



# BBA

GGS Indraprastha University

BBA 110: Cost Accounting

# **Objectives:**

# L-4 P-0 Credit-4

Objectives: The primary objective of the course is to familiarize the students with the basic cost concepts, allocation and control of various costs and methods of costing.

# <u>Unit I</u>

# Meaning and Scope of Cost Accounting:

Basic Cost Concepts – Elements of Costs, Classification of Costs, Total Cost Build up and Cost Sheet, Emerging Terms viz. Life Cycle Costing, Activity Based Costing, Back Flush Costing.

# Materials Control:

Meaning – Steps Involved – Materials and Inventory – Techniques of Material/Inventory Control – Valuation of Inventory – Material Losses.

# <u>Unit II</u>

# Labour Cost Control:

Direct and Indirect Labour, Steps Involved – Treatment of Idle Time, Holiday Pay, Overtime etc. in Cost Accounts, Casual Workers & Out Workers, Labour Turnover, Methods of Wage Payment. Incentive Plans.

## **Overheads:**

Meaning and Classification of Overheads – Treatment of Specific Items of Overheads in Cost Accounts – Stages Involved in Distribution of Overheads – Methods of Absorption of Overheads – Treatment of Under and Over Absorption of Overheads.

# <u>Unit III</u>

lectures:-12

# Methods of Costing:

Single Output Costing, Job Costing, Contract & Batch Costing.

# lectures:-14

## lectures:-14





# <u>Unit IV</u>

lectures:-12

Process Costing (including Joint Products and By-products and Inter-process Profits), Operating/ Service Costing. (Transport & Power House only); Reconciliation of Cost and Financial Accounts.





# Notes on Cost Accounting – BBA-110

**UNIT – 1** 

# **Meaning of Cost Accounting**

**Cost accounting** can be defined as a type of accounting process that aims to capture a company's costs of production by assessing the input costs of each step of production as well as fixed costs such as depreciation of capital equipment. Cost accounting will first measure and record these costs individually, then compare input results to output or actual results to aid company management in measuring financial performance.

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

## **Concept of Cost**

The term cost means the amount of expenses incurred on or attributable to a specified thing or activity. According to the Institute of Cost and Work Accounts (ICWA) India, cost is the 'measurement in monetary terms of the amount of resources used for the purpose of production of goods or rendering services'.

With reference to production/manufacture of goods and services cost refers to the sum total of the value of resources used like raw material, labour and expenses incurred in producing or manufacturing a given quantity.





Initially, business houses considered factory cost, office cost and cost of sales for determining the cost of a product. Now, business has grown to an extent where selling and distribution expenses cannot be ignored while calculating the cost of a product. Thus, costs include 'prime cost', factory cost, cost of production, cost of goods sold and cost of sales.

Cost accounting is concerned with cost and therefore is necessary to understand the meaning of term cost in a proper perspective. In general, cost means the amount of expenditure (actual or notional) incurred on, or attributable to a given thing. However, the term cost cannot be exactly defined. Its interpretation depends upon the following factors: • The nature of business or industry

• The context in which it is used

## **ELEMENTS OF COST**

The total costs are classified into three elements: They are material, labour and other expenses. These elements are further analysed into different elements as shown in the following diagram:



## **Direct material**

Direct materials are those that can be directly identified in a product. These materials become a major part of the product. These materials can be directly seen. Limestone in chalk pieces, wood in furniture and bricks in houses are examples. The following are considered as direct





materials: (i) all raw materials, (ii) specially purchased material for a special job and (iii) primary packing materials.

In other words, direct materials are materials that can be easily identified and related with specific products, jobs and processes. Timber as a raw material for making furniture, cloth for making garments, sugarcane for making sugar, gold/silver for making jewellery, etc., are some examples of direct materials.

A material that the forms part and parcel of a finished product and that can be assigned to a particular unit is known as a direct material. Direct material is also known as 'process material', prime cost material, 'production material', 'stores material', 'constructional material', etc.

### Direct labour

It is labour expended/spent in converting raw materials into finished goods. Wages given to workers who are engaged in converting raw material into finished goods comes under direct labour. Direct labour is also known as direct wages, 'productive labour', 'process labour' or prime cost labour. The following are considered as direct labour:

- 1. Labour engaged in the actual production of a product
- 2. Labour engaged in assisting the manufacture by way of supervision, maintenance, tool setting, etc.
- 3. Inspectors and analysts specially needed for production

In other words, direct labour is labour that is directly involved in the production of a commodity. It can be easily identified and related with a specific product, job, process and activity. Direct labour cost is easily traceable to specific products. Direct labour varies in direct proportion with the volume of output. It is also known as process labour, productive labour, 'operating labour', direct wages, 'manufacturing wages', etc. Examples for direct wages are as follows: cost of wages paid to a sculptor for making a statue, cost of wages paid to a carpenter for making furniture, cost of a tailor producing readymade garments, and cost of a washer in dry cleaning.





### **Direct expenses**

Expenses that can be directly identified and allocated to cost centres or cost units are called direct expenses. They include expenses other than direct material and direct labour, which are incurred in manufacturing a product.

Direct expenses are also known as 'chargeable expenses', prime cost expenses, 'productive expenses' or 'process expenses'. The following are considered direct expenses:

- Cost of special drawings, design or layout
- Hire charge, repairs and maintenance of special equipments hired
- Experiment expenses of a job
- Excise duty
- Royalty
- Architect fees
- Cost of rectifying defective work

These are the expenses that can be directly, conveniently and wholly allocated to specific cost centres or cost units. Examples of such expenses are as follows: hiring some special machinery required for a particular contract, cost of defective work incurred in connection with a particular job or contract, etc.

### Indirect material

Materials that cannot be identified as part of a product are called indirect materials. The following are considered indirect materials: (i) cotton waste, (ii) brooms, (iii) lubricants, (iv) cleaning materials and (v) materials for repairs and maintenance.

An indirect material is a material that cannot be easily and conveniently identified and related with a particular product, job, process and activity. Consumables stores, oil and waste, and printing and stationery are some examples of indirect materials. Indirect materials are used in the factory, office, or the selling and distribution departments.

The material that is used for purposes ancillary to business and that cannot be conveniently assigned to specific physical units is termed indirect material.

### Indirect labour





Wages that cannot be directly identified with a product are called indirect labour. The following are considered indirect labour: wages paid to those workers who assist in production, namely, who are indirectly involved in production, including (i) salary for supervisors, (ii) salary for storekeepers and (iii) salary for clerical staff.

Labour employed for the purpose of carrying out tasks that are indirectly related to goods produced or services provided is indirect labour. Such labour does not alter the construction, composition or condition of a product, although they form part of the product. It cannot be practically traced to specific units of output.

Wages of storekeepers, foremen and timekeepers; directors' fees; salaries of salesmen and works manager; etc., are examples of indirect labour costs. Indirect labour is used in the factory, office or the selling and distribution divisions.

#### **Indirect expenses**

Expenses that are not directly identified with a product are called indirect expenses. The following are considered indirect expenses: (i) factory rent; (ii) factory insurance; (iii) factory depreciation; and (iv) plant repair, maintenance and insurance. All indirect materials, indirect labour and indirect expenses are called *overheads*. Overheads in general refer to all expenses incurred in connection with the general organization of the firm. Overheads are broadly classified into (i) factory overheads, (ii) administration overheads and (iii) selling and distribution overheads.

These are the expenses that cannot be directly, easily and wholly allocated to specific cost centres or cost units. All indirect costs other than indirect material and indirect labour are termed indirect expenses. Thus, indirect expenses = indirect cost – indirect material – indirect labour.

#### **Overheads**

The term overhead includes indirect material, indirect labour and indirect expenses. Thus, all indirect costs are overheads. A manufacturing organization can be divided broadly into the following three divisions:

- Factory or works, where production is done
- Office and administration, where routine as well as policy matters are decided
- Selling and distribution, where products are sold and finally dispatched to customers

Overheads may be incurred in a factory, an office or the selling and distribution divisions. Thus, overheads may be of three types.





The term overhead has a wider meaning than the term indirect expenses. Overheads include the cost of indirect material, indirect labour and indirect expenses. This is the aggregate sum of indirect material, indirect labour and indirect expenses.

