COST ACCOUNTING

By:

Dr. Sudipta Ghosh

Assistant Professor

Dept. of Commerce (UG & PG)

Prabhat Kumar College, Contai

West Bengal, India

CHAPTER-1: INTRODUCTION

1.1 Meaning and definition of Costing, Cost Accounting and Cost Accountancy

Costing: **Costing has been defined by the terminology of the CIMA, London as "the technique and process of ascertaining cost".**

Cost Accounting: **According to CIMA, London, Cost Accounting is the "process of accounting for cost from the point at which the expenditure is incurred or committed to the establishment of its ultimate relationship with the cost unit". In a wider sense, it embraces the preparation of statistical data, the application of cost control methods and ascertainment of the profitability of the activities carried out or planned.**

Cost Accountancy: **According to CIMA, London, Cost accountancy is the "application of costing and cost accounting principles, methods and techniques to the science, art and practices of cost control and ascertainment of profitability.**

1.2 Features of Cost Accounting

- **It is a science.**
- **It is an art.**
- **It is a practice.**

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1.3 Nature of Cost Accounting

- **Cost Accounting as a branch of knowledge.**
- **Cost Accounting as an art.**
- **Cost Accounting as a science.**
- **Cost Accounting as a profession.**
- **Cost Accounting as a process of accounting.**
- **Cost Accounting as a basis of ascertaining cost.**
- **Cost Accounting as a basis of estimating cost.**
- **Cost Accounting as an information system.**
- **Cost Accounting as an aid to management.**
- **Cost Accounting as the means of control.**

1.4 Objective and Scope of Cost Accounting

The major objectives of Cost Accounting are broadly discussed as follows:

- **Classification of Cost: Cost Accounting classifies and analyses all cost with reference to product, service and operation element-wise, e.g., material, labour and other expenses.**
- **Ascertainment of Cost: For ascertaining cost, all costs are collected properly and then allocated and apportioned to the different cost centres, processes or departments and finally absorbed into different cost units or products or services**

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- Estimation of Cost: It helps in estimating the cost of a particular job, process or operation.
- Determination of Selling Price: Cost Accounting provides information relating to different items of cost on the basis of which the selling price of products or services may be fixed.
- Guide to decision-making: Cost information provides different guidelines to the management to various managerial decision-making.
- Development of standard cost: Cost Accounting by using standard costing technique, develops the standard cost for each type of job, process or element of cost so that actual cost which have been eventually recorded can be compared with the standard to take corrective measures whenever required.
- Cost Control: It aims at improving efficiency by controlling cost.
- Locating inefficiencies: Cost Accounting helps management to locate the extent and nature of under-utilization and over-utilization of machineries, equipments, etc.
- Cost Reduction.
- Ascertainment of profit of each activity.
- Comparison of cost data.
- Preparation of periodical statement for information to management.

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1.5 Importance of Cost Accounting

- **Control of direct cost.**
- **Control of overhead cost.**
- **Determination of selling price.**
- **Measurement of efficiency.**
- **Preparation of budget.**
- **Assists in strategic decision-making.**
- **Approach to expansion.**

1.6 Cost Centre, Responsibility Centre and Cost Unit

Cost Centre: CIMA, London defines cost centre "as a location, person or item of equipment (or group of these) for which cost may be ascertained and used for the purpose of control". The cost centre is an organizational sub-unit or segment of activity with reference to which cost is ascertained.

Responsibility Centre: When an organization is classified into different segments with reference to the responsibility and each such segment is controlled by an individual who is accountable for the performance of the segment, each such segment is called responsibility centre.

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Cost Unit: CIMA, London defines cost unit as "a unit or quantity of product , service or time (or combination of these) in relation to which costs may be ascertained or expressed". In short, it is a unit of measurement of cost of products and services which can be used conveniently.

1.7 Methods of Costing

Methods of costing usually refers to the system or process of ascertaining cost. The various methods used in costing are briefly stated as follows:

- ❖ **Industrial Costing: This method is applicable in those concerns where raw materials are processed with the help of labour, plant and machineries. Different methods of industrial costing are discussed below:**
- ✓ **Job Costing: Under this method, costs are collected and presented for each such job with an aim to determine the cost of each job and profit or loss in respect of each such job. The following are the different forms of job costing:**

1. **Batch Costing: Under this method, a batch of similar and identical products is treated as a job. For each batch, a batch order number is allotted and costs are collected and presented for ascertainment of cost for each such batch. Total costs of a batch are divided by the total units contained in the batch to determine the cost per unit.**

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2 **Contract Costing: Under this method, each contract is treated as job and costs are collected for each such contract to determine the expenses incurred for such contract and profit or loss made there from.**

✓ **Process Costing: According to this method, costs are collected and presented for ascertainment of cost of each such process or operation for a specific period. The costs of each process or operation include costs incurred in such process or operation during the period under consideration and the cost of input transferred from the previous process, if any during the said period.**

The following methods are the different forms of process costing:

- **Single Unit or Output Costing.**
- **Departmental costing.**
- **Operation Costing.**
- **Operating or Service Costing.**

✓ **Composite of Multiple Costing: This method is not a separate and independent method of costing but a combined application of job costing and process costing. This method may be conveniently used in industries which produce radio, motor cars, etc.**

❖ **Farm Costing: Farm costing is a separate method of costing which is mainly developed to ascertain the cost of agricultural products.**

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1.8 Techniques of Costing

Techniques of costing usually refers to the methods of presenting cost mainly for managerial decision-making. The important techniques of costing are stated as follows:

- **Historical Costing: It is the ascertainment of costs after they have been incurred. After the costs are actually incurred, they are collected and presented for determining cost of goods produced or service rendered.**
- **Standard Costing: CIMA, London defines standard costing as "the preparation and use of standard costs, their comparison with actual costs and the analysis of variances to their causes and points of incidence". Standard cost is the predetermined cost calculated under normal or ideal condition of efficiency.**
- **Marginal Costing: CIMA, London defines marginal costing as "the ascertainment of marginal costs and changes of the effect on profit by differentiating between fixed costs and marginal costs". Marginal cost is the aggregate of variable costs.**
- **Absorption Costing: CIMA, London defines absorption costing as "the practice of charging all costs, both variable and fixed to operations, processes or products". Thus, it considers both variable and fixed cost for determining cost of products or services.**

Apart from the above, the other techniques are identified as follows:

- **Direct Costing.**
- **Uniform Costing.**
- **Activity-based Costing.**
- **Target Costing.**
- **Life Cycle Costing.**
- **Differential Costing.**

CHAPTER-2: COST SHEET

2.1 Concept of Cost

Cost may be defined as the money value of sacrifices or forbearance for achieving or attaining a particular objective. CIMA, London defines cost as "the amount of expenditure (actual or nominal) incurred on or attributable to a specified thing or activity".

2.2 Classification of Cost

Depending on various purposes, cost can be classified according to:

- **Elements.**
- **Functions.**
- **Behaviour.**
- **Normality.**
- **Controllability.**
- **Timeliness.**
- **Traceability.**
- **Decision-making.**

Different types of costs are discussed below:

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- **According to Elements: Costs are divided into three categories as follows:**
  - **Material Cost.**
  - **Labour Cost.**
  - **Expenses.**
- **According to Functions: Here, costs are grouped on the basis of major functions of a manufacturing concern:**
  - **Production or Manufacturing Cost.**
  - **Administration Cost.**
  - **Selling Cost.**
  - **Distribution Cost.**
  - **Research and Development Cost.**
  - **Pre-production Cost.**
- **According to Behaviour: According to behaviour, costs are classified into the following:**
  - **Fixed cost.**
  - **Variable Cost.**
  - **Semi-variable (or Semi-fixed) Cost.**
- **According to Normality: These include:**
  - **Normal Costs.**
  - **Abnormal Costs.**

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- **According to Controllability: Cost may be classified as:**
  - **Controllable Cost.**
  - **Uncontrollable Cost.**
- **According to Timeliness: On the basis of timeliness, costs are classified as:**
  - **Historical Costs.**
  - **Current Costs.**
  - **Predetermined Costs.**
- **According to Traceability: On this basis, costs may be classified as:**
  - **Direct Cost.**
  - **Indirect Cost.**
- **According to Decision-making: Here, costs are classified as:**
  - **Relevant Cost.**
  - **Differential Cost.**
  - **Sunk Cost.**
  - **Out-of-pocket Cost.**
  - **Shut-down Cost.**
  - **Postponable Cost.**
  - **Avoidable Cost.**
  - **Opportunity Cost.**
  - **Imputed Cost.**
  - **Replacement Cost.**

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2.3 Elements of Cost and Cost Sheet

To arrive at a total cost of a product, the following division of cost can be made in three different stages as follows:

- **Direct Costs:**

1. **Direct Material.**
2. **Direct Wages.** | **= Prime Cost**
3. **Direct Expenses**

- **Indirect Costs relating to Factory:**

1. **Indirect Material Cost.**
2. **Indirect Labour Cost.** | **= Factory or Works Overhead**
3. **Indirect Expenses.**

(Prime Cost + Factory or Works Overhead = Work Cost or Factory Cost)

- **Indirect Cost relating to Administration:**

1. **Indirect Material Cost.**
2. **Indirect Labour Cost.** | **= Administration Overhead**
3. **Indirect Expenses.**

(Factory Cost + Administration Overhead = Cost of Production)

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- **Indirect Costs relating to Selling and Distribution:**

1. **Indirect Material Cost.**
2. **Indirect Labour Cost.** = **Selling and Distribution Overhead**
3. **Indirect Expenses.**

(Cost of Production + Selling and Distribution Overhead = Cost of Sales)

Once the cost of sales is determined, sales value will be calculated as follows:

Sales = Cost of Sales + Profit [or (-) Loss].

All the elements of costs are discussed below:

- **Direct Material: It is all such material which can be identified with and allocated to product , process or operation.**
- **Indirect Material: It is defined as costs which are not charged directly to a product.**
- **Direct Labour: It is that labour which can be traced and identified to a particular product, job, process or operation.**
- **Indirect Labour: It is that labour which can not be directly identified with a particular product, process, operation.**
- **Direct Expenses: It is those cost other than material or wages which are incurred for a specific product or saleable service.**
- **Indirect Expenses: These are the expenses which cannot be allocated but which can be apportioned to, or absorbed by cost centres or cost units.**

CHAPTER-2: COST SHEET (Contd.)

2.4 Cost Sheet – Definition and Objectives

Definition of Cost Sheet: A statement is prepared showing in details the total cost and cost per unit of such job or production order at different stages of production for a given period and this statement is known as cost sheet or statement of cost.

Cost sheet may, however, be prepared on the basis of historical cost or on the basis of future estimated cost.

Preparation of Cost Sheet: Usually, cost sheet is prepared to show the detailed cost of goods produced at different stages of production and for this purpose overhead is classified according to function or behaviour-wise and element-wise.

