purchases Of Materials	12,78,000
Direct Labour	3,20,000
Direct Expenses	1,57,600
Indirect Materials	24,000
Salaries	60,000
Buying expenses for Raw materials	48,000
Advertisements	30,000
Director's Salary	72,000
General expenses	37,200
Depreciation on office building	10,000
Legal Charges for Criminal case on the enterprise	20,000
Commission	28,000
Fuel	96,000
Electricity Charges (Factory)	72,000
General Manager's Remuneration	36,000
Repairs To Machinery	63,000
Rent, Rates and Taxes – Factory	18,000
Rent, Rates and Taxes – Office	9,600
Depreciation On Machinery	45,000
Depreciation On Furniture	3,600
Salesmen's Salaries	50,000
Audit Fees	18,000
Catalogue printing charges	10,000
Depreciation on Delivery Van	10,000

1)The Director's time is shared between the factory and the office in the ratio of 1:4.

2)Selling price is 120% of the cost price.

From the above details prepare detailed cost sheet for the quarter ending 31-12-2022 and ascertain sales:

Solution 1:

In the Books of M/s. Bejaan Enterprises
Cost sheet for the year ended 31st March, 2022

Particulars	Rs.	Rs.
I. DIRECT EXPENSES		
1. Raw Materials		
Opening Stock of Materials	2,30,000	
Octroi Duty on Raw materials	10,000	
Purchases Of Materials	12,78,000	
Buying expenses for Raw materials	48,000	
	15,66,000	
Less: Closing Stock of Materials	3,00,000	
RMC		12,66,000
2. Direct Labour		3,20,000
3. Direct Expenses		1,57,600
PRIME COST		17,43,600
II. INDIRECT EXPENSES		
1. Works Overheads		
Indirect Materials	24,000	
Director's Salary (1/5th)	14,400	
Fuel	96,000	
Electricity Charges (Factory)	72,000	
Repairs To Machinery	63,000	
Rent, Rates and Taxes – Factory	18,000	
Depreciation On Machinery	45,000	
		3,32,400
WORKS COST		20,76,000
2. Administrative Overheads		
Salaries	60,000	
Director's Salary (4/5th)	57,600	
Depreciation on office building	10,000	
General expenses	37,200	

General Manager's Remuneration	36,000	
Rent, Rates and Taxes – Office	9,600	
Depreciation On Furniture	3,600	
Audit Fees	18,000	
		2,32,000
COST OF PRODUCTION / COGS		23,08,000
3. Selling and Distribution Overheads		
Advertisements	30,000	
Catalogue printing charges	10,000	
Depreciation on Delivery Van	10,000	
Commission	28,000	
Salesman Salaries	50,000	
		1,28,000
TOTAL COST/ COST OF SALES		24,36,000
Add: Profit		6,09,000
Sales (125% of 24,36,000)		<u>30,45,000</u>

Problem No. 2: (Reverse calculation to find sales)

M/S. Chauhan manufacturing company manufacturing two types of products viz. A and B. The information for the year ended on 31st March, 2022 is as under.

<i>Particulars</i>	<i>Products</i>	
	<i>A Rs.</i>	<i>B Rs.</i>
Direct material per unit	120	100
Direct labour per unit	50	60
Direct expenses per unit	80	40

Additional information:

1. Factory expenses are charged at 25% of prime cost.
2. Office expenses are charged at 20% of work cost
3. 2,000 units of product A were produced of which 1,500 units were sold and 5,000 units of product B were produced of which 4,500 unit were sold.
4. Selling expenses are Rs. 15 per unit for product A and Rs. 20 per unit for product B.
5. Company wants to charge profit at 20% on sales for both the products A and B.

Prepare a cost sheet showing the cost and profit in total as well as in per unit.

Solution 2 :

Classification of Costs and
Cost Sheet

M/S CHAUHAN MANUFACTURING COMPANY
Cost Sheet For The Year Ended 31-3-2022,,

Particulars	PRODUCT A			PRODUCT B		
	Calculations Rs.	Cost Rs.	Unit Cost Rs.	Calculations Rs.	Cost Rs.	Unit Cost Rs.
Direct Materials	120x2000	2,40,000	120.00	100x5000	5,00,000	100.00
Direct Wages	50x2000	1,00,000	50.00	60x5000	3,00,000	60.00
Direct Expenses	80x2000	<u>1,60,000</u>	<u>80.00</u>	40x5000	<u>2,00,000</u>	<u>40.00</u>
PRIME COST		5,00,000	250.00		10,00,000	200.00
Factory Overheads		<u>1,25,000</u>	<u>62.50</u>		<u>2,50,000</u>	<u>50.00</u>
(25% Of Prime Cost)		6,25,000	312.50		12,50,000	250.00
		<u>1,25,000</u>	<u>62.50</u>		<u>2,50,000</u>	<u>50.00</u>
WORK COST						
Office Overheads						
(20% Of Work Cost)		7,50,000	375.00		15,00,000	300.00
COST OF PRODUCTION	375x500	<u>1,87,500</u>		300x500	<u>1,50,000</u>	
Less: Closing Stock		5,62,500	375.00		13,50,000	300.00
Of Finished Goods	15x1500	<u>22,500</u>	<u>15.00</u>	20x4500	<u>90,000</u>	<u>20.00</u>
		5,85,000	390.00		14,40,000	320.00
COST OF GOODS SOLD						
Selling Overheads		<u>1,46,250</u>	<u>97.5</u>		<u>3,60,000</u>	<u>80.00</u>
		<u>7,31,250</u>	<u>487.50</u>		<u>18,00,000</u>	<u>400.00</u>
COST OF SALES						
PROFIT						
(20% On Sales i.e. 5,85,000x20/80 & 14,40,000x20/80)						
SALES						

Problem No.3:

The Trading & Profit and Loss Account of Vilas Manufacturing Company for the year ending 31-12-2022 was as Follows:

Trading Profit & Loss A/c For the Year Ended 31-12-2022**Dr.****Cr.**

<i>Particulars</i>	<i>Amt</i>	<i>Particular</i>	<i>Amt</i>
To Raw Material Purchased	80,000	By Sales (2500 Units)	2,50,000
To Direct Wages	30,000	By Closing Stock Of Raw Material	5,000
To Direct Expenses	25,000		
To Direct Expenses	40,000		
To Factory Expenses	80,000		
To Gross Profit c/d			
	2,55,000		2,55,000
To Office Salaries	25,000	By Gross Profit B/D	80,000
To Office Rent	12,000	By Dividend Received	40,000
To Selling Expenses	12,500	By Discount Received	17,500
To Preliminary Expenses Written Off	22,500		
To Goodwill Written Off	25,500		
	40,000		
To Net Profit c/d			
	1,37,500		1,37,500

For The Year 2023, It Is Estimated That –

1. Units produced and sold will rise by 10%.
2. Prices of raw material per unit will rise by 10%.
3. Direct wages per unit will increases by 25%.
4. Direct expenses will increase by Rs.5,000 in total.
5. Works overheads per unit will increase by 25%.
6. The office premises which was on rental basis in 2022 would be purchased by the company, on which depreciation would be Rs.6,000 in 2023.
7. Selling expenses per unit will remain same.