## **Classification of Cost**

Classification is the process of grouping costs according to their common characteristics or features.

There are various methods of classifying costs on the basis of requirements.

The following are the important bases on which costs are classified:

# Classification of Cost on the basis of Nature (or) Elements:

- (a) Material Cost
- (b) Labour Cost
- (c) Other Expenses

# Classification of Cost on the basis of Function :

- (a) Production Cost
- (b) Administration Cost
- (c) Selling Cost
- (d) Distribution Cost

## Classification of Cost on the basis of Variability:

- (a) Fixed Cost
- (b) Variable Cost
- (c) Semi-Variable cost or Semi-Fixed cost

# Classification of Cost on the basis of Normality:

- (a) Normal Cost
- (b) Abnormal Cost





## Classification of Cost on the basis of Controllability and Decision Making:

- (a) Controllable Cost
- (b) Uncontrollable Cost
- (c) Sunk Cost
- (d) Opportunity Cost
- (e) Replacement Cost
- (f) Conversion Cost

(1)On the basis of Nature or Elements: One of the important classification cost is on the basis of nature or elements. Based on elements, it is classified into Material Cost, Labour Cost and Other Expenses.

They can be further subdivided into Direct and Indirect Material Cost, Direct and Indirect Labour Cost and Direct and Indirect Other Expenses.

(2) On the basis of Function: The classification of costs on the basis of the various function of a concern is known as function-wise classification. Here there are four important functional divisions in the business organization, viz.: (a) Production Cost (b) Administration Cost (c) Selling Cost and (d) Distribution Cost.

(3)On the basis of Variability: On the basis of variability with the volume of production Cost is classified into Fixed Cost, Variable Cost and Semi Variable Cost; Fixed Costs are those costs incurred which remain constant with the volume of production. Rent and rates of office and factory buildings are examples of fixed cost.

Variable costs are those costs incurred directly with the volume of output. For example, cost of

materials and wages to workers are the expenses chargeable with direct proportion to the volume of production.

Semi-Variable Costs are those costs incurred, partly fixed and partly variable, with the volume of production. Accordingly, it has both fixed and variable features. For example, depreciations and maintenance cost of plant and machinery.





(4)On the basis of Normality: Costs are classified into normal costs and abnormal costs on the basis of normality features. Normal costs are those incurred normally within the target output or fixed plan.

(5) On the basis of Controllability and Decision Making: Based on the managerial decision making and controllability the classifications are as follows: (a) Controllable Cost;
(b) Uncontrollable Cost; (c) Sunk Cost; (d) Opportunity Cost; (e) Replacement Cost; and
(f) Conversion Cost.

(a) Controllable Costs: Controllable Costs are the costs which can be influenced by the action

of a specified number of an undertaking. Controllable Costs incurred in a particular responsibility centre can be influenced by the action of the executive heading that responsibility centre. For example, direct materials and indirect materials.

(*b*) Uncontrollable Costs: Uncontrollable Costs are those costs which cannot be influenced action of a specified number of an undertaking. In fact, no cost is controllable, it is only in relation to a particular individual that may specify a particular cost to either controllable or non-controllable. For example, rent and rates.

(c) Sunk Cost: These are historical costs which were incurred in the past and are not relevant to the particular decision making problem being considered. While considering the replacement of a plant, the depreciated book-value of the old asset is irrelevant as the amount is a sunk cost which is to be written-off at the time of replacement. Unlike incremental or decremental costs, sunk costs are not affected by increase or decrease of volume. Example of sunk cost include dedicated fixed assets, development cost already incurred.

(d) Opportunity Cost: Opportunity costs mean the costs off or going or giving up an opportunity.

It is the notional value of going without the next best use of time, effort and money. These indicate the income or potential benefits sacrificed because a certain course of action has been taken. An example of opportunity costs is the market value forgone or sacrificed when an old machine is being used.





(e) Replacement Cost: Such expenses may be incurred due to factors like change in method of production, an addition or alteration in the factory building, change in flow of production.

# METHODS OF COSTING

The term method of costing refers to cost ascertainment. Different methods of costing for different industries depend upon the production activities and the nature of business. For these, costing methods can be grouped into two broad categories:

(1) Job and (2) Process costing.

## (1) Job Costing

Job costing is also termed as Specific Order Costing (or) Terminal Costing. In job costing, costs are collected and accumulated according to jobs, contracts, products or work orders. Each job is treated as a separate entity for the purpose of costing. The material and labour costs are complied through there spective abstracts and overheads are charged on predetermined basis to arrive at the total cost. Job costing is used in printing, furniture making, ship building, etc.

Job costing is further classified into (a) Contract costing (b) Cost plus contract and (c) Batch costing

(a) Contract Costing: This method of costing is applicable where the job work is big like contract work of building. Under this method, costs are collected according to each contract work. Contract costing is also termed as Terminal Costing. The principles of job costing are applied in contract costing.

(b) Cost plus Contract: These contracts provide for the payment by the contracted of the actual cost of manufacture plus a stipulated profit. The profit to be added to the cost. It may be a fixed amount or it may be a stipulated percentage of cost. These contracts are generally entered into when at the time of undertaking of a work, it is not possible to estimate its cost with reasonable accuracy due to unstable condition of material, labour etc. or when the work





is spread over a long period of time and prices of materials, rates of labour etc. are liable to fluctuate.

(c) Batch Costing: In Batch Costing, a lot of similar units which comprise the batch may be used as a cost unit for ascertainment of cost. Separate Cost Sheet is maintained for each batch by assigning a batch number. Cost per unit of product is determined by dividing the total cost of a batch by the number of units of the batch. Batch Costing is used in drug industries, ready-made garments industries, electronic components manufacturing, T V Sets, etc.

# (2) Process Costing

This costing method refers to continuous operation or continuous process costing. Process costing method is applicable where goods or services pass through different processes to be converted into finished goods. Process costing is used in Cement industries, Sugar industries, Textiles, Chemical industries etc.

The following are the important variants of process costing system:

(a) Operation Costing: It is concerned with the determination of the cost of each operation rather than process. It offers scope for computation of unit operation cost at the end of each operation by dividing the total operation cost by total output of units.

(b) Operating Costing: Operating costing is also termed as service costing. Operating costing is similar to process costing and is used in service industries. This method of costing is suitable for concerns rendering services. For example, Hospitals, Transport, Canteen, Hotels, etc.

(c) Output Costing: Output costing is also called Unit Costing (or) Single Costing. This method of costing is applicable where a concern undertakes mass and continuous production of single unit or two or three types of similar products or different grades of the same products. Under this method cost per unit is measured by dividing the total cost by number of units produced. Output Costing is used in industries like Cement, Cigarettes, Pencils, Quarries etc.





(d) Multiple Costing: This method of costing means combination of two or more methods of costing like operation costing and output costing. Under this method the cost of different sections of production are combined after finding out the cost of each and every part manufactured. This method of costing is suitable for the industries manufacturing motor cars, engines, aircraft, tractors, etc.

# **TECHNIQUES OF COSTING**

Costing is the technique and process useful to allocation of expenditure, cost ascertainment and cost control. In order to fulfil the needs of the management it supplies necessary information to the management. The following are the various techniques of costing:

- (a) Uniform Costing
- (b) Marginal Costing
- (c) Standard Costing
- (d) Historical Costing
- (e) Absorption Costing

(a) Uniform Costing: Uniform Costing is not a distinct method of costing. In fact when several undertakings start using the same costing principles and! or practices, they are said to be following uniform costing. The basic idea behind uniform costing is that the different firms in an industry should adopt a common method of costing and apply uniformly the same principles and techniques for better cost comparison and common good.

(b) Marginal Costing: Marginal costing can be defined as "a technique of costing

which aims at ascertaining marginal costs, determining the effects of changes in costs, volume, price etc., on the Company's profitability, stability etc. and furnishing the relevant data to the management for enabling it to take various management decisions by segregating total costs into variable and fixed costs."





(c) Standard Costing: Standard Costing is a technique of cost accounting which compares the standard cost of each product or service with actual cost to determine the efficiency of the operation, so that any remedial action may be taken immediately

(d) Historical Costing: Historical costing is the ascertainment and recording of actual costs when, or after, they have been incurred and was one of the first stages in the growth of the Cost Accountant's work. Actual costs refer to material cost, labour cost and overhead cost.

