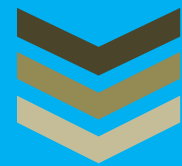


# Referencer for Quick Revision



## Intermediate Course Paper-3: Cost and Management Accounting

A compendium of subject-wise capsules published in the  
monthly journal "The Chartered Accountant Student"



**Board of Studies  
(Academic)  
ICAI**

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## Cost and Management Accounting - A Capsule for Quick Revision

In contemporary business environment, existence of an entity depends on the way it tackles the challenges posed by the competitive market conditions. Cost leadership being one of the competitive strategies, gives an added advantage to the entity. Cost being an important aspect for survival and growth in business, requires a mandatory awareness about the cost control and cost reduction. Fourth industrial revolution, also known as Industry 4.0, puts more emphasis on the digitization of information for effective decision-making, which enables an entity in keeping ahead in competition. Cost and Management accounting, a discipline of accounting, capacitates an entity in taking timely decisions by provisions of cost, profitability and other relevant information.

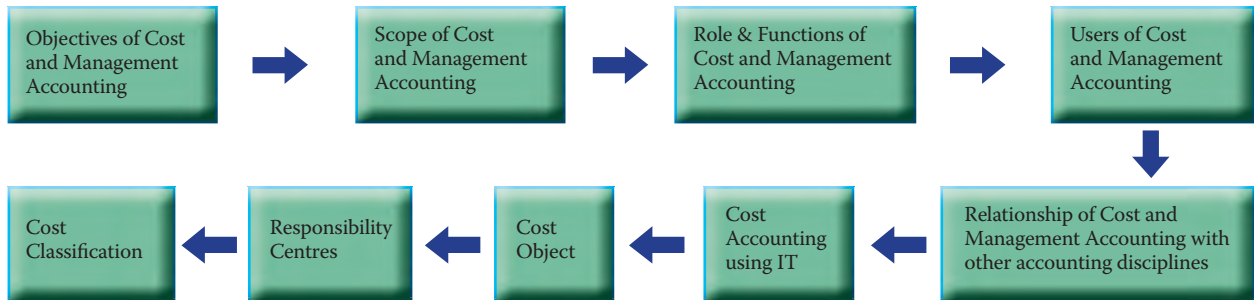
Chartered Accountants, as a global business solution provider, play an important role in business, have an onus by helping an entity to achieve its long-term objectives. In this direction, Cost and Management Accounting helps Chartered Accountants in taking timely and informed business decisions. In view of nobility of the objective to provide quality academic inputs to the students of CA course, the Board of Studies (BoS) of ICAI has decided to bring forth a capsule module of Cost and Management Accounting. Although, the capsule has been prepared keeping in view the new and revised Scheme of Education and Training of ICAI, the students of earlier Scheme may also be benefitted from it.

In the beginning, a chapter overview has been provided to present a holistic viewpoint on the topic's coverage. This capsule, though, facilitates the students in undergoing quick revision, under no circumstances; such revisions can substitute the detailed study of the material provided by the BoS.

Remember, "The expert in anything was once a beginner". Now, let us begin.

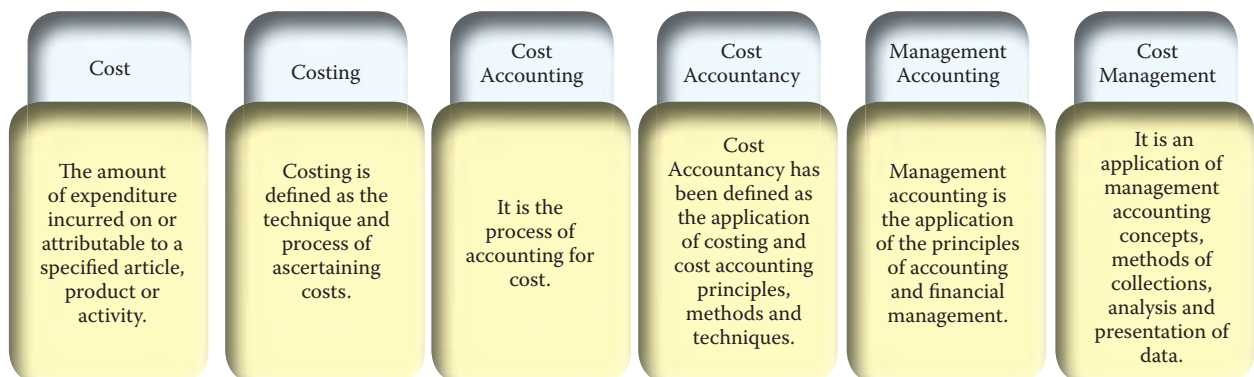
## Introduction to Cost and Management Accounting

### Chapter Overview



### Meaning of Terms used in Cost and Management Accounting

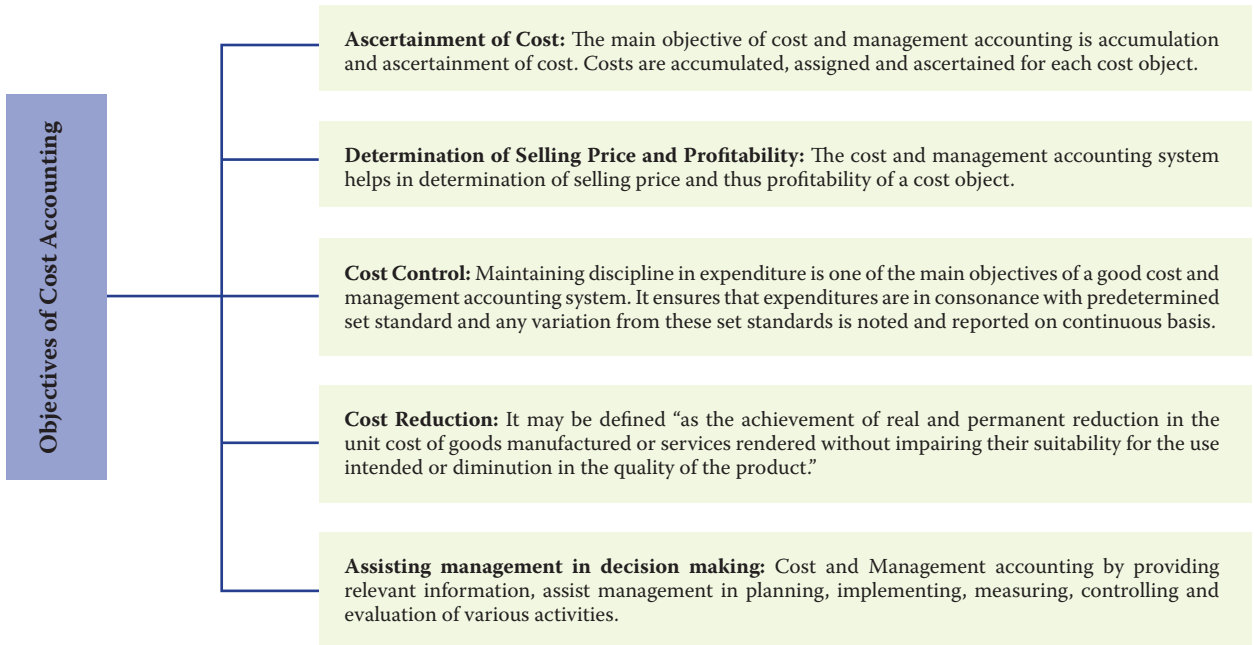
First of all, let us discuss the meaning of various terminologies used in Cost and Management Accounting to have a clear understanding about the subject.



# COST AND MANAGEMENT ACCOUNTING ||

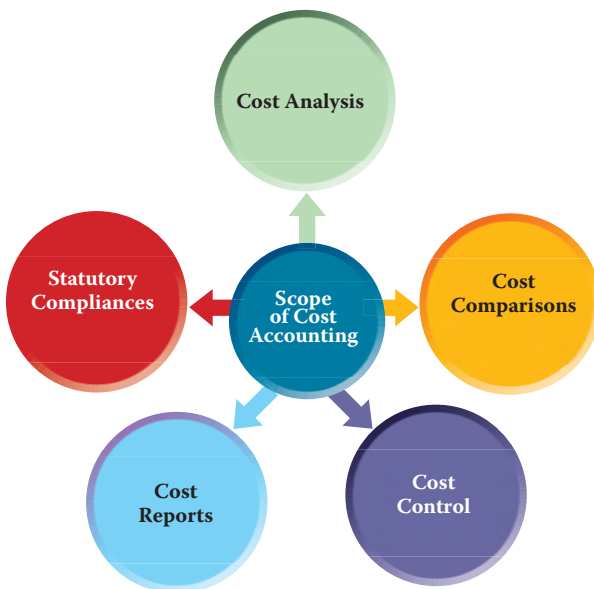
## Objectives of Cost Accounting

There are many objectives of cost accounting. The main objectives are explained as below. We also need to keep our focus on understanding the difference between Cost Control and Cost Reduction.



## Scope of Cost Accounting

We also need to know various scopes of cost accounting. Cost ascertainment and the process of cost accounting are the major scopes. The other scopes are presented.



## Role and Functions of Cost and Management Accounting

### Role of a Cost and Management Accounting system

Provide relevant information to management for decision making

Assist management for planning, measurement, evaluation and controlling of business activities

Help in allocation of cost to products and inventories for both external and internal users.



### Functions of Cost and Management Accounting System

Collection and accumulation of cost for each element of cost

Assigning costs to cost objects to ascertain cost.

Sets budget and standards for a particular period or activity beforehand and these are compared with the assigned and ascertained cost.

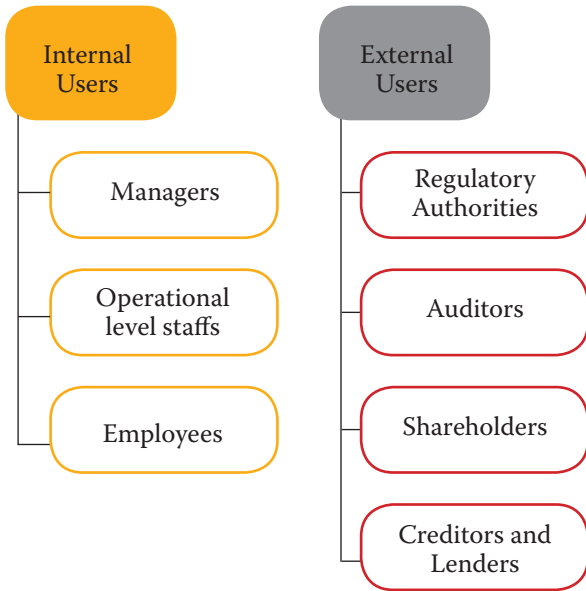
Provision of relevant information to the management for decision making.

To gather data like time taken, wastages, process idleness etc., analyse the data, prepare reports and take necessary actions

# COST AND MANAGEMENT ACCOUNTING

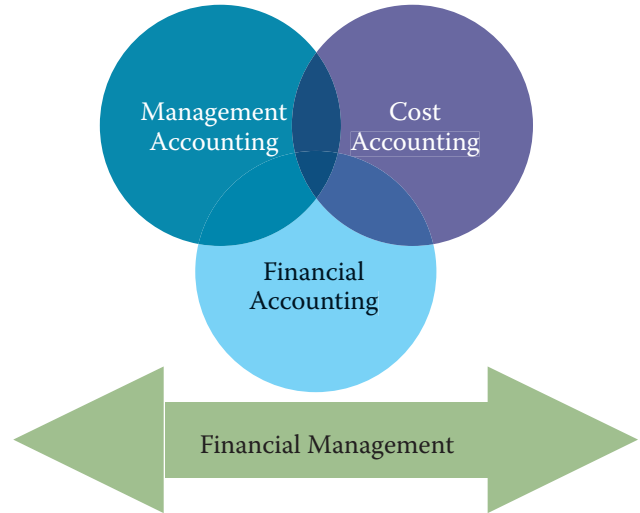
## Users of Cost and Management Accounting

Cost and Management Accounting information which are generated or collected are used by various stakeholders. The users of the information can be broadly categorized as below:



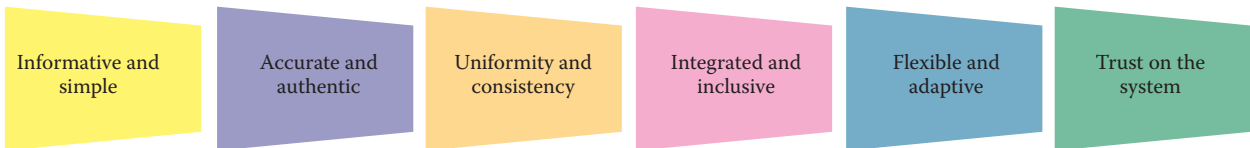
## Relationship of Cost Accounting, Management Accounting, Financial Accounting and Financial Management

There is a close relationship between various disciplines like Cost Accounting, Management Accounting, Financial Accounting and Financial Management. Sometimes these disciplines are interrelated and dependent on each other also.



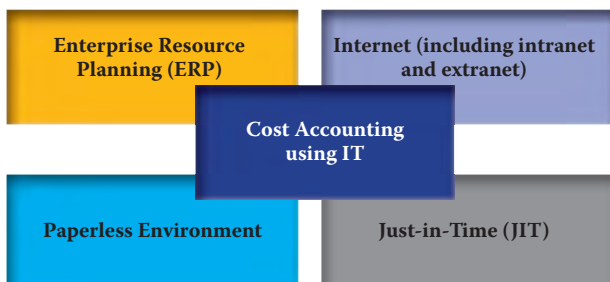
## Essentials of a good Cost Accounting System

The essential features which a cost accounting system should possess are depicted as below:



## Cost Accounting using Information Technology

With the use of information technology, the cost accounting system gets integrated and automated. The basic features are depicted as below:



## Cost Objects

It is very important to understand the meaning of cost object, cost unit and cost driver. Their meaning alongwith examples are illustrated below.

**Cost Object:** Cost object is anything for which a separate measurement of cost is required. Cost object may be a product (book), a service (airline), a project, a customer, a brand category etc.

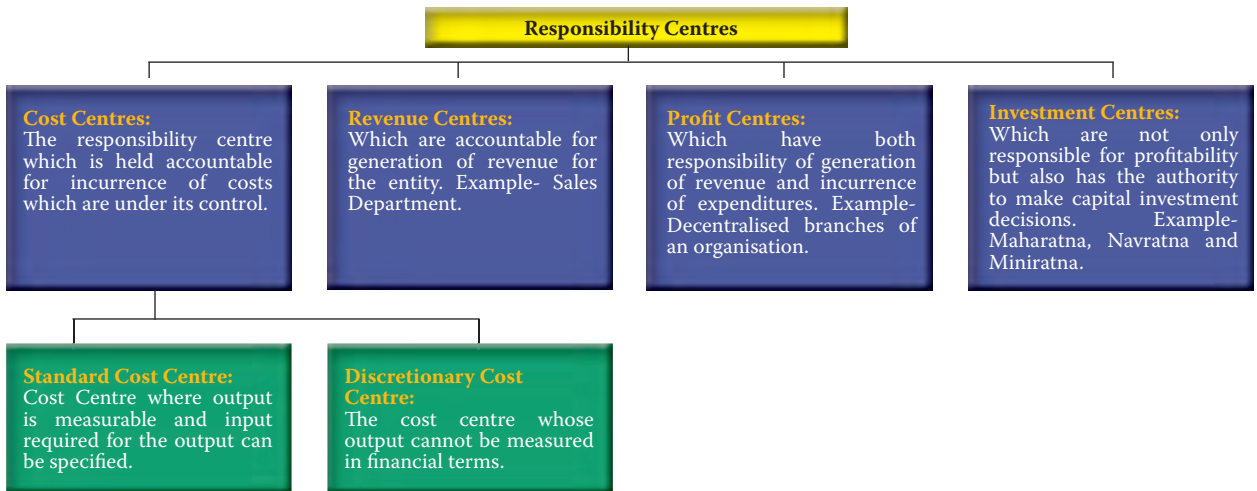
**Cost Units:** It is a unit of product, service or time (or combination of these) in relation to which costs may be ascertained or expressed. Example for power industry is kilo Watt hour (kWh).

**Cost Drivers:** A Cost driver is a factor or variable which effect level of cost. Example for a purchase department is number of purchase orders.