You are required to prepare a statement showing estimated cost and profit for the year ended 31-12-2023 considering that company shall charge a profit at 20% on sale.

Solution 3:

VILAS MANUFACTURING COMPANY

Cost sheet showing present and estimated cost

Particulars	2022 2500 Units		2023 3000 Units	
	Total Cost Rs.	Unit Cost Rs.	Total Cost Rs.	Unit Cost Rs.
A. Direct Materials	75,000	30.00	99,000	33.00
B. Direct Wages	30,000	12.00	45,000	15.00
C. Direct Expenses	25,000	10.00	30,000	10.00
D.PRIME COST	<u>1,30,000</u>	52.00	1,74,000	58.00
E. Work Overheads	40,000	16.00	60,000	20.00
F. FACTORY COST	<u>1,70,000</u>	68.00	2,34,000	78.00
G. Administrative Exp.	25,000		25,000	
Office Salaries	12,000		--	
Office Rent	---		6,000	
Depreciation	37,000	14.80	31,000	10.33
	2,07,000	82.80	2,65,000	88.33
	<u>12,500</u>	5.00	<u>15,000</u>	5.00
H. COST OF PRODUCTION	2,19,500	87.80	2,80,000	93.33
I. Selling Expenses	<u>30,500</u>	12.20	<u>70,000</u>	23.33
J. COST OF SALES	2,50,000	100.00	3,50,000	116.66
K. PROFIT				
L. SALES				

Working notes:

1. Units To Be Produced In 2022 will rise by 20% i.e. $2,500 + 500 = 3,000$.
2. Per unit cost of raw material in 2022, will increase by 10% in 2023 i.e. $30 + 10\% \text{ of Rs. } 30 = \text{Rs. } 33$.
3. Per unit direct wages will increase by 25% i.e. $12 + 25\% = 15$
4. Per unit cost of factory expenses will increase by 25% in 2023 i.e. $\text{Rs. } 16 = \text{Rs. } 20$.
5. Salary is assumed to be the same in 2023 as in 2022.

6. The premises which was on rental basis in 2022 is assumed to be purchased in 2023 and hence office rent will not appear in 2023. Instead, depreciation of Rs. 6,000 would be charged.
7. Preliminary expenses written off and goodwill written off are financial expenses/ losses and hence ignored in the cost sheet.
8. Dividend received and discount received are financial incomes and hence ignored in the cost sheet.
9. Profit for year 2022 is a balancing figure. For year 2023 profit is 20% on sales i.e 80 (cost) + 20 (profit) = 100 (S.P.). Profit is $\frac{1}{4}$ or 20% of cost in 2023.

Problem No.4:**Trading and Profit and Loss Account of AK & co.****For the year ended 31st March 2022.**

Dr.		Cr.	
Particulars	Amt	Particulars	Amt
To Raw Materials Consumed	3,75,000	By Sales (15,000 Units)	15,00,000
To Direct Wages	2,25,000		
To Works Overheads	3,00,00		
To Gross Profit c/d	6,00,00		
	<u>15,00,000</u>		<u>15,00,000</u>
To Office Rent	90,000	By Gross Profit b/d	6,00,000
To General Expenses	75,000	By Dividend Received	23,500
To Management Expenses	60,000	By Interest On Investment	16,500
To Goodwill W/Off	32,500		
To Advertisement	1,31,250		
To Salesman Commission	1,50,000		
To Interest on Loan	24,500		
To Net Profit c/d	76,750		
	<u>6,40,000</u>		<u>6,40,000</u>

For the year ending 31st march, 2023 the following Assumptions have been made:

- A. Production and sales units will be doubled.
- B. Direct material cost per unit will rise by 20%.
- C. Direct wages per unit will increase by 40%

- D. Of the factory overheads, Rs. 1,50,000 are fixed and would remain at the same level but variable thereof would be in same proportion to direct wages as in 2022.
- E. Total office and administrative overheads would increase by 40%.
- F. Selling and distribution overheads per unit will increase by 20%.
- G. Selling price per unit would rise by 10%.

You are required to prepare:

- I. Cost sheet for the year ended 31st march, 2022 showing cost per unit and total cost and
- II. Projected cost sheet for the year ending 31st march, 2023 showing cost per unit and total cost.

Solution 4:

Cost sheet

Particulars	31-3-2022 Units: 15,000		31-3-2023 Units: 30,000	
	Rs.	Rate per Unit Rs.	Rs.	Rate per Unit Rs.
Direct Materials	3,75,000	25.00	9,00,000	30.00
Direct Wages	2,25,000	15.00	6,30,000	21.00
PRIME COST	6,00,000	40.00	15,30,000	51.00
Add: factory overheads				
Fixed	1,50,000	10.00	1,50,000	5.00
Variable	1,50,000	10.00	4,20,000	14.00
Total Works Overheads	3,00,000	20.00	5,70,000	19.00
WORKS COST	9,00,000	60.00	21,00,000	70.00
Add: Office /Administrative Overheads				
Office Rent	90,000	-	-	-
General expenses	75,000	-	-	-
Management expenses	60,000	-	-	-
Total administrative overheads	2,25,000	15.00	3,15,000	10.50
COST OF PRODUCTION	11,25,000	75.00	24,15,000	80.50
Add: Selling Overheads				
Advertisements	1,31,250	8.75	3,15,000	10.50
Salesmen Commission	1,50,000	10.00	3,60,000	12.00
Total Selling Overheads	2,81,250	18.75	6,75,000	22.50
TOTAL COST	14,06,250	93.75	30,90,000	103.00
Add: Profit	93,750	6.25	2,10,000	7.00
SALES	15,00,000	100.00	33,00,000	110.00

Problem No.: 5

From the Following Particulars prepare cost sheet showing various elements of cost.