2.5 Valuation of Closing Stock of Finished Goods

Stock of finished goods may usually be valued using any of the following methods:

- **First-in-First-Out-Method (FIFO):**

Value of Closing Stock = Quantities held as closing stock × Cost price per unit of current production

If the number of units sold is less than the number of opening stock, then:

Value of closing stock = Units of opening stock held as closing stock × Cost per unit of opening stock + Current cost of production for the entire production.

- **Last-in-First-Out (LIFO):**

When current production are entirely sold: Value of Closing Stock = Quantity held as closing stock × Cost per unit of opening stock.

When quantities sold are less than current production: Value of Closing Stock = Cost of Opening Stock + Cost of Current Production held as Stock

CHAPTER-2: COST SHEET (Contd.)

- **Simple Average Method:**

Under this method, average cost is calculated by dividing the sum of cost per unit of opening stock and cost per unit of current production by two. Quantities held as closing stock are to be multiplied by the average cost to ascertain the value of closing stock.

- **Weighted Average Method:**

Under this method, weighted average rate is calculated as follows:

Weighted Average Rate = (Cost of current production + Cost of opening stock) ÷ (Quantity produced + Quantity of opening stock)

Quantities held as closing stock are multiplied by the average rate to ascertain the value of closing stock.

Stock may also be valued at notional prices e.g. standard price, inflated price, replacement price, re-use price etc. Among all such methods, FIFO and LIFO methods are widely used.

2.6 <u>Needs and Benefits of preparing Cost Sheet</u>

- ❑ **To determine cost.**
- ❑ **To control cost and fix up selling price.**
- ❑ **To detect weakness.**
- ❑ **To quote selling price.**
- ❑ **To reduce loss.**
- ❑ **To ascertain overhead recovery rate.**
- ❑ **To take important decisions.**
- ❑ **To promote comparability.**

CHAPTER-2: COST SHEET (Contd.)

2.7 Proforma Cost Sheet

Particulars	Total (Rs.)	Per Unit (Rs.)
Direct Material:		
Opening stock of raw material	***	
Add: Purchase	***	
Add: Carriage Inward	***	
Less: Closing stock of raw material	***	
Less: Scrap Value	***	
Direct Wages	***	***
Direct Expenses	***	***
PRIME COST	***	***
Add: Factory Overhead or Works Overhead:		
Factory Overhead during the given period	***	
Add: Opening Stock of W-I-P	***	
Less: Closing Stock of W-I-P	***	***
WORK COST / FACTORY COST	***	***
Add: Administration Overhead	***	***
COST OF PRODUCTION	***	
Add: Opening Stock of Finished Goods	***	
Less: Closing Stock of Finished Goods	***	
COST of GOODS SOLD	***	***
Add: selling and Distribution Overhead	***	***
COST OF SALES	***	***
Profit (+) Loss (-)	***	***
SALES	***	***

CHAPTER-3: MATERIAL

3.1 Concept of Material

The term material denotes the commodities supplied to an undertaking for the purpose of consumption and converting the same as finished product.

3.2 Material Control

Material control is defined as systematic control and regulation of purchase, storage and usage of material in such a way as to maintain an even flow of production and at the same time avoiding excessive investment in inventories. Efficient material control minimizes losses and wastes of materials which is not possible otherwise. In other words, it is a system which ensures provision of right quantity of material of the right quality at the right time with the least investment in inventory.

3.3 Need of Material Control

It serves the following purposes or benefits:

- **Maintenance of desired stock level.**
- **Determination of appropriate time of purchase.**
- **Selection of right quantity and quality at reasonable price.**
- **Avoidance of wastage.**
- **Reduction of losses from obsolescence, pilferage etc.**
- **Uninterrupted flow of production.**
- **Optimum investment in stock.**
- **Supply of relevant information.**
- **Reduction of cost.**

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3.4 Prerequisites of Material Control

- **Proper coordination.**
- **Proper recording.**
- **Proper documents and standard forms.**
- **Fixation of inventory level.**
- **Determination of EOQ.**
- **Separate purchase department.**
- **Proper storage system.**
- **Planned material requirement.**
- **Proper classification and codification of material.**
- **Control over issue.**
- **Determination of issue price.**
- **Use of budget.**
- **Follow up system.**
- **Internal check and internal control system.**
- **Regular reporting.**

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3.5 Advantages of Material Control

- ❑ **Wastage of material is reduced to the minimum.**
- ❑ **The cost of storage is reduced to the extent possible.**
- ❑ **The risk that is likely to be encountered on account of loss from theft and fraud is reduced.**
- ❑ **Appropriate and timely reports regarding materials can be submitted to the management for the purpose of decision making.**
- ❑ **Unnecessary blocking of working capital in inventories is avoided.**

3.6 Purchase Organization and Control

Purchasing is a function common to all organization irrespective of its size, nature, and type of products produced. It is a function of buying raw material, general supplies, tools, components, etc.

The advantages or importance of a separate purchasing department along with the effective purchase control are outlined as follows:

- ❖ **Ensure minimum loss of material.**
- ❖ **Ensure uninterrupted production.**
- ❖ **Prevent obsolescence of stores.**
- ❖ **Reduction in material cost.**
- ❖ **Minimization of dispute.**
- ❖ **Reduction in cost of production.**

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3.7 Organization of Material Control

To exercise effective control over material, the organization should be well-structured. The various functions performed by each department with a view to making effective material control are discussed below:

- **Functions of Purchase Department:**
  - **Preparation of Purchase budget.**
  - **Interviewing the supplier.**
  - **Select the best possible suppliers.**
  - **Verifying quantity and quality received.**
  - **Approving invoices/bills for payment.**
  - **Etc.**

- **Functions of Receiving and Inspection Department:**
  - **To receive all incoming materials.**
  - **To inspect and verify material.**
  - **To prepare reports.**
  - **To deliver supplies to stores.**

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❖ **Functions of Stores Department:**

- **To place purchase requisition.**
- **To keep supplies in proper places.**
- **To issue stores.**
- **To record movement of materials.**

❖ **Functions of Production Department:**

- **To prepare and place stores requisition.**
- **To keep records of materials received.**
- **To return or transfer materials and to prepare documents.**
- **To prepare reports on scrap.**

❖ **Functions of Stores Control Department:**

- **To determine issue price.**
- **To keep record.**
- **To prepare periodical statements.**

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3.8 System of Purchasing – Centralized and Decentralized

System of purchasing may be broadly be classified as follows:

- **Centralized purchasing.**
- **Decentralized purchasing.**

Advantages and Disadvantages of Centralized Purchasing System

Advantages:

- **Effective Control.**
- **Responsibility fixing.**
- **Uniformity of policy.**
- **Avoidance of duplication of work.**
- **Reduction of losses.**
- **Cost reduction.**
- **Etc.**

Disadvantages:

- **High transportation cost.**
- **High initial cost.**
- **Misunderstanding with other departments.**
- **Unsuitable for small quantity.**
- **Etc.**

CHAPTER-3: MATERIAL (Contd.)

Advantages and Disadvantages of Decentralized Purchasing System

Advantages:

- **Low transportation cost.**
- **Quick purchase of material.**
- **Close contact with suppliers.**
- **Maintenance of stock at minimum level.**
- **Flexibility.**
- **Ready settlement of disputes.**

Disadvantages:

- **Effective control not possible.**
- **Duplication of work.**
- **High cost.**
- **Lack of skill and efficiency.**
- **Mismanagement of stores.**
- **Lack of standardization.**

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3.9 Methods of Purchasing

The method of purchasing depend on the market conditions and the type of demand for the same. There are various methods of purchasing which are discussed below:

- **Purchasing according to schedule.**
- **Purchasing according to necessity.**
- **Contract purchasing.**
- **Purchase for regular use.**
- **Group purchasing.**
- **Speculative purchasing.**
- **Purchase according to market conditions.**

3.10 Purchase Procedure

The various steps are discussed below:

- ✓ **Receiving purchase requisition.**
- ✓ **Determining and selecting the suitable sources of supply.**
- ✓ **Placing of purchase order and follow up delivery.**
- ✓ **Inspecting and receiving goods.**
- ✓ **Checking supplier's bill or invoices and passing them for payment.**

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3.11 Pricing of Materials Purchased

Supplier's invoice received by the purchase department provides the basic figure of purchase price and the same is recorded in the stores ledger and other relevant register. But the following factors should be considered to arrive at the real cost of the material purchased.

- **Cash discount.**
- **Trade discount.**
- **Quantity discount.**
- **Sales tax, value added tax, excise duty, custom duty, octroi etc.**
- **Freight, transport and delivery charges.**
- **Insurance cost.**
- **Joint expenses.**
- **Extra spare parts at free of cost.**
- **Cost of container.**
- **Receiving, loading, inspection, storing and accounting charges.**

3.12 Bill of Material

A bill of materials or specification of materials is a complete schedule of all materials and components required for a particular job or order. It is a special form of requisition and generally used in case of standard product, where requirement of materials and component parts. for such job or order can be correctly determined in advance of production

CHAPTER-3: MATERIAL (Contd.)

3.13 Store Keeper – Duties and Responsibilities

Duties:

- **Receipt and accounting of stores.**
- **Maintenance and management of stores.**
- **Issue of materials.**

Responsibilities:

- **To keep every items of materials in proper place carefully in a good condition.**
- **Proper classification and codification of material.**
- **Responsible for any loss of material.**
- **Responsible for providing timely information to the top management.**
- **Responsible for supervising the duties of different members of staff under him.**
- **Responsible for maintaining co-operation and co-ordination with various departments.**

3.14 Stores location and Layout

Location of stores should be planned carefully to achieve maximum gain in handling stores. It should be located near the user department and the receiving department.

Stores layout is an important consideration to ensure effective control over stores. Thus, it should be carefully planned.

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3.15 Stores Organization

Store may be organized in the following ways:

- **Centralized stores.**
- **Decentralized stores.**
- **Centralized stores with sub-stores.**

Centralized Stores – Advantages and Disadvantages

Advantages:

- **Better control and supervision.**
- **Lesser risk of obsolescence.**
- **Smooth flow of stock.**
- **Better layout.**
- **Less storage space.**
- **Etc.**

Disadvantages:

- **Higher internal transport cost.**
- **Risk of damage.**
- **Delay in delivery.**
- **Interruption in production.**

CHAPTER-3: MATERIAL (Contd.)

Decentralized Stores – Advantages and Disadvantages

Advantages:

- **Timely delivery.**
- **Lower chance of obsolescence.**
- **Lower internal transport cost.**

Disadvantages:

- **Excessive maintenance cost.**
- **Dilution in control.**

3.16 Classification and Codification

Classification usually refers to the division of items of stores into groups and sub-groups on the basis of the nature, type and usage.

For easy identification and handling, classification should be accompanied by a scientific system of codification. Codification is the process of assigning symbol or code numbers to each specific item of stores, in order to achieve the desired result.