# COST AND MANAGEMENT ACCOUNTING ||

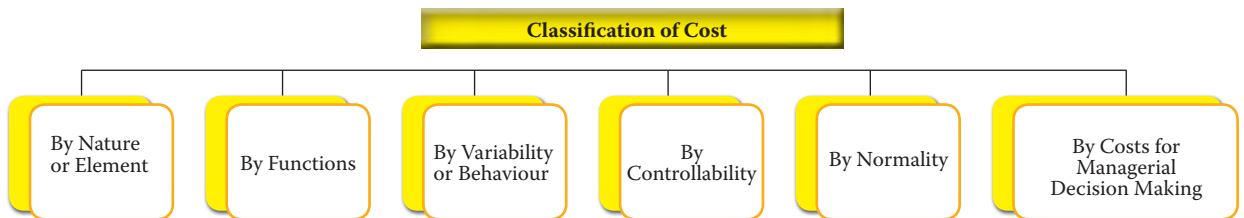
## Responsibility Centres

To have a better control over the organisation, management delegates its responsibilities and authorities to various departments or persons, which are known as responsibility centres. There are four types of responsibility centres as discussed below:

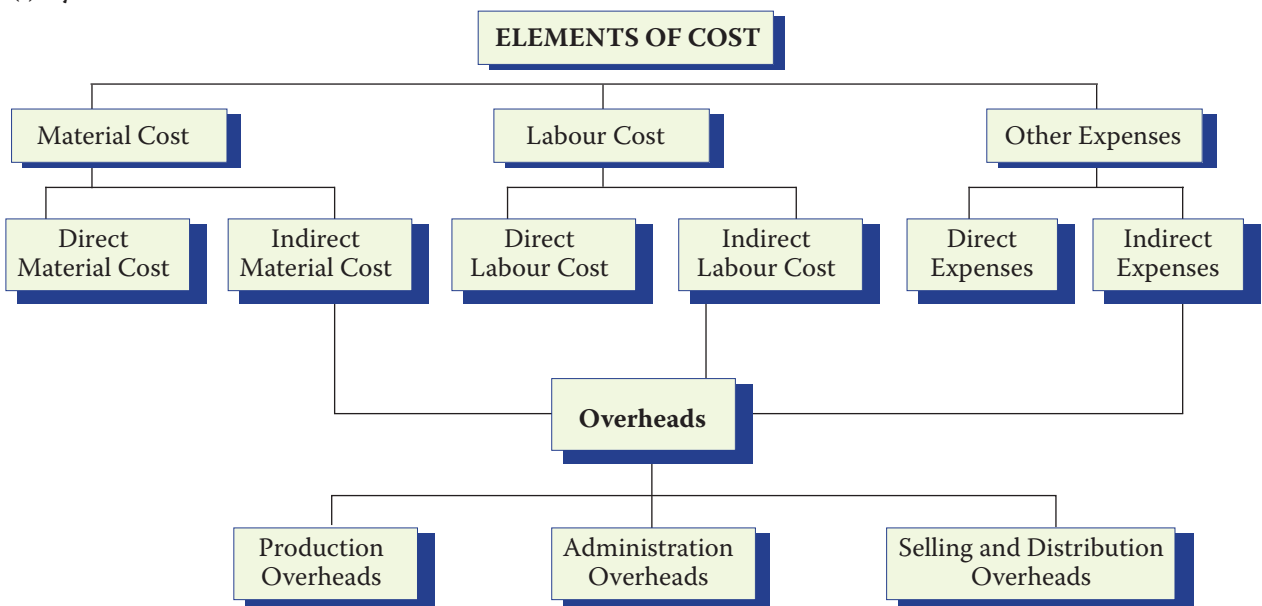


## Classification of Cost

Classification of cost basically means grouping of cost according to their common features. The important ways of classification of cost are illustrated as below:

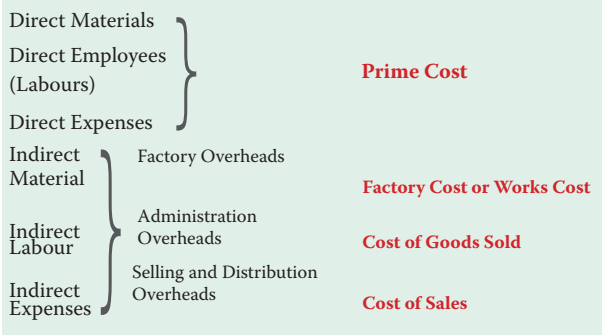


### (i) By Nature or Element



# COST AND MANAGEMENT ACCOUNTING

## (ii) By Functions



## (iii) By Variability or Behaviour



## (vi) By Cost for Managerial Decision Making

- (a) **Pre determined Cost** - A cost which is computed in advance before production or operations start
- (b) **Standard Cost** - A pre-determined cost, which is calculated from managements 'expected standard of efficient operation' and the relevant necessary expenditure
- (c) **Marginal Cost** - The amount at any given volume of output by which aggregate costs are changed if the volume of output is increased or decreased by one unit
- (d) **Estimated Cost** - The expected cost of manufacture, or acquisition, often in terms of a unit of product computed on the basis of information available in advance of actual production or purchase
- (e) **Differential Cost** - It represents the change (increase or decrease) in total cost (variable as well as fixed) due to change in activity level, technology, process or method of production, etc.
- (f) **Imputed Costs** - These costs are notional costs which do not involve any cash outlay
- (g) **Capitalised Costs** - These are costs which are initially recorded as assets and subsequently treated as expenses.
- (h) **Product Costs** - These are the costs which are associated with the purchase and sale of goods (in the case of merchandise inventory).
- (i) **Opportunity Cost** - This cost refers to the value of sacrifice made or benefit of opportunity foregone in accepting an alternative course of action

## (iv) By Controllability

- Controllable Costs:** Cost that can be controlled
- Uncontrollable Costs:** Costs which cannot be influenced or controlled

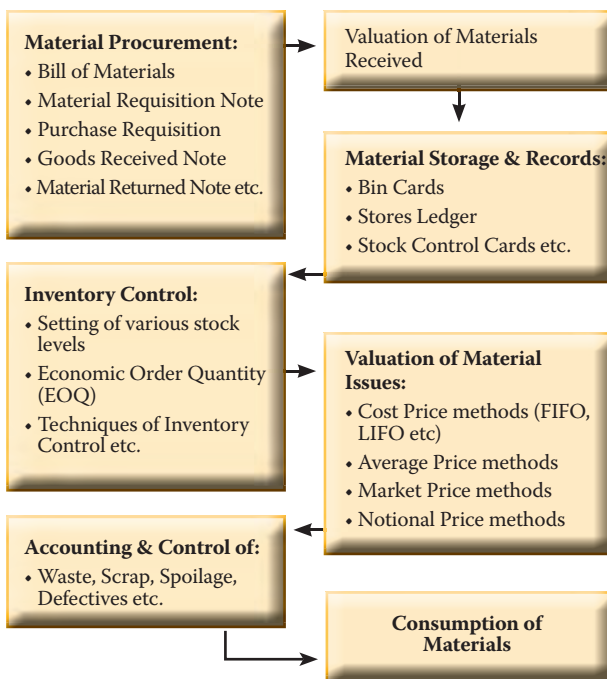
## (v) By Normality

- Normal Cost** - It is the cost which is normally incurred
- Abnormal Cost** - It is the cost which is not normally incurred

- (j) **Out-of-pocket Cost** - It is that portion of total cost, which involves cash outflow
- (k) **Shut down Costs** - Those costs, which continue to be incurred even when a plant is temporarily shut-down e.g. rent, rates, depreciation, etc
- (l) **Sunk Costs** - Historical costs incurred in the past are known as sunk costs. They play no role in decision making in the current period.
- (m) **Absolute Cost** - These costs refer to the cost of any product, process or unit in its totality.
- (n) **Discretionary Costs** - Such costs are not tied to a clear cause and effect relationship between inputs and outputs.
- (o) **Period Costs** - These are the costs, which are not assigned to the products but are charged as expenses against the revenue of the period in which they are incurred.
- (p) **Engineered Costs** - These are costs that result specifically from a clear cause and effect relationship between inputs and outputs.
- (q) **Explicit Costs** - These costs are also known as out of pocket costs and refer to costs involving immediate payment of cash. Salaries, wages, postage and telegram, printing and stationery, interest on loan etc.
- (r) **Implicit Costs** - These costs do not involve any immediate cash payment.

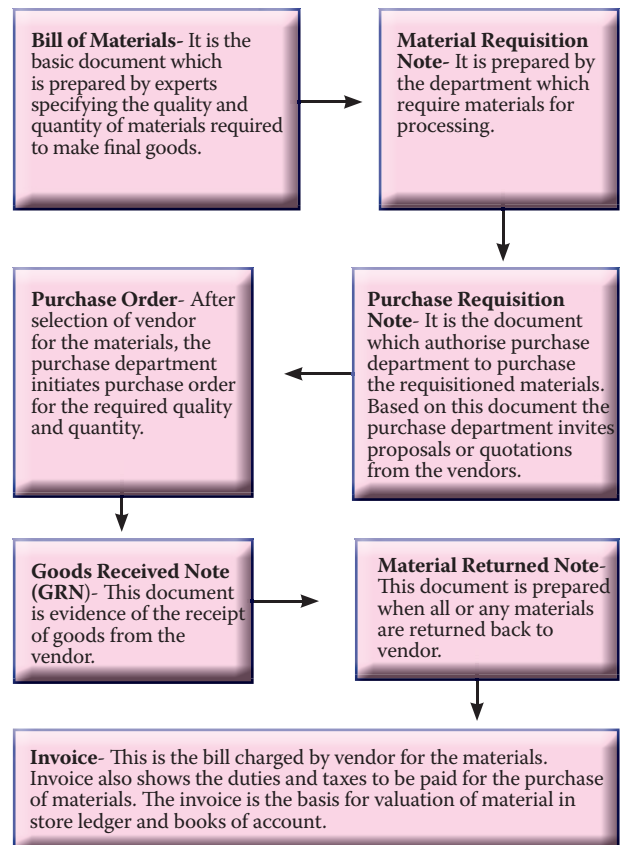
## Material Cost

### Chapter Overview



### How Material is Procured?

Material requirement procedure can be understood with the help of the following diagram. We should focus on various documents in general required and also should keep in mind the departments who initiate these documents.



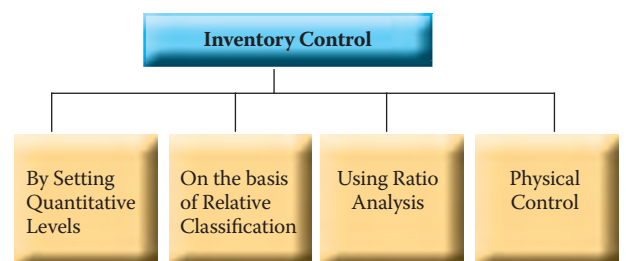
### Value at Which Materials are Recorded in Stores Ledger

From the following table we can understand the procedure of calculating total value at which materials are to be recorded in stores ledger.

Particulars	Amount	Amount
<b>Purchase Price</b>		XXX
<b>Additions/ Inclusions:</b>		
Insurance charges	XXX	
Commission or brokerage	XXX	
Freight inward	XXX	
Cost of containers	XXX	
Wastage due to normal reasons	XXX	
Duties and Taxes for which no credit or refund is available	XXX	XXX
<b>Deduction/ Exclusions:</b>		
Discount, Rebate and Subsidy	XXX	
Duties and Taxes for which credit or refund is available	XXX	
Penalties and charges	XXX	
Other expenses not borne	XXX	(XXX)
		XXX

### How Inventory is Controlled?

Inventory control is the function of ensuring that sufficient inventory is retained to meet all requirements. In inventory control, it is essential to balance between overstock and understock. Various techniques of inventory control are illustrated below:





## (a) Inventory Control- By Setting Quantitative Levels



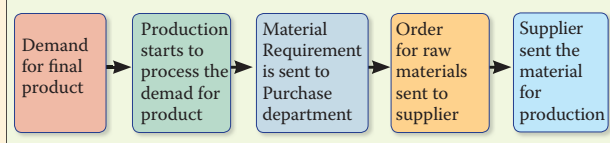
**(i) Re-order Stock Level (ROL):** Maximum Consumption × Maximum Re-order Period  
 Or, ROL = Minimum Stock Level + (Average Rate of Consumption × Average Re-order period)

**(ii) Re-Order Quantity/ Economic Order Quantity (EOQ):**

$$EOQ = \sqrt{\frac{2x \text{ Annual Requirement (A)} \times \text{Cost per order (O)}}{\text{Carrying Cost per unit per annum (C)}}$$

### Just in Time (JIT) Inventory Management

JIT is a system of inventory management with an approach to have a zero inventories in stores. According to this approach material should only be purchased when it is actually required for production.



**(iii) Minimum Stock Level:**

Minimum Stock Level = Re-order Stock Level - (Average Consumption Rate × Average Re-order Period)

**(iv) Maximum Stock Level:**

Maximum Stock Level = Re-order Level + Re-order Quantity - (Minimum Consumption Rate × Minimum Re-order Period)

**(v) Average Inventory Level:**

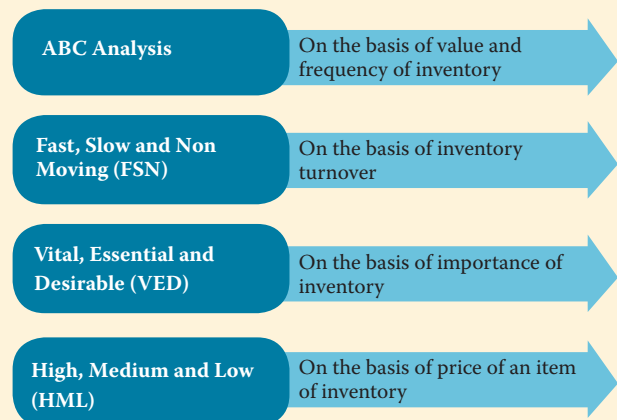
Average Stock Level = Minimum Stock Level + 1/2 Re-order Quantity

Or

Average Stock Level =

$$\frac{\text{Maximum Stock Level} + \text{Minimum Stock Level}}{2}$$

**(b) On the basis of Relative Classification**



**(c) Using Ratio Analysis**

**(i) Input Output Ratio:** Input-output ratio is the ratio of the quantity of input of material to production and the standard material content of the actual output.

**(ii) Inventory Turnover Ratio:**

Inventory Turnover Ratio =

$$\frac{\text{Cost of materials consumed during the period}}{\text{Cost of average stock held during the period}}$$

**(d) Physical Control**

**(i) Two Bin System:** Two Bin System is supplemental to the record of respective quantities on the bin card and the stores ledger card.

**(ii) Establishment of system of budgets:** Based on this, inventories requirement budget can be prepared. Such a budget will discourage the unnecessary investment in inventories.

**(iii) Perpetual inventory records and continuous stock verification :**

Perpetual inventory represents a system of records maintained by the stores department in the form of Bin cards and Stores ledger.

**(iv) Continuous Stock Verification:**

The system of continuous stock-taking consists of physical verification of items of inventory.

## Valuation of Material Issue

### Cost Price Methods

- Specific Price Method
- First-in First-out (FIFO) method
- Last-in-First-out (LIFO) method
- Base Stock Method

### Average Price Methods

- Simple Average Price Method
- Weighted Average Price Method

### Market Price Methods

- Replacement Price Method
- Realisable Price Method

### Notional Price Methods

- Standard Price Method
- Inflated Price Method
- Re-use Price Method

Some of the techniques are discussed as follows:

**(i) First-in First-out method (FIFO):** The materials received first are to be issued first when material requisition is received. Materials left as closing stock will be at the price of latest purchases.

**(ii) Last-in First-out method (LIFO):** The materials purchased last are to be issued first when material requisition is received. Closing stock is valued at the oldest stock price.

*(Accounting Standard- 2 and Ind AS-2 do not allow LIFO method for inventory valuation, however, for academic knowledge it may be studied).*

**(iii) Simple Average Method:** Material Issue Price =

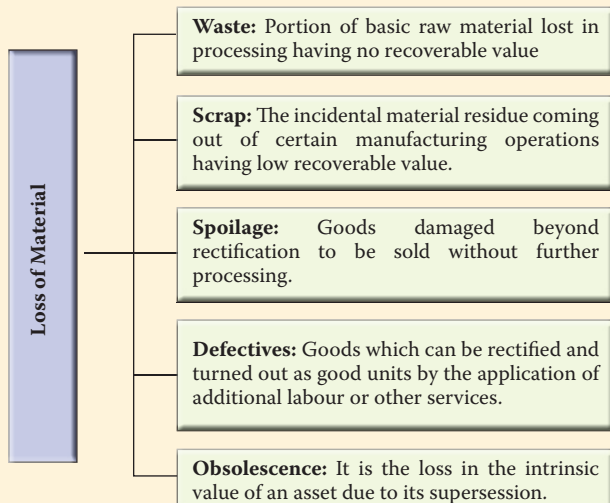
$$\frac{\text{Total of unit price of each purchase}}{\text{Total Nos of Purchases}}$$

**(iv) Weighted Average Price Method:** This method gives due weightage to quantities purchased and the purchase price to determine the issue price.

Weighted Average Price =

$$\frac{\text{Total cost of materials in stock}}{\text{Total quantity of materials}}$$

## Normal and Abnormal Loss of Materials



## Treatment of Loss of Material

**(i) Treatment of Waste**

**Normal-** Cost of normal waste is absorbed by good production units.

**Abnormal-** The cost of abnormal loss is transferred to Costing Profit and loss account.

**(ii) Treatment of Scrap**

**Normal-** The cost of scrap is borne by good units and income arises on account realisable value is deducted from the cost.