Particulars	₹
Opening Stock of Raw Material	1,10,000
Purchase of Raw Materials	8,25,000
Carriage outwards	25,000
Direct Wages	4,20,000
Direct Power	25,000
Technical Directors Salary	40,000
Factory Rent Rates and Insurance	20,000
Sale of Factory scrap	10,000
Depreciation on Factory Buildings	25,000
Factory Stationery	30,000
Closing Stock of Raw Material	1,00,000
Opening Stock of Finished Goods	1,50,000
Stationery and Printing	20,000
Staff Salaries	2,50,000
Office rent	50,000
Free Sample	12,000
Closing Stock of Finished Goods	1,00,000

Sales are made to earn a profit @ 10 % on Cost Price

COST SHEET

Classification of Costs and
Cost Sheet

Particulars	Rs.	Rs.
I. DIRECT EXPENSES		
1. Raw Materials		
Opening Stock of Materials	1,10,000	
Purchases Of Materials	8,25,000	
	9,35,000	
Less: Closing Stock of Materials	-1,00,000	
RMC		8,35,000
2. Direct Labour		4,20,000
3. Direct Expenses (Direct power)		25,000
PRIME COST		12,80,000
II. INDIRECT EXPENSES		
1. Works Overheads		
Technical Directors Salary	40,000	
Factory Rent Rates and Insurance	20,000	
Depreciation on Factory Buildings	25,000	
Factory Stationery	30,000	
	1,15,000	
Less: Sale of Scrap	-10,000	
		1,05,000
WORKS COST		13,85,000
2. Administrative Overheads		
Stationery and Printing	20,000	
Staff Salaries	2,50,000	
Office rent	50,000	
		3,20,000
COST OF PRODUCTION / COGS		17,05,000
Opening Stock of Finished Goods		1,50,000
Less: Closing Stock of Finished Goods		-1,00,000
COST OF GOODS SOLD		17,55,000
3. Selling and Distribution Overheads		
Carriage outwards	25,000	
Free Sample	12,000	
		37,000
TOTAL COST/ COST OF SALES		17,92,000
Add: Profit		1,79,200
Sales		19,71,200

PRACTICE PROBLEMS:**Problem No.6:**

Following details are furnished by AIKALtd. Of expenses incurred during the year ended 31st March, 2022.

Particulars	Amt.
Direct material	3,00,000
Opening stock of finished goods (5,000 units)	80,000
Closing stock of finished goods (1,000 units)	?
Depreciation on Machinery	96,000
Loss on sale of Fixed Assets	17,500
Trade fair expenses	87,000
Direct expenses	1,60,000
General manager's salary	4,00,000
Dividend paid	7,800
Direct wages	2,40,000
Advertisement	1,50,000
Depreciation on computers	1,70,000
Drawing and designing expenses	84,000
Purchase of machinery	1,90,000
Depreciation on delivery van	1,14,000
Office maintenance charges	1,98,000
Factory maintenance	1,45,000
Sales (24,000 units)	22,80,000

Closing stock of finished goods to be valued at cost of production.

You are required to prepare cost sheet showing various elements of cost both in total and per unit and also find out total profit and per unit profit.

Problem No. 7:

From the following details prepare COST SHEET showing Cost per unit and Total cost column.

Bharat Engineering Company manufactured and sold 1,000 machines in 2022. Following are the particulars obtained from the records of the company:

Cost of materials	80,000
Wages paid	1,20,000
Manufacturing expenses	50,000
Salaries	60,000
Rent, rates and insurance	10,000
Selling expenses	30,000
General expenses	20,000
Sales	4,00,000

Classification of Costs and Cost Sheet

The company plans to manufacture 1,200 machines in 2023.

You are required to submit a statement showing the price at which machines would be sold so as to show a profit of 10% on the selling price.

It was estimated that:

- The price of materials will rise by 20%.
- Wage rates will rise by 5%.
- Manufacturing expenses will rise in proportion to the combined cost of materials and wages.
- Selling expenses per unit will remain unchanged.
- Other expenses will remain unaffected by the rise in output.

Problem No. 8:

From the Following information prepare detailed cost statement showing various elements of cost.

Particulars	₹
Opening Stock of Finished goods	80,000
Purchase of Raw Materials	7,50,000
Carriage outwards	15,000
Direct Power	1,20,000
Direct Wages	2,25,000
Directors Fees	2,00,000
Rent, Rates and Insurance	26,000
Workmen Salaries	10,000
Depreciation n Factory Buildings	25,000
Fees paid to Brand ambassador	89,000

Interest on Loan (Outstanding)	45,000
Assets Loss by fire	30,000
Closing Stock of Raw Material	1,00,000
Opening Stock of Raw Materials	1,25,000
Raw materials returned to suppliers	10,000
Stationery and Printing	25,000
Staff Salaries	2,50,000
Maintenance of Factory building	85,000
Office rent	50,000
Goodwill Written off	12,345
Advertisements	12,000
Closing Stock of Finished Goods	1,00,000

Director devotes his time equally between Factory and Office.

Sales are made to earn a profit @ 20 % on Cost Price.

Hint: Drawing office Salary is a Factory expenses.

Problem No. 9:

From the following details prepare Cost Sheet showing Cost per unit and Total cost column.

M/s. 360 Company manufactured and sold 2,000 units of Finished goods in the year 2020-2021.

Following are the particulars obtained from the records of the company:

Cost of materials	1,20,000
Wages paid	80,000
Factory Rent	50,000
Repairs and Depreciation of Computers	25,000
Royalties	10,000
Indirect Materials	15,000
Salaries	10,000
Salesmen Salaries	80,000
Rent, rates and insurance	60,000
Other Selling expenses	10,000
Other office Expenses	25,000

Factory lighting	15,000
Telephone charges	2,000
General expenses	20,000
Loose tools written off	12,000
Selling commission	8,000
Purchase of Machinery	2,50,000
Bad Debts	20,000
Legal charges criminal Suits	15,000
Advertising	12,000
Sales	?

Classification of Costs and
Cost Sheet

Sales are made to earn 15% profit on cost.

Prepare cost sheet and show:

Prime Cost, Works Cost, Cost of Production, Cost of Sales and Profit.

Problem No. 10:

Prepare Cost sheet from the following particulars.

Raw Material	35,000
Direct Wages	20,000
Direct Expenses	15,000
Factory Rent	5,000
Factory Manager salaries	2,000
Depreciation on Machinery	3,000
Office Salaries	4,000
Printing & Stationery	5,000
Advertisement	4,000
Sales Commission	7,000
Profit	???
Sales	1,30,000

Ignore Units and CPU.

Problem No.: 11

ABCD Ltd. supplies you the following information and requires you to prepare a cost sheet.