The following factors are to be considered while assigning symbols or code numbers:

- **Clarity.**
- **Unambiguity.**
- **Uniqueness.**
- **Concise.**

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Methods of Codification

- ✓ **Numeric.**
- ✓ **Alphabetic.**
- ✓ **A combination of numeric and alphabetic systems.**

3.17 Material Handling

It refers to a systematic planning of receiving, storing and issuing of materials. It also extends to the proper planning and handling of materials in course of production.

3.18 Stores Control or Inventory Control

Stores control is very much needed to achieve the objective cost minimization and it is widely used by almost all large manufacturing concern.

The objectives of stores control are as follows:

- ➢ **To maintain optimum level of stock.**
- ➢ **To avoid losses.**
- ➢ **To ensure smooth flow of production.**
- ➢ **To reduce cost.**

CHAPTER-3: MATERIAL (Contd.)

3.19 Policies of Stores Control

To exercise an efficient control over stores, different policies may be adopted which are mentioned below:

- **Mini-Max or Level Control Method.**
- **Scientific Inventory Management – Wilson Model or Fixed Order Quantity System, Replenishment System, and the Modified Replenishment System.**
- **Twin-bin system of inventory control.**
- **Inventory control through recording and verification.**
- **Selective stores control - ABC analysis, VED analysis, etc.**
- **Input-output ratio.**

3.20 Fixation of Various Stock Levels

The following levels of materials are usually fixed for the above purpose:

- **Re-order Level or Ordering Level: Re-order level is that level of materials at which the store-keeper will initiate action for replenishment of stock.**

Re-order Level = Normal usage / Average Usage × (Minimum Stock Period + Average Delivery Time).

Re-order Level = Safety Stock + (Maximum Lead Time × Maximum Consumption Rate).

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- **Maximum Level = Re-order Level + Re-order Quantity – (Minimum Consumption Rate × Minimum Re-order Period)**
- **Minimum Level = Re-order Level – [Normal (or average) consumption × Normal (or average) re-order period].**
- **Danger Level = Normal (or average) consumption × Urgent Lead Time (i.e., the least possible time of procurement of materials).**
- **Average Level = (Maximum Level + Minimum Level) ÷ 2**

Or Average Level = Minimum Level + ½ × Re-order Quantity

3.21 <u>Scientific Inventory Management</u>

Several Models have been developed for scientific inventory management. Important factors considered in different models are:

- **Carrying or Holding Cost: This is the cost incurred in holding the inventory in the storehouse.**

Examples: Handling and internal transport cost, rent, electricity, etc.

- **Ordering Cost (or Cost of not Carrying): All cost incurred in relation to the placement of order for the purpose of procurement of materials are termed as ordering cost.**

Examples: Cost of forms, stationery, cost of telephone, etc.

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Based on the above factors, three models are mainly developed to determine "how much to order at a time" and "when to order":

- Economic Order Quantity (EOQ).
- Replenishment System.
- Modified Replenishment System.

3.22 Economic Order Quantity (EOQ)

EOQ is that ordering quantity at which the aggregate cost of ordering and carrying the inventory is minimum.

The assumptions of EOQ are as follows:

1. Maximum and minimum delivery period (i.e., lead time) is known.
2. Ordering cost per order remains constant irrespective of the size of the order.
3. Carrying cost per unit of the inventory is constant.
4. Purchasing cost per unit of material remains constant over the years.
5. Lead time, annual consumption, ordering cost, carrying cost and buying cost are completely known with certainty.
6. Replenishment of stock is made when the stock level reaches zero.

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EOQ – How to determine:

EOQ = √(2AO ÷ C)

Where: A = Annual Demand, O = Ordering Cost per Order.

C = Annual Carrying Cost per Unit (i.e., Cost per Unit × Carrying Cost Percentage).

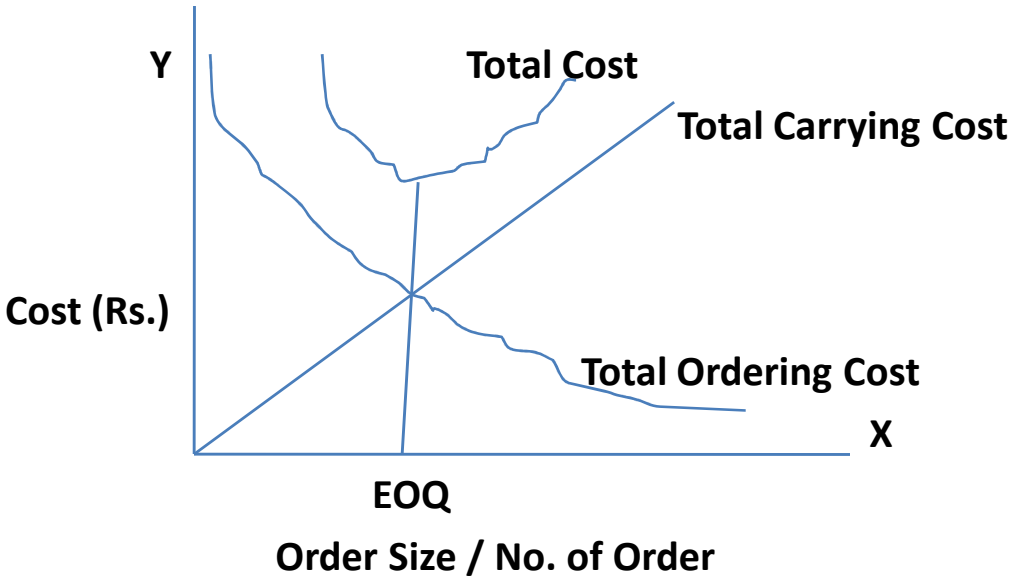

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Illustration on EOQ:

From the following information, calculate EOQ :

Annual Usage: 8000 Units.

Ordering Cost per Order: Rs.40

Carrying Cost: 10% of average inventory value.

Purchase Cost: Rs. 10 per unit.

EOQ = √ [(2 × 8000 × 40) ÷ (10 × 10%)]

= 800 Units.

3.23 Two-bin System of Inventory Control

Under this method, two bins or racks are used for storing each item of material. Each bin contains a definite quantity of material. In one bin, safety quantity (fixed in advance) of materials are kept from which issues are made in emergency situation.

3.24 Perpetual Inventory System (Or Automatic Inventory System) or Continuous Inventory System

CIMA, London defines perpetual inventory system as "the recording as they occur by receipts, issues and the resulting balances of individual items of stock in either quantity or quantity and value".

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3.25 Documents essential for implementation of Perpetual Inventory System

- Bin Card (quantitative records of material).
- Stores Ledger (record of materials both in quantity and value).
- Stock Verification Sheet (record of physical stock taking).

3.26 Advantages and Disadvantages of Perpetual Inventory System

Advantages:

- Ready information for decision making.
- Maintenance of optimum quantity of stock.
- Optimum investment of capital.
- Control over cost.
- Preparation of interim reports.
- Implementation of internal check.
- Early detection of errors and frauds.

Disadvantages:

- Requirement of extra staff.
- Costly.
- Requirement of multiple documents in several copies.
- Failure in case of lack of proper co-ordination.

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3.27 Physical Stock Taking

It implies the action taken for ascertaining the physical balance of stores by actual counting, weighing, measuring, etc.

The different methods used for physical stock-taking are as follows:

- **Continuous stock-taking or continuous verification.**
- **Periodic stock taking or periodic stock verification.**
- **Combination of continuous and periodic stock taking.**

3.28 Selective Inventory Control

The methods used for selective inventory control are as follows:

- **The ABC Method (or Proportional Parts Value Method or Always Better Control Method).**
- **The VED Method / Analysis.**
- **The SDE Method / Analysis.**
- **The FSND Method / Analysis.**
- **Other Methods (JIT, SOS, Pareto, GOLF, HML, VIR and MRP)**

3.29 ABC Analysis

According to this method, stores are classified into three categories i.e., A, B, and C. A category refers to those items where total usage value is maximum, while C items refers to those items where total usage value is relatively less. B items occupy between A and C items.

CHAPTER-3: MATERIAL (Contd.)

3.30 Sores Record

The documents /books that are usually maintained for this purpose are as follows:

- ✓ **Bin Card.**
- ✓ **Stores Material Control Card.**
- ✓ **Stores Ledger.**

The basic documents which are used for recording the receipts and issues of materials are (a) Goods Received Note, (B) Stores Requisition Note, (c) Materials Return Note, (d) Materials Transfer Note and (e) Stock Verification Sheet.

3.31 Distinction between Bin Card and Store Ledger

Bin Card:

- ○ **It is maintained by the store keeper.**
- ○ **It is a record of quantities only.**
- ○ **Each transaction is individually posted.**
- ○ **It fulfills the need of the store keeper.**
- ○ **Transactions are recorded normally just before the transactions actually take place.**

Store Ledger:

- ○ **It is maintained by an authorized employee of the costing department.**
- ○ **It is a record of both quantities and values.**
- ○ **Transactions may be summarized and then posted.**
- ○ **It fulfills the need of the costing department.**
- ○ **Transactions are recorded always after the transactions take place.**

CHAPTER-3: MATERIAL (Contd.)

3.32 Different Methods of Pricing Material Issues

- Specific Price Method.
- First In First Out (FIFO) Method.
- Last In First Out (LIFO) Method.
- Next In First Out (NIFO) Method.
- Highest In First Out (HIFO) Method.
- Base Stock Method.
- Simple Average Method.
- Weighted Average Method.
- Periodic Simple Average Method.
- Periodic Weighted Average Method.
- Simple Moving Average Method.
- Weighted Moving Average Method.

CHAPTER-4: LABOUR (Contd.)

4.1 Essential Features of Successful Wage System

- Based on scientific study.
- Acceptable to both workers and employees.
- Easy and comprehensive.
- Low cost of installation.
- Flexibility.
- Guaranteed minimum wages.
- Provision for incentive.
- Check against impairing quality.

4.2 Factors to be considered in determining a Good Wage System

- Attitude of the workers.
- Simplicity.
- Nature of the work.
- Quality and quantity of work.
- Wage structure of similar industries.
- Role of trade union.
- Legal provision.
- Govt. policy and general agreement.
- Incidence of fixed overhead.
- Cost of labour turnover.

CHAPTER-4: LABOUR (Contd.)

4.3 Need for Incentive Schemes

Incentive schemes are necessary because of the following reasons:

- **To increase labour efficiency.**
- **To raise standard of living.**
- **To meet the demand of the customers.**
- **To keep the cost of production low.**
- **To check inflation.**
- **Overall growth of the nation.**

4.4 Factors for Selecting Suitable Incentive Scheme

- ✓ **Boost employees' morale and motivation.**
- ✓ **Simplicity.**
- ✓ **Cost effectiveness.**

4.5 Methods of Remuneration

- **Ordinary time rate or flat time rate system:**

  Wage = Time spent × Rate of pay

  OR Wage = Hours worked × Hourly rate
- **Time rate at high wage levels**
- **Measured day work (or Graduated time rates)**
- **Differential time rate system**

CHAPTER-4: LABOUR (Contd.)