**Abnormal-** The scrap account should be charged with full cost. The credit is given to the job or process concerned. The profit or loss in the scrap account, on realisation, will be transferred to the Costing Profit and Loss Account.

**(iii) Treatment of Spoilage**

**Normal-** Normal spoilage (i.e., which is inherent in the operation) costs are included in costs either charging the loss due to spoilage to the production order or by charging it to production overhead so that it is spread over all products.

**Abnormal-** The cost of abnormal spoilage (i.e., arising out of causes not inherent in manufacturing process) is charged to the Costing Profit and Loss Account.

**(iv) Treatment of Defectives:**

**Normal-** The cost less realisable value on sale of defectives are charged to material cost of good production.

**Abnormal-** The material cost of abnormal loss is transferred to costing profit and loss account.

**(v) Treatment of Obsolescence:**

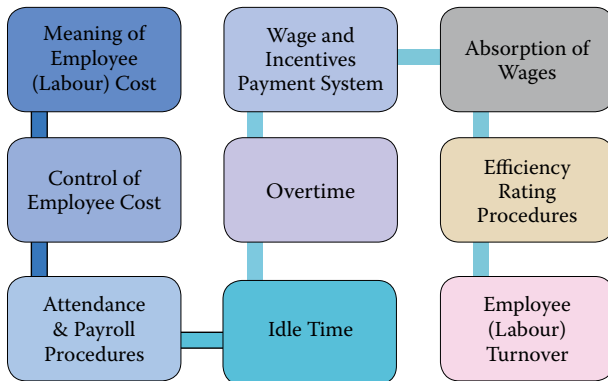
The value of the obsolete material held in stock is a total loss and immediate steps should be taken to dispose it off at the best available price. The loss arising out of obsolete materials on abnormal loss does not form part of the cost of manufacture.

## CA INTERMEDIATE - PAPER 3 - COST AND MANAGEMENT ACCOUNTING

In today's business world, Chartered Accountants are very much part of the decision-making team of any organisation. They are rigorously involved in decision-making process with the help of Cost and Management Accounting tools. While being associated with an industry, a Chartered Accountant may also be involved in monitoring, measuring, compensating appropriately to the employees (labour) to achieve economy in cost as well as retain best talent, efficiency in performance and effectiveness in desired output, side by side ascertaining cost for a cost object through elementwise collection of cost, accumulation of the costs into a cost sheet. While this edition of Cost & Management Accounting (CMA) Capsule discusses the topic 'Employee (Labour) Cost' covering Wages and Incentive Payment system to employees, its absorption; efficiency rating procedures; treatment of overtime, idle time; Employee Turnover along with topic 'Cost Sheet' covering its classification, format and advantages, students are advised to thoroughly go through the same to meticulously understand the concepts before attempting questions.

### EMPLOYEE (LABOUR) COST

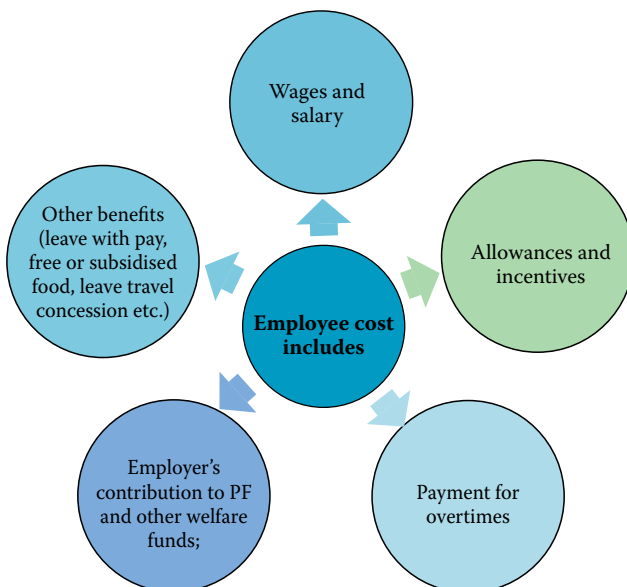
#### Points of Discussion



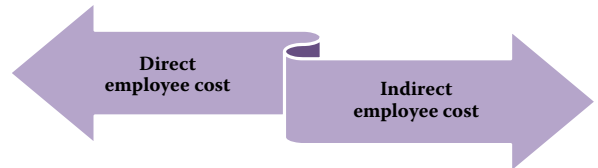
#### Meaning of Employee (Labour) Cost

##### EMPLOYEE (LABOUR) COST

- Benefits paid or payable to the employees of an entity, whether permanent, or temporary for the services rendered by them.
- Includes payments made in cash or kind.



#### Classification of Employee cost:



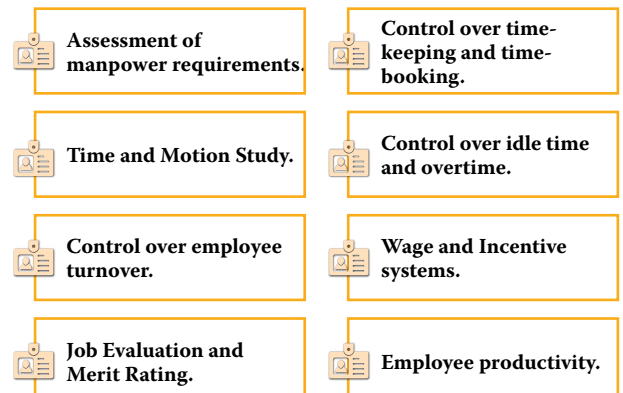
Direct employee cost	Indirect employee cost
1. Cost of employees, directly engaged in the production process.	1. Cost of employees who are not directly engaged in the production process.
2. Easily identifiable and allocable to cost unit.	2. Apportioned on some appropriate basis.
3. Varies with the volume of production and has positive relationship with the volume.	3. May not vary with the volume of production.

#### Employee Cost Control

##### EMPLOYEE (LABOUR) COST CONTROL

- To control over the cost incurred on employees.
- To keep the wages per unit of output as low as possible.
- To give the employees an appropriate compensation and encourage efficiency.

#### Factors for the Control of Employee Cost:

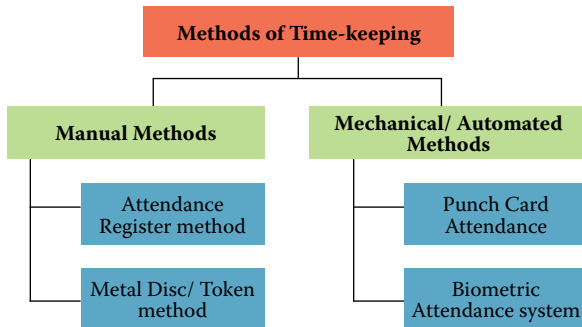


**Time-keeping:** A record of total time spent by the employees in a factory.

**Objectives of Time Keeping:**

- (i) For the preparation of payrolls.
- (ii) For calculating overtime.
- (iii) For ascertaining employee cost.
- (iv) For controlling employee cost.
- (v) For ascertaining idle time.
- (vi) For disciplinary purposes.
- (vii) For overhead distribution.

**Methods of Time-keeping**



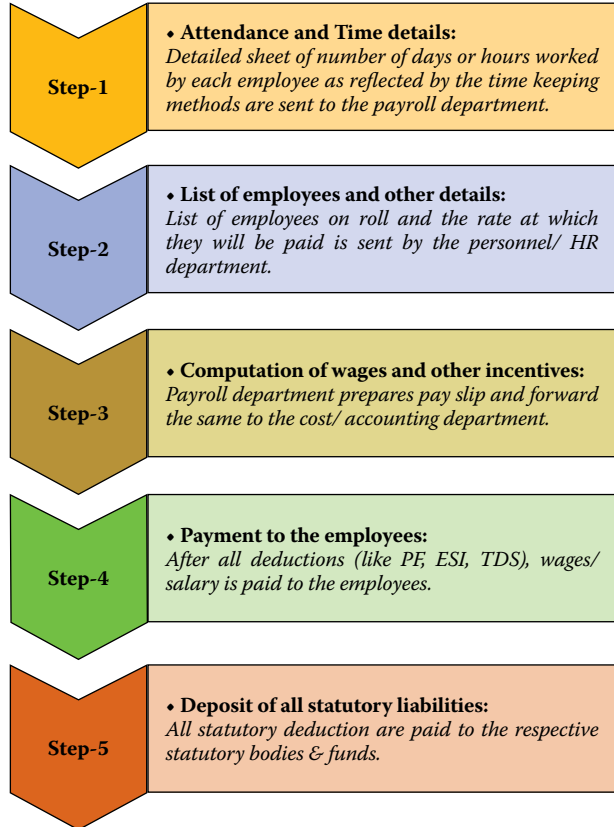
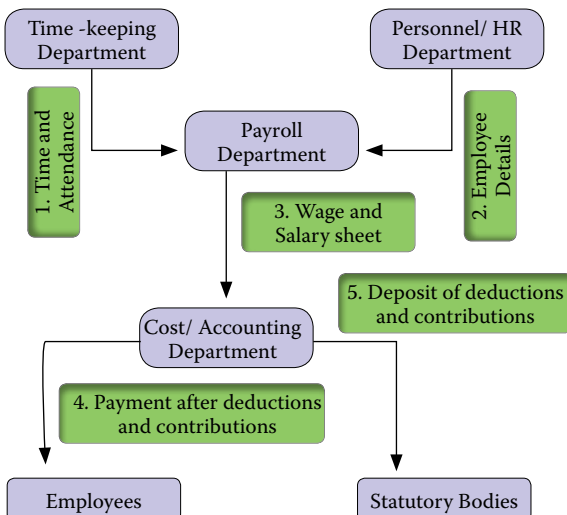
**Time-Booking:** A method wherein each activity of an employee is recorded.

**Objectives of Time Booking:**

- (i) To compute the cost of the job or activity.
- (ii) To measure efficiency.
- (iii) To analyse the variance in time with respect to the standard time.

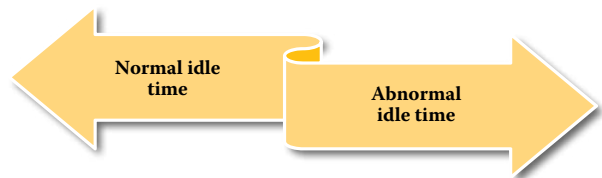
For the collection of all such data, a separate record, generally known as Time (or Job) card, is kept.

**Payroll Procedures of Employees**



**Idle Time**

The time during which no production is carried-out because the worker remains idle but are paid.



**Normal Idle Time:** Time which cannot be avoided or reduced in the normal course of business.



**Causes:**

- Time lost between factory gate and the place of work,
- Interval between one job and another,
- Setting up time for the machine,
- Normal rest time, break for lunch etc.

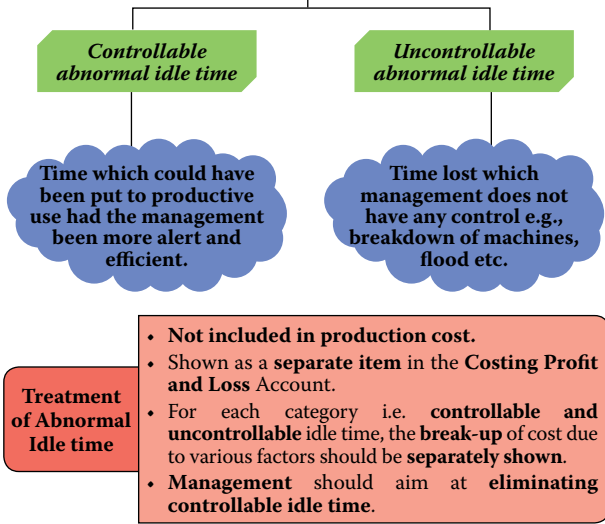
**Treatment of Normal Idle Time**

- Treated as a **part of cost of production.**
- In the case of **direct workers** an allowance for normal idle time is considered while **setting of standard hours** or standard rate.
- In case of **indirect workers**, normal idle time is considered for the **computation of overhead rate.**

**Abnormal Idle Time:** Apart from normal idle time, there may be factors which give rise to abnormal idle time.



- Causes:**
- Lack of coordination,
  - Power failure, Breakdown of machines,
  - Non-availability of raw materials,
  - Strikes, lockouts, poor supervision, fire, flood etc.



## Overtime

**Overtime: Work done beyond normal working hours.**

Overtime Payment = Wages paid for overtime at normal rate + Premium (extra) payment for overtime work

Overtime premium:

Extra amount so paid over the normal rate

<b>CAUSES</b>	<b>TREATMENT</b>
Urgency of work.	Charged to job directly.
To make up shortfall in production due to some unexpected development.	Treated as overhead cost of the particular cost centre which works overtime.
To make up shortfall in production due to some fault of management.	If overtime is worked in a department due to the fault of another department, then premium should be charged to the latter department.
To take advantage of an expanding market or of rising demand.	Overtime worked on account of abnormal conditions such as flood, etc., should be charged to Costing P/L Account.

## Systems of Wage Payment and Incentives

System of Wages Payment					
Time based	Output based	Combination of time and output based	Premium Bonus method	Group bonus scheme	Incentives for indirect workers

### Time based (Time Rate System):

Workers are paid on time basis i.e. hour, day, week, or month.

**Wages = Time Worked (Hours/ Days/ Months) × Rate for the time**

### Output Based (Piece Rate System):

Each operation, job or unit of production is termed a piece. A rate of payment, is fixed for each piece. The wages of the worker depend upon his output and rate of each unit of output.

**Wages = Number of units produced × Rate per unit**

### Premium Bonus Method:

The worker is guaranteed his daily wages, if output is below and up to standard. In case the task is completed in less than the standard time, the saved time is shared between the employees and the employer.

**HALSEY PREMIUM PLAN**

- A standard time is fixed for each job or process
- Worker gets his time rate even if he exceeds the standard time limit, since his day rate is guaranteed.
- If job done in less than the standard time, bonus equal to 50 percent of the wages of time saved is paid.

**Wages = Time taken × Time rate + 50% of time saved × Time rate**

<b>ADVANTAGES of HALSEY PREMIUM PLAN</b>	<b>DISADVANTAGES of HALSEY PREMIUM PLAN</b>
<ul style="list-style-type: none"> <li>• Time rate is guaranteed.</li> <li>• Opportunity for <b>increasing earnings</b> by increasing production.</li> <li>• System is <b>equitable</b> in as much as the employer gets a <b>direct return</b> for his efforts in improving production methods.</li> </ul>	<ul style="list-style-type: none"> <li>• Incentive is <b>not so strong</b> as with piece rate system.</li> <li>• <b>Harder the worker works, the lesser he gets</b> per piece.</li> <li>• Sharing principle may <b>not be liked by employees</b>.</li> </ul>

**ROWAN PREMIUM PLAN**

- Standard time allowance is fixed for performance of a job.
- Bonus is paid if time is saved.
- Bonus is that proportion of the time wages as time saved bears to the standard time.

$$\text{Time taken} \times \text{Rate per hour} + \frac{\text{Time Saved}}{\text{Time Allowed}} \times \text{Time taken} \times \text{Rate per hour}$$

**ADVANTAGES of ROWAN PREMIUM PLAN**

- A worker can never double his earnings even if there is bad rate setting.
- Suitable for encouraging moderately efficient workers.
- Sharing principle appeals to the employer as being equitable.

**DISADVANTAGES of ROWAN PREMIUM PLAN**

- System is a bit complicated.
- Incentive is weak at a high production level where the time saved is more than 50% of the time allowed.
- Sharing principle is not generally welcomed by employees.

**Absorption of Wages**

**ELEMENTS OF WAGES**

**Monetary payment**

- Basic wages,
- Dearness allowance,
- Overtime wages,
- Production bonus,
- Employer's contribution to PF, ESI and other funds,
- Leave pay, etc.

**Non-monetary benefits**

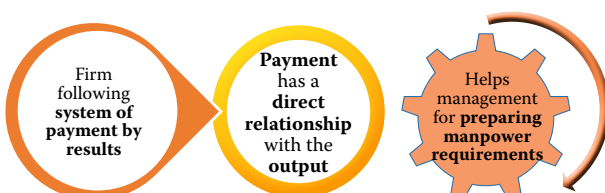
- Medical facilities;
- Educational and training facilities;
- Recreational and sports facilities;
- Housing and social welfare; and
- Cost of subsidised canteen and co-operative societies, etc.

**Efficiency Rating Procedures**

If the time taken by a worker on a job ≤ the standard time, then he is rated efficient.

$$\text{Efficiency in \%} = \frac{\text{Time allowed as per standard}}{\text{Time Taken}} \times 100$$

**Need for Efficiency rating:**



**Factors for increasing Employee productivity:**

Employing who possess right type of skill.

Placing the right type of person to the right job.

Training young and old workers by providing right types of opportunities.

Taking appropriate measures to avoid the situation of excess or shortage of employees.

Carrying out work study for fixation of wages.