Stock of raw materials	65,000
Stock of raw materials	90,500
Direct wages	32,500
Indirect wages	12,750
Sales	2,50,000

Cost Accounting	Work-in-progress	26,000
	Work-in-progress	35,000
	Purchases of raw materials	67,000
	Factory rent, rates and power	12,000
	Depreciation of plant and machinery	2,500
	Expenses on purchases	3,500
	Carriage outward	2,500
	Advertising	5,500
	Office rent and taxes	12,500
	Travellers' wages and commission	10,500
	Opening stock of Finished Goods	54,000
	Closing Stock of Finished Goods	45,000

Problem No.: 12

From the following information for the month of December, prepare a cost sheet to show the following components: (a) Prime Cost , (b) Factory Cost , (c) Cost of Production, (d) Total Cost. (e) Profit

Direct material	37,000
Direct wages	1,18,500
Factory rent and rates	2,500
Office rent and rates	2,500
Plant repairs and maintenance	1,700
Plant depreciation	1,250
Factory heating and lighting	4,000
Factory manager's salary	3,000
Office salaries	12,600
Director's remuneration	11,500
Telephone and postage	2,200
Printing and stationery	8,100
Legal charges	1,050
Advertisement	2,200
Salesmen's salaries	2,500
Showroom rent	5,100
Sales	1,66,000

Problem No.: 13**Classification of Costs and
Cost Sheet**

From the following particulars of M/s Rama Raju, prepare a cost sheet:

Stock, 01-04-2022: Raw materials	30,500	Finished goods	20,400
Stock, 31-03-2023: Raw materials	48,500	Finished goods	10,000
Purchase of raw materials	45,000		
Work-in-progress, 1-4-2022	18,000		
Work-in-progress, 31-3-2023	19,000		
Net Sales	1,15,000		
Direct wages	22,400		
Factory Rent	8,500		
Office Rent	4,400		
Showroom Rent	5,800		
Distribution expenses	12,500		

Also calculate the percentage of works expenses to direct wages and the percentage of office expenses to works cost.



RECONCILIATION OF COST AND FINANCIAL ACCOUNTS

Unit Structure

6.0 Objectives

6.1 Introduction

6.2 Need for Reconciliation

6.3 Importance of Reconciliation

6.4 Methods of Reconciliation

6.5 Solved Problems

6.6 Exercises

6.7 References

6.0 OBJECTIVES

After studying the unit the students will be able to:

- Ascertain the difference between Profit as shown by Financial Profit and Loss Account and Profit appearing in Costing Profit & Loss Account.
- Identify and quantify the cost components, which contribute to the difference in profit figures.
- Prepare a statement reconciling the two profit figures reported by financial and cost records.

6.1 INTRODUCTION

The word 'Reconcile' means to tally, conciliate, harmonize, bring together or equate. The term reconciliation applies to the reconciliation of the results of the business profit or loss as shown by the financial accounting records and the cost accounting records. Cost accounts and financial accounts are maintained in two different sets of books, there will be prepared two profit and loss accounts - one for costing books and the other for financial books. The profit or loss shown by costing books may not agree with that shown by financial books. Such a system is termed as, 'Non- Integral System'. where two sets of accounting systems are being maintained, the profit shown by the two sets of accounts may not agree with each other. The difference in purpose and approach generally results in a different profit figure thus arises the need for the reconciliation of profit figures given by the cost accounts and financial accounts. In business concern where Non-integrated Accounting System is followed,

cost and financial accounts are maintained separately, the difference between the result of these two are required to be reconciled. Reconciliation of cost and financial accounts mean tallying the profit or loss revealed by both set of accounts. The chief aim is to find out the reasons for the difference between the results shown by Cost Accounts and Financial Accounts.

6.2 NEED FOR RECONCILIATION

The various reasons which create difference between cost and financial profit or loss shown by the two set of books may be listed under the following heads:

- (1) Items shown only in Financial Accounts
- (2) Items shown only in Cost Accounts
- (3) Absorption of Overheads
- (4) Methods of Stock Valuation
- (5) Abnormal Loss and Gains

(1) Items shown only in Financial Accounts: Some items of income and expenses which are included only in financial accounts but are not shown in cost accounts and vice versa. The following items are shown in financial accounts but not in cost accounts:

(A) Income:

- (1) Profit on sale of fixed assets
- (2) Interest received on investment
- (3) Dividend received on investment
- (4) Rent, brokerage and commission received
- (5) Premium on issue of shares
- (6) Transfer fees received.

(B) Expenditure:

- (1) Loss on sale of fixed assets, e.g., Plant, Machinery, Building etc.
- (2) Interest paid
- (3) Discount paid
- (4) Dividend paid
- (5) Losses due to scrapping of plant and machinery
- (6) Penalties and fines

- (7) Expenses of shares' transfer fees
- (8) Preliminary expenses written off
- (9) Damages payable at law.

(2) Items shown only in Cost Accounts: There are some items which are recorded only in Cost Accounts but are not included in financial accounts, nominal interest on capital, notional rent of premises owned, salary to proprietor etc. are not recorded in financial account because the amount is not actually spent or paid. These expenses reduced the profit in cost account while in financial account it may be the reverse effect.

(3) Absorption of Overheads: In financial accounts actual amount of expenses paid are recorded while in cost accounts overheads are charged at predetermined rates. If overhead charged are not equal to the amount of overhead incurred the under or over absorption of overhead leads to difference in profits of two accounts.

(4) Methods of Stock Valuation: The term stock refers to opening or closing stock of raw materials, work in progress and finished goods. In financial accounts stocks are valued at cost price or market price whichever is lower. In Cost Account; stock of raw materials can be valued based on FIFO, LIFO and Simple Average Method etc., and working progress may be valued at Prime Cost or Work Cost. Finished stocks are generally valued on the basis of cost of production. Thus, the adaptation of different method of valuation of stock leads to difference in profits of two sets of accounts.

(5) Abnormal Losses and Gains: Different items of abnormal wastages, losses or gains which are included in financial accounts but are not recorded in cost accounts. Thus, the figures of abnormal losses and gains may affect the results in financial accounts alone.

6.3 IMPORTANCE OF RECONCILIATION

Reconciliation of cost and financial account is necessary for the following reasons :

- (1) To ensure arithmetical accuracy of both set of accounts for effective cost ascertainment and cost control.
- (2) To identify the reasons for different results in two sets of accounts.
- (3) To evaluate the reasons for variations for effective internal control.
- (4) To enable the smooth co-operation and co-ordination between the activities of cost and financial accounting departments.
- (5) To ensure the standardization of policies relating to stock valuation, depreciation and absorption of overheads.

6.4 METHODS OF RECONCILIATION

Reconciliation of financial accounts and cost accounts can be presented using any of the following two methods i.e.

- (1) Statement of Reconciliation or Reconciliation statement
- (2) Memorandum Reconciliation Account.

6.4.1 Reconciliation Statement - Reconciliation statement is a statement which exhibits the items to be added or subtracted to bring the balance profit/loss of cost books in agreement with the profit/loss as disclosed in financial books. So, the purpose of preparing reconciliation statement is to reconcile the profit/loss as per cost accounts with the profits/loss as per financial accounting by ascertaining and adjusting all causes of differences between the two.

6.4.2 Procedure of Preparing reconciliation Statement –

This procedure consists of the following steps :

Step 1 - Start with taking any one of the figure of profit/loss (either as per cost books or financial books) which may be called base profit figure.

Step 2 - Secondly, the various reasons of disagreement (as discussed in the preceding section) between the profits disclosed by two sets of books in a particular case are ascertained.