- **Straight piece rate system:**

Earnings = Number of pieces produced × Rate per piece

- **Differential piece rate system**

1. **Taylor's Differential Piece Rate System**
2. **Merrick Differential Piece Rate System**

- **Piece rate with graduated time rate system**
- **Gnatt Task and Bonus System**
- **Emerson's Efficiency Plan**
- **Bedaux System**
- **Halsey Premium Scheme (Constant Sharing Plan):**

Earnings = (Hours worked × Hourly rate) + (50% of the time saved × Hourly rate)

Where: Time saved = Standard time (or Time allowed) – Actual time taken

- **Halsey-Weir Scheme (Constant Sharing Plan)**

Total Earnings = (Hours worked × Hourly rate) + (331/3% of the time saved × Hourly rate)

- **Rowan Scheme (Variable Sharing Scheme):**

Total Earnings = Time wages +Bonus (no bonus is allowed when time saved is nil)

Where: Time wages = Time taken × Hourly rate

Bonus = (Time saved ÷ Time allowed) × Time wages

CHAPTER-4: LABOUR (Contd.)

4.6 Group Bonus Schemes

These schemes provide bonus to a group of workers engaged in a work or a job according to the efficiency of the group. These schemes are particularly useful in the following cases:

- **When the work is performed by a group of workers.**
- **When team's effort is more important than individual's effort.**
- **When production depends on the collective performance of the group.**
- **When performance of the individual can not be precisely measured.**

CHAPTER-4: OVERHEAD

4.1 Concept and Definition

According to CIMA Official Terminology, London, "Overhead" or indirect cost is the expenditure on labour, materials or services which cannot be economically identified with a specific saleable cost per unit.

Precisely, overhead may be considered as the cost over and above prime cost. In other words, any cost incurred other than the cost of direct material, direct labour and direct expenses is known as overhead.

4.2 Classification of Overhead

A. Classification on the basis of elements:

1. **Indirect material are those materials which cannot be identified with a particular job, product, process etc. and which do not enter directly into the finished output.**
2. **Indirect labour: Indirect labour cost is the amount of remuneration paid to those employees who are not directly engaged in the process of manufacturing.**
3. **Indirect expenses: Indirect expenses are the cost of all those services other than labour which cannot be conveniently linked with a particular job product, etc.**

B. Classification on the basis of function:

1. **Production overhead (or Factory overhead or Manufacturing overhead or Works overhead): All indirect costs incurred in discharging the production function of a manufacturing concern are known as production overhead.**

CHAPTER-4: OVERHEAD (Contd.)

2. Administration Overhead (or Administrative Cost): It represents the cost incurred for discharging the administrative functions of a manufacturing concern.

Example: Rent, Postage, Audit fees, etc.

3. Selling Overhead or Selling Cost: It refers to all costs incurred to stimulate demand , promote sales and secure orders.

Example: Travelling expenses, Bad debt, Primary packing, Advertisement, etc.

4. Distribution Overhead or Distribution Cost: Distribution overhead refers to all expenses incurred for distribution of finished products or services.

Example: Carriage outward, Warehouse expenses, Insurance on finished goods, etc.

C. Classification on the basis of Behaviour:

1. Fixed Overhead: These costs are those costs which tend to remain constant for all activity levels up to a certain range. On the basis of nature, fixed costs may be classified into two categories: (a) Discretionary fixed costs and (b) Committed fixed costs.
2. Variable Overhead: Variable overhead are those indirect expenses which tend to vary directly with changes in level of production or activity.
3. Semi-variable or Semi-fixed Overhead: These overhead costs represent those expenses which are partly fixed and partly variable.

CHAPTER-4: OVERHEAD (Contd.)

D. Classification on the basis of Normality:

1. **Normal Overhead: Normal overhead is such overhead cost which are incurred under normal condition.**
2. **Abnormal Overhead: Any overhead cost incurred under abnormal conditions or situations is known as abnormal overhead.**

E. Classification on the basis of Controllability:

1. **Controllable Overhead: Such overhead costs are those which can be controlled by the management through timely and appropriate managerial action.**
2. **Uncontrollable Overhead: Uncontrollable overhead costs are those which cannot be controlled by any action of the management.**

4.3 Cost Allocation and Cost Apportionment

Cost Allocation: It is the charging of discrete, identifiable items of cost to cost centres or cost units.

Cost Apportionment: It is the allotment of two or more cost centres of proportions of the common items of cost on the estimated basis of benefits received.

The points of distinction between cost allocation and cost apportionment are as follows:

CHAPTER-4: OVERHEAD (Contd.)

1. In cost allocation, costs are allocated to a cost centre or cost unit.

   In case of cost apportionment, costs which are common and not identified with a particular cost centre or cost unit .
2. Both direct and indirect and indirect costs can be allocated in cost allocation. Only indirect costs are apportioned in case of cost apportionment.
3. Accurate allocation is possible in cost allocation. In cost apportionment, accurate allocation of cost is not possible.
4. In cost allocation, personal judgment will have no influence for cost allocation. In case of cost apportionment, personal judgment have influence on cost apportionment.

4.4 Apportionment of Factory Overhead

Step – I: Common overhead cost are to be apportioned among all the departments (production as well as service departments) on some suitable bases through Primary Overhead Distribution Summary.

Step – II: Total overhead costs of each service department are to be apportioned among production departments on some suitable bases through Secondary Distribution Summary.

CHAPTER-4: OVERHEAD (Contd.)

Primary Distribution of Factory Overhead: Primary distribution refer s to a method by which all the overhead costs will be allocated or apportioned to all the departments or cost centres on some suitable bases.

The following principles may however, be followed for the purpose of apportionment of overhead:

1. **Service or Use method.**
2. **Survey method.**
3. **Ability to pay method.**
4. **Equity.**

Secondary Distribution of Factory Method: It means the apportionment of total factory overhead costs of each service department to production departments. The total cost of service departments are apportioned to production departments on some suitable bases to ascertain the true cost of production. The process of redistribution of costs of service departments to production departments is known as secondary distribution of overhead costs.

CHAPTER-4: OVERHEAD (Contd.)

4.5 Different Methods of Secondary Distribution

1. **Apportionment of costs of service departments to production departments only.**
2. **Apportionment of costs of service departments to production departments and other service departments.**

i) Apportionment on non-reciprocal basis.

ii) Apportionment on reciprocal basis. These include the following methods:

a) Repeated distribution method.

b) Simultaneous equation method.

c) Trial and error method.

4.6 Absorption of Overhead

After ascertaining the total overhead cost of each production department, it is necessary to allocate such total cost to each unit of production on suitable basis in order to ascertain the share of overhead cost to be borne by each unit with the ultimate object of ascertaining cost per unit of production. This process of allocation of overhead of each cost centre to cost unit is known as absorption of overhead.

CHAPTER-4: OVERHEAD (Contd.)

4.7 Different Methods of Overhead Absorption

1. Production Unit Method (or Cost Unit Rate Method):

Factory Overhead Absorption rate = Factory Overhead to be absorbed (Actual / Predetermined) ÷ Number of Cost Units (Actual /Predetermined)

2. Percentage on Direct Material Cost:

Factory Overhead Absorption rate (%) = [Factory Overhead to be absorbed (Actual / Predetermined) ÷ Direct Material Cost (Actual /Predetermined)] × 100

3. Percentage on Direct Cost:

Factory Overhead Absorption rate (%) = [Factory Overhead to be absorbed (Actual / Predetermined) ÷ Direct Wages (Actual /Predetermined)] × 100

4. Percentage on Prime Cost:

Factory Overhead Absorption rate (%) = [Factory Overhead to be absorbed (Actual / Predetermined) ÷ Prime Cost (Actual /Predetermined)] × 100

5. Labour Hour Rate:

Factory Overhead Absorption rate = Factory Overhead to be absorbed (Actual / Predetermined) ÷ Direct Labour Hours for Production (Actual /Predetermined)

6. Machine Hour Rate:

Factory Overhead Absorption rate = Factory Overhead to be absorbed (Actual / Predetermined) ÷ Machine Hours (Actual /Predetermined)

CHAPTER-4: OVERHEAD (Contd.)

4.8 Over and Under Absorption of Overhead

1. **Under –absorption: When the amount of overhead absorbed is less than the amount of actual overhead incurred, there is under-absorption of overhead. In such a case, actual overhead is not fully charged to cost unit.**
2. **Over –absorption : When the amount of overhead absorbed is more than the amount of actual overhead incurred, there is over-absorption of overhead. In such a case, job or product is overcharged by the amount of excess overhead than the actual overhead.**

4.9 Causes of Under or Over Absorption

a. **Wrong estimation of overhead costs, and / or**
b. **Wrong estimation of the base i.e., machine hours, production quantity, etc.**

4.9 Treatment of Under or Over Absorbed Overhead

a. **Write off to costing profit and loss account.**
b. **Use of supplementary rate.**
c. **Carry forward to the next period's accounts.**

CHAPTER – 5: JOB COSTING, BATCH COSTING, CONTRACT COSTING

5.1 Definition of Job Costing

According to CIMA , London, job costing is "that form of specific order costing which applies where work is undertaken to customers' specific requirement and each order is of comparatively short duration (compared with those to which contract costing applies).

5.2 Application of Job Costing

Job costing is applicable in the following industries:

- **Where goods and services are produced as per customers' specific needs,**
- **Where goods and services are produced for stock purpose for which orders are expected to be received in future,**
- **Where jobs are done with raw materials supplied by customers,**
- **Where internal jobs involving capital expenditure are done,**
- **Doing repairing works at the customers; premises.**

CHAPTER – 5: JOB COSTING, BATCH COSTING, CONTRACT COSTING (Contd.)

5.3 Procedure in Job Costing

- **Job number: As and when an order for a job from a customer is accepted, a specific number is allotted to that job is known as job number.**
- **Production order number: It is generally prepared by the production control department or production planning department. It contains detailed information about the job to be done.**
- **Bill of material: It is a document prepared by the production planning / control department stating the different types of material required for the production of the job.**
- **Job cost sheet: Costs for each job are collected and recorded in a document which is known as job cost sheet or job cost card. It is a document containing detailed information about cost incurred for each job undertaken.**
- **Accounting: Costs incurred for jobs are debited to WIP control A/C. On completion of the jobs WIP control A/C is debited and cost of sales A/C is credited.**
- **Job completion report: On completion of each job of a Job Completion Report is prepared by the production department and copies of the same are sent to production planning department and costing department. By comparing the actual expenses with the estimates, variances can be found out.**

CHAPTER – 5: JOB COSTING, BATCH COSTING, CONTRACT COSTING (Contd.)

5.4 Accounting Treatment

Material Costs: WIP Control A/C----------Dr.

To Stores Ledger Control A/C

Labour Cost: WIP Control A/C----------Dr.

To Wages Control A/C

Direct Expenses: WIP Control A/C----------Dr.

To General Ledger Adjustment A/C

5.5 Batch Costing

According to CIMA, London, Batch costing is "that form of specific order costing which applies where 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".