**Employee (Labour) Turnover**

**EMPLOYEE TURNOVER**

Rate of change in the composition of employee force during a specified period measured against a suitable index.

**Methods to calculate Employee Turnover**

**Replacement Method**  
This considers actual replacement of employees irrespective of number of persons leaving the organisation

**Separation Method**  
This considers total number of employees separated

**Flux Method**  
This considers both the number of replacements as well as the number of separations

$$\text{Replacement method} = \frac{\text{Number of employees Replaced during the period}}{\text{Average number of employees during the period on roll}} \times 100$$

$$\text{Separation method} = \frac{\text{Number of employees Separated during the period}}{\text{Average number of employees during the period on roll}} \times 100$$

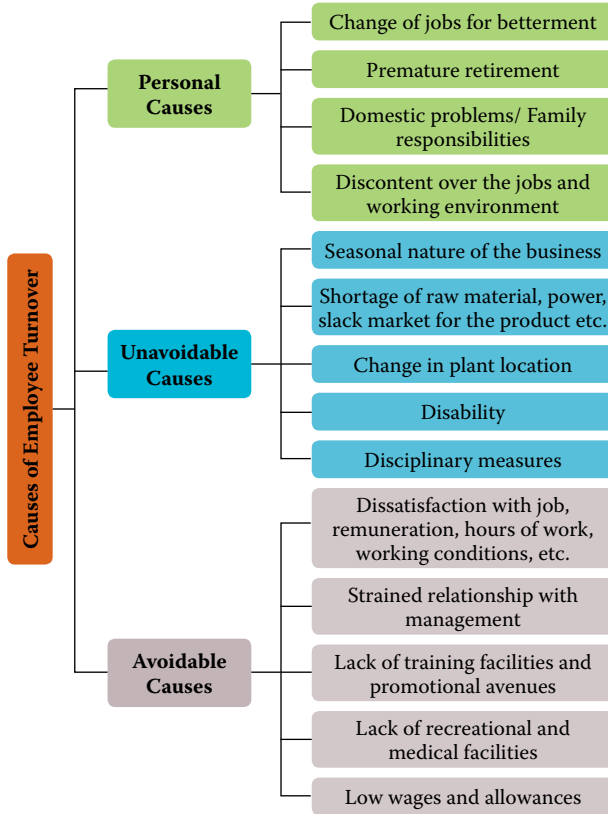
$$\text{Flux method} = \frac{\text{Number of employees Separated} + \text{Number of employees Replaced during the period}}{\text{Average number of employees during the period on roll}} \times 100$$

Or

$$\frac{\text{No. of Separations} + \text{No. of Accessions (i.e. No. of Replacements + No. of New Joinings)}}{\text{Average no. of employees during the period on roll}} \times 100$$

Newly recruited employees are also responsible for changes in the composition or work force, some management accountants feel to take new recruitment for calculating employee turnover. The total number of workers joining, including replacements, is called accessions.

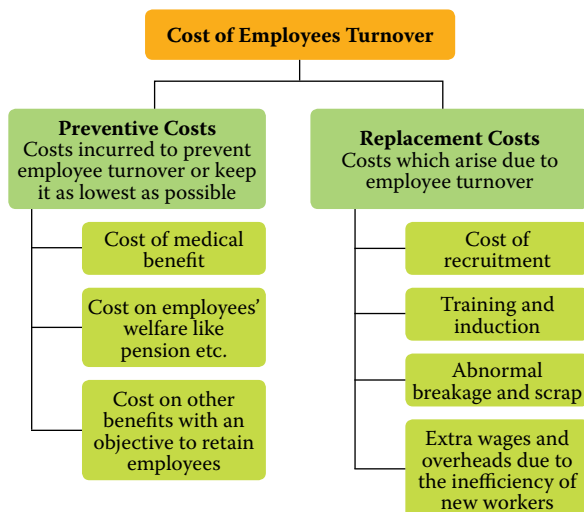
**Causes of Employee Turnover:**



**Effects of Employee Turnover:**

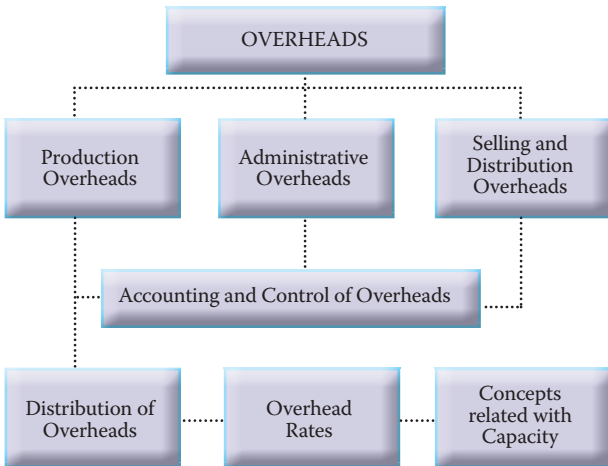
- Even flow of production is disturbed
- Efficiency of new workers is low
- Increased cost of training
- New workers cause increased breakage of tools
- Cost of recruitment

**Cost of Employees Turnover:**



## Overheads

### Chapter Overview



### Classification of Overheads

Overheads are the expenditure which can not be identified with a particular cost unit. Overheads can be classified as under.

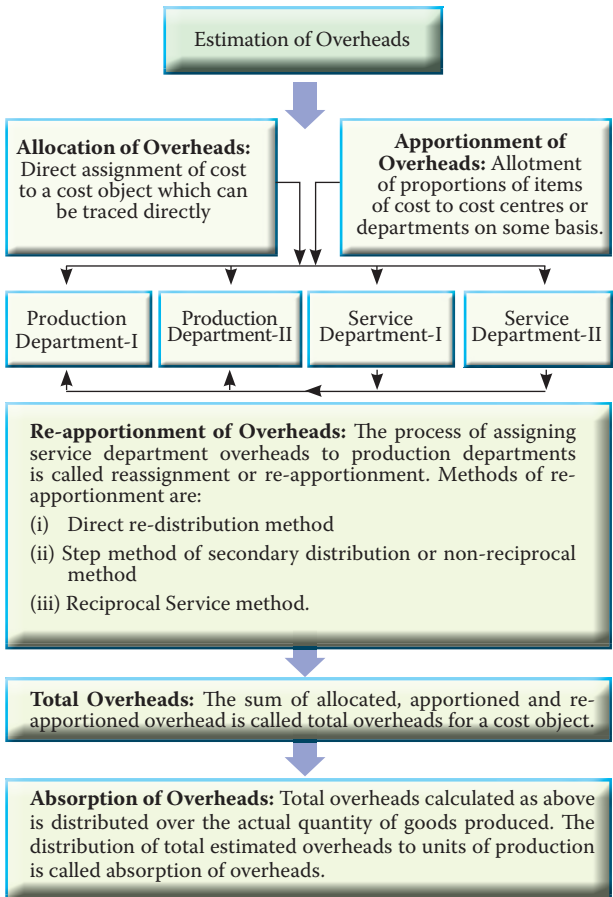
By Function	By Nature	By Element	By Control
<ul style="list-style-type: none"> <li>Factory or Manufacturing or Production Overhead</li> <li>Office and Administrative Overheads</li> <li>Selling and Distribution Overheads</li> </ul>	<ul style="list-style-type: none"> <li>Fixed Overhead</li> <li>Variable Overhead</li> <li>Semi-Variable Overheads</li> </ul>	<ul style="list-style-type: none"> <li>Indirect materials</li> <li>Indirect employee cost</li> <li>Indirect expenses</li> </ul>	<ul style="list-style-type: none"> <li>Controllable costs</li> <li>Uncontrollable costs</li> </ul>

### Functional Classification of Overheads

One of the most important ways of classifying overheads is as per their function. As per this classification overheads are classified as under.

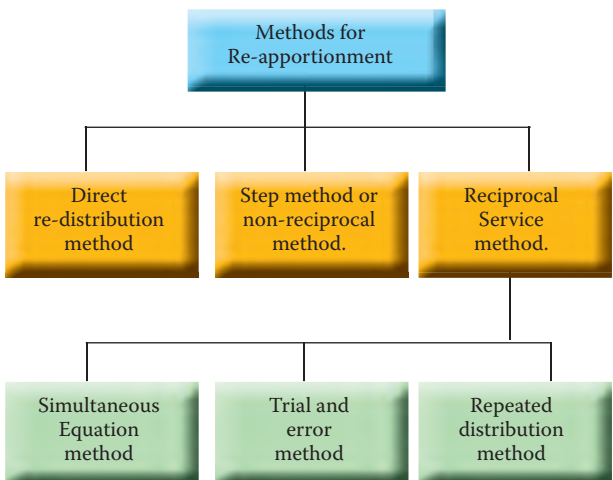
<b>Factory or Manufacturing or Production Overhead</b>	{	Indirect cost incurred for manufacturing or production activity in a factory. Manufacturing overhead includes all expenditures incurred from the procurement of materials to the completion of finished product.
<b>Office and Administrative Overheads</b>	{	Expenditures incurred on all activities relating to general management and administration of an organisation. It includes formulating the policy, directing the organisation and controlling the operations of an undertaking which is not related directly to production, selling, distribution, research or development activity or function.
<b>Selling and Distribution Overheads</b>	{	(i) Selling overhead: expenses related to sale of products and include all indirect expenses in sales management for the organisation. (ii) Distribution overhead: cost incurred on making product available for sale in the market.

### Steps for Distribution of Overheads



### Methods for Re-apportionment of Overheads

The re-apportionment of service department expenses over the production departments may be carried out by using any one of the following methods:





## Methods of Absorbing Overheads to various Products or Jobs

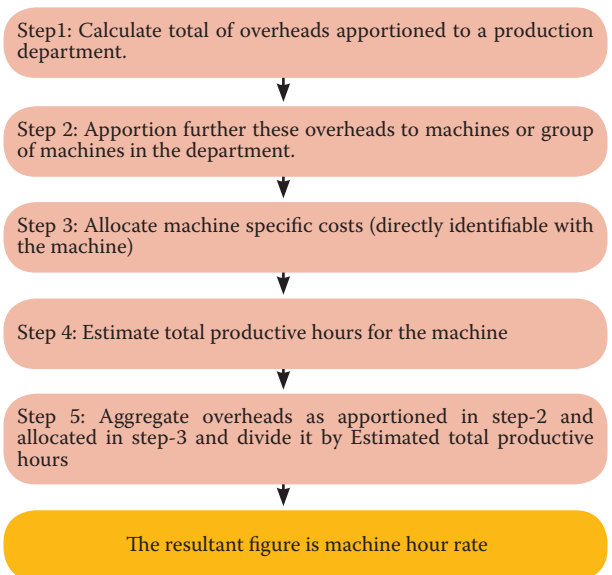
Several methods are commonly employed either individually or jointly for computing the appropriate overhead rate. The more common of these are:

Percentage of direct materials	Percentage of prime cost	Percentage of direct labour cost	Labour hour rate	Machine hour rate	Rate per unit of Output
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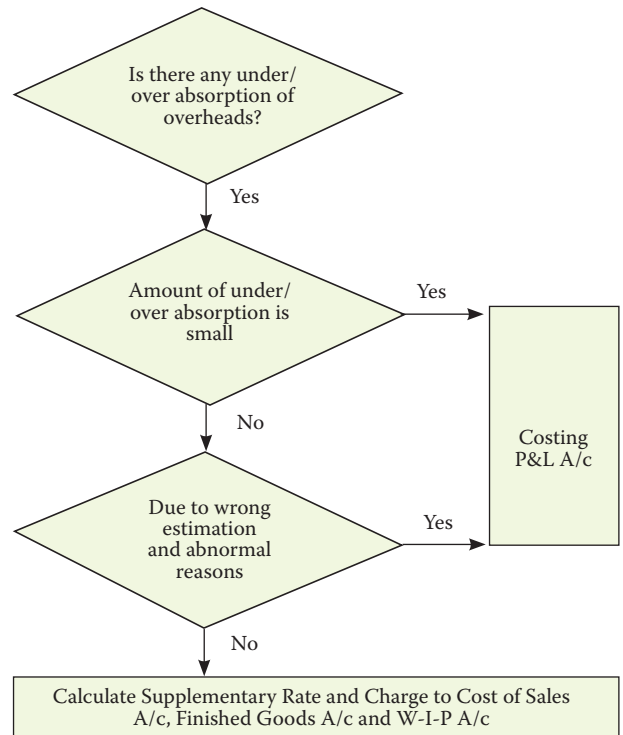
### Machine hour rate

Machine hour rate implies, cost of running a machine for an hour to produce goods.

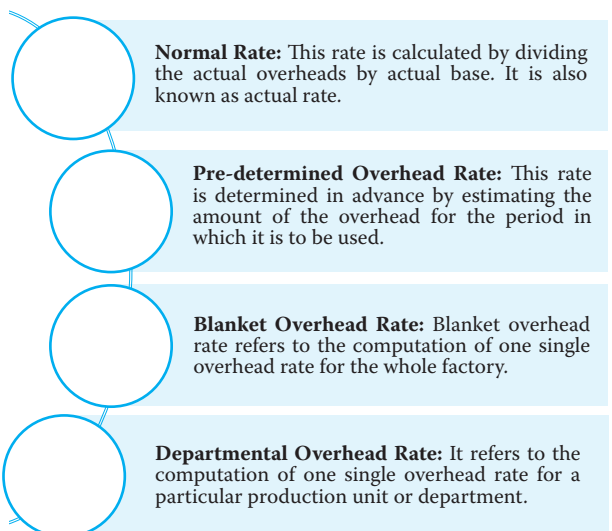
The steps involved in determining of Machine hour rate is as follows:



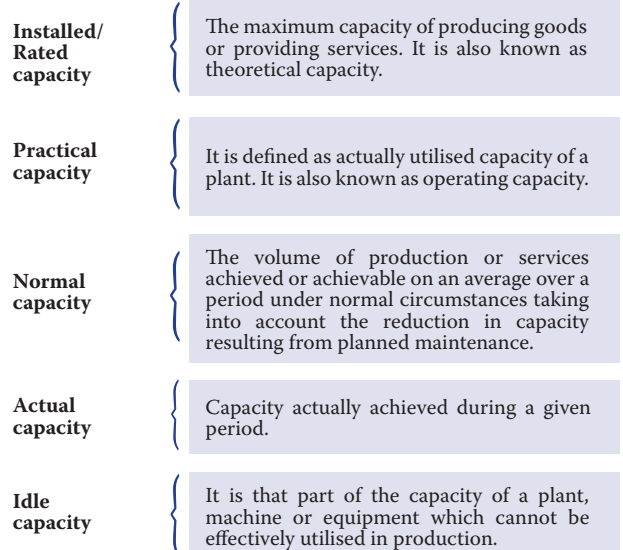
### Treatment of Under-absorption and Over-absorption of overheads in Cost Accounting



### Types of Overhead Rates



### Concepts related with Capacity



## Treatment of Certain Items in Cost Accounting

### Interest and financing charges

It includes any payment in nature of interest for use of non-equity funds and incidental cost that an entity incurs in arranging those funds. Interest and financing charges shall be presented in the cost statement as a separate item of cost of sales.

### Packing expenses

Cost of primary packing necessary for protecting the product or for convenient handling, should become a part of cost of production. The cost of packing to facilitate the transportation of the product from the factory to the customer should become a part of the distribution cost.

### Fringe benefits

These indirect benefits stand to improve the morale, loyalty and stability of employees towards the organisation. If the amount of fringe benefit is considerably large, it may be recovered as direct charge by means of a supplementary wage or labour rate; otherwise these may be collected as part of production overheads.

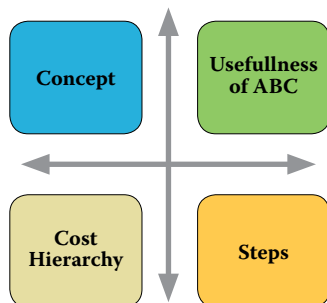
### Research and Development Expenses

If research is conducted in the methods of production, the research expenses should be charged to the production overhead; while the expenditure becomes a part of the administration overhead if research relates to administration. Similarly, market research expenses are charged to the selling and distribution overhead.

Development costs incurred in connection with a particular product should be charged directly to that product. Such expenses are usually treated as "deferred revenue expenses," and recovered as a cost per unit of the product when production is fully established.

## ACTIVITY BASED COSTING

### POINTS OF DISCUSSION

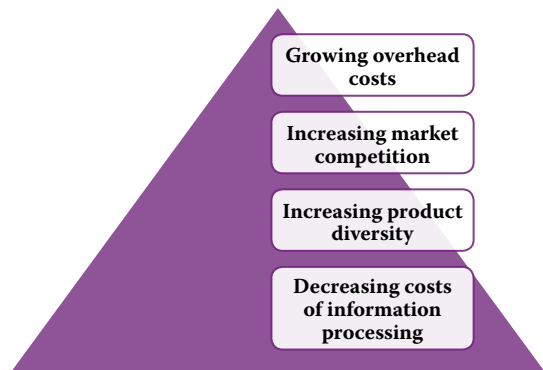


### MEANING OF ACTIVITY BASED COSTING

#### ACTIVITY BASED COSTING (ABC)

- Accounting methodology that assigns costs to activities rather than products or services.
- Costs are assigned based on their use of resources.
- Creates a LINK BETWEEN THE ACTIVITY (resource consumption) and the COST OBJECT.
- Useful to the ORGANIZATION WITH MULTIPLE PRODUCTS.