Step 3 - Add those items of difference which have the effect of increasing profits in other set of books to the base profit figure (from which we started in step 1) (such items may be called '+' items)

Step 4 - Subtract those items of disagreement from the base profit figure which have the effect of lowering profits in other set of books. (such items may be called '-' items).

The resultant figure after making all the above mentioned adjustments (if all the calculations are computably and arithmetically correct) will be the profit or loss as per other set of books.

Proforma Reconciliation Statement - Suppose we start taking the profits as per cost accounts as base profits figure, the reconciliation statement can be exhibited / presented as given below.

6.4.3 Proforma Reconciliation Statement

(When profits as per Cost Accounts is taken as Starting point or base figure).

Particulars	Amount (')	Amount (')
A. Profits as per cost accounts		
B. Add : items having the effect of higher profits in financial accounts		
(a) over-absorption of factory, office and selling and distribution over-heads		
(b) Items charged in cost accounts only eg.		
- Notional Rent		
- Notional Interest or Salaries		
(c) Over-valuation of opening stocks in cost a/cs		
(d) Under-valuation of closing stocks in cost a/cs		
(e) Purely financial incomes excluded from cost a/cs		
- Interest & dividends received		
- Rent or transfer fees received		
C. Less : items having the effect of lower profits in financial accounts		
(a) Under absorption of factory, office and selling and distribution overheads		
(b) Under-valuation of opening stock in cost a/cs		
(c) Over-valuation of Closing stock in cost a/cs		
(d) Purely financial charges excluded from cost a/cs eg Legal charges, donations, preliminary expenses written off		
(e) Depreciation under- charged in cost accounts		
D. Profits as per financial accounts.		

Tutorial Note :

In cases we have losses in cost accounting records then the figure of loss as a starting point can be put as 'minus' or '-ive' figure. The implication of this will be that sum of '+' items (items to be added) will be deducted and sum of '-' items (items to be subtracted) will be added to the base figure of loss to arrive at the resultant figure (which is the profit/loss as per financial books).

Proforma Reconciliation Statement (When profits as per financial accounts are taken as base profits figure)

6.4.4 Memorandum Reconciliation Account

Memorandum Reconciliation Account performs the same function of reconciling two figures of profits disclosed by financial accounts and cost accounts as is accomplished by preparing reconciliation statement. Memorandum Reconciliation Account, basically, is the presentation of reconciliation statement in 'T' shape account form. It is called memorandum account because it does not form part of double entry.

Steps in preparation of Memorandum Reconciliation Account

Four basic steps of preparing the Memorandum Reconciliation Account are encapsulated in the following lines:

Step 1. At first, base profit figure, say, profits as per cost account is placed on the credit side of the account and if costing books reveal a loss, it is to be put on the debit side of the memorandum reconciliation account.

Step 2. All items which are to be added for reconciliation purpose will be shown on the credit side of the account. For instance, if we are starting from costing book's profits, the following items will be shown on the credit side :

- (a) Purely financial incomes included in financial accounts
- (b) Over-absorption of overheads in cost accounts
- (c) Over-valuation of opening stock in cost accounts
- (d) Under valuation of closing stock in cost accounts.

Step 3. All those items which are to be subtracted from base profit figure will be shown on the debit side of Memorandum Reconciliation Account. A list of the items to be shown on debit side in case, we start the procedure from profits as per cost accounts is given below :

- (a) Purely financial charges (as listed in the preceding section) excluded from cost accounts.
- (b) Under absorption of overheads in cost accounts
- (c) Over-Valuation of closing stock in cost accounts
- (d) Under-Valuation of opening stock in cost accounts.

Step 4. The balancing figure after placing all the items as described in first 3 steps is determined and should match with the figure of profits/loss as per financial accounts (if all the computations are arithmetically correct). If sum of credit side items > sum of debit side items, balancing figure is profit. If sum of debit side > sum of credit side items, balancing figure is loss, as per financial accounts.

Proforma of Memorandum Reconciliation Account, if starting Point of the procedure is profits as per cost books, is given below :

DR. **Memorandum Reconciliation A/c** CR.

Particulars	Amount (₹)	Particulars	Amount (₹)
To Loss as per cost accounts		By profits as per cost accounts	
To purely financial charges		By purely financial income	
Discount on issue of shares written off		Rent Received	
Preliminary expenses written off		Interest Received	
Underwriter's Commission		Profits on sale of fixed assets	
Fines & Penalties		Dividend	
Donation		Transfer fee received	
Bank interest		By items charged in cost accounts only.	
To depreciation under charged in cost a/cs		By Excess of depreciation charged in cost books.	
To under-absorption of overheads		By over-absorption of overheads	
To under-valuation of opening stock in cost a/cs		By over-valuation of opening stock in cost a/cs.	
To over-valuation of closing stock in cost a/cs		By under-valuation of closing stock in cost a/cs.	
To profits as per financial a/cs		By Loss as per financial a/c.	
(Balancing figure when sum of credit items > sum of debit items)		(Balancing figure when sum of Debit items > sum of credit items)	

The following table will help to prepare the reconciliation of cost and financial accounts:

Treatment of Causes for Differences

S. No.	Reasons For Differences	Suitable Adjustments	
		Base is Costing Pmfit or Financial Loss (+) or (—)	Base is Financial Profit or Costing loss (+) or (—)
1.	Over absorption of overhead in Cost Account	Add	Less
2.	Over valuation of closing stock in Financial	Add	Less (—)
3.	Account	Add	
4.	Over valuation of opening stock in Cost Account	Add	
5.	Excess provision for depreciation of building plant & machinery etc., charged in Cost Account Items of expenses charged in Cost Account but not in Financial Accounts (Example	Add	
6.	Notional interest on Capital, Notional rent on Premises) Items of income recorded in Financial Account but not in Cost Account	Add (+) Less (—)	Less (—) Add (+)
7.	Under absorption of overhead in Financial	Less (—)	Add (+)
8.	Account	Less (—)	Add (+)
9.	Over valuation of opening stock in Financial Account		Add (+)
10.	Over valuation of closing stock in Cost Account Item of income tax, dividend paid, preliminary expenses written off, goodwill written off, under writing commission and debenture discount written off and any appropriation of profit included in Financial Account only.	Less	Add (+)

6.5 SOLVED EXAMPLES

1 The book of Cost accounts of Ms. D Bros shows profit of Rs. 1,20,000 for the year ending 31-3-2020, some of the expenses and incomes are given. Describe what effects they would have in reconciliation statement.

Here – profit as per financial accounts is not given, we will start with cost books and will show the effect on the basis of books of cost accounts so our book is Cost accounts.

