

COST ACCOUNTING

B.COM 4TH SEM

STUDY NOTES

UNIT I

COST ACCOUNTING

Cost accounting is the classifying, recording and appropriate allocation of expenditure for the determination of the costs of products or services, and for the presentation of suitably arranged data for purposes of control and guidance of management. It includes the ascertainment of the cost of every order, job, contract, process, service or unit as may be appropriate. It deals with the cost of production, selling and distribution.

Objectives of Cost Accounting:

Following are the main objectives of cost accounting:

1. Ascertainment of the cost per unit of the different products that a business concern manufacturer.
2. To correctly analyse the cost of both the process and operations.
3. Disclosure of sources for wastage of material, time, expenses or in the use of the equipment and the preparation of reports which may be necessary to control such wastage.
4. Provide requisite data and help in fixing the price of products manufactured or services rendered.
5. Determination of the profitability of each of the products and help management in the maximization of these profits.
6. Exercise effective control of stocks of raw material, work-in-progress, consumable stores, and finished goods so as to minimize the capital invested in them.
7. Present and interpret data for management planning, decision-making, and control.
8. Help in the preparation of budgets and implementation of budgetary control.
9. Aid management in the formulation and implementation of incentive bonus plans on the basis of productivity and cost savings.
10. Organization of cost reduction programmes with the help of different departmental managers.
11. To provide specialized services for cost audit in order to prevent errors and frauds.

12. To facilitate prompt and reliable information to management.

13. Determination of costing profit or loss by linking the revenues to costs of those products or services by selling which the revenues have arisen.

Advantages of Cost Accounting

Cost Accounting has manifold advantages, a list of which is given below.

- Measuring and Improving Efficiency
- Control over Stock
- Disclosure of profitable and unprofitable activities
- Guidance for future production policies
- Periodical determination of profit and losses
- To find out exact cause of decrease or increase in profit
- Control over material and supplies
- Relative efficiency of different workers
- Reliable comparison
- Helpful to government
- Helpful to consumers
- Classification and subdivision of cost
- To find out adequate selling price
- Proper investment in inventory
- Correct valuation of inventory
- Decision on manufacturing or purchasing from outside
- Reliable check on accounting
- Budgeting

Difference between Financial Accounting and Cost Accounting

The main differences between Financial and Cost Accounting are as follows:

Financial Accounting	Cost Accounting
(a) It provides the information about the business in a general way. i.e. Profit and Loss Account, Balance Sheet of the business to owners and other outside partners.	(a) It provides information to the management for proper planning, operation, control and decision making.
(b) It classifies, records and analyses the transactions in a subjective manner, i.e. according to the nature of expense.	(b) It records the expenditure in an objective manner, i.e. according to the purpose for which the costs are incurred.
(c) It lays emphasis on recording aspect without attaching any importance to control.	(c) It provides a detailed system of control for materials, labour and overhead costs with the help of standard costing and budgetary control.
(d) It reports operating results and financial position usually at the end of the year.	(d) It gives information through cost reports to management as and when desired.
(e) Financial Accounts are accounts of the whole business. They are independent in nature.	(e) Cost Accounting is only a part of the financial accounts and discloses profit or loss of each product, job or service.
(f) Financial Accounts records all the commercial transactions of the business and include all expenses i.e. Manufacturing, Office, Selling etc.	(f) Cost Accounting relates to transactions connected with Manufacturing of goods and services, means expenses which enter into production.
(g) Financial Accounts are concerned with external transactions i.e. transactions between business concern and third party.	(g) Cost Accounts are concerned with internal transactions, which do not involve any cash payment or receipt.
(h) Only transactions which can be measured in monetary terms are recorded.	(h) Non-Monetary information likes No of Units / Hours etc. are used.
(i) Financial Accounting deals with actual figures and facts only.	(i) Cost Accounting deals with partly facts and figures and partly estimates / standards.
(j) Financial Accounting do not provide information on efficiencies of various workers/ Plant & Machinery.	(j) Cost Accounts provide valuable information on the efficiencies of employees and Plant & Machinery.
(k) Stocks are valued at Cost or Market price whichever is lower.	(k) Stocks are valued at Cost only.
(l) Financial Accounting is a positive science as it is subject to legal rigidity with regarding to preparation of financial statements.	(l) Cost Accounting is not only positive science but also normative because it includes techniques of budgetary control and standard costing.
(m) These accounts are kept in such a way to meet the requirements of Companies Act 2013 as per Sec 128 & Income Tax Act, 1961 Sec 44AA.	(m) Generally, Cost Accounts are kept voluntarily to meet the requirements of the management, only in some industries Cost Accounting records are kept as per the Companies Act.

CLASSIFICATION OF COSTS

Costs may be categorized according to (1) management function, (2) ease of traceability, (3) timing of charge against revenue, (4) behavior in accordance with activity, and (5) relevance to decision making.