### FACTORS PROMPTING DEVELOPMENT OF ABC



### USEFULNESS/SUITABILITY OF ABC

ABC is particularly needed in the following situations:

High amount of overhead	Wide range of products	Presence of non-volume related activities	Stiff competition
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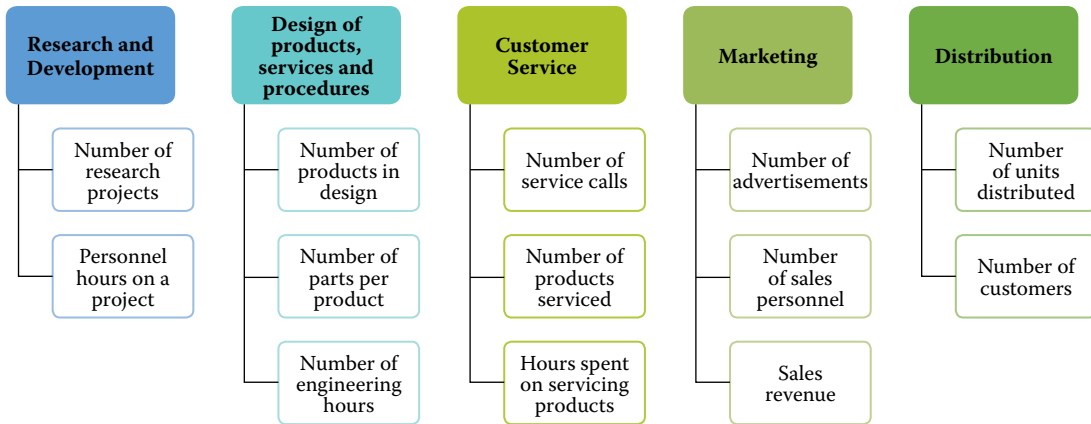
### ADVANTAGES AND DISADVANTAGES OF ABC

ADVANTAGES	DISADVANTAGES
<ul style="list-style-type: none"> <li>More accurate costing.</li> <li>Overhead allocation is done on logical basis.</li> <li>Enables better pricing policies.</li> <li>Utilizes unit cost rather than just total cost.</li> <li>Help to identify non-value added activities.</li> <li>Helpful to the organizations with multiple products.</li> <li>Highlights problem areas which require attention of the management.</li> </ul>	<ul style="list-style-type: none"> <li>Expensive.</li> <li>Not helpful to the small organizations.</li> <li>May not be applied to organizations with limited products.</li> <li>Selection of the most suitable cost driver may be difficult or complicated.</li> </ul>

### TERMS USED

(i) Activity	Event that incurs cost.
(ii) Cost Object	An item for which cost measurement is required
(iii) Cost Driver	<ul style="list-style-type: none"> <li>Factor that causes a change in the cost of an activity-                             <ul style="list-style-type: none"> <li><b>Resource cost driver:</b> Measure of the quantity of resources.</li> <li><b>Activity cost driver:</b> Measure of the frequency and intensity of demand.</li> </ul> </li> </ul>

**Examples of Cost Driver business function wise:**



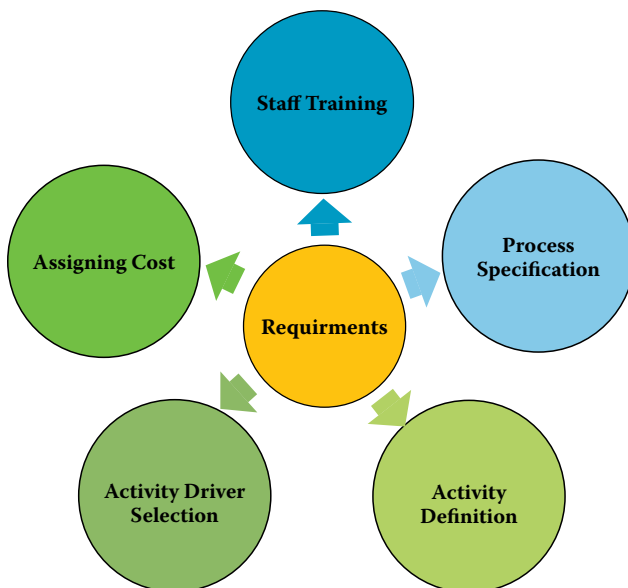
**(iv) Cost Pool**

- Group of various individual cost items.
- Example machine set-up.

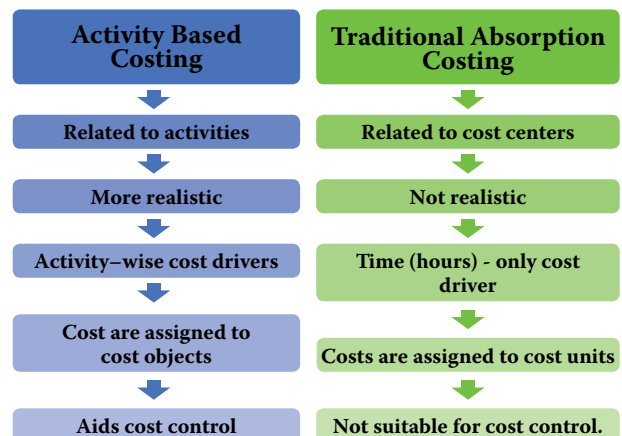
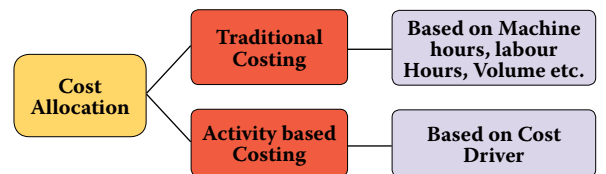
**COST ALLOCATION**



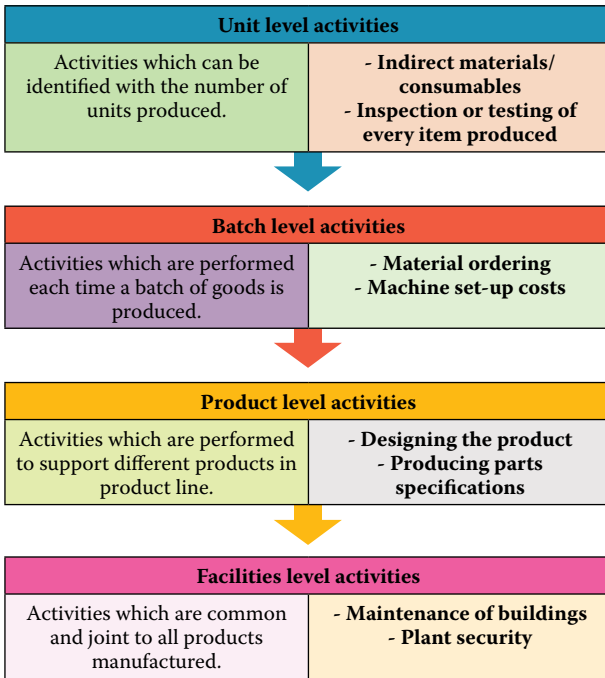
**REQUIREMENTS IN ABC IMPLEMENTATION**



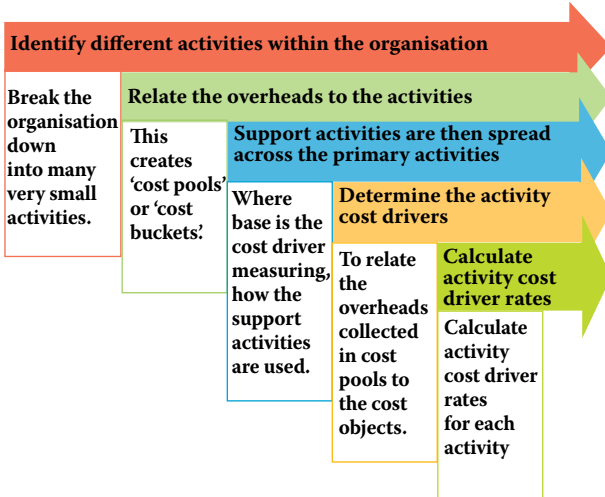
**TRADITIONAL ABSORPTION COSTING VS ABC**



### LEVEL OF ACTIVITIES UNDER ABC METHODOLOGY/COST HIERARCHY

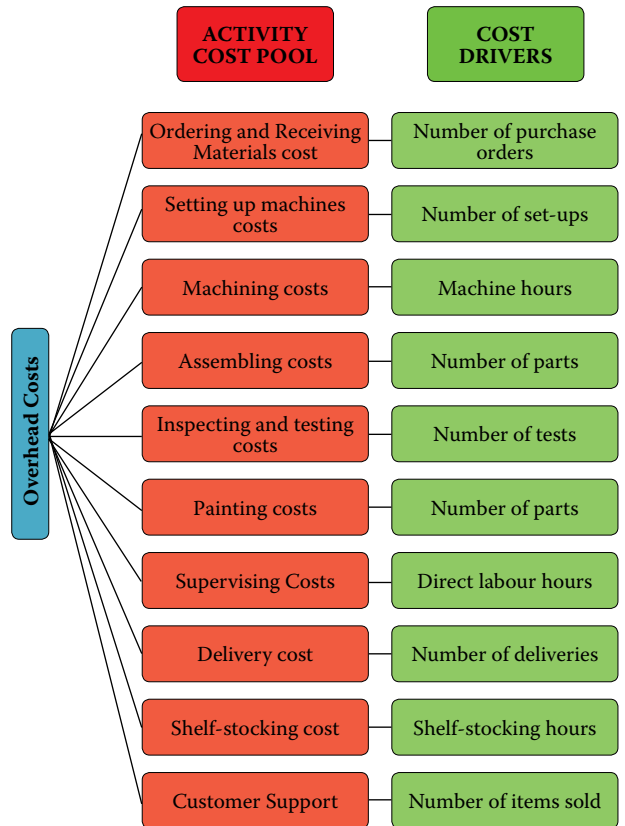


### STAGES IN ACTIVITY BASED COSTING (ABC)



$$\text{Activity cost driver rate} = \frac{\text{Total cost of activity}}{\text{Activity driver}}$$

### EXAMPLES OF COST DRIVERS



### HOW TO CALCULATE COST PER PRODUCT USING ABC?

If it is given that,

Activity	Cost (₹)	Particulars	Product 1	Product 2
Ordering	64,000	No. of Purchase Orders	30	50
Delivery	1,40,000	No. of Deliveries	110	90
Shelf stocking	80,000	Shelf Stocking Hours	220	180



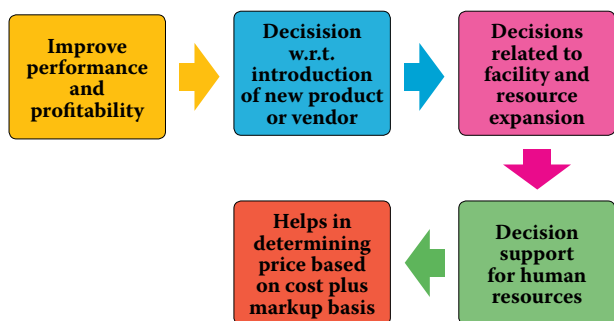
Image source: <https://www.dreamstime.com/photos-images/activity-based-costing.html>

Then, cost per product as per ABC

Activity	Total Cost (₹)	Cost Driver	Cost Driver Level	Cost Driver Rate (₹)	Product 1 (₹)	Product 2 (₹)
(a)	(b)	(c)	(d)	(e) = (b)/(d)	(f)	(g)
Ordering	64,000	No. of Purchase Orders	80 (30+50)	800	24,000 (800 x 30)	40,000 (800 x 50)
Delivery	1,40,000	No. of Deliveries	200 (110 + 90)	700	77,000 (700 x 110)	63,000 (700 x 90)
Shelf stocking	80,000	Shelf Stocking Hours	400 (220 +180)	200	44,000 (200 x 220)	36,000 (200 x 180)

### PRACTICAL APPLICATIONS OF ACTIVITY BASED COSTING

#### As a Decision-Making Tool



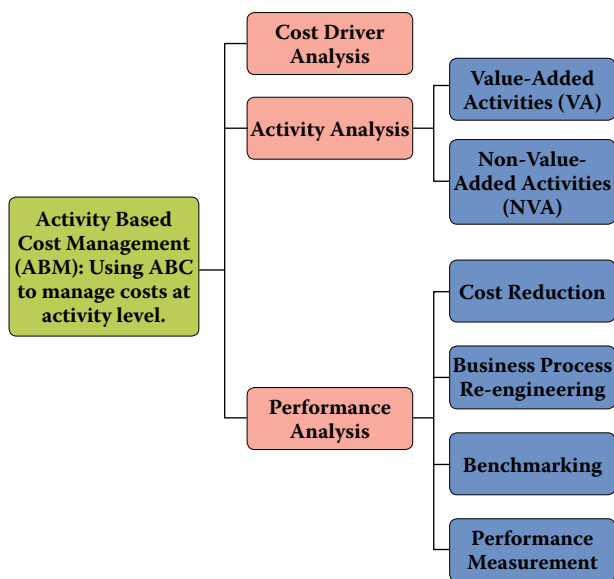
**Key Elements**

- Type of work to be done
- Quantity of work to be done
- Cost of work to be done

**Benefits**

- Enhance accuracy of financial forecasts
- Increasing management understanding
- Rapidly and accurately produce financial plans
- Eliminates much of the needless rework

#### As Activity Based Management

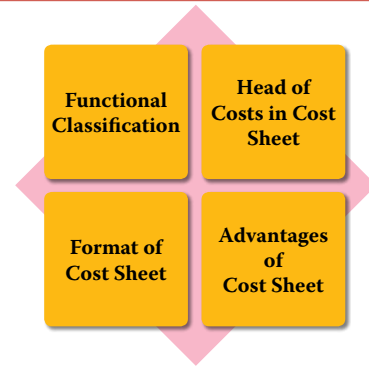


#### Facilitate Activity Based Budgeting (ABB)

It analyses the resource input or cost for each activity. It is the reversing of the ABC process to produce financial plans and budgets.

# COST SHEET

## Points of Discussion



## Functional Classification of Elements of Cost

Direct Material Cost

Direct Employee (labour) Cost

Direct Expenses

Production/ Manufacturing Overheads

Administration Overheads

Selling Overheads

Distribution Overheads

Research and Development costs etc.