(e) Absorption Costing: Absorption Costing is also termed as Full Costing (or) Orthodox Costing. It is the technique that takes into account charging of all costs both variable and fixed costs to operation processed or products or services.

### Total Cost build up

Total cost is divided into various sub groups each of which has been explained here:

### Prime Cost:

It comprises of all direct materials, direct labour and direct expenses. It is also know as "flat cost"

## **Prime Cost = Direct Materials + Direct Labour + Direct Expenses.**

### Works cost:

It is also know as factory cost or cost of manufacture. It is the cost of manufacturing an article. It includes prime cost and factory overheads.

## **Works Cost = Prime cost + Factory Overheads.**

### **Cost of Production:**

It represents factory cost plus administrative overheads.

## **Cost of Production = factory Cost + Administrative Overheads.**

### **Total Cost:**

It represents cost of production plus selling & distribution overheads.

## **Total Cost = Cost of Production + selling & Distribution overheads**





# Selling price:

It is the price which includes total cost plus margin of profit (or minus loss if ) any.

Selling Price = Total cost + Profit (-Loss)

# **Activity Based Costing:**

Activity-based costing (ABC) is a method of assigning costs to products or services based on the resources that they consume.

ABC is an alternative to traditional accounting in which a business's overheads (indirect costs such as lighting, heating and marketing) are allocated in proportion to an activity's direct costs. This is unsatisfactory because two activities that absorb the same direct costs can use very different amounts of overhead. A mass-produced industrial robot, for instance, can use the same amount of labour and materials as a customised robot. But the customised robot uses far more of the company engineers' time (an overhead) than does the mass-produced one.

This difference would not be reflected in traditional costing systems. Hence a company that makes more and more customised products (and bases its pricing on historic costings) can soon find itself making large losses. As new technologies make it easier for firms to customise products, the importance of allocating indirect costs accurately increases.

Introducing activity-based costing is not a simple task—it is by no means as easy as ABC. For a start, all business activities must be broken down into their discrete components. As part of its ABC programme, for example, ABB, a Swiss-Swedish power company, divided its purchasing activity into things like negotiating with suppliers, updating the database, issuing purchase orders and handling com-plaints.

Large firms should try a pilot scheme before implementing the system throughout their organisation. The information essential for ABC may not be readily available and may have





to be calculated specially for the purpose. This involves making many new measurements. Larger companies often hire consultants who are specialists in the area to help them get a system up and running.

The easy approach is to use ABC software in conjunction with a company's existing accounting system. The traditional system continues to be used as before, with the ABC structure an extra to be called upon when specific cost information is required to help make a particular decision. The development of business accounting software programs has made the introduction of activity-based costing more feasible.

Setting up an activity-based costing system is a prerequisite for improving business processes and for any re-engineering programme. Many firms also use ABC data for the measures required for a balanced scorecard.

Activity-based costing became popular in the early 1980s largely because of growing dissatisfaction with traditional ways of allocating costs. After a strong start, however, it fell into a period of disrepute. Even Robert Kaplan ,a Harvard Business School professor sometimes credited with being its founding father, has admitted that it stagnated in the 1990s. The difficulty lay in translating the theory into action. Many companies were not prepared to give up their traditional cost-control mechanisms in favour of ABC.

In 2007 Kaplan introduced a new concept which has also mentioned in his book that tried to make activity-based costing easier. Called TDABC (time-driven activity-based costing), it attempted to relate the measurement of cost to time. As Kaplan put it, only two questions need to be answered in TDABC:

• How much does it cost per time unit to supply resources for each business process?

• How much time is required to perform the work needed for a company's products, transactions and customers?

Nevertheless, ABC has many satisfied customers. Chrysler, an American car manufacturer, claims that it saved hundreds of millions of dollars through a programme that it introduced in the early 1990s. ABC showed that the true cost of certain parts that Chrysler made was 30





times what had originally been estimated, a discovery that persuaded the company to outsource the manufacture of many of those parts.

#### **Back flush Costing:**

Backflush costing is a traditional and standard costing systems track costs as products pass from raw materials, to work in progress, to finished goods, and finally to sales. Such systems are called 'sequential tracking systems' because the accounting system entries occur in the same order as purchases and production. Sequential tracking is common where management desires to track direct material and labor time to individual operations and products.

Backflush costing is a method of costing a product that works backwards: standard costs are allocated to finished products on the basis of the output of a repetitive manufacturing process. Used where inventory is kept at minimum this method obviates the need for detailed cost tracking required in absorption costing, and usually eliminates separate accounting for workin-process. It also called backflush accounting. Backflush costing is in the Accounting and Auditing and Industries, Manufacturing, and Technology subjects. It is also an accounting system in which costs are applied to products when production is completed. Backflush accounting is a product costing approach, used in a Just-In-Time (JIT) operating environment, in which costing is delayed until goods are finished. Standard costs are then flushed backward through the system to assign costs to products. The result is that detailed tracking of costs is eliminated. Journal entries to inventory accounts may be delayed until the time of product completion or even the time of sale, and standard costs are used to assign costs to units when journal entries are made, that is, to flush costs backward to the points at which inventories remain. It can be argued that backflush accounting simplifies costing since it ignores both labor variances and work-in-progress. Backflush accounting is employed where the overall cycle time is relatively short and inventory levels are low.

### **Materials Control:**

The term material may be defined as "anything that can be stored, stacked or stockpiled." It refers to all commodities that are consumed in the process of manufacture. Material is classified in direct material and indirect materials. Ni cost accounting system can become effective without proper and efficient control of material. This is so because quite often





material is the largest single element of cost and as such an efficient systems of material control leads to a significant economy in the total cost. Material control is as much cash as cash itself and any theft, waste and excessive use of materials are immediate and direct financial losses, where slack methods exist, it is easy for such losses to pass unnoticed. The planning and control of the functions supporting the complete cycle (flow) of materials, and the associated flow of information. These functions include (1) identification, (2) cataloging, (3) standardization, (4) need determination, (5) scheduling, (6) procurement, (7) inspection, (8) quality control, (9) packaging, (10) storage, (11) inventory control, (12) distribution, and (13) disposal.

Materials or inventory control may be defined as "systematic control and regulation of purchase, storage and usage of materials in such a way so as to maintain an even flow of production and at the same time avoiding excessive investment in inventories. Efficient material control cuts out losses and wastes of material that otherwise pass unnoticed. Thus an efficient system of material control should be comprehensive enough to cover purchase systems, storage system, issue to production and determining stock levels for each item of material.

Inventory control involves the optimal procurement, care and disposition of material required in a manufacturing or retailing process. The three kinds of inventory that are of concern to any business are raw material, work-in-process and finished goods.

Why is inventory control important?

Helps maintain in line with market demand 0 stock or sales trends. Reduces carrying holding 0 and costs. Improves stock turnover 0 rates. o Builds your business reputation for always having adequate stock of merchandise in demand.

Controlling inventory is not a difficult job. The following is a 5 step process that will help you bring this potential problem under control.





Plan your inventory: Obviously, inventory control requires you to plan beforehand. Organize the movement of new goods and work-in-process as per a well thought out schedule. Ideally, new goods should come onto the shelves, just as the last piece is being sold, but that is neither feasible, nor free of risk. Therefore see to it that you neither hold several months' stock nor sport empty shelves in your store. An optimal order quantity minimizes total variable costs required to hold inventory. Software Programs like "Premier Manufacturing & Wholesale Edition 2006" will help you track this better.

Establish order cycles: If you can predict demand for your products, then establish a regular ordering pattern. Remember to consider the costs of preparing an order, the aggregate shipping cost and the economic order cost while setting up the order cycle. This allows you to minimize expenses. Spend some time to develop a system tailored to your business needs.

Balance stock levels: Inefficient management of inventory could easily dampen profits. Consider market and budget related issues while determining ideal stock levels. Optimizing inventory such that it does not result in excessive carrying costs, yet satisfies market demand, is a fine skill.

Inventories consist of raw materials, stores, spares, packing materials, coal, petroleum products, works-in-progress and finished products in stock either at the factory or deposits. The maintenance of inventory means blocking of funds and so it involves the interest and opportunity cost to the firm. In many countries specially in Japan great emphasis is placed on inventory management. Efforts are made to minimize the stock of inputs and outputs by proper planning and forecasting of demand of various inputs and producing only that much quantity which can be sold in the market.