5.6 Application of Batch Costing

Batch costing is applicable in those industries where identical articles are produced in definite batches. Industries producing hardware, ready made garments, radio, etc. are some of the examples where batch costing is suitable.

CHAPTER – 5: JOB COSTING, BATCH COSTING, CONTRACT COSTING (Contd.)

5.7 Distinction between Job Costing and Batch Costing

- **In job costing, each job is considered a cost unit. In case of batch costing , a batch of identical jobs is considered a cost unit.**
- **The main purpose of job costing is to ascertain cost of each job. On the other hand, the main purpose of batch costing is to ascertain cost of all articles in the batch.**
- **Job costing is used where jobs are non-respective in nature i.e., each job is different from each other. In case of batch costing, it is applicable where the products are identical in nature.**
- **In job costing, production is done to customers' order and specification. In batch costing, production is done either for stock for assembly of finished products or for sale to customers generally not against any specific order.**
- **Job costing is applicable in jobbing type of industries like printing, founders, building construction etc. On the other hand, batch costing is applicable where identical and standards products are produced in definite batches like industries manufacturing toys, radio, T.V. etc.**

CHAPTER – 5: JOB COSTING, BATCH COSTING, CONTRACT COSTING (Contd.)

5.8 Concept of Contract Costing

According to CIMA, London, contract costing is "that form of specific order costing which applies where work is undertaken according to customer' special requirement and each order is of long duration (compared with those to which job costing applies). The work is usually constructional and in general, the method is similar to job costing".

5.9 Features of Contract Costing

- **Jobs are done according to terms and conditions of contract made with the customers.**
- **Works are generally done at a site other than the factory of the concern.**
- **Each contract has special characteristics of its own and differs from another contract in many aspects.**
- **Each contract is treated as a cost unit and is given a distinct number.**
- **Most of the items of cost are incurred for a particular contract.**
- **Contract price is usually fixed in advance.**
- **Separate contract account is opened for each contract in the books of the contractor and profit and loss from each contract is ascertained accordingly.**

CHAPTER – 5: JOB COSTING, BATCH COSTING, CONTRACT COSTING (Contd.)

5.10 Procedure in Contract Costing

- **Allotment of number: Each contract is allotted a specific number and costs of the contract are collected and recorded accordingly.**
- **Charging of costs: Each contract is charged with the actual costs incurred.**
- **Contract price: Contract price is credited to the respective contract account.**
- **Profit or loss on contract: Profit or loss on contract is ascertained by taking the difference between the total of credit and debit side of the contract account.**

5.11 Cost-Plus Contracts

This is a special type of contract price fixed by adding a specified amount of profit to the actual cost incurred by the contractor. Such profit may be a fixed amount ormay be calculated by applying a fixed percentage on actual cost or capital employed and to be clearly stated in terms of the contract.

CHAPTER – 6: PROCESS COSTING

6.1 Concept of Process Costing

According to CIMA, London, process costing is "the basic costing method applicable where goods or services result from a sequence of continuous or repetitive operations or processes to which costs are charged and averaged over the units produced during the period".

6.2 Characteristics of Process Costing

- **The products are produced in one or more processes or operations.**
- **The products are homogeneous and standardized.**
- **Identity of product during processing stage is not possible.**
- **The output of one process becomes the input of the next process and the output of the last process is transferred to finished stock.**
- **Each process or operation is a cost centre.**
- **Costs are collected separately for each such cost centre and charged accordingly.**
- **Average cost per unit is calculated by dividing the total cost of operations by the number of output.**
- **The production process may result in two or more products which are either termed as joint products or by-products.**

CHAPTER – 6: PROCESS COSTING (Contd.)

6.3 Different Types of Process Costing

- **Sequential Processing: In such system of processing output of one process is transferred to the next process sequentially.**
- **Parallel Processing: In such system of processing output of one process may not be the input of the next process. But one or more processes may run simultaneously.**
- **Selective Processing: In this system of processing, output of one process is not transferred to the next process sequentially.**
- **Joint Processing: This is a system of common processing required for production of two or more products simultaneously.**

6.4 Application of Process Costing

- **Manufacturing industries such as textiles, iron and steel etc.**
- **Chemical industries like paint, drugs, etc.**
- **Mining industries such as oil, coal etc.**
- **Public utility services such as generation of power, gas, water supply etc.**

CHAPTER – 6: PROCESS COSTING (Contd.)

6.5 Distinction between Job Costing and Process Costing

- **Job costing is applicable in jobbing type of industries. On the other hand, process costing is applicable in industries which manufacture goods on a continuous basis through several process.**
- **In job costing, production is done according to customer's specification. In process costing, homogeneous and standardized products are produced in bulk quantities.**
- **In job costing, costs are collected and accumulated job- wise. In process costing, costs are collected and accumulated process- wise or operation –wise.**
- **In job costing, cost of job is generally computed after the completion of the job. In process costing, cost of product is generally computed at the end of the accounting period.**
- **In job costing, cost of one job is not transferred to another job. In process costing, cost of one process or operation is transferred to the next process or operation.**
- **In job costing, WIP may or may not exist at the end of the accounting period. In process costing, as the production process is continuous, WIP exists at the end of each accounting period.**
- **In job costing, losses and wastages can be reduced to a minimum through proper control and supervision. In process costing, normal loss of material is inevitable as materials are processed through several processes or operations.**

CHAPTER – 6: PROCESS COSTING (Contd.)

6.6 Procedure in Process Costing

- ✓ **The factory is divided into different process centres.**
- ✓ **Different costs are collected for each such process centre.**
- ✓ **If product is produced through different processes cost of one process is transferred to the next process.**
- ✓ **Production in terms of quantities are recorded at the end of specified period, say weekly, monthly, etc.**
- ✓ **Average cost per unit is found out by dividing total cost of each process by total production. Average cost per unit of finished goods is found out by dividing the total cost of all process up to the finished stage by total units of finished products.**

6.7 Process Loss

- **Normal Loss: The loss which arises out of unavoidable causes is considered as normal loss.**

Example:

- ➢ **Loss due to evaporation, shrinkage, leakage, etc.**
- ➢ **Loss due to chemical change.**
- ➢ **Loss for withdrawals of input for testing.**
- ➢ **Etc.**

CHAPTER – 6: PROCESS COSTING (Contd.)

- **Abnormal Loss: The loss which arises due to some abnormal and unexpected factors like machine breakdown, use of standard materials, faulty planning, poor administration etc. is considered as abnormal loss. Such loss is unanticipated. It represents a loss which is over and above the normal loss.**

6.8 Abnormal Gain

If actual loss is less than the expected loss (i.e. normal loss), a gain would arise which is termed as abnormal gain.

6.9 Concept of Equivalent Production

The concept of equivalent units states that 2 units, each complete 50% will be treated as equivalent to 1 completed unit. This concept will have to be implemented for solving the problem of incomplete units. For this, degree of completion will have to be ascertained for each element of cost, i.e. material, labor and overheads.

The following methods of pricing are used for valuing the equivalent units:

- ***First In First Out Method [FIFO]: In this method, the assumption is that the incomplete units from* the opening stock are completed first and then the units introduced in the process are completed. The costs added in each process during the current period is prorated to the production necessary to complete the opening work in progress, to complete the units added in the process and units in the work in progress. The objective of the first in first out method is to value the inventory at the current costs and as such the main problem is to calculate the equivalent production under this method.**

CHAPTER – 6: PROCESS COSTING (Contd.)

- ***Average Method: Process costs are sometimes computed on the basis of average costs. Where degree*** **of completion of opening work in progress is not given, average method is used. The average process cost is obtained by adding the cost of opening work in progress in the cost of units introduced in the process during the current period and dividing this total cost by total equivalent units obtained by adding the number of units completed and equivalent units of the closing work in progress of each element, material, labor and overheads. The main object of average method is to even out the fluctuations in prices and hence is used when the prices fluctuate widely during a particular period.**
- ***Weighted Average Method: If a manufacturing unit is manufacturing two or more products, which*** **are quite dissimilar to each other, weighted average method is used. Under this method, weighted average is computed and used in valuation of the incomplete units.**

6.10 <u>Inter Process Profit</u>

The output of one process is transferred to the subsequent process at cost price. However sometimes, the transfer is made at cost + certain percentage of profit. This is done when each process is treated as a profit center. In such cases, the difference between the debit and credit side of the process account represents profit or loss and is transferred to the Profit and Loss Account. The stocks at the end and at the beginning contain an element of unrealized profits, which have to be written back in this method. If the profit element contained in the closing inventory is more than the profit element in the opening inventory, profit will be overstated and vice versa. Profit is realized only on the goods sold, thus to obtain the actual profit the main task would be to calculate the profit element contained in the inventories. In order to compute the profit element, in closing inventory and to obtain the net realized profit for a period, three columns have to be shown in the ledger for showing the cost, unrealized profit and the transfer price.

CHAPTER – 6: PROCESS COSTING (Contd.)

6.11 Concept of Joint Product and By Products

Joint products: Joint Products can be defined as distinctly different major products that are inevitably produced simultaneously from common inputs or by common processing.

By-Product: The term 'by-products' is sometimes used synonymously with the term 'minor products'. The by-product is a secondary product, which incidentally results from the manufacture of a main product. By–products are also produced from the same raw material and same process operations but they are secondary results of operation. The main difference between the joint product and byproduct is that there is no intention to produce the by-product while the joint products are produced intentionally.

6.12 Important Terms

***Split Off Point: This is a point up to which, input factors are commonly used for production of multiple* products, which can be either joint products or by-products. After this point, the joint products or byproducts gain individual identity. In other words, up to a certain stage, the manufacturing process is the same for all the products and a stage comes after which, the individual processing becomes different and distinct. For example, in a dairy, several products like, milk, ghee, butter, milk powder, ice-cream etc. may be produced. The common material is milk. The pasteurization of milk is a common process for all the products and after this process, each product has to be processed separately. This point is of special significance in the accounting of joint product and by-products because the joint cost incurred before this point is to be apportioned appropriately in the joint products.**

***Joint Costs:* Joint cost is the pre separation cost of commonly used input factors for the production of multiple products. In other words, all costs incurred before or up to the split off point are termed as joint costs or pre separation costs and the apportionment of these costs is the main objective of joint product accounting. Costs incurred after the split off point are post separation costs and can be easily identified with the products.**

CHAPTER – 6: PROCESS COSTING (Contd.)

6.13 Accounting for Joint Product Cost

In case of joint products, the main objective of accounting of the cost is to apportion the joint costs incurred up to the split off point. The manufacturing process is same up to a certain stage and after crossing that stage; each product has distinct manufacturing process. Therefore the main problem is apportionment of the joint cost or the cost incurred up to the split off point. The total cost of production of the joint product will be cost incurred up to the split off point duly apportioned plus the cost incurred after the split off point. There is no problem of charging the cost incurred after the split off point as the cost can be identified easily. The main problem therefore is that of apportionment of the joint cost and the following methods are used for apportioning the same.