According to Management Function

1. **Manufacturing costs** - incurred in the factory to convert raw materials into finished goods. It includes cost of raw materials used (direct materials), direct labor, and factory overhead.

2. **Non-manufacturing costs** - not incurred in transforming materials to finished goods. These include selling expenses (such as advertising costs, delivery expense, salaries and commission of salesmen) and administrative expenses (such as salaries of executives and legal expenses).

According to Ease of Traceability

1. **Direct costs** - those that can be traced directly to a particular object of costing such as a particular product, department, or branch. Examples include materials and direct labor. Some operating expenses can also be classified as direct costs, such as advertising cost for a particular product.

2. **Indirect costs** - those that cannot be traced to a particular object of costing. They are also called common costs or joint costs. Indirect costs include factory overhead and operating costs that benefit more than one product, department, or branch.

According to Timing of Charge against Revenue

1. **Product costs** - are inventoriable costs. They form part of inventory and are charged against revenue, i.e. cost of sales, only when sold. All manufacturing costs (direct materials, direct labor, and factory overhead) are product costs.

2. **Period costs** - are not inventoriable and are charged against revenue immediately. Period cost include non-manufacturing costs, i.e. selling expenses and administrative expenses.

According to Behavior in Accordance with Activity

1. **Variable costs** - vary in total in proportion to changes in activity. Examples include direct materials, direct labor, and sales commission based on sales.
2. **Fixed costs** - costs that remain constant regardless of the level of activity. Examples include rent, insurance, and depreciation using the straight-line method.
3. **Semi variable costs** - costs that vary in total but not in proportion to changes in activity. It basically includes a fixed cost portion plus additional variable cost. An example would be electricity expense that consists of a fixed amount plus variable charges based on usage.

According to Relevance to Decision Making

1. **Relevant cost** - cost that will differ under alternative courses of action. In other words, these costs refer to those that will affect a decision.
2. **Standard cost** - predetermined cost based on some reasonable basis such as past experiences, budgeted amounts, industry standards, etc. The actual costs incurred are compared to standard costs.
3. **Opportunity cost** - benefit forgone or given up when an alternative is chosen over the other/s. Example: If a business chooses to use its building for production rather than rent it out to tenants, the opportunity cost would be the rent income that would be earned had the business chose to rent out.
4. **Sunk costs** - historical costs that will not make any difference in making a decision. Unlike relevant costs, they do not have an impact on the matter at hand.
5. **Controllable costs** - refer to costs that can be influenced or controlled by the manager. Segment managers should be evaluated based on costs that they can control.

UNIT II

Material Cost

Material is any substance that forms part of or composed of a finished product. i.e. material refers to the commodities supplied to an undertaking for the purpose of consumption in the process of manufacturing or of rendering service or for transformation into products.

Material cost is the significant constituent of the total cost of any product. It constitutes 40% to 80% of the total cost.

The materials are of two types, namely:

(i) **Direct materials:** The materials which can be easily identified and attributable to the individual units being manufactured are known as direct materials. These materials also form part of finished products. All costs which are incurred to obtain direct materials are known as direct material costs.

(ii) **Indirect materials:** Indirect materials, on the other hand, are those materials which are of small value such as nuts, pins, screws, etc. and do not physically form part of the finished product. Costs associated with indirect materials are known as indirect material costs

Techniques of Material Control

The various techniques of material control include:

Setting of various stock level

In this technique of material control, we study and control by calculating different level of quantity of stock. With our past records, we have the data of normal usage, maximum usage, minimum usages, re-order quantity and minimum and maximum period and its mid will be average period. With this data, we can find following stock level

a) Re-ordering level

It is the level of stock quantity between minimum and maximum level and material order was sent for getting fresh stock.

Formula **maximum usage of stock X maximum delivery period**

b) Minimum level

It is the minimum balance, which must be maintained in hand at all times, so that there is no stoppage of production due to non-availability of inventory.

Re-order level - (Normal usage X average period)

c) Maximum level

It shows maximum quantity which should be in the stock, if we buy more, it means we are wasting money.

Re-order level X re-order quantity - (minimum usage X minimum period)

d) Average Stock Level

This is the average of minimum and maximum level and it can be calculated by adding minimum level and maximum level and divided by 2.

(minimum level + maximum level)/ 2

e) Danger level

It is the level at which normal issues of the raw material inventory are stopped and emergency issues are only made.

Average consumption X lead time for emergency purchases

ABC ANALYSIS

ABC analysis is a technique that is followed for the purpose of exercising control over materials according to their importance or value. Category 'A' consists of materials which consists 5% to 10% of the total items in a store and represent 70% to 85% of the total store value. It represents less items with high value. Category 'B' consists of materials which consists of 10% to 20% of the total items in a store and represent 10% to 20% of the total store value. This category represents medium quantity and value.