Particulars	Cost Books	Financial Books	Difference	Effect
Factory Overheads	15,000	16,000	1,000	Expenses are less in our books, hence Rs1,000 will be deducted
Office Overheads	25,000	23,500	1,500	Expenses are more in our books, hence Rs.1,500 will be added
Selling Overheads	36,700	36,700	0	Expenses are equal in both books, hence there will be no effect
Opening Stock	10,500	10,000	500	Opening stock shown on debit side, so effect will be same as in case of expense, it is more Rs.500 will be added
Closing Stock	36,500	35,000	1,500	Closing stock shown on credit side, so effect will be same as in case of income, it is more Rs.1,500 will be deducted.
Debenture Interest	--	3,000	3,000	No expenses are recorded in our books, so full difference of Rs 3,000 will be deducted
Interest on Investment	--	26,000	26,000	No Incomes are recorded in our books, so full difference of Rs 26,000 will be added.

2 From the following particulars prepare a reconciliation statement: -

Particulars	Rs.
Net Profit as per financial records	154506
Net Profit as per costing records	206880
Works overheads under recovered in costing	3744
Administrative Overheads recovered in excess in costing	2040
Deprecation charged in financial accounts	13440
Depreciation recovered in Cost Accounts	15000
Interest received but not included in Cost Accounting	9600
Obsolescence loss charged in financial records	6840
Income tax provided in financial books	48360
Bank interest credited in financial books	900
Stores adjustment credited in financial books	570
Depreciation of stock charged in financial books	8100

Solution

RECONCILIATION STATEMENT

Particulars	Rs.	Rs.
Net Profit as per costing records		206880
Add:		
1. Administrative Overheads over absorbed	2040	
2. Depreciation excess charged	1560	
3. Income not credited in costing -		
Interest received	15,000	
Bank interest	900	
Stores adjustment <u>470</u>	16470	<u>20070</u>
Total		226950
Less		
1. Works overheads under recovered	3744	
2. Expenses not charged in costing books	9600	
3. Income tax provided in Financial Book	48360	
4. Depreciation of Stock charged in Financial Book	66060	69804
<u>8100</u>		
Net Profit as per financial books		157146

3 from the following particulars Prepare :

- A) Statement of cost of Manufacture for the year ended 31st March, 2021.
- B) Statement of Profit as per cost accounts.
- C) Profit and Loss Account in the financial books and
- D) Show how you would attribute the difference in the profit as shown by (b) and (c)

Particulars	Rs.
Opening stock of Raw materials	2,88,000
Opening stock of Finished goods	5,76,000
Purchase of Raw materials	17,28,000
Stock of Raw materials at the end	4,32,000
Stock of Finished goods at the end	1,44,000
Wages	7,20,000

Calculate Factory on cost at 20% on prime cost, and office on cost at 80% on factory on cost. Actual work expenses amounted to Rs. 4,54,300 and office expenses amounted to Rs. 3,71,900. The selling price was fixed at a profit of 20% on cost.

Solution:

Notes :

- A) Cost of Materials used, wages and sales are shown at the same amount both in Cost and Financial Accounts.
- B) If no other information is given, under that the value of closing stock of finished goods are considered at the same amount in both types of books.

Statement of cost of Manufacture (COST SHEET)

Reconciliation of Cost and
Financial Accounts

Particulars	Rs.	Rs.
Opening stock of Raw materials	2,88,000	
Add : Purchase of Raw materials	17,28,000	
	20,16,000	
Less: Closing stock of Raw materials	4,32,000	
Materials consumed		15,84,000
Wages		7,20,000
Prime cost		23,04,000
Factory on cost (20% of Prime cost)		4,60,800
Factory cost		27,64,800
Office on cost (80% of Factory on cost)		3,68,640
Cost of Production		31,33,440
Opening stock of Finished goods		5,76,000
		37,09,440
Closing stock of Finished goods		1,44,000
Cost of sales		35,65,440
Sales (cost + 20% profit)		42,78,528
Profit		7,13,088

Profit and Loss Account in Financial Books

Particulars	Rs.	Particulars	Rs.
To opening stock:		By Sales	42,78,528
Raw materials: 2,88,000		Closing Stock:	
Finished Goods; <u>5,76,000</u>	8,64,000	Raw materials: 4,32,000	
Purchase of Raw materials	17,28,000	Finished goods: <u>1,44,000</u>	5,76,000
Wages	7,20,000		
Work expenses	4,54,300		
Office expenses	3,71,900		
Net profit	7,16,328		
	<u>48,24,528</u>		<u>48,24,528</u>

Reconciliation Statement

Particulars	Rs.
Profit as per cost accounts	7,13,088
Add : Factory on cost charges over recovered in cost accounts	
(4,60,800-4,54,300)	6,500
	7,19,588
Less : Office on cost charges under recovered in Cost Accounts	
(3,71,900 – 3,68,640)	3,260
Profit as per financial Accounts	<u>7,16,328</u>

3 From the following Profit & loss account draw up a Memorandum Reconciliation account showing the Profit as per Cost Accounts:-

4	Particulars	Amt Rs	Particulars	Amt rs.
5	To Office Salaries	11282	20 By Gross Profit	54648
6	To Office Expenses	6514	21 By Dividend received	400
7	To Salary to Salesmen	4922	22 By Interest on Bank FD	150
8	To Sales Expenses	9304		
9	To Distribution Exp.	2990		
10	To Loss on Sale of Machinery	2990		
11	To Fines	1950		
12	To Discount	200		
13	To Net Profit c/d	100		
14		17936		
15		55198		55198
16	To Income Tax			
17	To Transfer to Reserves	8000		17936
18	To Dividend	1000		
19	To Balance c/d	4800		24
		4136		25
			23 By Net Profit	26 17936
		17936	b/d	

The cost accountant has ascertained a Profit of Rs.19636 as per his books.

SolutionReconciliation of Cost and
Financial Accounts**MEMORENDUM RECONCILIATION A/C**

PARTICULARS	AMT RS.	PARTICULARS	AMT RS.
To Expenses not debited to Cost accounts:		By Profit as per cost account	
Fines		By Income not credited in	19636
Discount	200	Cost accounts:	
Loss on sale of Machinery	100	Dividend Received	
Income Tax	1950	Interest on Bank FD	400
Tr. to Reserves	8000		
Dividend	1000		
To Net Profit c/d	4800		150
	4136		
	20186		20186

6. The following figures are extracted from the financial accounts of a manufacturing firm for the first year of its operation :

Particulars	Amt rs.
Direct material consumption	50,00,000
Direct wages	30,00,000
Factory overheads	16,00,000
Administration overheads	7,00,000
Selling and Distribution overheads	9,60,000
Bad debts	80,000
Preliminary expenses written off	40,000
Legal Charges	10,000
Dividends received	1,00,000
Interest on Deposit received	20,000
Sales – 1,20,000 units	1,20,000
Closing stock :	
Finished stock 4,000 units	3,20,000
Work-in-progress	2,40,000

The cost accounts for the same period reveal that the direct material consumption was Rs.56,00,000;

Factory overhead is recovered at 20% on Prime Cost:

Administration overhead is recovered @ Rs. 6 per unit of production;

Selling and Distribution overheads are recovered @ Rs. 8 per unit sold.