The inventory cost is not only interest on stocks but also cost of store building for storage, insurance and obsolesce and movement of inputs from place of storage to the factory where the materials have to be finally used to convert them into finished goods. In japan industries have adopted concept of JIT (Just in Time) and components, materials are received when required for which detailed instructions are given to suppliers

### **Objectives of Inventory Management**





The primary objectives of inventory management are:

- (i) To minimize the possibility of disruption in the production schedule of a firm for want of raw material, stock and spares.
- (ii)To keep down capital investment in inventories.

So it is essential to have necessary inventories. Excessive inventory is an idle resource of a concern. The concern should always avoid this situation. The investment in inventories should be just sufficient in the optimum level. The major dangers of excessive inventories are:

- (i) the unnecessary tie up of the firm's funds and loss of profit.
- (ii) excessive carrying cost, and
- (iii) the risk of liquidity.

The excessive level of inventories consumes the funds of business, which cannot be used for any other purpose and thus involves an opportunity cost. The carrying cost, such as the cost of shortage, handling insurance, recording and inspection, are also increased in proportion to the volume of inventories.

This cost will impair the concern profitability further.

On the other hand, a low level of inventories may result in frequent interruptions in the production schedule resulting in under-utilization of capacity and lower sales. The aim of inventory management thus should be to avoid excessive inventory and inadequate inventory and to maintain adequate inventory for smooth running of the business operations. Efforts should be made to place orders at the right time with the right source to purchase the right quantity at the right price and quality. The effective inventory management should

- maintain sufficient stock of raw material in the period of short supply and anticipate price changes.
- ensure a continuous supply of material to production department facilitating uninterrupted production.
- minimize the carrying cost and time.
- maintain sufficient stock of finished goods for smooth sales operations.
- ensure that materials are available for use in production and production services as and when required.





- ensure that finished goods are available for delivery to customers to fulfil orders, smooth sales operation and efficient customer service.
- minimize investment in inventories and minimize the carrying cost and time.
- protect the inventory against deterioration, obsolescence and unauthorized use.
- maintain sufficient stock of raw material in period of short supply and anticipate price changes.
- control investment in inventories and keep it at an optimum level.

### **Inventories Control Techniques**

### **ABC Analysis of Inventories**

The ABC inventory control technique is based on the principle that a small portion of the items may typically represent the bulk of money value of the total inventory used in the production process, while a relatively large number of items may from a small part of the money value of stores. The money value is ascertained by multiplying the quantity of material of each item by its unit price.

According to this approach to inventory control high value items are more closely controlled than low value items. Each item of inventory is given A, B or C denomination depending upon the amount spent for that particular item. "A" or the highest value items should be under the tight control and under responsibility of the most experienced personnel, while "C" or the lowest value may be under simple physical control.

It may It may also be clear with the help of the following examples:

"A" Category -5% to 10% of the items represent 70% to 75%

of the money value.

"B" Category -15% to 20% of the items represent 15% to 20% of the money.

"C" Category – The remaining number of the items represent

5% to 10% of the money value.

The relative position of these items show that items of category A should be under the maximum control, items of category B may not be given that much attention and item C may be under a loose control.





### Advantages of ABC Analysis

- It ensures a closer and a more strict control over such items, which are having a sizable investment in there.
- It releases working capital, which would otherwise have been locked up for a more profitable channel of investment.
- It reduces inventory-carrying cost.
- It enables the relaxation of control for the 'C' items and thus makes it possible for a sufficient buffer stock to be created.

## **Fixation of Norms of Inventory Holdings**

Either by the top management or by the materials department could set the norms for inventories. The top management usually sets monitory limits for investment in inventories. The materials department has to allocate this investment to the various items and ensure the smooth operation of the concern. It would be worthwhile if norms of inventories were set by the management by objectives, concept. This concept expects the top management to set the inventory norms (limit) after consultation with the materials department. A number of factors enter into consideration in the determination of stock levels for individual items for the purpose of control and economy. Some of them are:

- 1. Lead time for deliveries.
- 2. The rate of consumption.
- 3. Requirements of funds.
- 4. Keeping qualities, deterioration, evaporation etc.
- 5. Storage cost.
- 6. Availability of space.
- 7. Price fluctuations.
- 8. Insurance cost.
- 9. Obsolescence price.
- 10. Seasonal consideration of price and availability.
- 11. EOQ (Economic Order Quantity), and





12. Government and other statuary restriction

Any decision involving procurement storage and uses of item will have to be based on an overall appreciation of the influence of the critical ones among them. Material control necessitates the maintenance of inventory of every item of material as low as possible ensuring at the same time, its availability as and when required for production. These twin objectives are achieved only by a proper planning of inventory levels. It the level of inventory is not properly planned, the results may either be overstocking or understocking. If a large stock of any item is carried it will unnecessarily lock up a huge amount of working capital and consequently there is a loss of interest. Further, a higher quantity than what is legitimate would also result in deterioration. Besides there is also the risk of obsolescence if the end product for which the inventory is required goes out of fashion. Again, a large stock necessarily involves an increased cost of carrying such as insurance, rent handling charges. Under stocking which is other extreme, is equally undesirable as it results in stock outs and the consequent production holds ups. Stoppage of production in turn, cause idle facility cost. Further, failure to keep up delivery schedules results in the loss of customers and goodwill. These two extreme can be avoided by a proper fixation of two important inventory level *viz*, the maximum level and the minimum level. The fixation of inventory levels is also known as the demand and supply method of inventory control.

An efficient inventory management, therefore, requires the company to maintain inventories at an optimum level where inventory costs are minimum and at the same time there is no stock out which may result in loss of sale or stoppage of production. This necessitates the determination of the minimum and maximum level of inventories.

## Minimum Level

The minimum level of inventories of their reorder point may be determined on the following bases:

- Consumption during lead-time.
- Consumption during lead-time plus safety stock.
- Stock out costs.
- Customers irritation and loss of goodwill and production hold costs.





To continue production during Lead Time it is essential to maintain some inventories. Lead Time has been defined as the interval between the placing of an order (with a supplier) and the time at which the goods are available to meet the consumer needs.

### Maximum Level

The upper limit beyond which the quantity of any item is not normally allowed to rise is known as the "Maximum Level". It is the sum total of the minimum quantity, and ECQ. The fixation of the maximum level depends upon a number of factors, such as, the storage space available, the nature of the material *i.e.* chances of deterioration and obsolescence, capital outlay, the time necessary to obtain fresh supplies, the ECQ, the cost of storage and government restriction.

### **Re-Order Level**

Also known as the 'ordering level' the reorder level is that level of stock at which a purchase requisition is initiated by the storekeeper for replenishing the stock. This level is set between the maximum and the minimum level in such a way that before the material ordered for are received into the stores, there is sufficient quantity on hand to cover both normal and abnormal circumstances. The fixation of ordering level depends upon two important factors *viz*, the maximum delivery period and the maximum rate of consumption.

## **Re-Order Quantity**

The quantity, which is ordered when the stock of an item falls to the reorder level, is know as the reorder quantity or the EOQ or the economic lot size. Although it is not a stock level as such, the reorder quantity has a direct bearing upon the stock level in as much as it is necessary to consider the maximum and minimum stock level in determining the quantity to be ordered. The re-order quantity should be such that, when it is added to the minimum quantity, the maximum level is not exceeded. the re-order quantity depends upon two important factors *viz*, order costs and inventory carrying costs. It is, however, necessary to remember that the ordering cost and inventory carrying cost, but the ordering costs such as the cost inviting tenders of placing order and of receiving and inspection, goes up. If on the other hand purchases are made in large quantities, carrying costs, such as, the interest





on capital, rent, insurance, handling charges and losses and wastage, will be more than the ordering costs. The EOQ is therefore determined by balancing these opposing costs.

## **Economy Order Quantity**

The Economic Order Quantity (EOQ) is the number of units that a company should add to inventory with each order to minimize the total costs of inventory—such as holding costs, order costs, and shortage costs. The EOQ is used as part of a continuous review inventory system in which the level of inventory is monitored at all times and a fixed quantity is ordered each time the inventory level reaches a specific reorder point. The EOQ provides a model for calculating the appropriate reorder point and the optimal reorder quantity to ensure the instantaneous replenishment of inventory with no shortages. It can be a valuable tool for small business owners who need to make decisions about how much inventory to keep on hand, how many items to order each time, and how often to reorder to incur the lowest possible costs.