Category 'C' consists of materials which consists of 70% to 85% of the total items in a store and represent 5% to 10% of the store value. This category represents high quantity but small value. It is also known as Always Better Control method since it aims at obtaining maximum control over materials and minimum cost of control

TWO BIN SYSTEM

Two bin system is used for the material control. It is that technique of material control in which we have two bins, one is used for in use minimum stock and second bin is used for reserve stock or to keep the remaining quantity of material. This system of inventory control is also called in USA Kanban. First bin is utilized for issuing the material for production and then, second bin is used. Its record is done on bin cards and store ledger card.

CONTINUOUS STOCK VERIFICATION

Continuous stock verification is that technique of material control in which company appoints some experts who verifies all the stock physically with its record. It is just like internal audit of store. These experts are independent from store and they have right to check the material at any time without providing advance information to store staff. This surprise checking through continuous stock verification makes store staff more responsible for duty. There are also other benefits of continuous stock like it will make store keeper more sober and moral to do the duty. He knows that the store is also controlled by experts. He tries to best to reduce all inherent shortcomings. Continuous stock verification will also helpful to remove all discrepancies between actual stock and book record of stock and expert can identify for this mistake and take action against him.

VED ANALYSIS

This technique of material control is used in connection with the spare parts. Under this

- 'V' stands for 'Vital'
- 'E' stands for 'Essential'
- 'D' stands for 'Desirable'

Vital spare parts are those parts, the unavailability of which will interrupt the production process for quite some time. Essential spare parts are those spares, the absence of which cannot be tolerated for more than few hours or a day. Desirable spare parts are those spares which are needed but their non-availability for even a week or so will not lead to interruption in production.

MATERIALS TURNOVER

Turnover of materials refers to movement into and out of an organization. It can be calculated by comparing balance of stores with the total issues or withdrawal during a particular period of time.

Material Turnover Ratio= Value of materials consumed during the period/ value of average stock.

Average stock= Opening stock+ Closing stock/ 2

High material turnover ratio indicates that the material item is fast moving and exhausts easily. Low material turnover indicates that the material items are slow moving and organization should not go for over stocking of materials.

PERPETUAL INVENTORY SYSTEM

Perpetual Inventory System refers to a system of maintaining such records as will reflect the receipts, issues and balance of all items of materials in store all the times. Thus it is a system of ascertaining balance after every receipt and issue of materials through stock records to facilitate regular checking and to avoid closing down the firm for stock taking .The records maintained in a manufacturing concern for material accounting are divided into two parts:

Bin Card: It is maintained in the stores department and shows the quantities of materials received, issued and balance in hand after each receipt and issue.

Stores Ledger: It is maintained by costing office and deals with the quantities and values of materials received, issued and balance in hand.

ECONOMIC ORDER QUANTITY

Economic order quantity is that size of the order which given maximum economy in purchasing any item of material. There are two main costs that are considered while determining the economic order quantity, these are:

Material Acquisition Costs are related to the number of orders placed during a given period. These costs are part of wages and operating expenses for departments like production

control, purchasing, receiving and stores is incurred for purchasing and possessing the materials.

Material carrying costs includes the interest charges on investment in materials, insurance costs, storage costs etc. these costs may be variable or semi-variable in nature as they tend to change nearly in direct proportion to the level of stock carried in the manufacturing concern.

PRICING OF MATERIAL ISSUES

The important methods followed in pricing of issue of materials are:- 1. Actual Cost Method 2. First-In First-Out (FIFO) Method 3. Last-In First-Out (LIFO) Method 4. Highest-in First-Out (HIFO) Method 5. Simple Average Cost Method 6. Weighted Average Cost Method 7. Periodic Average Cost Method 8. Standard Cost Method 9. Replacement Cost Method 10. Next in First Out (NIFO) Method 11. Base Stock Method.

1. Actual Cost Method:

Where materials are purchased specially for a specific job, actual cost of materials is charged to that job. Such materials will normally be stored separately and issued only to that particular job.

2. First-In First-Out (FIFO) Method:

CIMA defines FIFO as “a method of pricing the issue of material using, the purchase price of the oldest unit in the stock”. Under this method materials are issued out of stock in the order in which they were first received into stock. It is assumed that the first material to come into stores will be the first material to be used.

Last-In First-Out (LIFO) Method:

Under this method most recent purchase will be the first to be issued. The issues are priced out at the most recent batch received and continue to be charged until a new batch received is arrived into stock. It is a method of pricing the issue of material using the purchase price of the latest unit in the stock.

Highest-in First-Out (HIFO) Method:

Under this method, the materials with highest prices are issued first, irrespective of the date upon which they were purchased. The basic assumption is that in fluctuating and inflationary market, the cost of material are quickly absorbed into product cost to hedge against risk of inflation. This method is used when the material is in short supply and in

execution of cost plus contracts. This method is not popular and not acceptable under standard accounting practices.