Methods of Apportionment of Joint Costs to Joint Products: The following methods are used for apportionment:

- ***Physical Quantity Method: Under this method, cost apportionment is made in proportion to the*** **volume of production. These physical measures may be units, pounds, liters, kilos, tones, gallons etc.**
- ***Average Unit Cost Method: Under this method, the joint cost is apportioned to the joint products*** **by computing the average unit cost of the product units. The average unit cost is computed by dividing the total manufacturing cost by the total number of units produced of all products. This method is useful where all the products produced are uniform with each other in all the respects.**

CHAPTER – 6: PROCESS COSTING (Contd.)

- ***Weighted Average Method: Under this method, weights are assigned to each unit based upon size*** **of the units, difference in type of labor employed, material consumption, market share, efforts of labor required and so on. The joint cost is apportioned on the basis of the weights assigned to each product.**
- ***Selling Price Method: Under this method, the joint cost is apportioned on the basis of sales value*** **at the split off point. The logic is that a product should bear the share of the joint cost according to its sale price. If sales price is higher than that of the other products, more share of joint cost should be charged to that product and if it is comparatively less than that of other products, less share of joint cost should be charged to the same.**

6.14 <u>Accounting for By-Products</u>

By-products are jointly produced products of minor importance and do not have separate costs until the split off point. They are not produced intentionally but are emerging out of the manufacturing process of the main products. The following methods are used for accounting of by-products. The methods are broadly divided into Non-Cost Methods and Cost Methods.

❖ ***Non-Cost Methods: The following methods are included in this category.***

- ***Other income or miscellaneous income method: Under this method, sales value of by-products*** **is credited to the Profit and Loss Account and no credit is given in the cost accounts. The credit to the profit and loss account is treated as other income or miscellaneous income. No effort is made for ascertaining the cost of the product. No valuation of inventory is made and all costs and expenses are charged to the main product.**

CHAPTER – 6: PROCESS COSTING (Contd.)

- ***Total sales less total cost: Under this method, sales value of by-product is added to the sales*** **value of the main product. Further the total cost of the main product including the cost of the by-product is deducted from the sales revenue of the main product and by-product. All costs and expenses are charged to the main product.**
- ***Total cost less sales value of by-product: In this method, the total cost of production is reduced*** **by the sales value of the by-product.**
- ***Total cost less sales value of by-products after setting off selling and distribution overheads of by-products:*** **Sales value *of the by-product* minus the selling and distribution overheads of byproduct is deducted from the total cost. Selling and distribution overheads are charged against by-products actually sold.**
- ***Reverse cost method: This method is based on the view that the sales value of the by-product*** **contains an element of profit. It is agreed that this element of profit should not be credited to the profit and loss account. The cost of by-product is arrived at by working backwards. Selling price of the by-product is deflated by an assumed gross profit margin. Thus under this method, sales value of the by-product is first reduced by, an estimated profit margin, selling and distribution expenses and then the post split off costs and then the cost of the main product is thus reduced by this net figure.**

CHAPTER – 6: PROCESS COSTING (Contd.)

❖ ***Cost Methods:*** **The following methods are included in this category:**

- ***Replacement or opportunity cost method*: If the by-products are consumed captively, they *are* valued at the opportunity cost method or replacement cost method. This means the cost which would have been incurred had the by-product been purchased from outside. For example, bagasse, which is one of the main by-product of sugar industry and which is used for the factory as a fuel in the boiler is valued at the market value, i.e. the price that would have been paid if it would have been purchased from outside.**
- ***Standard cost method:* Under this method, the by-product is valued at the standard cost determined for each product. The standard cost may be based on technical assessment. Standard cost of the by-product is credited to the process account of the main product. Accordingly, the cost control of main product can be exercised effectively.**
- ***Joint cost proration:* Where the by-product is of some significance, it is appropriate that the joint costs should be apportioned between the main products and by-products on a most suitable and acceptable method. Thus in this method, no distinction is made between the joint product and byproduct. Industries, where the by-products are quite important, use this method. For example, in a petroleum refinery, gas was earlier considered as a by-product. Now it has assumed the importance like petrol, diesel etc. and is being treated as joint product. Accordingly, the joint cost is prorated between the joint product and the by-product.**

CHAPTER – 7: COST CONTROL ACCOUNTS

7.1 Introduction

In cost accounting, the cost books are basically maintained under the following two systems. I] No integral or non- integrated cost accounting and II] Integral or integrated cost accounting. Where cost and financial accounts are maintained in a combined way, the system is called as integrated while if the records are maintained separately, the system is called as non-integrated system of maintaining accounts. Under the non-integrated system, separate ledgers are maintained for financial transactions while the cost accounts department is responsible for maintaining cost accounts.

7.2 Maintenance of Accounts

- **General ledger: It includes all real, nominal and personal accounts except debtors and creditors accounts.**
- **Debtors Ledger: It contains the personal accounts of trade debtors.**
- **Creditors Ledger: It contains the personal accounts of trade creditors.**

On the other hand, the cost accounting department maintains the following cost ledgers:

- **Stores ledger for recording all stores transactions**
- **Work-in-progress ledger: Cost of materials, labour and overheads of all jobs, which are in progress, are posted to this account.**
- **Finished goods/stock ledger: This ledger has the record of finished goods/stock.**

CHAPTER – 7: COST CONTROL ACCOUNTS (Contd.)

- **Cost ledger: This ledger maintains the accounts relating to income and expenditure. The following accounts are maintained in this ledger.**

  A. Cost control accounts: These accounts are maintained to exercise control over the three subsidiary ledgers maintained above and also to complete the double entry in cost accounts. The important cost control accounts are as follows.

  I. Stores ledger control a/c

  II. Work-in-progress ledger control a/c

  III. Finished goods ledger control a/c

  IV. General ledger adjustment a/c

  ***B. Other accounts: They include all other impersonal accounts [real as well as nominal]* which effect costs, e.g. wages control account, factory overhead accounts, administration overhead account, selling and distribution overhead account, cost of sales account etc. Depending upon the requirement, the following additional accounts may also be maintained.**

- **Overhead suspense account**
- **Capital orders account**
- **Service orders account.**

CHAPTER – 7: COST CONTROL ACCOUNTS (Contd.)

7.3 Treatment of Elements of Cost

The following treatment is given to the various elements of cost.

- ***Materials: Certain transactions relating to material are recorded in the financial accounts also.***

  Examples of such transactions are purchase of material, return of materials. These transactions are

  recorded in financial as well as cost accounts. On the other hand, certain transactions like issue of

  materials from stores, transfer of material from one job to the other one, return of excess materials to stores are recorded in cost accounts only.

- **Labour*:* Wages paid are recorded in the cost accounts through wages control account and the general ledger adjustment account.**

- **Overheads: Various types of overheads like production, administration and selling and distribution are absorbed to the products on some suitable basis. The production overhead accounts is credited with the amount of overheads absorbed and the work in progress account is credited. In case of administrative overhead account, the amount absorbed is credited to the administrative overhead account and finished stock account is debited. Selling and distribution overheads are credited the selling and distribution overhead account and corresponding debit is given to the cost of sales account. Finally, the amount of under/over absorbed overheads is transferred to the Costing Profit t and Loss A/c.**

CHAPTER – 8: RECONCILIATION OF COST AND FINANCIAL ACCOUNTS (Contd.)

8.1 Introduction

In financial accounting, a bank reconciliation statement is prepared to reconcile between the bank balance as shown by the pass- book and cash- book of a business organization. This statement is prepared when there is a difference between the balances as shown by both these books. On the same principle, a reconciliation statement is prepared in cost accounts for reconciling the profits shown by the cost accounts and financial accounts. Obviously this is required when the profits shown by both the methods differ. Profit shown by the cost accounts and financial accounts differ when accounts are kept on non-integrated system, which means that cost accounts and financial accounts are prepared separately and independently of each other. In such a case, profit disclosed by one accounting system will differ from the profit shown by the other and need for reconciliation will arise.

8.2 Reasons for Difference in Profit

The profit shown by financial accounts and cost accounts differ on account of the following reasons.

- **Items of Financial Nature not recorded in Cost Accounts: The following items are not recorded in cost accounts as they are of purely financial nature and consequently the profits differ as these items are recorded in the financial accounts.**

CHAPTER – 8: RECONCILIATION OF COST AND FINANCIAL ACCOUNTS (Contd.)

- Interest received on bank deposits.
- Dividend, interest received on investments.
- Rent received
- Losses on sale of assets
- Bad debts written off, recovered
- Transfer fees received
- Interest on proprietor's capital
- Fines and penalties payable
- Compensation payable.

➢ Items Charged to Profit and Loss Account but not Recorded in Cost Accounts: The following items are found in the cost accounts but not recorded in the financial accounts.

- Corporate taxes
- Appropriations out of profits, such as transfer of profits to reserves
- Certain payments like dividend
- Additional provisions of depreciation
- Certain amounts written off such as goodwill, patents, preliminary expenses, underwriting
- commission etc.

CHAPTER – 8: RECONCILIATION OF COST AND FINANCIAL ACCOUNTS (Contd.)

- **Items Peculiar in Cost Accounts: The items described below are peculiar in cost accounts while their treatment in financial accounts is different. Hence there is a difference between the profits shown by both the systems**
- **Overheads: In cost accounts, overheads are finally absorbed in the products by computing the predetermined rate of absorption. In such cases, there may be under/over absorption of overheads. This means that the overheads actually incurred will not tally with the overheads charged to the product. In financial accounts overheads are always taken at actual basis irrespective of under/over absorption of the same. In such cases the profits shown by both the systems will differ. However, if the under/over absorbed overheads are charged to the costing profit and loss account, the profits shown by financial accounts and cost accounts will not differ.**
- **Valuation of Closing Stock and Work-in-Progress: The principle of valuation of closing stock in financial statements is cost price or market price whichever is less. However, in cost accounts, valuation of closing stock may be made on the basis of marginal costing where only the variable costs are taken into consideration while valuing the closing stock. Work-in-Progress in cost accounts is often valued on the basis of prime cost and sometimes variable manufacturing overheads are added in the same. On the other hand, in financial accounting, work-in-progress may be valued after taking into consideration administrative expenses also.**
- **Abnormal Losses and Gains: In cost accounts, abnormal losses and gains are computed and transferred to the Costing Profit and Loss A/c. No such computation is made in the financial accounts. This results in difference between the profits shown by cost accounts and financial accounts**

CHAPTER – 8: RECONCILIATION OF COST AND FINANCIAL ACCOUNTS (Contd.)

8.3 Methodology for Preparing Reconciliation Statement

Reconciliation between the profits shown by cost accounts and financial accounts is made by the same method as is followed in the Bank Reconciliation Statement. Beginning to this statement may be made from either the profits as per the financial accounts or cost accounts. The items, which are responsible for the difference between the two are either added or deducted from the profits taken in the beginning. After addition or deduction, the profit as shown by the other method is arrived at. Thus if the beginning is made from profits as shown by cost accounts, we will arrive at the profits as shown by the financial accounts and vice versa.