The EOQ model assumes that demand is constant, and that inventory is depleted at a fixed rate until it reaches zero. At that point, a specific number of items arrive to return the inventory to its beginning level. Since the model assumes instantaneous replenishment, there are no inventory shortages or associated costs. Therefore, the cost of inventory under the EOQ model involves a trade off between inventory holding costs (the cost of storage, as well as the cost of tying up capital in inventory rather than investing it or using it for other purposes) and order costs (any fees associated with placing orders, such as delivery charges). Ordering a large amount at one time will increase a small business's holding costs, while making more frequent orders of fewer items will reduce holding costs but increase order costs. The EOQ model finds the quantity that minimizes the sum of these costs.

The basic EOQ relationship is shown below. Let us look at it assuming we have a painter using 3,500 gallons of paint per year, paying \$5 a gallon, a \$15 fixed charge every time he/she orders, and an inventory cost per gallon held averaging \$3 per gallon per year.

The relationship is TC = PD + HQ/2 + SD/Q ' where

• TC is the total annual inventory cost—to be calculated.





- P is the price per unit paid—assume \$5 per unit.
- D is the total number of units purchased in a year—assume 3,500 units.
- H is the holding cost per unit per year—assume \$3 per unit per annum.
- Q is the quantity ordered each time an order is placed—initially assume 350 gallons per order.
- S is the fixed cost of each order—assume \$15 per order.

Calculating TC with these values, we get a total inventory cost of \$18,175 for the year. Notice that the main variable in this equation is the quantity ordered, Q. The painter might decide to purchase a smaller quantity. If he or she does so, more orders will mean more fixed order expenses (represented by S) because more orders are handles—but lower holding charges (represented by H): less room will be required to hold the paint and less money tied up in the paint. Assuming the painter buys 200 gallons at a time instead of 350, the TC will drop to \$18,063 a year for a savings of \$112 a year. Encouraged by this, the painter lowers his/her purchases to 150 at a time. But now the results are unfavorable. Total costs are now \$18,075. Where is the optimal purchase quantity to be found?

The EOQ formula produces the answer. The ideal order quantity comes about when the two parts of the main relationship (shown above)—"HQ/2" and the "SD/Q"—are equal. We can calculate the order quantity as follows: Multiply total units by the fixed ordering costs (3,500  $\times$  \$15) and get 52,500; multiply that number by 2 and get 105,000. Divide that number by the holding cost (\$3) and get 35,000. Take the square root of that and get 187. That number is then Q.

In the next step, HQ/2 translates to 281, and SD/Q also comes to 281. Using 187 for Q in the main relationship, we get a total annual inventory cost of \$18,061, the lowest cost possible with the unit and pricing factors shown in the example above.

Thus EOQ is defined by the formula: EOQ = square root of 2DS/H. The number we get, 187 in this case, divided into 3,500 units, suggests that the painter should purchase paint 19 times in the year, buying 187 gallons at a time.





The EOQ will sometimes change as a result of quantity discounts offered by some suppliers as an incentive to customers who place larger orders. For example, a certain supplier may charge \$20 per unit on orders of less than 100 units and only \$18 per unit on orders over 100 units. To determine whether it makes sense to take advantage of a quantity discount when reordering inventory, a small business owner must compute the EOQ using the formula (Q = the square root of 2DS/H), compute the total cost of inventory for the EOQ and for all price break points above it, and then select the order quantity that provides the minimum total cost.

For example, say that the painter can order 200 gallons or more for \$4.75 per gallon, with all other factors in the computation remaining the same. He must compare the total costs of taking this approach to the total costs under the EOQ. Using the total cost formula outlined above, the painter would find TC = PD + HQ/2 + SD/Q =  $(5 \times 3,500) + (3 \times 187)/2 + (15 \times 3,500)/187 = $18,061$  for the EOQ. Ordering the higher quantity and receiving the price discount would yield a total cost of  $(4.75 \times 3,500) + (3 \times 200)/2 + (15 \times 3,500)/200 = $17,187$ . In other words, the painter can save \$875 per year by taking advantage of the price break and making 17.5 orders per year of 200 units each.

EOQ calculations are rarely as simple as this example shows. Here the intent is to explain the main principle of the formula. The small business with a large and frequently turning inventory may be well served by looking around for inventory software which applies the EOQ concept more complexly to real-world situations to help purchasing decisions more dynamically.





# UNIT 2

# **Labor Cost Control**

## **Direct and Indirect Labor**

Direct Labor: it is the type of labor which is directly related with the manufacturing of product in factory like people directly working on machines for production of goods.

Indirect Labor: it is the type of labor which is labor in nature but do not directly relate with the production of goods or without which the product can still be made like Supervisor in factory who supervise the workers working on machines to produce any product.

## Treatment of Idle time, Holiday Pay, Overtime

# **IDLE TIME**

### Idle time is the simply the time for which labour has been paid for but no work has been done.

Idle time may arise out of normal or abnormal situations and it is the situation that will tell whether it is a normal idle time (unavoidable idle time) or abnormal idle time (avoidable idle time).

Normal idle time, as the name is suggesting arises due to such reasons which are considered:

- either part of the process e.g. in paint industry labour has to wait for certain time to apply the second layer of paint over the first one
- or simply out of control of the entity e.g. delays in receiving orders of raw material due to war etc

On the other hand **abnormal idle time** is such idle time that given the situation is considered controllable and should have been avoided if due care was taken. In other words abnormal idle is most of the time result of mismanagement.

Accounting treatment of idle time depends on whether:

- idle time is normal or abnormal
- idle time relates to direct or indirect labour

If **normal idle time relates to** *direct labour* then <u>it will form part of direct labour cost</u> or simply direct cost. Usually while planning for labour, provision for normal idle time is made in the labour cost budget.

If **normal idle time relates to** *indirect labour* then <u>it will considered as overheads</u> cost and will be absorbed in the cost of units produced or services provided as indirect cost.





However, in case of **abnormal idle time** irrespective of the labour i.e. whether it relates to direct or indirect labour, <u>abnormal idle time will be reported separately as a loss in the profit</u> and loss account and will not form part of the cost of units produced or services rendered. In other words costs related to abnormal idle time are neither direct production cost or indirect production costs they are simply losses to be written of as expenses in the income statement of the entity.

# OVERTIME

overtime work is represented by any work beyond 9 hours in a day or 48 hours in a week & is paid at double the normal rate. Even where the Act is not applicable, on the basis of the agreement between the workers & the employer, overtime work is paid at a rate higher than the normal wages rate.

Overtime wage consists in 2 parts: - (a) payment made at normal rate, & (b) payment made at extra rate over the normal rate i.e. the overtime premium.

The treatment of overtime wages depends upon the circumstances in which it arises:-

(a) Where due to general pressure of work overtime is caused, the payment made at normal rate should be debited to the job order or standing order number on which the worker has been employed & the premium should be debited to the overhead account of the department. Alternatively & where appropriate, after taking into consideration the estimated direct wages at normal wages & overtime premium, calculation of a comprehensive rate may be done & throughout the period all jobs may be charged to that rate.

(b) Where specifically at the customer's request the overtime is worked to expedite delivery, in that case total payment should be charged to the job as direct wage.

(c) Where due to delay of work in another department, overtime work has to be undertaken in a department, the overtime premium should be charged to the department by which delay had been caused.

(d) Where a seasonal industry undertakes overtime work so that it can cope with busy season work, the overtime premium should be charged to general overhead or alternatively, may be debited to deferred overhead account & throughout the cycle gets absorbed by the production.

(e) Where in order to avail special market opportunity, overtime work has to be undertaken, because the market price which will be received shall be high, the total payment should be charged to production as direct wage.

(f) Where due to abnormal conditions like major breakdown, prolonged power cut, natural calamity etc., overtime job has to be undertaken, it should not be considered for cost accounts. On the contrary, in that case, the overtime wage should be charged to costing profit & loss account.