You are required to prepare Costing and Financial Profit and Loss Accounts and reconcile the difference in the profits as arrived at in the two sets of accounts.

Solution

cost sheet

Particulars	Amt rs.
Direct Materials	56,00,000
Direct Wages	<u>30,00,000</u>
Prime cost	86,00,000
Factory overhead 20% on Prime cost	<u>17,20,000</u>
	1,03,20,000
Less Work-in-progress (Closing stock)	<u>2,40,000</u>
Works Cost	1,00,80,000
Administration overhead Rs. 6 per unit of production: 1,20,000 + 4,000	7,44,000
Cost of Production	<u>1,08,24,000</u>
Less Closing stock	3,49,161
	<u>1,04,74,839</u>
Add Selling and distribution expenses @ Rs. 8per unit i.e. 1,20,000 × 8	<u>9,60,000</u>
Cost of Goods sold	1,14,34,839
Profit	5,65,161
Sales	1,20,00,000

Profit and Loss A/c

Reconciliation of Cost and
Financial Accounts

Particulars	Rs.	Particulars	Rs.
To Direct Materials	50,00,000	By Sales	1,20,00,000
To Direct Wages	30,00,000	By Closing stock:	3,20,000
To Factory overheads	16,00,000	Finished Stock	2,40,000
To Gross Profit	29,60,000	WIP	
	1,25,60,000		1,25,60,000
To Administration Overheads	7,00,000	By Gross Profit	29,60,000
To Selling and Distribution	9,60,000	By Dividends	1,00,000
To Bad debts	80,000	By Interest	20,90,000
To Preliminary Expenses	40,000		
To Legal Charges	10,000		
To Net Profit	12,90,000		
	30,80,000		30,80,000

Reconciliation Statement

Particulars	Rs.	Rs.
Profit as per cost accounts		5,65,161
Add		
Dividend not taken in costing.	1,00,000	
Interest not take in costing	20,000	
Excess of Direct materials consumed.	6,00,000	
Over-absorbed in Costing:		
(a) Factory overheads	1,20,000	
(b) Administration overheads	44,000	<u>8,84,000</u>
		<u>14,49,161</u>
Less		
Bad Debts taken in Financial Accounts but not in costing	80,000	
Preliminary expenses taken in Financial Accounting, but not in costing	40,000	
Legal charges taken in financial but not in costing	10,000	
Different in closing stock		
(3,49,161-3,20,000)	29,161	<u>1,59,161</u>
Profit as per Financial Accounts		<u>12,90,000</u>

6.5 EXERCISE

1. What is the need for reconciliation of cost and financial accounts?
2. Discuss the main sources of difference between Profit shown by cost accounts and that as per financial accounts.

3. Objective type questions;

A. Multiple choice questions:

1. Dividend received is shown in _____

- i) costing profit and loss A/c iii) Ignored
- ii) financial profit and loss A/c iv) None of the above

2. Over valuation of closing stock in Cost Accounts-----.

- i) Increases costing profit iii) Decreases costing profit
- ii) Increases financial profit iv) Decreases financial profit

3. Over absorption of overheads in financial accounting

- i) Decreases financial profit iii) Increases costing profit
- ii) Increases financial profit iv) Both (i) & (ii)

4. Under valuation of opening stock in costing

- i) Increases costing profit iii) Decreases costing profit
- ii) Decreases financial profit iv) Both (i) & (ii)

5. Donations paid is

- i) Debited to costing P & L A/c iii) Ignored in costing
- ii) Debited to financial P & L A/c iv) (ii) & (iii)

Answers: ii, i, i, iii, ii.

B. True or false

1. Under absorption of overheads in cost accounting decreases costing profit.
2. Interest received on Bank Deposit is ignored in cost accounting.
3. Interest on investment increases Costing profit.
4. Dividend paid on share capital is debited to financial P & L A/c.
5. Over absorption of overheads in financial accounting decreases the costing profit.

6. Cost accounting considers the Loss or profit on sale of capital assets.
7. Abnormal loss has considered in costing.
8. Fines and penalties reduce the financial profit.
9. Interest or Dividend received increases financial profit.
10. Overvaluation of opening stock in Financial Accounting reduces financial profit.
11. Under valuation of closing stock in costing increases costing profit.
12. Difference in Depreciation in costing and financial accounting distinguishes costing profit from financial profit.

Answers:

False, True, False, True, False, False, true, true, true, true, false, true.

C Fill in the blanks

1. Premium on issue of shares is shown in -----accounts only.
2. Transfer to General Reserve is purely ----- item.
3. Interest on Bank Deposits is Credited in -----.
4. Overheads recovered more than actual in costing is called as _____.
5. Overheads recovered less than actual in financial accounting is called as _____.
6. Interest on capital reduces _____ profit.
7. Under absorption of overheads in costing increases _____ profit.
8. Over valuation of closing stock in financial accounting increases _____ profit.
9. Under valuation of closing stock in costing decreases _____ profit.
10. Over absorption of overheads in financial accounting decreases _____ profit.
11. Under absorption of overheads in costing increases _____ profit.
12. Dividend paid on shares is debited to _____ P & L A/c.

Answers:

financial accounts, financial, financial P&L A/c., over absorption of overheads in costing, under absorption of overheads in financial accounting, financial profits, costing profit, financial profits, costing profits, financial profits, costing profits, financial.

Practical Questions

1 The following particulars are available from financial accounts of Big Beng Manuf. Co. for the year ending 31st March 2021:

Particulars	Rs.
Materials consumed	3,00,000
Direct Wages	1,80,000
Factory expenses	1,20,000
Office expenses	1,50,000
Selling expenses	30,000
	7,80,000

In cost accounts materials and wages are charged at actual cost but factory overheads are recovered at 70% of direct wages and office overheads are recovered at 30% of the factory cost, while selling overheads are recovered at Rs.12 per unit sold.

There was no stock of finished goods at the beginning of the years. During the year 1,200 units were produced, out of which 1,000 units were sold at Rs.10,00,000.

You are required to prepare :

- 1) Statement showing Profit and Loss a/c as per Financial Accounts.
- 2) Statement showing Profit and Loss a/c as per Cost Accounts
- 3) Statement showing Reconciliation of Profit and Loss

2 Profit and Loss a/c of Dev Ltd. For the year ended on 31st March 2021 :

Profit and Loss Account

Particulars	Amount- Rs	Particulars	Amount – Rs.
To opening stock(1000 units)	26,000	By sales (15,500 units)	10,85,000
Direct Materials	4,00,000	By Closing stock (500 units)	20,000
Direct Labour	2,30,000	Interest income	1,000
Factory overheads	1,45,000	Brokerage	16,000
Office overheads	1,60,000		
Selling overheads	85,000		
Penal interest	7,000		
Discount on shares	9,000		
To net profit	60,000		
	11,22,000		11,22,000

Direct Labour and Materials are charged on actual basis in cost accounts. Factory overheads are recovered at 70% of direct labour and office overheads at 25% of factory cost. Selling expenses are recovered at Rs.7 per unit.