## Cost Heads in a Cost Sheet

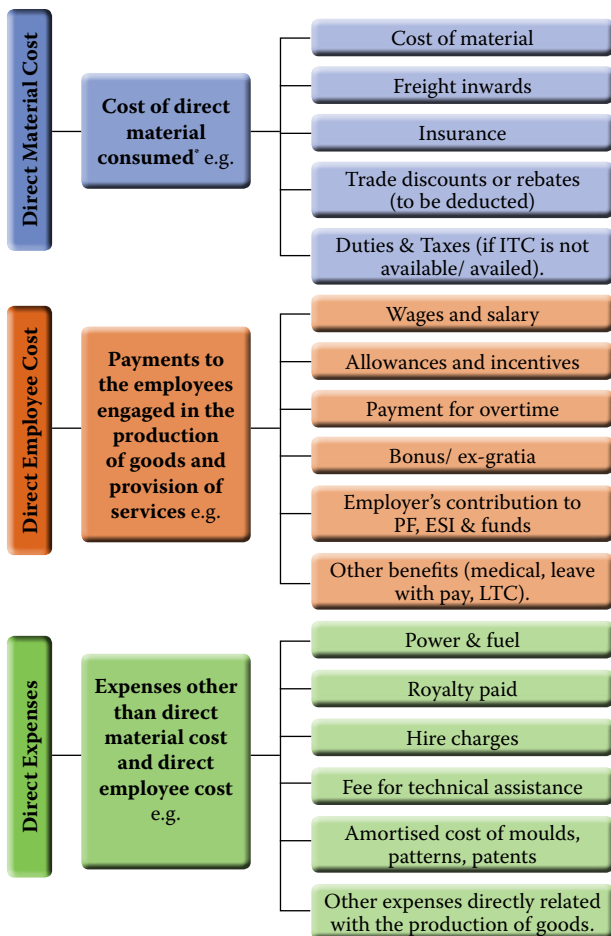
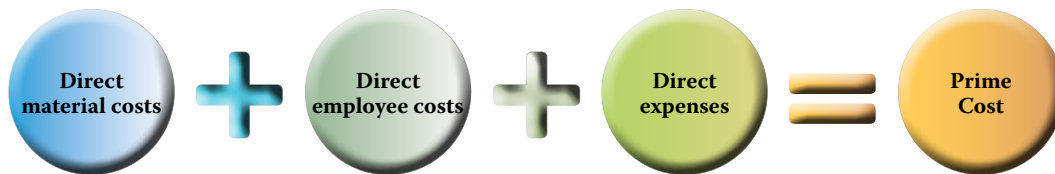
Prime Cost

Cost of Production

Cost of Goods Sold

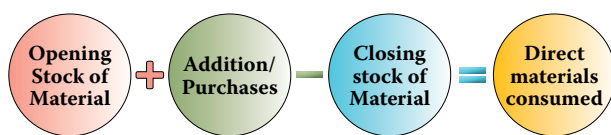
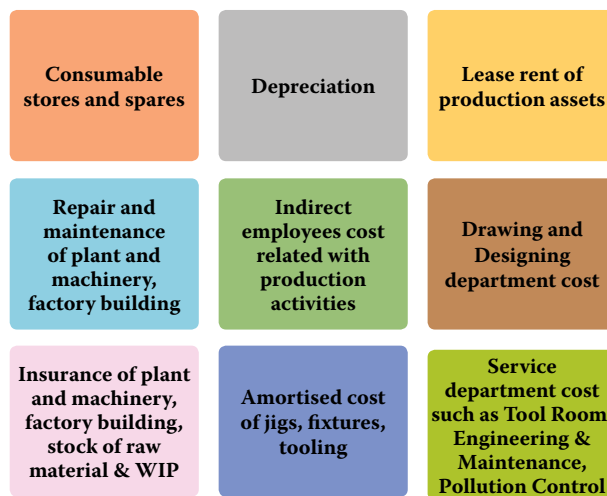
Cost of Sales

**Prime Cost:**

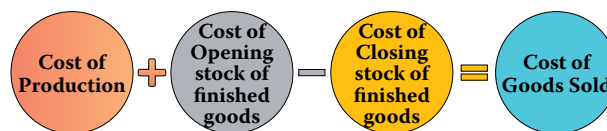


Prime Cost	xxxx
Add: Factory Overheads*	xxx
Gross Works Costs	xxxx
Add: Opening stock of Work-in-process	xxx
Less: Closing stock of Work-in-process	(xxx)
Factory or Works Costs	xxxx
Add: Quality Control Cost	xxx
Add: Research & Development cost (Process related)	xxx
Add: Administrative Overheads related with production	xxx
Less: Credit for recoveries (miscellaneous income)	(xxx)
Add: Packing Cost (Primary packing)	xxx
Cost of Production	xxxx

\* Factory Overheads (Works / production / manufacturing overheads) includes-



**Cost of Goods Sold:**



**Cost of Production:**



**Cost of Sales:**

Cost of Goods Sold	xxxx
Add: Administrative Overheads (General)	xxx
Add: Selling Overheads	xxx
Add: Packing Cost (secondary)	xxx
Add: Distribution Overheads	xxx
Cost of Sales	xxxx



**Examples:**



**Cost Sheet- Specimen Format**

	Particulars	Total Cost (₹)	Cost per unit (₹)
1.	Direct materials consumed:		
	Opening Stock of Raw Material	xxx	
	<b>Add:</b> Additions/ Purchases	xxx	
	<b>Less:</b> Closing stock of Raw Material	(xxx)	
		<b>xxx</b>	<b>xxx</b>
2.	Direct employee (labour) cost	xxx	
3.	Direct expenses	xxx	
4.	<b>Prime Cost (1+2+3)</b>	<b>xxx</b>	<b>xxx</b>
5.	<b>Add:</b> Works/ Factory Overheads	xxx	
6.	Gross Works Cost (4+5)	xxx	
7.	<b>Add:</b> Opening Work in Process	xxx	
8.	<b>Less:</b> Closing Work in Process	(xxx)	
9.	<b>Works/ Factory Cost (6+7-8)</b>	<b>xxx</b>	<b>xxx</b>
10.	<b>Add:</b> Quality Control Cost	xxx	
11.	<b>Add:</b> Research and Development Cost	xxx	
12.	<b>Add:</b> Administrative Overheads (relating to production activity)	xxx	
13.	<b>Less:</b> Credit for Recoveries/Scrap/By-Products/ misc. income	(xxx)	
14.	<b>Add:</b> Packing cost (primary)	xxx	
15.	<b>Cost of Production (9+10+11+12-13+14)</b>	<b>xxx</b>	<b>xxx</b>
16.	<b>Add:</b> Opening stock of finished goods	xxx	
17.	<b>Less:</b> Closing stock of finished goods	(xxx)	
18.	<b>Cost of Goods Sold (15+16-17)</b>	<b>xxx</b>	<b>xxx</b>
19.	<b>Add:</b> Administrative Overheads (General)	xxx	
20.	<b>Add:</b> Marketing Overheads :		
	Selling Overheads	xxx	
	Distribution Overheads	xxx	
21.	<b>Cost of Sales (18+19+20)</b>	<b>xxx</b>	<b>xxx</b>

**Treatment of various items of cost in Cost Sheet:**

<b>Abnormal costs</b>	<ul style="list-style-type: none"> <li>Any abnormal cost, where it is material and quantifiable, shall not form part of cost of production or acquisition or supply of goods or provision of service.</li> </ul>
<b>Subsidy/ Grant/ Incentives</b>	<ul style="list-style-type: none"> <li>Reduced from the cost objects to which such amount pertains.</li> </ul>
<b>Penalty, fine, damages, and demurrage</b>	<ul style="list-style-type: none"> <li>Does not form part of cost.</li> </ul>
<b>Interest and other finance costs</b>	<ul style="list-style-type: none"> <li>Not included in cost of production.</li> <li>Shall be presented in the cost statement as a separate item of cost of sales.</li> </ul>

**Advantages of Cost Sheet**

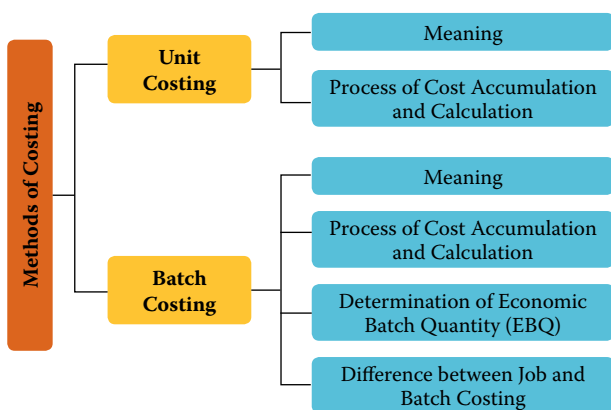
- Provides the total cost figure as well as cost per unit of production.
- Helps in cost comparison.
- Facilitates preparation of cost estimates required for submitting tenders.
- Provides sufficient help in arriving at the figure of selling price.
- Facilitates cost control by disclosing operational efficiency.

## CA INTERMEDIATE (NEW) PAPER 3- COST AND MANAGEMENT ACCOUNTING

Different Industries follow different method of Costing as the nature of their work varies. A Chartered Accountant will be associated with various industries, hence it is of paramount importance that a CA student must be familiar with method of costing followed by these Industries. This edition of Cost and Management Accounting capsule covers the topic Unit & Batch Costing, Job & Contract Costing, Activity Based Costing (ABC), Joint Products & By-products. Brief overview of the topics is given as follows for quick recapitulation: Industries like paper, cement, mining, etc. follows unit costing where output produced is identical and each unit of output requires identical cost, while batch costing is followed where products are manufactured in predetermined lots known as batches like in case of pen manufacturing industry, vaccine manufacturing etc. The job costing method is also applicable to industries in which production is carried out to accomplish a specific Job, while contract costing is followed where job is relatively at larger scale and takes longer than a year to complete like in case of construction of building, setting up plants. ABC is an approach followed while allocating cost to cost object based on cost drivers. The joint product costs are the expenditures incurred up-to the point of separation, however, its apportionment may be done based on different methods like physical units method, net realisable value at split-off point, etc.

### UNIT & BATCH COSTING

#### Points of Discussion



### UNIT COSTING

#### Meaning of Unit Costing

##### UNIT COSTING

- where the output produced is identical and each unit of output requires identical cost.
- also known as single or output costing.
- applied in industries like PAPER, CEMENT, STEEL WORKS, MINING, BREWERIES ETC.

Here, costs are collected and analysed element wise and then total cost per unit is ascertained as follows:

$$\text{Cost per unit} = \frac{\text{Total cost of production}}{\text{No. of units produced}}$$

#### COST COLLECTION PROCEDURE IN UNIT COSTING

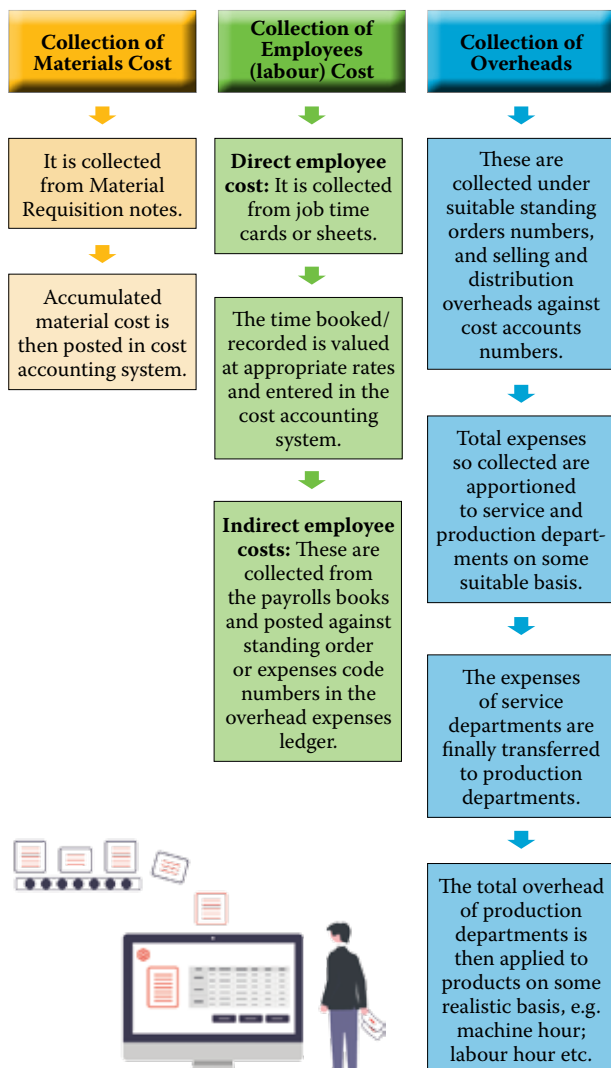
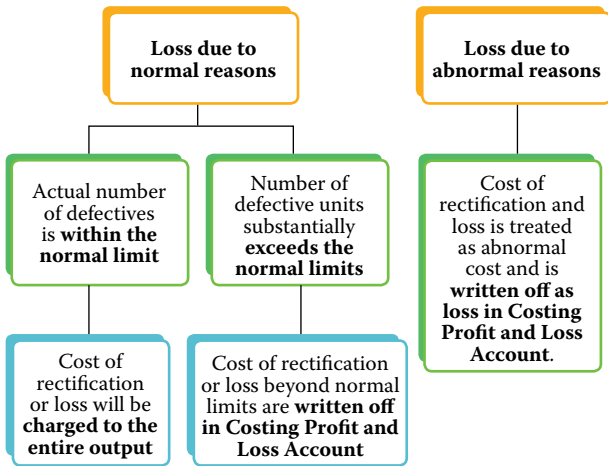


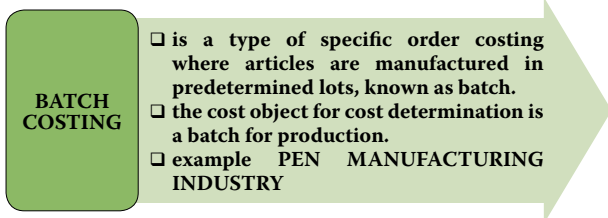
Image source: <https://metry.io/en/cost-collection-from-invoices/>

## TREATMENT OF SPOILED AND DEFECTIVE WORK



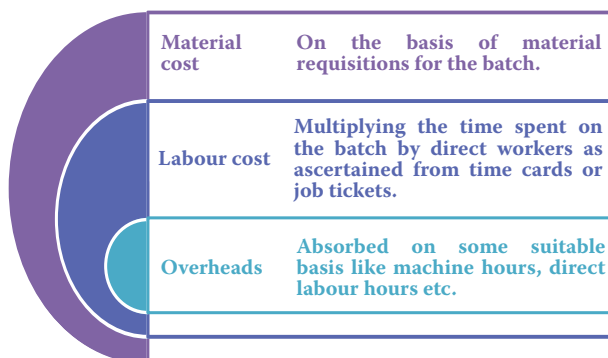
## BATCH COSTING

### Meaning of Batch Costing



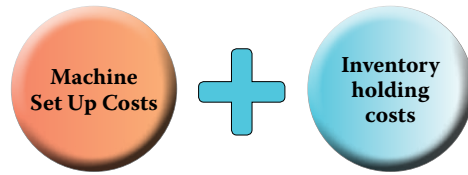
A batch consists of certain number of units which are PROCESSED SIMULTANEOUSLY. Under this method of manufacturing, the inputs are accumulated in the assembly line till it reaches minimum batch size. Soon after a batch size is reached, all inputs in a batch is processed for further operations.

### COSTING PROCEDURE IN BATCH COSTING

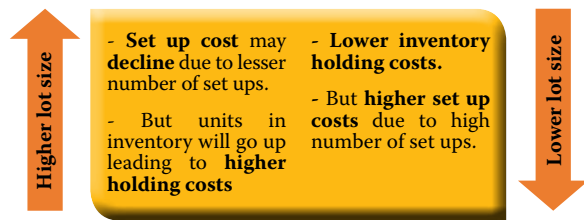


## ECONOMIC BATCH QUANTITY (EBQ)

Primarily, the total production cost under batch production comprises of two main costs, namely,

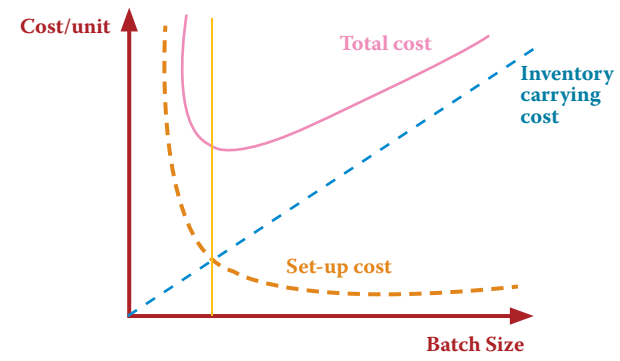


### Balancing Machine set up cost and Inventory holding cost



**ECONOMIC BATCH QUANTITY (EBQ)**

- It is the size of a batch where total cost of set-up and holding costs are at minimum.



### Determination of EBQ

By calculating the total cost for a series of possible batch sizes and checking which batch size gives the minimum cost.

Mathematical formula:

$$EBQ = \sqrt{\frac{2DS}{C}}$$

Where,

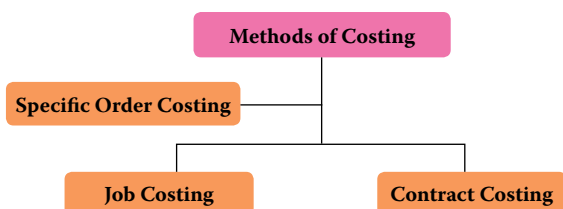
- D = Annual demand for the product
- S = Setting up cost per batch
- C = Carrying cost per unit of production

## DIFFERENCE BETWEEN JOB AND BATCH COSTING

Sr. No	Job Costing	Batch Costing
1	Used for <b>non- standard and non- repetitive products</b> produced as per customer specifications and against specific orders.	<b>Homogeneous products</b> produced in a continuous production flow in lots.
2	<b>Cost determined for each Job.</b>	<b>Cost determined in aggregate</b> for the entire Batch and then arrived at on per unit basis.
3	Jobs are different from each other and independent of each other. Each <b>Job is unique.</b>	Products produced in a batch are homogeneous and <b>lack of individuality.</b>

## JOB AND CONTRACT COSTING

### POINTS OF DISCUSSION



## JOB COSTING

### MEANING OF JOB COSTING

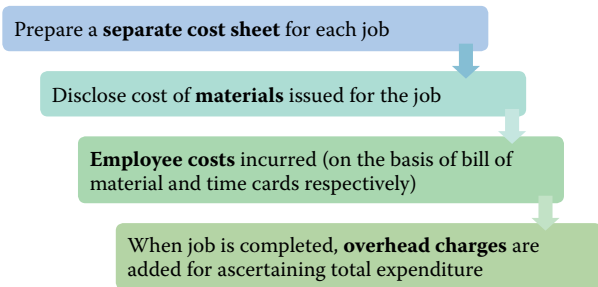
**JOB COSTING**

- It is applicable where the work consists of separate contracts, jobs or batches, each of which is authorised by specific order or contract.
- Industry example: PRINTING; FURNITURE; HARDWARE; SHIP-BUILDING; HEAVY MACHINERY; INTERIOR DECORATION.