Simple Average Cost Method:

Under this method all the materials received are merged into existing stock of materials, their identity being lost. The simple average price is calculated without any regard to the quantities involved. The simple average cost is arrived at by adding the different prices paid during the period for the batches purchased by dividing the number of batches. For example, three batches of materials received at Rs. 10, Rs. 12 and Rs. 14 per unit respectively.

The simple average price is calculated as follows:

$$\text{Rs. } 10 + \text{Rs. } 12 + \text{Rs. } 14 / 3 \text{ batches} = \text{Rs. } 36 / 3 \text{ batches} = \text{Rs } 12 \text{ per unit}$$

This method is not popular because it takes into consideration the prices of different batches but not the quantities purchased in different batches. This method is used when prices do not fluctuate very much and the stock values are small in value.

Weighted Average Cost Method:

It is a perpetual weighted average system where the issue price is recalculated every time after each receipt taking into consideration both the total quantities and total cost while calculating weighted average price. For example, three batches of material received in quantities of 1,000 units @ Rs. 15, 1,300 units @ Rs. 16 and 800 units @ Rs. 14.

The weighted average price is calculated as follows:

$$(1,000 \text{ units} \times \text{Rs. } 15) + (1,300 \text{ units} \times \text{Rs. } 16) + (800 \text{ units} \times \text{Rs. } 14) / 1,000 \text{ units} + 1,300 \text{ units} + 800 \text{ units}$$

$$= \text{Rs. } 15,000 + \text{Rs. } 20,800 + \text{Rs. } 11,200 / 3,100 \text{ units} = \text{Rs. } 47,000 / 3,100 \text{ units} = \text{Rs. } 15.16 \text{ per unit}$$

Standard Cost Method:

Under this method, material issues are priced at a predetermined standard issue price. Any variance between the actual purchase price and standard issue price is written off to the Profit and Loss Account. Standard cost is a predetermined cost set by the management prior to the actual material costs being known and the standard issue price is used for all issues to production and for valuation of closing stock. If initially the standard price is set carefully then it reduces all the clerical work and errors tremendously and the stock recording procedure is simplified. The realistic production cost comparisons can be made easier by

eliminating fluctuations in cost due to material price variance. In a situation of fluctuating prices, this method is not suitable.

Replacement Cost Method:

This method is also called as 'market price method'. The replacement cost is a cost at which material identical to that can be replaced by purchasing at the date of pricing material issues; as distinct from the actual cost price at the date of purchase. The replacement price is the price of replacing the material at the time of issue of materials or on the date of valuation of closing stock.

MATERIAL LOSSES

Material losses do occur in every type of manufacturing organization. These losses may be in the form of waste, spoilage or defective work. There is no uniformity in the terminology and accounting treatment of these items. Material losses take place in one way or the other in the process of material handling, storage and issue to respective departments or jobs.

Normal Loss:

It is that loss which cannot be avoided and it has a tendency to occur, such as

- (a) Loss due to evaporation
- (b) Loss due to breaking
- (c) Loss in loading and unloading of materials.

Abnormal Loss:

This loss arises on account of inefficiency and mischief etc., such as:

- (i) Improper storage
- (ii) Breakage of material
- (iii) Theft and Pilferage
- (iv) Use of defective weighing machine
- (v) Fire, accident, flood, earth quacks etc.

(vi) Other unavoidable reasons.

Classification of Material Losses

Material losses can be classified on the basis of: - 1. Wastage 2. Spoilage 3. Scrap 4. Defectives 5. Obsolete Materials.

Waste:

That portion of raw materials, which is lost in the process of manufacturing is known as waste. Waste may be visible or invisible. Quantity of production is reduced on account of wastes. If waste is a part of abnormal loss, it is transferred to P/L A/c.

Scrap:

The incidental residue of small quantity and low value is known as scrap. Scrap increases the cost of production and a proper control is to be made on it. Sale of scrap may be treated as other income and can be credited to P/L A/c. The realised value of scrap may be credited to the process account.

Spoilage:

When materials are damaged, which cannot be brought to normal conditions is known as spoilage. Normal spoilage is a part of total cost, while abnormal spoilage is to be transferred to profit and loss account.

Defectives:

The production which is below the fixed standard and can be rectified by incurring additional expenditure is known as defective item. Proper control should be exercised over the defective goods. The rectification costs should be debited to the concerning jobs. In case of abnormal defective work, the cost may be transferred to costing profit and loss account.

LABOUR COST

Payment of remuneration to the workers for their service to the firm is known as labour payment. This is the second element of total cost. It may be direct or indirect in nature. If it is treated as a direct expense, it will be included with prime cost and if it relates to factory, it will be treated as an item of factory cost.

Classification of Labour Cost

The labour cost may be classified in the following ways.

1. Direct Labour Cost

Direct Labour cost is that portion of salary or wage, which can be identified with and charged to a single unit cost of production.