Opening stock is valued at Rs.25 per unit in cost accounts. Closing stock consists of units produced during the year.

Prepare:

- 1) Cost sheet for the year ended 31st March 2021
- 2) Factory, Office and Sales overheads accounts
- 3) Reconciliation Statement of net profit as per financial and cost accounts

[Ans. Loss as per cost sheet Rs.4,292 and Closing stock Rs. 32,958 (9,88,750 X 500/15,000)]

- 3 The following figures are extracted from the financial accounts of Mumbai Ltd. For the year ending 31st March 2021:

Particulars	Amt Rs.
Sales (20,000 units)	50,00,000
Materials	20,00,000
Wages	10,00,000
Factory overheads	9,00,000
Administrative overheads	5,20,000
Selling and Distribution overheads	3,60,000
Closing Stock :	
Finished goods (1,230 units)	3,00,000
Work – in – progress	1,40,000
Goodwill written off	4,00,000
Interest on debentures	40,000

In the cost records factory overheads is charged at 100% of wages, administrative overheads at 10% of factory cost and selling and distribution overhead at the rate of Rs.20 per unit sold.

Prepare a Statement of Reconciling the profit as per cost records with the profit as per financial records.

[Ans. Profit as per cost accounts Rs. 6,00,000, Profit as per financial accounts Rs.2,20,000, closing stock as per cost accounts Rs.2,46,000]

- 4 The following is the Trading and Profit and Loss Account of ABC Ltd. For the year ending 31st March 2021.

Trading and P & L A/c

Particulars	Rs.	Particulars	Rs.
To opening stock (1,200 units)	48,000	By sales	9,00,000
Direct Materials	2,00,000	Closing stock of (2,200 units)	1,16,600
Direct Labour	1,50,000		
Production expenses	1,80,000		
Gross profit	4,38,600		
	10,16,600		10,16,600
Administrative expenses	1,35,000	Gross profit	4,38,600
Selling and distribution expenses	14,000	Interest and dividend	11,400
Bad debts	18,000	Profit on sale of investments	30,000
Loss on sale of assets	3,000		
Penalty	35,000		
Debenture interest	15,000		
Preliminary expenses written off	1,75,000		
Net profit			
	4,80,000		4,80,000

In cost accounts materials and labours are charged at actual cost. The cost accounts present the following information :

Direct materials per unit	Rs.20
Direct labour per unit	Rs.15
Opening stock of finished goods	Rs. 58,500

The production overheads are recovered at 50% of prime cost while administrative and selling and distribution overheads are recovered at Rs.15 per unit.

You are required to prepare

- 1) Find out profit as per cost accounts
- 2) A statement reconciling profit disclosed by Cost accounts and Financial accounts.

[Ans. Profit as per cost accounts Rs. 1,80,000, Factory overheads Rs.1,75,000, Admin exp. Rs.1,50,000, closing stock Rs.1,48,500]

Start with profit as per cost accounts add rs. 1,16,900 (int & divi Rs.11,400 + Profit on Sale of investments Rs.30,000 + Admin exp over

recovered Rs.15,000 + diff in op. stock Rs. 10,500 + Selling exp over recovered Rs.50,000) = Rs2,96,600 Less Rs 1,21,900 (Bad debts Rs.14,000 + Loss on Sale of assets Rs.18,000 + penalty Rs.3,000 + Deb interest Rs.35,000 +Prelim exp Rs.5,000 + Diff in closing stock Rs.31,900)]

5 The following is the cost per unit of XYZ ltd. Per unit cost is Rs.810 which is allocated as follows:

	Rs
Materials	400
Wages	200
Factory overheads (based on prime cost)	150
Administrative overheads	40
Selling overheads	20

The following is the profit and loss a/c of company

Particulars	Rs.	Particulars	Rs
Opening stock (Finished goods 1,000 units)	4,00,000	By sales (10,000 units)	1,10,00,000
Materials	60,00,000	Closing stock (Finished goods 6,000 units)	42,40,000
Labour	30,00,000		
Factory expenses	16,00,000		
Gross profit	42,40,000		
	1,52,40,000		1,52,40,000
Office expenses	2,80,000	By gross profit	42,40,000
Selling expenses	2,20,000	Interest and discount	2,00,000
Provision for tax	1,40,000		
Goodwill written off	40,000		
Net profit	37,60,000		
	44,40,000		44,40,000

Prepare Cost Statement and Reconciliation Statement

[Ans. Production units 15,000 (10,000+6,000-1,000), Profit as per cost A/cs Rs.32,90,000, closing stock as per cost a/c Rs.47,40,000 (6,000 units x per unit Rs.790). Start with profit as per cost A/c. Add: over recovery of factory exp Rs.6,50,000 + Over recovery of office exp Rs.3,20,000 + Int and discount received Rs.2,00,000: Less : Selling Exp under recovered Rs.20,000 + Goodwill written off Rs.40,000 +

Provision for Tax Rs.1,40,000 + Diff in closing stock Rs.5,00,000 = 37,60,000 Profit as per financial A/c]

6 Suppose works expenses are absorbed at 60% of labour and office expenses at 20% of works cost.

Actual total expenditure incurred is as follows :

	Rs.
Materials	1,00,000
Labour	75,000
Factory expenses	50,000
Office expenses	40,000
Assuming that 10% of output is still in stock and sales amounts to	2,50,000

Prepare :

- Profit as per Financial Statement
- Profit as per cost statement
- Reconciliation statement

[Ans. As per cost accounts : net profit Rs. 12,400, works exp Rs. 45,000, office exp Rs. 44,000 and closing stock of finished goods Rs.26,400 (10% of production cost Rs. 2,64,000), profit as per financial a/c : net profit Rs. 7,500, closing stock of finished goods Rs. 22,500 (10% of works cost Rs. 2,25,000). Start Reconciliation Statement with profit as per cost a/c : Add Office overheads Rs. 4,000 less : Factory overheads Rs. 5,000 and difference in value of closing stock Rs. 3,900]

6.7 REFERENCES

- 1) Cost Accounting : Principles & Practice M N Arora Vikas Pub House.
- 2) Practical Costing :N.K.Sharma : Shree Niwas Pub
- 3) Cost Accounting : Dr P C Tulsian : S Chand
- 4) Cost Accounting : Dr Murthy & S Gurusamy : The McGraw Hill Co.