(g) Where for the purpose of utilizing the surplus perishable materials which are obtained





from one job for utilization in another job, overtime work is undertaken, in that case, to the job in which the material is utilized, the normal payment is to be debited & to the general overhead, the premium should be charged.

# **Casual workers & Out workers**

A casual worker is a worker who is employed when somebody is on leave or there is an emergency of work. These are not regular employees of a factory.

They are paid as soon as the work is completed or on a daily basis.

Out workers are those who work outside the factory premises on behalf of the organization. They are classified in two categories:

- (a) Those who work at their homes with their own tools or tools given by the company.
- (b) Those who go to the site to perform the tasks.

# Labour turnover

The <u>ratio</u> of the number of <u>employees</u> that leave a <u>company</u> through <u>attrition</u>, <u>dismissal</u>, or resignation during a <u>period</u> to the number of employees on <u>payroll</u> during the same period.

### CAUSES

**Causes of Labour Turnover:** The main causes of labour turnover come under 2 heads:

### 1. Avoidable Causes:

- a) Lack of job satisfaction
- b) lack of scope for training & promotion
- c) Bad working condition.
- d) long hours of work
- e) lack of facilities for recreation, children's education etc.
- f) inadequacy of welfare measures
- g) inhumane attitude of management
- h) lack of understanding amongst the workers etc.

### 2. Unavoidable Causes:

- a) Unhealthy atmosphere of the locality
- b) Retirement & death
- c) Leaving for a better chance
- d) In case of seasonal industries, retrenchment during off-season
- e) Social unrest
- f) Marriage of female workers

LABOUR TURNOVER RATIO





Labour Turnover ratio = <u>Number of workers left + Number of workers replaced during a period \* 100</u> Average number of workers on roll during that period

# Methods of wage payment

1. Time Wage System

Under this system, wages are paid on the basis of time spent on the job irrespective of the amount of work done. The unit of time may be a day. A week, a fortnight or a month. In the past, daily wages have been the most common basis and, therefore, it came to be known as the 'Day Wage System'.

Time wage system has the following advantages:

1. It is the simplest and the oldest method. It is easy to understand and workers can easily compute their own remuneration.

2. Earnings of workers are regular and fixed and they do not suffer from temporary loss of efficiency.

Time wage system is suitable under following conditions:

1. Where units of output are non-measurable an in case of office work and mental work is involved as in policy working.

2. When quality of work is especially important, e.g., artistic furniture, fine jewelry, etc.

- 3. When supervision is good and supervisors know what constitutes a "fair day's work".
- 4. When workers are new and learning the job.

5. When collective efforts of a group of persons are essential for completing the job.

2. Piece Wage System

Under this system, remuneration is based on the amount of work done or output of a worker. One unit of output is considered as one piece and a specific rate of wage is paid per piece. Greater id the number of pieces produced by a worker, higher is his remuneration. Thus, a workman is paid in direct proportion to his output. It is called payment by results.

Piece wage system has the following advantages:

1. There is a direct relation between effort and reward; workers who work hard and produce more get more wages. This provides an incentive to increase productivity.





2. Ambitious and efficient workers are provided ample opportunity to utilize their talent and increase their earnings and thereby improve their standard of living and morale.

Piece wage system is suitable under the following conditions:

1. When work done by an individual worker can be measured accurately, e.g., production of standardized goods in the factory.

2. When the quantity of output depends directly upon the skill and efforts of the worker.

3. Where the flow of work is regular and interruptions are minimum i.e., repetitive jobs.

4. Where quality and workmanship are not very important.

# TAYLOR'S DIFFERENTIAL PIECE RATE SYSTEM

F.W. Taylor, founder of the scientific management evolved this system of wage payment. Under this system, there is no guarantee of minimum wages. Standard time and standard work is determined on the basis of time study. The main characteristics of this system are that two rates one lower and one higher are fixed. Those who fail in attaining the standard, are paid at a lower rate and those exceeding the standard or just attaining the standard get higher rate.

## Marrick Multiple Piece Plan

No guarantee time rate is set. Those who could attain only upto 83 % of the standard output are entitled wages at lowest rate. Those who output exceed 83 % of the standard by does not reach the standard are paid the second higher rate, which includes an increase of 10 %. Those who attain or exceed the standard get the wages at third and the highest rate which includes a further increase of 10 % of the basic wage.

## Gantt Bonus Plan

A standard of performance is also ascertained. If a worker fails in completing the standard work in standard time, he is paid only the minimum wages and no bonus but if he attains the standard, he will get minimum wages plus a fixed percentage of bonus decided beforehand. Te rate of bonus usually varies from 25 % of the time taken on the job. If a worker completes the job in lesser time, he will be paid wages at piece rate.

## **Bonus or Incentives Schemes**

(1)Halsey Premium Plan: This Plan was developed by F. A. Halsey. This system also termed as Split Bonus Plan or Fifty-Fifty Plan. Under this plan, standard time is fixed for each job or operation on the basis of past performance. If a worker completes his job within or more than the standard time then the worker is paid a guaranteed time wage. If a worker completes his job within or less than the standard time, then he gets a bonus of 50% of the time saved plus normal earnings.





(2) The Halsey~ Weir Scheme: Under this system, the worker gets the bonus of 30% of the time saved instead of 50% of time saved under Halsey Plan. Except for this, Halsey Plan and Halsey-Weir Systems are similar in all other respects.

(3) Rowan Plan: This plan was introduced by James Rowan of England. It was similar to the Halsey Plan in many respects except that it differs in calculation of bonus. Under this system bonus is determined as the proportion of the time taken which the time saved bears to the standard time allowed. Under this system the following formula is applied to calculation of bonus:

(4) Emerson's Efficiency Sharing Plan: Under this plan, earning of a worker is by combining guaranteed day wages with a differential piece rate. Accordingly the level of efficiency is determined on the basis of establishment of standard task for a unit of time. If the level of worker's efficiency reaches 67% the bonus is paid to him at a normal rate. The rate of bonus increases in a given rate as the output increases from 67% to 100% efficiency.





**Unit - 3** 

# Meaning And Classification Of Overheads

Classification	of over	heads is the process	s of grouping of c	osts based on	the features and
objectives of	the busin	ness organization. T	he following are th	ne important m	nethods on which
the	overheads		are		classified:
a)	On	the	basis	of	Nature.
b)	On	the	basis	of	Function.
c)	On	the	basis	of	variability.
d)	On	the	basis	of	Normality.
e)	On	the	basis	of	Control.

1. On the Basis of Nature : One of the important classifications is on the basis of nature or elements. Based on nature the aggregate of all indirect material cost, indirect labour cost and indirect other expenses are known as overheads.

Accordingly, overheads are grouped into (a) Indirect material Cost (b) Indirect Labour Cost and (c) Indirect Expenses. a) Indirect material Cost: Indirect materials do not form part of the finished products. Indirect materials are indirectly or generally used for production which cannot be identified directly. For example, oil, lubricants, cotton waste, tools for repairs and maintenance etc. are indirect materials.

b) Indirect Labour Cost: Indirect labour is for work in general. The importance of the distribution lies in the fact that whereas direct labour can be identified with and charged to the job, indirect labour cannot be so charged and has, therefore, to be treated as part of the factory overheads to be included in the cost of production. Examples are salaries and wages of maintenance labour supervisors, storekeepers, etc. c) Indirect Expenses: Any expenses that are not specifically incurred for or can be readily charged to or identified with a specific job. These are the expenses incurred in general for more than one cost centre. Examples of indirect expenses are rent, insurance, lighting, telephone, stationery expenses etc. 2) On the Basis of Function The classification overheads on the basis of the various function of the business concern are known as function wise overheads. Here, there are four important functional overheads such as:





a)ProductionOverheadb)AdministrationOverheadc)SellingOverheadd)DistributionOverhead

a) Production Overhead: Production overhead is also termed as manufacturing overhead or works overhead or factory overhead. It is the aggregate of all indirect expenses which are incurred for work in operation or factory. These costs are normally incurred during the period when the production process is carried on. For example, factory rent, factory light, power, factory employees' salary, oil, lubrication of plant & machinery, etc.

b) Administrative Overhead: Administrative expenses are incurred in general for management to discharge its functions of planning organizing, controlling, co-ordination and directing. These expenses are not specifically incurred and cannot be identified with the specific job. It is also termed as office cost. For example, office rent, rates, printing, stationery, postage, telegram, legal expenses etc. are the office and administrative costs. c) Selling overheads: Selling expenses are overheads which are incurred for promoting sales, securing orders, creating demand and retaining customers. For example, salesmen's salaries, advertisement, rent and rates show samples, commission of room, etc. d) Distribution Overhead: Distribution overhead are incurred for distribution of products or output from producers to the ultimate consumers. For example, warehouse staff salaries, expenses of delivery van, storage expenses, packing etc.