2. Indirect Labour Cost

It is not identifiable within the production of goods and services even though directly incurred. These costs are incurred in the production place. Sometimes, some cost center may render service to the production departments or production activities. Such cost centers purchase, engineering and time keeping.

3. Controllable Labour Cost

A labour cost can be controlled by the management during production period and even during absence of production. A standard time and time rate may be fixed and request the labour to complete the job or order within such time. If so, the labour cost can be controlled to some extent.

4. Non-Controllable Labour Cost

A labour cost, which cannot be easily controlled by the management. A job or order can be completed by a group of labours. The efficiency of such group of labours differ in nature. A labour can use his/her efficiency in full as per the prevailing environment in the product place. If so, the cost cannot be controlled by the management.

TIME KEEPING AND TIME BOOKING

Time-keeping department is concerned with the recording of time of each worker engaged in the factory. The recording of time is for two purposes, i.e., for Time-keeping and Time Booking. Time-keeping is concerned with the recording of time of workers for the purpose of attendance and wage calculations whereas time booking is the reporting of each worker's time for each department, operation and job for the purposes of cost analysis and apportionment of labour costs between various jobs and departments. Time booking signifies the time spent by a worker on each job, process or operation.

These two recordings should be regularly reconciled to establish the accuracy of recording of time because wages calculated on the basis of time-keeping should agree with the wages charged to the various jobs or production orders on the basis of time booking.

Idle Time

There is always a difference between the time booked to different jobs or work orders and the time recorded at the factory gate. This difference is known as idle time. Idle time is of two types.

- (a) Normal Idle Time
- (b) Abnormal Idle Time

Normal Idle Time: This represents the time, the wastage of which cannot be avoided and, therefore, the employer must bear the labour cost of this time. But every effort should be made to reduce it to the lowest possible level. Examples of normal idle time are: time taken in going from the factory gate to the department in which the worker is to work and back at the end of the day, time taken in picking up the work for the day, time between the completion of one work and the start of another work, time taken for personal needs like tea or toilet, time taken for machine maintenance, time taken for waiting for instructions, printouts, machine set-up time etc.

Normal Idle Time is unavoidable cost as such should be included in cost of production. The cost of normal idle time can be treated as an item of factory expenses and recovered as an indirect charge or added to labour cost.

Abnormal Idle Time: It is that time the wastage of which can be avoided if proper precautions are taken. Example: time wasted due: - to breakdown of machinery on account of inefficiency of the works engineer, failure of the power supply, shortage of materials, waiting for instructions, waiting for tools and raw materials, strikes or lock-outs in the factory.

It is a principle of costing that all abnormal expenses and losses should not be included in costs and as such wages paid for abnormal idle time should not form part of the cost of production. Hence it is debited to Costing Profit and Loss Account.

Over Time

It is the work done beyond the normal working period in a day or week. For overtime done, the workers are given double the wages for the overtime done. The additional amount paid on account of overtime is known as overtime premium. Overtime should be recorded separately and thoroughly investigated to see that it is incurred only when genuinely required. The treatment of overtime depends on the situation. If overtime is incurred for because of the sequence of jobs, then normal wages is charged to labour cost for the overtime also but if it is a rush job, then the overtime wages is added to the cost of labour. On the other hand, if overtime arises due to any abnormal reason like breakdown of machinery or power failure, overtime premium is excluded from the cost of production and is debited to the Costing Profit and Loss Account.

System of Wage Payment

There are two principal wage systems: (i) Payment on the basis of time spent in the factory irrespective of the amount of work done. This method is known as time wage system. (ii) Payment on the basis of the work done irrespective of the time taken by the worker. This method is called piece rate system.

Other methods called premium plans or bonus and profit-sharing schemes are used with either of the two principal methods of wage payment.

Time Wage System

Under this method of wage payment, the worker is paid at an hourly, daily, weekly or monthly rate. This payment is made according to the time worked irrespective of the work done.

Piece Rate System (payment by result)

Under this system of wage payment, a fixed rate is paid for each unit produced, job completed or an operation performed. Thus, payment is made according to the quantity of work done no consideration is given to the time taken by the workers to perform the work.

There are four variants of this system.

- a) Straight piece rate system
- b) Taylor's differential piece rate system
- c) Merrick's multiple piece rate system
- d) Gant's task and bonus plan

(a) **Straight piece rate system**

Payment is made as per the number of units produced at a fixed rate per unit. Another method is piece rate with guaranteed time rate in which the worker is given time rate wages if his piece rate wages is less than the time rate.

(b) **Taylor's Differential Piece Rate system**

This system was introduced by Taylor, the father of scientific management to encourage the workers to complete the work within or less than the standard time. Taylor advocated two-piece rates, so that if a worker performs the work within or less than the standard time, he is paid a higher piece rate and if he does not complete the work within the standard time, he is given a lower piece rate.