### PRINCIPLES OF JOB COSTING

- Analysis and ascertainment of cost of each unit of production
- Control and regulate cost
- Determine the profitability

## PROCESS OF JOB COSTING



## SUITABILITY OF JOB COSTING

- When jobs are executed for different customers according to their specifications.
- When no two orders are alike and each order/job needs special treatment.
- Where the work-in-progress differs from period to period on the basis of the number of jobs in hand.

## JOB COST CARD/ SHEET

**JOB COST CARD/ SHEET**

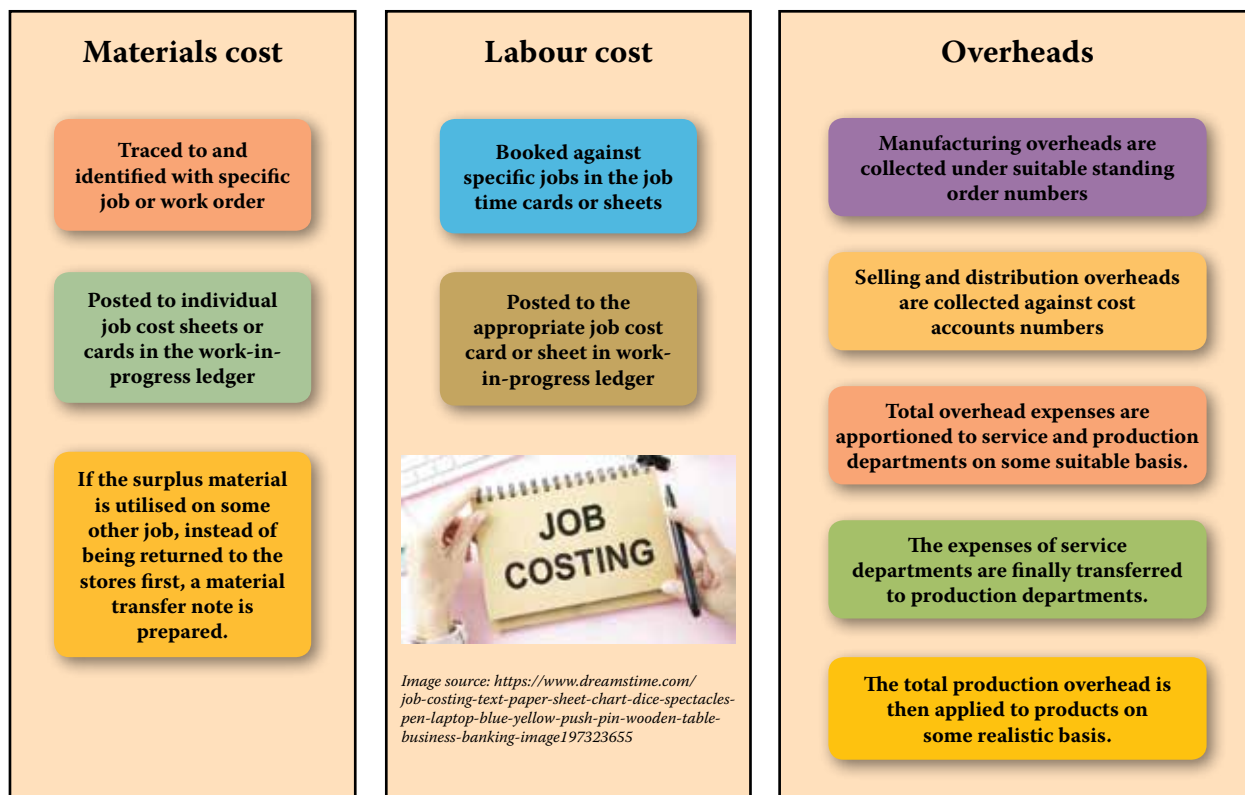
A cost sheet where,

- quantity of materials issued,
- hours spent by different class of employees,
- amount of other expenses and share of overheads are recorded.

### Format of Job Cost Sheet:

JOB COST SHEET					
Description: _____		Job No.: _____			
Blue Print No.: _____		Quantity: _____			
Material No.: _____		Date of delivery: _____			
Reference No.: _____		Date commenced: _____			
		Date finished: _____			
Date	Reference	Details	Material	Labour	Overhead
		<b>Total</b>			
<i>Summary of costs</i>		<i>Estimated (₹)</i>	<i>Actual (₹)</i>	For the job _____	
Direct material cost				Units produced _____	
Direct wages				Cost/unit _____	
Production overhead				Remarks _____	
<b>PRODUCTION COST</b>				Prepared by: _____	
Administration and				Checked by: _____	
Selling & Distribution					
Overheads					
<b>TOTAL COST</b>					
<b>PROFIT/LOSS</b>					
<b>SELLING PRICE</b>					

## COLLECTION OF COSTS FOR A JOB



## SPOILED AND DEFECTIVE WORK

### Meaning

#### Spoiled work

It is the quantity of production that has been totally rejected and cannot be rectified.

#### Defective work

It refers to production that is not as perfect as the saleable product but is capable of being rectified

### Treatment

Where a percentage of defective work is ALLOWED in a particular batch AS IT CANNOT BE AVOIDED.

The cost of rectification will be charged to the whole job and spread over the entire output of the batch

Where defect is DUE TO BAD WORKMANSHIP.

The cost of rectification shall be written off as a loss being an abnormal cost

Where defect is due to the inspection department WRONGLY ACCEPTING INCOMING MATERIAL OF POOR QUALITY.

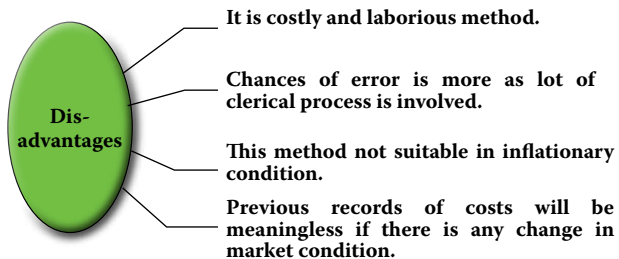
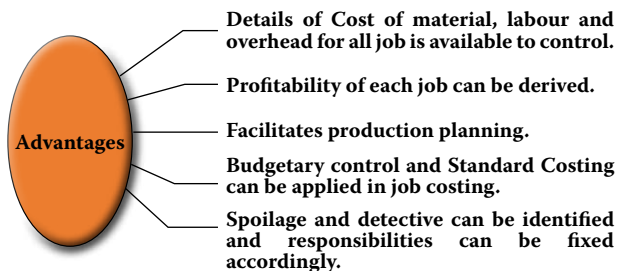
Cost of rectification will be charged to the department and will not be considered as cost of manufacture of the batch

## ACCOUNTING OF COSTS FOR A JOB

1.	<b>For purchase of materials</b>	
	Stores Ledger Control A/c	Dr.
	To Cost Ledger Control A/c	
2.	<b>For the value of direct materials issued to jobs</b>	
	Work-in-Process Control A/c	Dr.
	To Stores Ledger Control A/c	
3.	<b>For return of direct materials from jobs</b>	
	Stores Ledger Control A/c	Dr.
	To Work-in-Process Control A/c	
4.	<b>For return of materials to suppliers</b>	
	Cost Ledger Control A/c	Dr.
	To Stores Ledger Control A/c	
5.	<b>For indirect materials</b>	
	Factory Overhead Control A/c	Dr.
	To Stores Ledger Control A/c	
6.	<b>For wages paid</b>	
	Wages Control A/c	Dr.
	To Cost Ledger Control A/c	

7.	<b>For direct wages incurred on jobs</b>	
	Work-in-Process Control A/c	<b>Dr.</b>
	To Wages Control A/c	
8.	<b>For indirect wages</b>	
	Factory Overhead Control A/c	<b>Dr.</b>
	To Wages Control A/c	
9.	<b>For any indirect expense paid</b>	
	Factory Overhead Control A/c	<b>Dr.</b>
	To Cost Ledger Control A/c	
10.	<b>For charging overhead to jobs</b>	
	Work-in-Process Control A/c	<b>Dr.</b>
	To Factory Overhead Control A/c	
11.	<b>For the total cost of jobs completed</b>	
	Cost of Sales A/c	<b>Dr.</b>
	To Work-in-Progress Control A/c	
12.	<b>The balance of Cost of Sales A/c is transferred to Costing Profit and Loss A/c; For such transfer</b>	
	Costing Profit and Loss A/c	<b>Dr.</b>
	To Cost of Sales A/c	
13.	<b>For the sales value of jobs completed</b>	
	Cost Ledger Control A/c	<b>Dr.</b>
	To Costing Profit and Loss A/c	

### ADVANTAGES AND DISADVANTAGES OF JOB COSTING

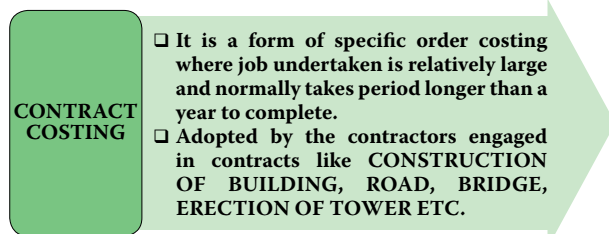


### DIFFERENCE BETWEEN JOB COSTING AND PROCESS COSTING

Job Costing	Process Costing
A Job is carried out by specific orders.	Process of producing the product has a continuous flow and the product produced is homogeneous.
Costs determined for each job.	Costs are compiled on time basis i.e., for each process or department.
Each job is separate and independent.	Products lose their individual identity.
Each job has a number and costs are collected against the same job number.	The unit cost of process is an average cost for the period.
Costs are computed when a job is completed.	Costs are calculated at the end of the cost period.
More managerial attention is required for effective control.	Control here is comparatively easier.

### CONTRACT COSTING

#### MEANING OF CONTRACT COSTING

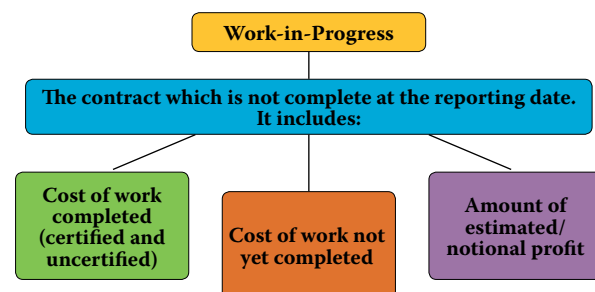


#### FEATURES OF CONTRACT COSTING

Work in contract is ordinarily carried out at the site of the contract.	Separate account is usually maintained for each contract.	Bulk of the expenses incurred are considered as direct.
Number of contracts undertaken by a contractor at a time is usually few.	Indirect expenses mostly consist of office expenses, stores and works.	Cost unit in contract costing is the contract itself.

#### TERMS USED IN CONTRACT COSTING

(i) Work-in-Progress



**(ii) Cost of Work Certified or Value of Work Certified**

Expert, based on his assessment, certifies the work completion in terms of percentage of total work. Cost or value of certified portion is calculated and is known as Cost of work certified or Value of work certified respectively.

- (a) Value of Work Certified = Value of Contract × Work certified (%)
- (b) Cost of Work Certified = Cost of work to date – (Cost of work uncertified + Material in hand + Plant at site)

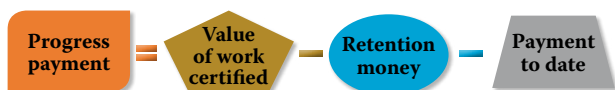
**(iii) Cost of Work Uncertified**

Cost of the work carried out but not certified by the expert. Always shown at cost price.

The cost of Work Uncertified may be ascertained as follows:

	(₹)	(₹)
Total cost to date		xxx
Less: Cost of work certified	xxx	
Material in hand	xxx	
Plant at site	xxx	xxx
Cost of work uncertified		xxx

**(iv) Progress Payment**



**(v) Retention Money**



**(vi) Cash Received**



**(vii) Notional Profit**



**(viii) Estimated Profit**



**SPECIMEN OF CONTRACT ACCOUNT (with few items)**

The cost of Work Uncertified may be ascertained as follows:

	Particulars	(₹)		Particulars	(₹)
To	Materials	xxx	By	Plant at site c/d	xxx
"	Wages	xxx	"	Work-in-progress c/d:	xxx
"	Direct expenses	xxx		- Work certified	xxx
"	Indirect expenses	xxx		- Work uncertified	xxx
"	Plant and Machinery	xxx	"	Costing P&L A/c (b/f) (If Loss)	xxx
"	Cost of Sub-Contract	xxx			
"	Costing P&L A/c (b/f) (If Profit)	xxx			
		XXX			XXX

**COST PLUS CONTRACT**

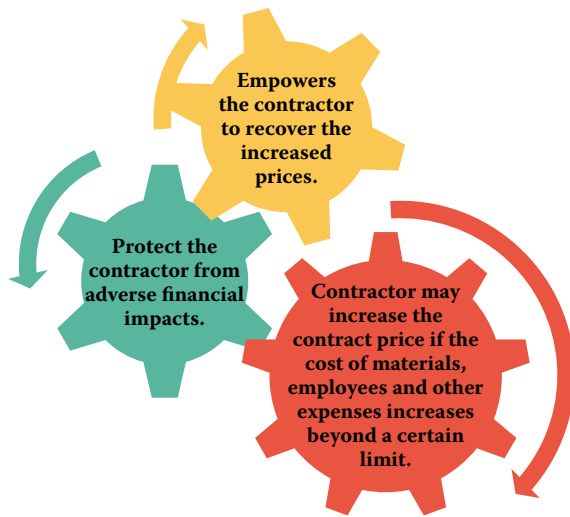
Cost-Plus Contract When the value of the contract is determined by adding an agreed percentage of profit to the total cost.

**ADVANTAGES AND DISADVANTAGES OF COST PLUS CONTRACT**

ADVANTAGES	DISADVANTAGES
<ul style="list-style-type: none"> <li>• Contractor is assured of a fixed percentage of profit.</li> <li>• Useful when work to be done is not definitely fixed at the time of making the estimate.</li> <li>• Contractee can ensure himself about 'the cost of the contract', as he is empowered to examine the books and documents of the contractor.</li> </ul>	<ul style="list-style-type: none"> <li>• Contractor may not have any inducement to avoid wastages and effect economy in production to reduce cost.</li> </ul>

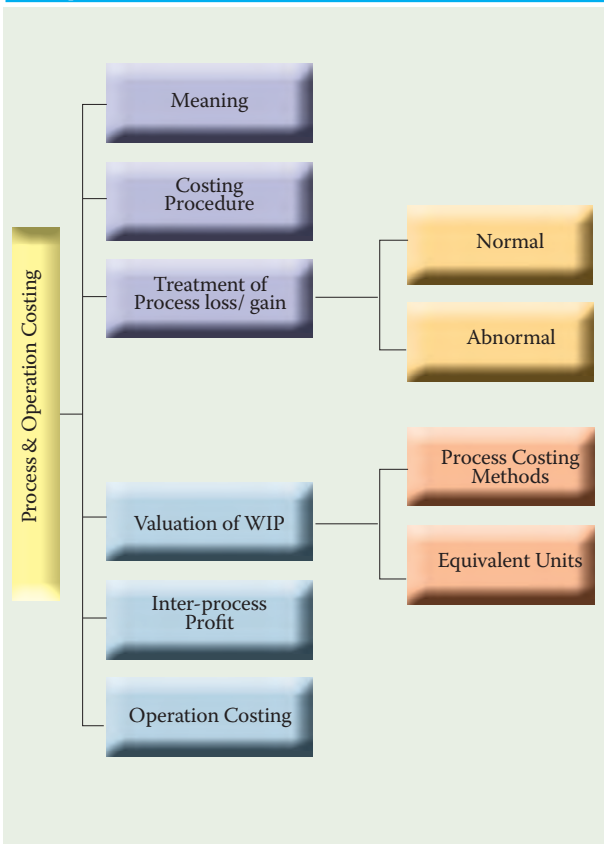


## ESCALATION CLAUSE



## Process and Operation Costing

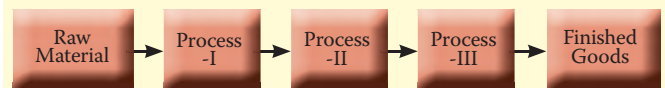
### Chapter Overview



### Meaning of Process Costing

Process Costing is a method of costing used in industries where the material has to pass through two or more processes for being converted into a final product. It is defined as “a method of Cost Accounting whereby costs are charged to processes or operations and averaged over units produced”.

This can be understood with the help of the following diagram:



### Costing Procedure in Process Costing

**Materials:** Each process for which the materials are used, are debited with the cost of materials consumed on the basis of the information received from the Cost Accounting department.