3) On the Basis of Variability :

One of the important classifications is on the basis of variability. According to this, the expenses can be grouped into (a) Fixed Overhead (b) Variable Overhead and (c) Semi-Variable Overhead.

a) Fixed Overhead: Fixed cost or overhead incurred remain constant due to change in the volume output or change in the volume of sales. For example, rent and rates of buildings, depreciation of plant, salaries of supervisors etc.

b) Variable Overhead: Variable overhead may be defined as "they tend to increase or decrease in total amount with changes in the volume of output or volume of sales." Accordingly the change is in direct proportion to output. Indirect materials, indirect labour, repair and maintenance, power, fuel, lubricants etc. are examples of variable overhead costs. c) Semi-variable Overheads: Semi-variable overheads are incurred with a change in the volume of output or turnover. They neither remain fixed nor do they tend to vary directly with the output. These costs remain fixed upto a certain volume of output but they will vary at other part of activity. Semi-variable overheads are mixed cost, i.e. partly fixed and partly variable. For example, power, repairs and maintenance, depreciation of plant and machinery telephone etc.

4) On the Basis of Normality :

Overheads are classified into normal overheads and abnormal overheads on the basis of normality features. According to this normal overheads are incurred in achieving the target





output or fixed plan. On the other hand, abnormal overhead costs are not expected to be incurred at a given level of output in the conditions in which the level of output is normally produced. For example, abnormal idle time, abnormal wastage etc. Such expenses are transferred to Profit and Loss Account.

5) On the basis of Control

It is one of important classifications of overhead on the basis of control. Based on control it is grouped into controllable overhead and uncontrollable overhead. Controllable overhead which can be controlled by the action of a specified number of undertaking. For example, idle time, wastage etc. can be controlled. Uncontrollable overheads cannot be controlled by the action of the executive heading the responsibility centre. For example, rent and rates of building cannot be controlled.

Procedure or steps involved in overhead

Overhead are incurred for work in general. Overhead is added to the prime cost in order to measure the total cost of production or cost of goods sold. For allocation and apportionment of overhead in the cost of production or cost of goods sold the following procedures are involved.

- 1) Classification of Overhead
- 2) Collection of Overhead
- 3) Overhead Analysis :

a) Distribution of overhead to production and service departments, i.e. Allocation and apportionment of overhead to cost centre.

b) Re-distribution of overhead from service department to production department i.e., Allocation and Apportionment of Service centres to production centres or departments.4) Absorption of overhead by cost units, i.e. computation of overhead absorption rates.

We will discuss the above procedures in detail. They are as follows:-1) CLASSIFICATION OVERHEADS

We have already discussed the classification of overhead in the previous Sec 5.5 2) COLLECTION OF OVERHEAD :

The production overheads or factory overheads are collected and identified under separate overhead code numbers or standing order numbers. These overheads are collected from different sources and documents.





## 3) OVERHEAD ANALYSIS :

(a) Allocation and Apportionment of Overhead to Cost Centre The first step of overhead analysis is distribution of overhead to production department and service department. Before analysing overhead, we should know the concept of Allocation, Absorption and Apportionment.

i) Allocation : Cost allocation refers to the allotment of whole item of cost to cost centres. The technique of charging the entire overhead expenses to a cost centre is known as cost allocation.

ii) Absorption : Cost absorption refers to the process of absorbing all overhead costs allocated to apportioned over particular cost centre or production department by the unit produced.
iii) Apportionments : Apportionment is the process of distribution factory overheads to cost centres or cost units on an equitable basis. The term apportionment refers to the allotment of expenses which cannot be identified wholly with a particular department. Such expenses require division and apportionment over two or more cost centres in proportion to estimated benefits received.

ALlocation Vs Apportionment

1) Allocation deals with whole amount of factory overheads while apportionment deals with proportion of item of cost or proportion to cost centres.

2) The item of factory overhead directly allocated and identified with specific cost centres. Where as apportionment requires suitable and equitable basis. For example, factory rent may be allocated to the factory and has to be apportioned among the producing and service departments on an equitable basis.

2) Basic of Apportionment

Overhead apportionment depends upon matching with principles. Accordingly, the basis for apportionment should be related to the basis on which the expenditure is incurred. The following are the usual basis adopted for apportionment of overhead : Basis of Apportionment

b) Re-apportionment (Re-distribution) : Re-distribution of overhead from various service departments to production departments is known as Re-apportionment or Secondary distribution. Accordingly, allocation and apportionment of overheads from service departments or centres to production centres or departments





MethodsofRe-apportionmentorRe-distributionThe following are the important methods of re-distribution of service department overheadsto production department :

1)	Direct Re-distribution Method		
2)	Step Distribution Method		
3)	Reciprocal Service Method - this method further grouped into:		
	a) Repeated Distribution Method		
	b) Simultaneous Equation Method		
	c) Trial and Error Method		

1) Direct Re-distribution Method : Under this method the cost of service department is directed to re-distribution to the production departments without considering the services rendered by one service department to another service department.

B. Step Method : Under this method, the cost of most serviceable department is first distributed to production departments and other service departments. Thereafter, the next service department is distributed and later the last service departments until the cost of all the service departments are redistributed to the production department.

3) Reciprocal Service Method : This method recognizes the fact that if a service department receives services from other department, the services should be charged in the receiving department. Thus, the cost of inter departmental services is taken into account on reciprocal basis. The following are the three important methods available for dealing with reciprocal distribution :

a) Simultaneous Equation Method.

b) Repeated Distribution Method.

c) Trail and Error Method.

a) Simultaneous Equation Method : Under this method, the true cost of total overhead of each service department is ascertained with the help of Simultaneous or Algebraic Equation. The obtained result re-apportioned to production department on the basis of given percentage.

b) Repeated Distribution Method : Under this method, the total overhead costs of the service departments are distributed to service and production departments, according to given percentage of the service departments are exhausted in turn repeatedly until the figures become too small to matter.





c) Trial and Error Method : In this method, the cost of a service centre is apportioned to another service centre. Then, the cost of another service centre along with the apportioned cost from the first centre is again apportioned back to the first service centre. This process is repeated till the amount to be apportioned becomes zero or nil.





# UNIT 4

# **Methods of Costing**

## 1. Unit Costing

This method also called 'Single output costing'. This method of costing is used for products which can be expressed in identical quantitative units and is suitable for products which are manufactured by continuous <u>manufacturing</u> activity. Costs are ascertained for convenient units of output. Examples: Brick making, mining, cement manufacturing, dairy, flour mills etc.

## ANALYSIS OF COST

The collection of costs incurred on material labor and direct expenses is to be carried out in a manner discussed earlier in respective chapters. The total cost is analyzed in terms of prime cost, factory cost or works cost, office cost or cost of production.

The prime cost consists of cost of (1) raw materials, (2) direct labor and (3) direct expenses. But as per CIMA terminology, "direct expenses" have been excluded from prime cost.

The works cost consists of prime cost PLUS works (factory) overheads.

The cost of production consists of works cost PLUS office and administration overheads. The total cost (or) cost of sales consists of cost of production PLUS selling and distribution overheads.

Overheads are included in respective accounts based on estimates.

# COST SHEET

The terminology of CIMA defines cost sheet "as a document which provides for the assembly of the estimated detailed cost in respect of a cost centre or a cost unit". Cost sheet is a periodical statement of cost depicted to show in detail the various elements of cost, namely, prime cost, works cost, cost of production, cost of sales.

Cost sheet can be prepared either based on actual data or on estimated data. Depending on preparation it can be classified into (1) historical cost sheet and (2) estimated cost sheet.

## TREATMENT OF SCRAP

- 1. Scrap is residue arising in a manufacturing process.
- 2. Its quantity is small and value is low.
- 3. It is mostly recoverable without further processing.