(c) **Merrick's Multiple Piece Rate System**

This method seeks to make an improvement in the Taylor's differential piece rate system. Under this method, three-piece rates are applied for workers with different levels of performance. Wages are paid at ordinary piece rate to those workers whose performance is less than 83% of the standard output, 110% of the ordinary piece rate is given to workers whose level of performance is between 83% and 100% of the standard and 120% of the ordinary piece rate is given to workers who produce more than 100% of the standard output

Premium and Bonus Plan

The object of a premium plan is to increase the production by giving an inducement to the workers in the form of higher wages for less time worked. Under a premium plan, a standard time is fixed for the completion of a specific job or operation at an hourly rate plus wages for a certain fraction of the time saved by way of a bonus. The plan is also known as incentive plan because a worker has the incentive to earn more wages by completing the work in less time. The following are some of the important premium plans.

(i) **Halsey Premium Plan:** Under this method, the worker is given wages for the actual time taken and a bonus equal to half of wages for time saved. The standard time for doing each job or operation is fixed. In practice the bonus may vary from $33\frac{1}{3}\%$ to $66\frac{2}{3}\%$ of the wages of the time saved.

Thus, if S is the standard time, T the time taken, R the labour rate per hour, and % the percentage of the wages of time saved to be given as bonus, total earnings of the worker will be:

$$T \times R + \% (S-T) R$$

Under Halsey-Weir plan, the premium is set at 30% of the time saved.

(ii) **Rowan Plan:** The difference between Halsey plan and Rowan Plan is the calculation of the bonus. Under this method also the workers are guaranteed the time wages but the bonus is that proportion of the wages of the time taken which the time saved bears to the standard time allowed.

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

UNIT III

OVERHEADS

An overhead is the amount which is not identified with any product. Cost related to a cost center or cost unit may be divided into two i.e. Direct and Indirect cost. The Indirect cost is the overhead cost and is the total of indirect material cost, indirect labour cost, indirect expenses. CIMA defines indirect cost as “expenditure on labour, materials or services which cannot be economically identified with a specific saleable cost per unit”. Indirect costs are those costs which are incurred for the benefit of a number of cost centres or cost units. So any expenditure over and above prime cost is known as overhead. It is also called ‘burden’, ‘supplementary costs’, ‘on costs’, ‘indirect expenses.

Classification of Overheads

Overheads can be classified on the following basis:

(1) **Function-wise classification:** Overheads can be divided into the following categories on functional basis.

(a) **Manufacturing or production overheads** e.g.: - indirect materials like lubricants, cotton wastes, indirect labour like salaries and wages of supervisors, inspectors, storekeepers, indirect expenses like rent, rates and insurance of factory, power, lighting of factory, welfare expenses like canteen, medical etc.

(b) **Administration overheads** e.g.: - indirect materials like office stationery and printing, indirect labour salaries of office clerks, secretaries, accountants, indirect expenses rent, rates and insurance of office, lighting heating and cleaning of office, etc.

(c) **Selling and Distribution overheads** e.g.: - indirect materials like catalogues, printing, stationery, price list, indirect salary of salesmen, agents, travellers, sales managers, indirect expenses like rent, rates and insurance of showroom, finished goods, godowns etc., advertising expenses, after sales service, discounts, bad debts etc.

ii) **Behavior-wise classification:** Overheads can be classified into the following categories as per behavior pattern.

(a) **Fixed overheads** like managerial remuneration, rent of building, insurance of building, plant etc.

(b) **Variable overheads** like direct material and direct labour.

(c) **Semi-variable overheads** like depreciation, telephone charges, repair and maintenance of buildings, machines and equipment etc.

iii) **Element-wise classification:** Overheads can be classified into the following categories as per element.

(a) **Indirect materials** (b) **Indirect labour**

(c) **Indirect expenses**

Departmentalisation of Overhead

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

Allocation of Overhead Expenses

Allocation is the process of identification of overheads with cost centres. An expense which is directly identifiable with a specific cost centre is allocated to that centre. Thus, it is allotment of a whole item of cost to a cost centre or cost unit. For example, the total overtime wages of workers of a department should be charged to that department. The electricity charges of a department if separate meters are there should be charged to that particular department only.

Apportionment of Overhead Expenses

Cost apportionment is the allotment of proportions of cost to cost centres or cost units. If a cost is incurred for two or more divisions or departments then it is to be apportioned to the different departments on the basis of benefit received by them. Common items of overheads are rent and rates, depreciation, repairs and maintenance, lighting, works manager's salary etc.

Basis of Apportionment

Suitable bases have to be found out for apportioning the items of overhead cost to production and service departments and then for reapportionment of service departments costs to other service and production departments. The basis selected should be correlated to the expenses and the expense should be measurable by the basis. This process of distribution of common expenses over the departments on some equitable basis is known as 'Primary Distribution'.