The following steps are to be taken for preparing this statement.

- **The starting point may be either profit shown by cost accounts or financial accounts.**
- **If the profit as taken in the beginning is reduced due to the various causes given, these items should be added in the profits.**
- **If the profit as taken in the beginning is increased due to the various causes given, these items should be deducted from the profits.**
- **After completion of these additions and deductions, we will arrive at the profit as shown by the other system, i.e. if profits as per cost accounts is taken in the beginning, we will arrive at the profit as shown by financial accounts and vice versa.**

CHAPTER – 9: MARGINAL COSTING

9.1 Definition of Marginal Cost

Marginal Cost is defined as, ' the change in aggregate costs due to change in the volume of production by one unit'. For example, if the total number of units produced are 800 and the total cost of production is Rs.12, 000, if one unit is additionally produced the total cost of production may become Rs.12, 010 and if the production quantity is decreased by one unit, the total cost may come down to Rs.11, 990. Thus the change in the total cost is by Rs.10 and hence the marginal cost is Rs.10. The increase or decrease in the total cost is by the same amount because the variable cost always remains constant on per unit basis.

Marginal Costing has been defined as, 'Ascertainment of cost and measuring the impact on profits of the change in the volume of output or type of output. This is subject to one assumption and that is the fixed cost will remain unchanged irrespective of the change.' Thus the marginal costing involves firstly the ascertainment of the marginal cost and measuring the impact on profit of alterations made in the production volume and type.

9.2 Features of Marginal Costing

- **In marginal costing, costs are segregated into fixed and variable. Only variable costs are charged to the production, i.e. included in the cost of production. Fixed costs are not included in the cost of production, which means that they are not absorbed in the production.**

CHAPTER – 9: MARGINAL COSTING (Contd.)

- **Another important feature of marginal costing is the valuation of inventory is done at variable cost only. This means, that variable costs only are taken into consideration while valuing the inventory. Fixed costs are eliminated from the inventory valuation because they are largely period costs and relate to a particular period or year.**
- **Another feature of marginal costing is the preparation of income statement. The income statement is prepared in a different manner as compared to the statement prepared under traditional costing, i.e. absorption costing.**

9.3 <u>Difference between Marginal Costing and Absorption Costing</u>

- **In absorption costing, costs are classified as direct and indirect, direct costs are identifiable with a particular product and hence charged directly. Indirect costs i.e. overheads are first identified, apportioned to the cost centers and finally absorbed in the product units on some suitable basis.**

  In marginal costing, costs are classified as fixed and variable. While direct costs are mostly variable, indirect costs, i.e. overheads may be semi variable. The variable portion in the total overhead cost is identified and thus the total variable costs are computed. Only variable costs are charged to the product while the fixed costs are not absorbed in the product units. They are finally debited to the Costing Profit and Loss Account for computing the final figure of profit or loss. Thus the cost of production under marginal costing is only the variable portion of the total costs.

CHAPTER – 9: MARGINAL COSTING (Contd.)

- **In absorption costing, the year-end inventory of finished goods under absorption costing is valued at total cost, i.e. fixed and variable.**

  In case of marginal costing, the year-end inventory is valued at variable cost only. Fixed costs are not taken into consideration while valuing inventory, as they are not absorbed in the product units.

- **In absorption costing, the fixed overhead absorption may create some problems like over/under absorption. This happens because of the overhead absorption rate which is pre determined. Suitable corrective entries are to be made to rectify the over/under absorption of overheads; otherwise the cost of production will be distorted.**

  In marginal costing, the fixed overheads are charged directly to the Costing Profit and Loss Account and not absorbed in the product units. Therefore there is no question of under/over absorption of overheads.

- **In absorption costing, due to the inventory valuation, which is done at the full cost, the costs relating to the current period are carried forward to the subsequent period. This will distort the cost of production.**

  In marginal costing, Fixed costs are not taken into consideration while valuing the inventory and hence there is no distortion of profits.

- **In absorption costing, the total cost of production is charged to the product without distinguishing between the fixed and variable components. The selling price is thus fixed on the basis of total costs.**

  In marginal costing, only variable costs are charged to the cost of production and therefore the selling price is also based on only variable costs. This will result in fixation of selling price below the total costs. There is a possibility of starting a price war in such situations, which will be harmful to all the companies in the industry.

CHAPTER – 9: MARGINAL COSTING (Contd.)

9.4 Applications [Merits] of Marginal Costing

- **Cost Control: One of the important challenges in front of the management is the control of cost. In the modern competitive environment, increase in the selling price for improving the profit margin can be dangerous as it may lead to loss of market share. The other way to improve the profit is cost reduction and cost control. Cost control aims at not allowing the cost to rise beyond the present level. Marginal costing technique helps in this task by segregating the costs between variable and fixed. While fixed costs remain unchanged irrespective of the production volume, variable costs vary according to the production volume.**
- **Profit Planning: Another important application of marginal costing is the area of profit planning. Profit planning, generally known as budget or plan of operation may be defined as the planning of future operations to attain a defined profit goal. The marginal costing technique helps to generate data required for profit planning and decision-making.**
- **Key Factor Analysis: The management has to prepare a plan after taking into consideration the constraints, if any, on the various resources. These constraints are also known as limiting factors or principal budget factors as discussed in the topic of 'Budgets and Budgetary Control'. These key factors may be availability of raw material, availability of skilled labour, machine hours availability, or the market demand of the product. Marginal costing helps the management to decide the best production plan by using the scarce resources in the most beneficial manner and thus optimize the profits.**

CHAPTER – 9: MARGINAL COSTING (Contd.)

- **Decision Making: Managerial decision-making is a very crucial function in any organization. Decision – making should be on the basis of the relevant information. Through the marginal costing technique, information about the cost behaviour is made available in the form of fixed and variable costs. The segregation of costs between fixed and variable helps the management in predicting the cost behaviour in various alternatives. Thus it becomes easy to take decisions.**

9.5 Break-even Point

The concept of 'Break Even Point' is extremely important for decision making in various areas. This concept is based on the behaviour of costs, i.e. fixed cost and variable costs. As discussed earlier, fixed costs are those costs that remain constant irrespective of the changes in the volume of production. On the other hand, variable costs are the costs that vary with the level of production. While fixed cost per unit is always variable, variable cost per units is always fixed. In addition to these two types of costs, there are semi variable costs that are partially fixed and partially variable. Semi variable costs thus have the features of both types of costs. They remain fixed up to a certain level of production and after crossing that level, they become variable. The Break Even Point is a level of production where the total costs are equal to the total revenue, i.e. sales. Thus at the break even level, there is neither profit nor loss. Production level below the break-even-point will result into loss while production above break-even point will result in profits.

CHAPTER – 9: MARGINAL COSTING (Contd.)

Break even level can also be worked out with the help of the following formulae.

Break even point [in units] = Fixed Cost / Contribution per Unit

Break even point [in Rs.] = Fixed Cost / Profit Volume [P/V] Ratio

- **Assumptions of Break Even Point: The concept of break even point is based on the following assumptions.**

1. Production and sales are the same, which means that as much as is produced is sold out in the market. Thus there is no inventory remaining at the end.

2. Fixed cost remains same irrespective of the production volume.

3. Variable cost varies with the production. It changes in the same proportion that of the production. Hence it has a linear relationship with the production. In other words, variable cost per unit remains the same.

4. Selling price per unit remains same irrespective of the quantity sold.

- **Margin of Safety: Margin of Safety is the difference between the actual sales and the break even sales. As we have discussed, at the break even point there is neither any profit nor loss. Hence any firm will always be interested in being as much above the break even level as possible. Margin of safety explains precisely this thing and the higher the safety margin the better it is. Margin of safety is computed as follows:**

CHAPTER – 9: MARGINAL COSTING (Contd.)

Margin of Safety = Actual Sales – Break Even Sales.

- **Limitations of Break even Point: Break Even point is extremely useful in decision- making regarding the production level. It indicates the level of production where there is neither any profit nor loss. However this is based on the assumption that the variable cost per unit, sales price per unit and the fixed cost remains the same. If there is any change in these variables, the break even point will give misleading results.**
- **Problem:**

A Company budgets for a production of 150000 units. The variable cost per unit is Rs.14 and fixed cost per unit is Rs.2 per unit. The company fixes the selling price to fetch a profit of 15% on cost.

A. What is the break- even point? B] What is the profit/volume ratio? C] If the selling price is reduced by 5%, how does the revised selling price affects the Break Even Point and the Profit/Volume Ratio? D] If profit increase of 10% is desired more than the budget, what should be the sales at the reduced price?

A] Break Even Point = Fixed Cost /Contribution Per unit

= Rs.2 1 50 000 units = Rs.3, 00, 000 /Rs.18.40 – Rs.14.00

= Rs.3, 00, 000 / Rs.4.40 = 68, 182 units.

Note: Contribution per unit is computed as shown below.

Selling Price per unit = Total Cost + 15% Profi t on cost = Rs.16 [Rs.14 variable cost + Rs.2 fixed cost] + Rs.2.40 [15% of Rs.16] = Rs.18.40

Contribution = Selling Price – Variable Cost = Rs.18.40 – Rs.14 = Rs.4.40

CHAPTER – 9: MARGINAL COSTING (Contd.)

B] Profit/Volume Ratio: Contribution Per Unit/Selling Price Per Unit 100

Rs.4.40 /Rs.18.40 100 = 23.91%

C] Reduction in selling price by 5%: Reduced selling price = Rs.18.40 – 5% of Rs.18.40 = Rs.17.48, revised

contribution = Rs.17.48 – Rs.14.00 = Rs.3.48

Break Even Point = Fixed Cost /Contribution Per Unit = Rs.3, 00, 000 /Rs.3.48

= 86, 207 units

D] Desired profit = Rs.2.40 + 10% of Rs.2.40 = Rs.2.64 per unit

Total Profits = Rs.2.64 1 50 000 units = Rs.3, 96, 000

+ Total Fixed Costs = Rs.3, 00, 000

Total Contribution = Rs.6, 96, 000

Quantity to be sold = Total Contribution + Revised Contribution Per Unit

Rs.6, 96, 000 / Rs.3.48 = 2, 00, 000 units

Sales Value = 2 00 000 units Rs.17.48 = Rs.34, 96, 000

CHAPTER – 10: STANDARD COSTING

10.1 Concept of Standard Costing

Standard Cost is defined as, 'a pre-determined cost which is calculated from management's standard of efficient operation and the relevant necessary expenditure. It may be used as a basis for price fixation and for cost control through variance analysis.' [CIMA – UK] Standard Costing is defined as, 'preparation and use of standard costs, their comparison with actual costs and analysis of variances into their causes and points of incidences.' [CIMA – UK]

10.2 Features of Standard Cost and Standard Costing

The following are the features of standard cost:

- **Standard cost is a pre planned or pre-determined cost. This means that the standard cost is determined even before the commencement of production. For example, if a firm is planning to launch a product in the year 2009, the standard cost of the same will be determined in the year 2008.**
- **Standard cost is not an estimated cost. There is a difference between saying what would be the cost and what should be the cost. Standard cost is a planned cost and it is a cost that should be the actual cost of production.**
- **It is calculated after taking into consideration the management's standard of efficient operation. Thus standard cost fixed on the assumption of 80% efficiency will be different from what it will be if the assumption is of 90% efficiency.**
- **Standard cost can be used as a basis for price fixation as well as for exercising control over the cost.**

CHAPTER – 10: STANDARD COSTING (Contd.)