- 4. Any realization by sale of scrap is deducted from gross works cost or works overheads.
- 5. Materials found to be defective before undergoing process should be sold and deducted from the cost of such materials.
- 6. Loss on sale of such materials is to be charged to costing profit and loss account.

Treatment of Spoilage and Defective Work

- 1. Spoilage means goods that are damaged and that cannot be rectified.
- 2. Defective means goods damaged but can be rectified
- 3. **Normal spoilage**: Loss due to normal spoilage is to be spread over good units. The same is the case with normal defectives.

# 2. JOB COSTING

Job costing is one of the methods of costing. It is also known as job order costing. In this system, work is undertaken to customer's specific requirements on the basis of orders. Such orders are of comparatively short duration. The work is carried out within the factory. The work passes through processes or operation activities in such a way as to identify the unit continuously till it reaches finished product. "The term may also be applied to work such as property repairs and the method may be used in the costing of internal capital expenditure jobs."

This method of costing is used in industries which are engaged in printing, steel structures, switch gear, heat exchangers, transformers, motors, pumps, pressure vessels, general engineering works, oil well and shipping.

### FEATURES OF JOB COSTING

- 1. A job consists of a single order or contract.
- 2. It is a cost unit by itself.
- 3. Each job is unique in nature.
- 4. Products are not manufactured for general consumption.
- 5. Each order is given a job number.
- 6. Costs are accumulated with reference to this number.
- 7. Costs are ascertained for each order.
- 8. Generally the duration of job order is comparatively short (products).





9. An important feature of job costing is that it is possible to identify a job at each stage of its manufacturing process.

PROCEDURE OF JOB COSTING

## Step 1: Pre-production Procedure

It starts from preparing quotations and culminates in the acceptance of quotations by customer. Tenders are floated by customers. After analyzing the specific features, a detailed cost estimate is to be prepared by the design and estimation department with the assistance of costing department to quote the price. An estimation sheet is prepared after scrutinizing the reference job. Once the quotation, thus prepared based on various factors, is accepted by the customer, the manufacturer intimates in advance to the concerned departments.

### Step 2: Allotment of Job Number

Every order received is given a separate distinguishing number which is referred to as job number. Every job or order is to be identified with this number throughout its production process. The main purpose of assigning job number for each job or order is for proper accounting and administrative convenience.

## 3. CONTRACT COSTING

Contract costing is essentially a form of job costing. The cost of each contract is calculated separately. The work mainly involves a constructional activity. They are of a long duration.

## SPECIAL FEATURES OF CONTRACT COSTING

- 1. Activity: In contract, the work mainly involved is construction activity.
- 2. Site: The work is carried out at the customer's site, away from the factory premises.
- 3. **Duration:** Contract work is generally of a long duration extending beyond an accounting period.
- 4. **Risk:** It involves risk and uncertainty.
- 5. **Meet requirements of customers:** Contract work is done as per the tastes and requirements of customers.
- 6. Accounting contract: Like job costing, a job-order member is assigned to each contract. Costs are accumulated and ascertained for each contract.
- 7. **Identifiable:** In contract costing, it is possible to identify each contract from the start to the finish.





### CONTRACT-COSTING PROCEDURE

Just like job costing, the cost of each contract has to be ascertained separately. Treatment of items of expenses in contract accounts is explained in detail as follows (otherwise, steps in contract-costing procedure):

Step 1: Separate Number: Each contract is assigned a separate job number.Step 2: Separate Account: A separate contract is to be opened and maintained for each contract.

**Step 3:** Charging Costs: All costs with respect to a particular contract are charged to respective contract accounts.

Step 4: Collection of Costs.

### TYPES OF CONTRACTS

Contracts are classified into:

- 1. Fixed-price contract with escalation clause
- 2. Cost-plus contract.

### GUIDELINES TO ASSESS PROFIT ON INCOMPLETE CONTRACTS

Standard costing principles should be adopted for the recognition of profit for each period. In case of incomplete contracts, only a certain portion of the profit can be taken to P&L A/c based on the work completed. The firm must provide for the unforeseen losses and contingencies. The following are the general guidelines that may be followed for the assessment of profit on incomplete contracts:

- a. Profit should be completed on the basis of "work certified"
- b. Uncertified work should be valued at

In case the value of work certified is less than 25% or 1/4th of the contract price, then no profit has to be taken into consideration. The entire profit has to be kept as a reserve for meeting the contingencies.

### WORK-IN-PROGRESS

In contract accounts, the value of work-in-progress consists of the following two items:

- 1. Work Certified and
- 2. Work Uncertified





# ACCOUNTING TREATMENT

Although there are two approaches to deal with the value of the work certified and the consequent payment, the most common approach is as follows:

- A memorandum of work certified is maintained.
- The cash received from the contractee is credited to his personal account.
- The value of work is debited to WIP account and credited to the contract account.
- The WIP is shown as an asset in the Balance Sheet after deducting the amount received from the contractee.
- On the completion of the contract, the contractee's personal account is debited and the contract account is credited.

# 4. BATCH COSTING

Batch costing may be defined as "that form of specific order costing which applies when similar articles are manufactured in batches, either for sale or for use within the undertaking. In most cases the costing is similar to job costing".

The term "batch" means a group of products of similar nature. Under this method of costing, a batch is regarded as a single cost unit.

- Costs are accumulated against each batch.
- Separate cost sheets are maintained for each batch of products.

## **5. PROCESS COSTING**

Process costing is one of the methods of costing. The cost of operating each process and the cost of transfer from one process to another are determined under this method. Process costing is a different type of cost procedure for continuous or mass production industries. In those industries, the output consists of like units, where each unit would be processed in the same manner. It is generally suitable for firms manufacturing products in a continuous flow, without any reference to specific orders or jobs.

## FEATURES OF PROCESS COSTING

### 1. Costs Flow From One Process to Another

As in any manufacturing organizations, costs relating to direct material, direct wages and factory overheads are incurred here also, which are charged to process accounts. As manufacturing is continuous, the cost of the finished output of one process becomes the cost of the raw material input of the next process.

2. Average Unit Cost Consumption





An average cost per unit is calculated by dividing the total costs by the output in a period.

3. Not Distinguishable

The products are not distinguishable in the processing stage.

4. Normal Spoilage

The cost of normal spoilage or wastage is included in the cost of the total units produced.

## JOINT PRODUCTS AND BY-PRODUCTS

In some industrial concerns two or more products are produced simultaneously. Chemical companies, refineries, flour mills, coal mines, dairies, canners and meat packers produce in their manufacturing or conversion process more than one product having equal importance. In such concerns, apportionment of costs for all the products has to be carried out. Those products which are produced are classified as (i) Joint Products and (ii) By-Products.

Joint products may be defined as, "Two or more products separated in the course of processing, each having a sufficiently high saleable value to merit recognition as a main product". When two or more products of equal importance are simultaneously produced, they are called "joint products". Example: In petroleum-refining industry, petrol, naptha, kerosene and fuel oil are obtained simultaneously. The products are not identifiable as separate products until a certain stage of production known as "split-off point".

# ACCOUNTING FOR JOINT PRODUCT COSTS

Allocation of Joint Costs Methods

A portion of the total joint costs has to be apportioned to each joint product properly in order to ascertain the unit product cost and P&L A/c.

## 6. OPERATING/SEVICE COSTING

Service costing involves the method of determination of the cost of services. The cost of providing a service is computed at ease. At the end of specified periods, the expenses (costs) of operating a service are grouped under suitable headings. The aggregate of these costs is to be divided by the quantity of services provided during the specified period to arrive at the cost per unit of service.





## TRANSPORT COSTING

Service costing method is used to ascertain the cost of services provided by an organization (transport firm) which uses its vehicles for transporting goods or passengers. In motor transport costing, the cost unit is tonne-km or passenger-km.

# Objectives of Motor Transport Costing

- 1. Analysis of operating costs, namely, wages, full cost, insurance, repairs and maintenance.
- 2. Control of operating and running costs and avoidance of waste of fuel and other consumable material.
- 3. Comparison of cost of running and maintenance of different vehicles.
- 4. Assignment of costs to services provided by each vehicle.
- 5. To quote hiring rates.
- 6. To compute cost of idle vehicle and lost running time.
- 7. Collection and analysis of cost for cost control.

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