Absorption of Overhead

Absorption means the distribution of the overhead expenses allotted to a particular department over the units produced in that department. Overhead absorption is also known as levy or recovery of overheads. Absorption is 'recording of overheads in Cost Accounts on an estimated basis with the help of a predetermined overhead rate, which is computed at normal or average or maximum capacity' Overhead absorption is accomplished by overhead rates.

Under-absorption and Over-absorption of Overhead

The amount of overhead absorbed in costs is the sum total of the overhead costs allotted to individual cost units by application of the overhead rate. When a predetermined rate worked out on the basis of anticipated or budgeted overhead and base is applied to the actual base, the amount absorbed may not be identical with the amount of overhead expenses incurred if either the actual base or the actual expenses or both deviate from the estimates or the budget.

If the amount absorbed is less than the amount incurred, which may be due to actual expenses exceeding the estimate and / or the output or the hours worked may be less than the estimate, the difference denotes under-absorption. On the other hand if the amount absorbed is more than the expenditure incurred, which may be due to the expense being less than estimate and / or the output or hours worked may be exceeding the estimate, this would indicate over-absorption, which goes to inflate the costs.

CAPACITY LEVELS

Theoretical or Maximum Plant Capacity

Maximum Capacity or the Ideal Capacity is the capacity for which plant is designed to operate. It is only Theoretical Capacity. It does not give allowance for waiting, delays and shut-down. The capacity is significant for designing the plant mechanically. For cost

considerations, this capacity is not important. Ideal Capacity is never used to determine overhead rates for its disregard to even necessary interruptions in production process.

Practical Capacity

When this capacity is determined, allowance is given for unavoidable interruptions like time lost for repairs, inefficiencies, breakdown, delay in delivery of raw material and supplies, labour shortages and absence, Sunday, holidays, vacation, inventory taking, etc. Thus, Practical Capacity is the maximum theoretical capacity with minor unavoidable interruptions. These unavoidable interruptions are based mostly on internal influences and do not consider main external causes like lack of customers orders.

Normal Capacity

Idle capacity due to long-term sales trend only is reduced from Practical Capacity to get Normal Capacity. Calculation of Normal Capacity of a plant presents considerable problems. Normal Capacity is determined for the business as a whole. Then, it is broken down by plants and departments. For Normal Capacity determination, prime considerations are physical capacity and average sales expectancy. It should be noted that average sales expectancy to be considered for this purpose takes into account a period enough to level out cyclical fluctuations. The determination of Normal Capacity helps in: i) the preparation of flexible budgets and computation of predetermined factory overhead rates. ii) the use of Standard Costing, iii) estimating sales price etc., iv) scheduling production, v) inventory valuation, vi) determination of breakeven point, vii) controlling costs.

Capacity based on Sales Expectancy

Capacity may be based on sales expectancy for the year. The distinction between Normal Capacity and capacity based on sales expectancy should be properly understood. While Normal Capacity considers the long-term trend analysis of sales, which is based on sales of a cycle of years, the capacity based on sales expectancy is based on sales for the year only. When long-term sales trends are determined, cycle of years long enough to even out cyclical fluctuations is considered. Capacity based on sales expectancy is influenced more by general economic conditions and forecast of industry than long term sales trend

Idle Capacity and Excess Capacity

Practical Capacity is determined after giving allowance to unavoidable interruptions like time lost for repairs, inefficiencies, breakdown and labour shortage, etc., Even this Practical Capacity is not normally fully achieved. Some losses due to idleness of workers and plant facilities to occur even in most carefully administered companies. These losses are not taken into account for determining the Practical Capacity, because for the purpose of determining Practical Capacity only unavoidable interruptions are considered. Thus, the difference between Practical Capacity and Normal Capacity, i.e., the capacity based on long-term sales expectancy is the Idle Capacity. However, if Actual Capacity happens to be different from capacity based on sales expectancy, the idle capacity will represent difference between Practical Capacity and Actual Capacity. Idle Capacity is that part of Practical Capacity which

is not utilized due to factors like temporary lack of orders, bottlenecks and machine breakdown, etc. Idle Capacity represents unused productive potential, which fails to be realized due to interruptions that are not unavoidable. Idle capacity is that part of Practical Capacity which is not utilized due to irregular interruptions.

Idle Capacity is different from Excess Capacity. Idle Capacity refers to temporary idleness of available resources due to irregular interruptions. Excess Capacity results either from managerial decision to retain larger production capacity or from unbalanced equipment or machinery within departments. Excess Capacity refers to that portion of Practical Capacity which is available, but no attempt is made for its utilization for strategic or other reasons. If the Excess Capacity results from purchase of assets not required, it will be a prudent policy for company to dispose of the assets which cause Excess Capacity. Alternatively, action should be taken for utilization of resources in the form of Excess Capacity. Excess Capacity also results from imbalance or bottlenecks in certain departments. This situation can be remedied by attempting synchronization in the working of various departments, working overtime, running double shift and temporary off-loading to departments having spare capacity. While overhead rate includes cost of Idle Capacity, Excess Capacity is excluded from overhead rate consideration.