Standard Costing is a technique of costing rather than a method and has the following features:

- **Standard costing involves setting of standards for various elements of cost. Thus standards are set for material costs, labour costs and overhead costs. Setting of standard is the heart of standard costing and so this work is done very carefully. Setting of wrong standards will defeat the very purpose of standard costing. Standards are not only set for costs, but also for sales and profits. The objective behind setting of standards is to have a basis for comparison between the standard performance and the actual performance.**
- **Another feature of standard costing is to continuously record the actual performance against the standards so that comparison between the two can be done easily.**
- **Standard costing ensures that there is a constant comparison between the standards and actual and the difference between the two is worked out. The difference is known as 'variance' and it is to be analysed further to find out the reasons behind the same.**
- **After the ascertaining of the variances, analyzing them to find out the reasons for the variances and taking corrective action in order to ensure that the variances are not repeated, are the two important actions of management. Thus standard costing helps immensely in evaluation of performance of the organization.**

CHAPTER – 10: STANDARD COSTING (Contd.)

- **Estimated costs should not be confused with standard costs. Though both of them are future costs, there is a fundamental difference between the two. Estimated cost is more or less a reasonable assessment of what the cost will be in future while on the other hand, standard cost is a pre planned cost in the sense it denotes what the cost ought to be. Estimated costs are developed on the basis of projections based on past performance as well as expected future trends. Standard costs are pre determined in a scientific manner through technical analysis regarding the material consumption and time and motion study for determining labour requirements. Estimated costs may not help management in decision making as they are not scientifically pre determined costs but standard costs are decided after a comprehensive study and analysis of all relevant factors and hence provide reliable measures for product costing, product pricing, planning, co-ordination and cost control as well as reduction purposes. Under estimated costing, the cost is estimated in advance and is based on the assumption that costs are more or less free to move and that what is made is the best estimate of the cost. Under standard costing, a cost is established which is based on the assumption that cost will not be allowed to move freely but will be controlled as far as possible so that the actual cost will be close to the standard cost as far as possible and any variation between the standard and actual cost will be capable of reasonable explanation.**

CHAPTER – 10: STANDARD COSTING (Contd.)

10.3 Setting of Standards

The following aspects should be taken into consideration before setting the standards.

- **Type of Standard: The important aspect is that what should be the level of standard from the point of attainment? Whether it should be very difficult to achieve or too easy to achieve? In other words whether the standards set should be too high or too low? Thus from the standard of attainment, there can be the following types of standards.**
- **Ideal Standard: An ideal standard is a standard, which can be attained under the most favourable conditions. The expected performance can be achieved only if all factors, such as material and labour prices, level of performance of employees, highest output with best possible equipment and machinery, highest level of efficiency and so on. In practice, it is very difficult to achieve this, as the combination of all favourable factors is almost impossible. Hence the utility of this standard is that it can be used for relatively long period of time without alteration. However, as the achievement is nearly impossible, the employee may be frustrated due to the constant adverse variances.**
- **Normal Standard: This standard is the average standard, which is attainable during the future period of time, which may be long enough to cover one business cycle. This standard will be revised only after one business cycle is over and thus frequent revision is not required. Normal standard may be useful for management in long term planning.**
- **Basic Standard: Basic Standard is the standard, which is established for an unaltered use for an indefinite period, which may be a very long period of time. Basic standards are revised very rarely, and hence the fluctuations in the costs and prices are not reflected in this standard.**

CHAPTER – 10: STANDARD COSTING (Contd.)

- **Expected Standard: An Expected Standard is a standard, which, it is anticipated, can be attained during a future specified standard period. This standard is quite attainable, it is consistent and hence fulfils all the purposes of a good standard. It provides incentive to improve performance and get the better of the adverse conditions. These standards are formulated after making allowance for the cost of normal spoilage, cost of idle time due to machine breakdowns, and the cost of other events, which are unavoidable in normal efficient operations. Thus all the normal losses are taken into consideration. These standards are most accurate and very useful to the management in product costing, inventory valuations, estimates, analyses, performance evaluation, planning, and employee motivation for managerial decision-making.**
- **Historical Standard: This is the average standard, which has been achieved in the past. This standard tends to be a loose standard because there is a possibility that the average past performance may include inefficiencies, which will be passed on the new standards. However the utility of these standards is that past performance can be used as a basis for setting of standard in future.**

CHAPTER – 10: STANDARD COSTING (Contd.)

10.4 Setting of Standard Costs

- **Direct Material Cost Standard: The establishment of standard cost for direct materials involves the determination of, a] standard quantity of standard raw materials and b] standard price of raw material consumed. The standard quantity of materials is determined with the help of production department and while fixing the same; normal or inevitable losses are taken into consideration. The cost accounting department in co-operation with the purchase department determines standard price of material consumed. Recent prices, past prices and the likely trend of prices in the future are taken into consideration while fixing the standard prices. Similarly stock on hand, purchase orders already placed and likely fluctuations in the price should also be taken into consideration while fixing the material price standards.**
- **Direct Labour: Labour is also an important element of cost and the standard labour cost indicates the labour cost that should be incurred. Two factors need to be taken into consideration while fixing the standard labour cost. The first one is the standard time and the second one is the standard rate. For setting the standard time, it is necessary to conduct time and motion study with the help of Work Study Engineer. Firstly motion study is conducted to identify unnecessary motions and then to eliminate them. After elimination of unnecessary motions, standard time is allotted to the motions that are required to be performed for producing the product. While determining the standard time, allowance is made for normal idle time to cover mental and physical fatigue. The standard wage rate is fixed after considering the level of rates in the market, the degree of skill required for performing the job, the availability of manpower and the wage structure in the concerned industry. Concept of 'Standard Hour' is extremely important in setting the standards for labour. It is a hypothetical hour, which represents the amount of work, which should be performed in one hour under standard conditions.**

CHAPTER – 10: STANDARD COSTING (Contd.)

- **Factory Overhead Standards: Setting of standard for overhead costs, there is a need to determine, a] standard capacity and b] standard overhead cost for that capacity. The standard overhead cost can be computed using normal capacity. Normal capacity is not the total installed capacity but it is the practical capacity, which is based on the resources available and efficient utilization of the same. After this the standard overheads are fixed. In case of variable overheads, since they remain constant per unit of the production, it is necessary to calculate only standard variable overhead rate per unit or per hour. In case of fixed overheads, budgeted fixed overheads and budgeted production are to be taken into consideration. A standard rate of fixed overhead per unit is then computed by dividing the budgeted fixed overheads by the budgeted production.**
- **Direct Expenses: If at all there are some items of standard expenses, rate per unit of the same may be determined on the basis of budgeted output and budgeted direct expenses.**

10.5 Variance Analysis

After setting the standards and standard costs for various elements of cost, the next important step is to compute variances for each element of cost. Variance is the difference between the standard cost and the actual cost. In other words it is the difference between what the cost should have been and what is the actual cost.

A. MATERIAL COST VARIANCE

- ***Material Cost Variance:*** **Standard Cost of Material Consumed for Actual Production – Actual Cost**

CHAPTER – 10: STANDARD COSTING (Contd.)

If the actual cost of material consumed is less than the standard cost of material consumed, the variance is 'favourable', otherwise it is adverse.

- **Material Price Variance: Actual Quantity [Standard Price – Actual Price]**
- **Material Quantity [Usage] Variance: Standard Price [Standard Quantity – Actual Quantity]**

Illustration No.1] Calculate Material Variances from the following details.

Standard quantity of materials for producing 1 unit of finished product 'P' is 5 kg. The standard price is Rs.6 per kg. During a particular period, 500 units of 'P' were produced. Actual material consumed was 2700 kg at a cost of Rs.16, 200.

Solution:

I] Material Cost Variance = Standard Cost of Materials – Actual Cost

500 units 5 kg Rs.6 – Rs.16, 200

Rs.15, 000 – Rs.16, 200 = Rs.1, 200 [A]

II] Material Price Variance = Actual Quantity [Standard Price – Actual Price]

2, 700 [Rs.6 – Rs.6] = Nil

III] Material Quantity Variance = Standard Price [Std. Qty – Actual Qty]

Rs.6 [2500 – 2700] = Rs.1, 200 [A]

Reconciliation

Material Cost Variance = Material Price Variance + Material Quantity Variance.

Rs.1200 [A] = Rs. Nil + Rs.1, 200 [A]

CHAPTER – 10: STANDARD COSTING (Contd.)

- Material Mix Variance = Standard Cost of Standard Mix – Standard Cost of Actual Mix
- Material Yield Variance = SYR [Actual Yield – Standard Yield]

SYR = Standard Yield Rate, i.e. standard cost per unit of standard output.

B. LABOUR COST VARIANCE

- Labour Cost Variance = Standard Labour Cost for Actual Production – Actual Labour Cost
- Labour Rate Variance: Actual Hours Paid [Standard Rate – Actual Rate]
- Labour Efficiency Variance = Standard Rate [Standard Hours for Actual Output – Actual Hours

worked]

- Labour Mix Variance = Standard Cost of Standard Mix – Standard Cost of Actual Mix.
- Labour Yield Variance = Average Standard Wage Rate Per Unit [Actual Output – Standard

Output]

- Idle Time Variance = Abnormal Idle Time X Standard Rate.

CHAPTER – 10: STANDARD COSTING (Contd.)

C. OVERHEAD COST VARIANCE

- **Fixed Overhead Cost Variance: Standard Fixed Overheads for Actual Production – Actual Fixed Overheads.**
- **Fixed Overhead Expenditure Variance: Budgeted Fixed Overheads – Actual Fixed Overheads**
- **Fixed Overhead Volume Variance: Standard Rate [Budgeted Quantity – Actual Quantity]**
- **Fixed Overhead Efficiency Variance: Standard Rate [Standard Production – Actual Production]**
- **Fixed Overheads Capacity Variance: Standard Rate [Standard Quantity – Budgeted Quantity]**
- **Fixed Overhead Revised Capacity Variance = Standard Rate [Standard Quantity – Revised Budgeted Quantity]**
- **Fixed Overheads Calendar Variance = Standard Rate [Budgeted Quantity – Revised Budgeted**

Quantity]

- **Variable Overhead Cost Variance = Standard Variable Overheads for Actual Production – Actual Variable Overheads.**
- **Variable Overhead Expenditure Variance = Standard Variable Overheads for Standard Production – Actual Variable Overheads.**
- **Variable Overheads Efficiency Variance: Standard Rate [Standard Quantity – Actual Quantity]**