Idle time is distinguished from Idle Capacity and its cost is separated in the accounts. Idle time represents lost time of men and machines arising from lack of business or of material, a breakdown of equipment, faulty supervision or other similar causes whether avoidable or not. Idle Capacity is the difference between Practical Capacity and Actual Capacity and represents the unused production potential.

Idle Capacity costs are represented mostly by the fixed charges of owning and maintaining plant and equipment and of employing services, which are not used to their maximum potential. The principal causes of idle capacity are:

UNIT FOUR

Methods of Costing

UNIT COSTING

It is an important method of costing. It is also known as output costing or single costing. It is used to ascertain the cost of producing a unit of output. This method is called 'unit' costing since every unit of production is identical in all respects and the cost unit is a standard product.

According to J.R Batliboi, "Single or output cost system is used in business where a standard product is turned out and it is desired to find out the cost of a basic unit of production."

Features:

1. It is used where output can be measured in convenient physical unit
2. It is followed in concerns engaged in the production of a single product
3. It is followed in industries where manufacturing process is continuous
4. It is followed where all units of production are identical

JOB COSTING

It means ascertaining costs of an individual job, work order or project separately. According to ICMA London, "Job costing is that form of specific order costing which applies where work is undertaken to customer's specific requirements and each order is of comparatively short duration." Under this method of costing, each job is considered to be a distinct cost unit. As such, each job is separately identifiable. In the case of a job, work is usually carried out within the factory or workshop. Sometimes, a job is accomplished even in the customer's premises. This method of costing is applicable to ship building, printing, engineering, machine tools, readymade garments, shoes, hats, furniture, musical instruments, interior decorations etc.

Features:

1. Each job has its own characteristics, depending up on the special order placed by the customer.
2. Each job is treated as a cost unit.
3. A separate job cost sheet is made out for each job on the basis of distinguishing numbers.
4. A separate work in progress ledger is maintained for each job.
5. The duration of the job is normally a short period.
6. Profit or loss is determined for each job independently of others

CONTRACT COSTING

It is a special form of job costing and it is the most appropriate method to be adopted in such industries as building and construction work, civil engineering, mechanical fabrication and ship building. In other words, it is a form of specific order costing which applies where the work is undertaken to customer's requirements and each order of long duration as compared to job costing. It is also known as terminal costing.

The official CIMA terminology defines contract costing as " a form of specific order costing in which costs are attributed to individual contracts."

Basic features:

1. Each contract itself a cost unit.
2. Work is executed at customers site
3. The existence of sub contract
4. Most of the expenses incurred upon the contracts are direct.
5. Cost control is very difficult in contract costing.

Types of contracts

Generally, there are three types of contracts:

1. Fixed price contracts: Under these contracts both parties agree to a fixed contract price.
2. Fixed price contract with Escalation clause
3. Cost plus contract: Under this contract no fixed price could be settled for a contract.

PROCESS COSTING

Process costing is the method of costing applied in the industries engaged in continuous or mass production. Process costing is a method of costing used to ascertain the cost of a product at each process or stage of manufacturing.

According to ICMA terminology, "Process Costing is that form of operation costing which applies where standardized goods are produced".

So, it is a basic method to ascertain the cost at each stage of manufacturing. Separate accounts are maintained at each process to which expenditure incurred. At the end of each process the cost per unit is determined by dividing the total cost by the number of units produced at each stage. Hence, this costing is also called as “Average Costing” or “Continuous Costing”. Process Costing is used in the industries like manufacturing industries, chemical industries, mining works and public utility undertakings.

Characteristics of Process Costing

1. Production is continuous
2. Products pass through two or more distinct processes of completion.
3. Products are standardized and homogeneous.
4. Products are not distinguishable in processing stage.
5. The finished product of one process becomes the raw material of the subsequent process.
6. Cost of material, labour and overheads are collected for each process and charged accordingly.

SERVICE COSTING

It is the costing procedure used for determining the cost of per unit of service rendered. It is a method of costing applied to undertaking which provides service rather than production of commodities. The services may be in the form of transport, supply service, welfare service, etc. There is a difference between operating costing and operation costing. Operating costing is a method of costing designed to find out the cost of operating or rendering a service. On the other hand, operation costing is a method of costing applied to determine the total cost and unit cost of each operation. Though service undertakings are of different types, but here we discuss only transport operating costing.

Transport costing:

Transport industries include Air, Water, Rail and Road. They render services to the community at large. We have to give utmost care while selecting the cost unit. The cost unit of other forms operation costing is quite different from that of a service undertaking. The cost unit of a service organization is a composite unit. The important factors to be considered includes the number of passengers, tonnage carried, distance covered etc.

Reference Books:

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