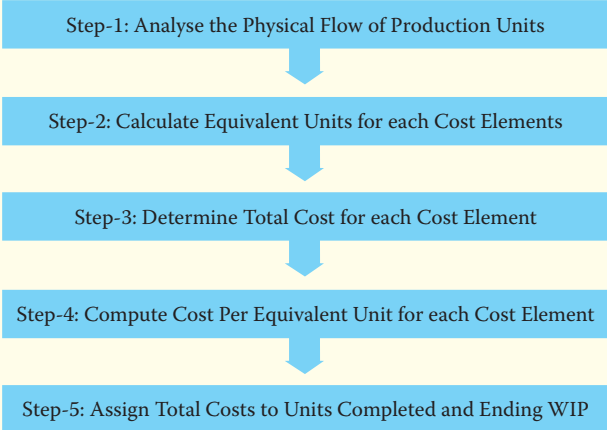
**Employee Cost (Labour)** - Each process account should be debited with the labour cost or wages paid to labour for carrying out the processing activities. Sometimes the wages paid are apportioned over the different processes after selecting appropriate basis.

**Direct expenses** - Each process account should be debited with direct expenses like depreciation, repairs, maintenance, insurance etc. associated with it.

**Production Overheads**- These expenses cannot be allocated to a process. The suitable way out to recover them is to apportion them over different processes by using suitable basis.

# COST AND MANAGEMENT ACCOUNTING

## Steps in Process Costing



## Treatment of Normal, Abnormal Loss and Abnormal Gain

Normal Process Loss	Abnormal Process Loss	Abnormal Process Gain/ Yield
<ul style="list-style-type: none"> <li>The cost of normal process loss in practice is absorbed by good units produced under the process. The amount realised by the sale of normal process loss units should be credited to the process account.</li> </ul>	<ul style="list-style-type: none"> <li>The cost of an abnormal process loss unit is equal to the cost of a good unit. The total cost of abnormal process loss is credited to the process account from which it arises.</li> <li>Total cost of abnormal process loss is debited to costing profit and loss account.</li> </ul>	<ul style="list-style-type: none"> <li>The process account under which abnormal gain arises is debited with the abnormal gain and credited to abnormal gain account which will be closed by transferring to the Costing Profit and Loss account.</li> </ul>

## Valuation of Work-in-process

The valuation of work-in-process presents a good deal of difficulty because it has units under different stages of completion from those in which work has just begun to those which are only a step short of completion.

### (i) Equivalent Units

Equivalent units or equivalent production units, means converting the incomplete production units into their equivalent completed units. Under each process, an estimate is made of the percentage completion of work-in-process with regard to different elements of costs, viz., material, labour and overheads.

The formula for computing equivalent completed units is:

$$\text{Equivalent completed units} = \left( \begin{array}{l} \text{Actual number of units in} \\ \text{the process of manufacture} \end{array} \right) \times \left( \begin{array}{l} \text{Percentage of} \\ \text{Work completed} \end{array} \right)$$

Input Details	Units	Output Particulars	Units	Equivalent Units					
				Material		Labour		Overhead	
				%	Units	%	Units	%	Units
			a	b	c= a×b	d	e=a×d	f	g=a×f
Opening W-I-P	xxx	Opening W-I-P*	xxx	xxx	xxx	xxx	xxx	xxx	xxx
Unit Introduced	xxx	Finished output**	xxx	xxx	xxx	xxx	xxx	xxx	xxx
		Normal loss***	xxx	-	-	-	-	-	-
		Abnormal loss/ Gain****	xxx	xxx	xxx	xxx	xxx	xxx	xxx
Total		Closing W-I-P	xxx	xxx	xxx	xxx	xxx	xxx	xxx
	xxx	Total	xxx		xxx		xxx		xxx

\* Equivalent units for Opening W-I-P is calculated only under FIFO method. Under the Average method, it is not shown separately.

\*\*Under the FIFO method, Finished Output = Units completed and transferred to next process less Opening WIP. Under Average method, Finished Output = Units completed and transferred.

\*\*\*For normal loss, no equivalent unit is calculated.

\*\*\*\*Abnormal Gain/ Yield is treated as 100% complete in respect of all cost elements irrespective of percentage of completion.

## (ii) Methods for valuation of work-in-process

Under this method the units completed and transferred include completed units of opening work-in-process and subsequently introduced units. Proportionate cost to complete the opening work-in-process and that to process the completely processed units during the period are derived separately.

Under this method, the cost of opening work-in-process and cost of the current period are aggregated and the aggregate cost is divided by output in terms of completed units.

### Inter Process Profit

In some process industries the output of one process is transferred to the next process not at cost but at market value or cost plus a percentage of profit. The difference between cost and the transfer price is known as inter-process profits.

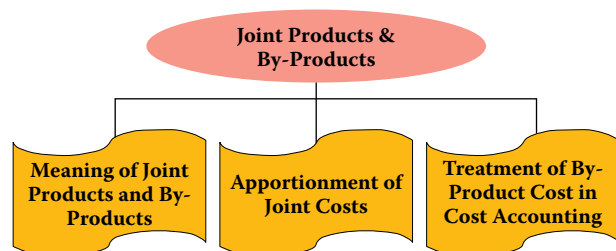


### Operation Costing

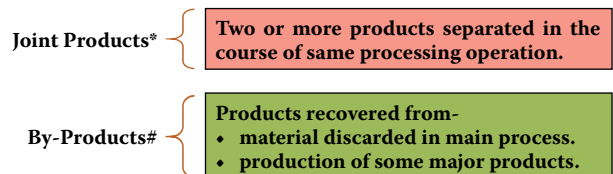
This product costing system is used when an entity produces more than one variant of final product using different materials but with similar conversion activities. Which means conversion activities are similar for all the product variants but materials differ significantly. Operation Costing method is also known as Hybrid product costing system as materials costs are accumulated by job order or batch wise but conversion costs i.e. labour and overheads costs are accumulated by department, and process costing methods are used to assign these costs to products.

## JOINT PRODUCTS AND BY PRODUCTS

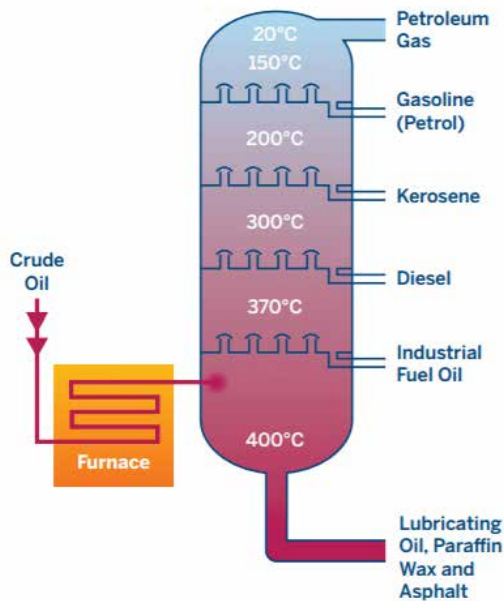
### POINTS OF DISCUSSION



### MEANING OF JOINT PRODUCTS AND BY-PRODUCTS



\*OIL INDUSTRY PRODUCING JOINT PRODUCTS using crude petroleum like gasoline, fuel oil, lubricants, paraffin, asphalt, kerosene etc.



Petroleum Refining Processes<sup>1</sup>

# MOLASSES IS PRODUCED AS A BY-PRODUCT in the process of sugar manufacturing



Sugar Manufacturing Process<sup>2</sup>

Point at which products are separated from the main product is known as **SPLIT-OFF POINT**.

### DISTINCTION BETWEEN JOINT PRODUCTS AND BY-PRODUCTS

JOINT PRODUCTS	BY-PRODUCTS
<ul style="list-style-type: none"> <li>• Equal importance.</li> <li>• Produced simultaneously.</li> </ul>	<ul style="list-style-type: none"> <li>• Small economic value.</li> <li>• Incidental to the main product.</li> </ul>

<sup>1</sup> Image source: <https://www.cmegroup.com/education/courses/introduction-to-refined-products/a-look-into-the-refining-process.html>

<sup>2</sup> Image source: <http://www.sustainablesugar.eu/molasses>

### CO-PRODUCTS

#### CO-PRODUCTS

Joint products and co-products are used synonymously, but a **distinction is there.**

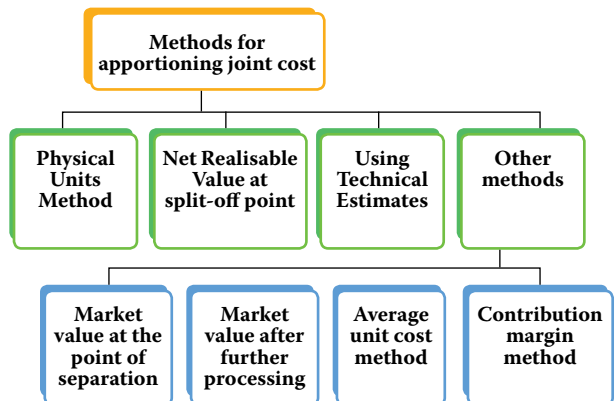
Co-products are the two or more products which are **contemporary but do not emerge necessarily from the same material in the same process.**

For instance,

wheat and gram produced in two separate farms with separate processing of cultivation are co-products.

Timber boards made from different trees are co-products.

### METHODS OF APPORTIONMENT OF JOINT COST TO JOINT PRODUCTS



#### Physical Units Method:

Joint costs here are apportioned on the basis of some **physical base, such as weight, numbers etc.**

#### Net Realisable Value at Split-off Point Method:

Joint costs here are apportioned on the basis of **Net Realisable Value at Split-off Point.**

#### NET REALISABLE VALUE AT SPLIT-OFF POINT

➔ sales value of joint products after processing

⊖ Estimated profit margins

⊖ Selling and distribution expenses

⊖ Post split-off costs

### Using Technical Estimates:

- This method is used WHEN-
- Result obtained by above methods does not match with the resources consumed by joint products, or;
- Realisable value of the joint products are not readily available.

### Other Methods:

#### (i) Market value at the point of separation

Useful method where further processing costs are incurred disproportionately.

To determine the apportionment of joint costs over joint products, a multiplying factor is determined as follows:

$$\text{Multiplying factor} = \frac{\text{Joint Cost}}{\text{Total Sales Revenue}} \times 100$$

Alternatively, joint cost may be apportioned in the ratio of sales values of different joint products.

#### (ii) Market value after further processing

Basis of apportionment of joint cost is the total sales value of finished products.

Use of this METHOD IS UNFAIR WHERE-

Further processing costs after the point of separation are disproportionate, or;

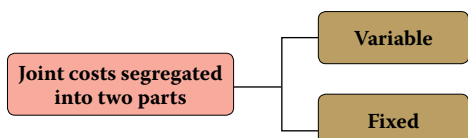
All the joint products are not subjected to further processing.

#### (iii) Average Unit Cost Method

$$\text{Average unit cost} = \frac{\text{Total process cost (up to the point of separation)}}{\text{Total units of joint product produced}}$$

Physical unit method also follows the same steps of calculation as followed under Average unit cost method, ultimately giving the same outcome.

#### (iv) Contribution Margin Method



### Variable costs

Apportioned on the basis of units produced (average method or physical quantities)

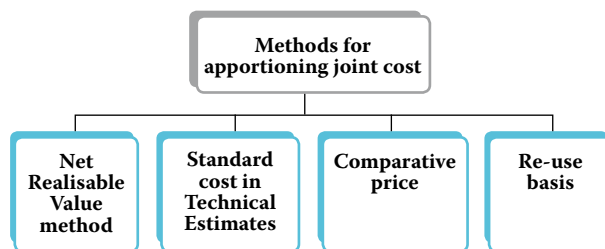
In case products are further processed after point of separation, then all variable cost incurred be added to the variable costs determined earlier.

Total variable cost is arrived which is deducted from their respective sales values to ascertain their contribution.

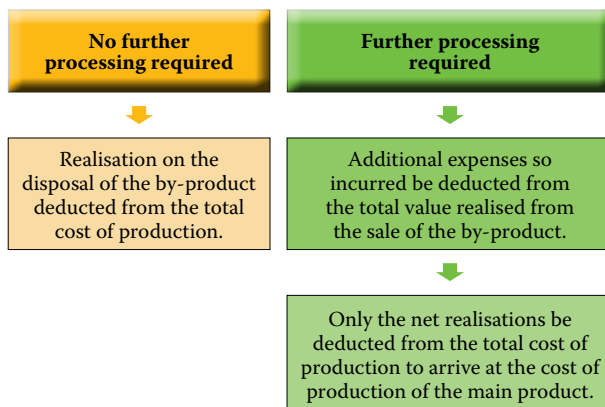
### Fixed costs

Thereafter, fixed costs are apportioned over the joint products on the basis of the contribution ratios.

## METHODS OF APPORTIONMENT OF JOINT COST TO BY-PRODUCTS



### Net Realisable Value method:



### Standard cost in Technical Estimates:

This method may be adopted where by-product is not saleable.

It may be valued at standard costs.

Standard cost may be determined by averaging costs recorded in the past and making technical estimates of the number of units of original raw material going into the main product and the number forming the by-product; or by adopting some other consistent basis.

**Comparative price:**

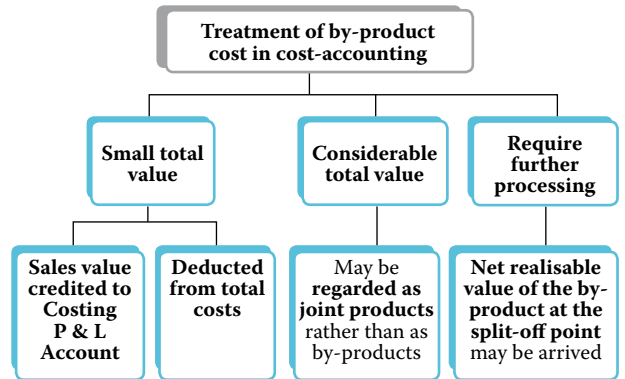
Value of by-product is ascertained with reference to the price of -

Similar material, or;	Alternative material
-----------------------	----------------------

**Re-use basis:**

<p>Sometimes, by-product may be of such a nature that it can be reprocessed in the same process as part of the input of the process.</p>	
<p>In that case, value put on by-product should be same as that of the materials introduced into the process.</p>	<p>However, if the by-product can be put into an earlier process only, the value should be the same as for the materials introduced into the process.</p>

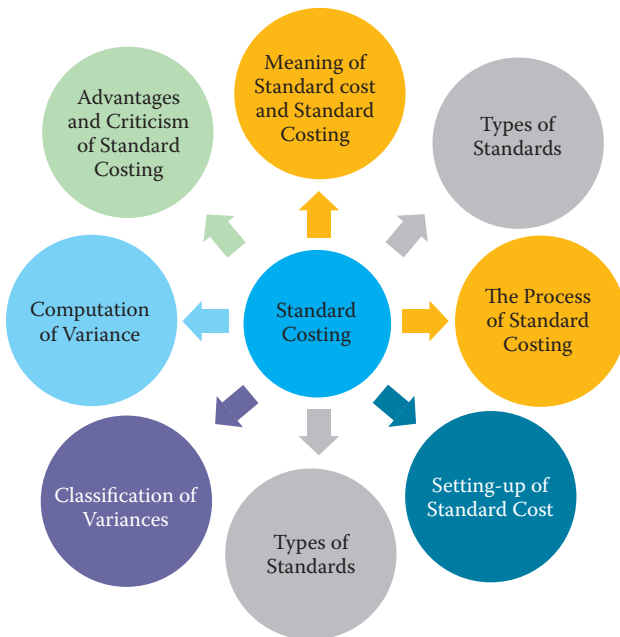
**TREATMENT OF BY-PRODUCT COST IN COST-ACCOUNTING**





## Standard Costing

### Chapter Overview



### What is a Standard or Standard Cost?

Standard cost is defined in the CIMA Official Terminology as “the planned unit cost of the product, component or service produced in a period. The standard cost may be determined on a number of bases. The main use of standard costs is in performance measurement, control, stock valuation and in the establishment of selling prices.”

### Types of standards

There are various types of standard which are illustrated below:

**Ideal Standards:** The level of performance attainable when prices for material and labour are most favourable, when the highest output is achieved with the best equipment and layout and when the maximum efficiency in utilisation of resources results in maximum output with minimum cost.

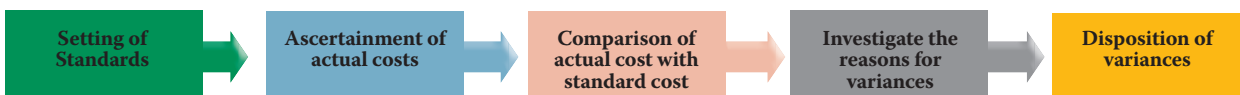
**Normal Standards:** These are standards that may be achieved under normal operating conditions.

**Basic or Bogey Standards:** These standards are used only when they are likely to remain constant or unaltered over a long period.

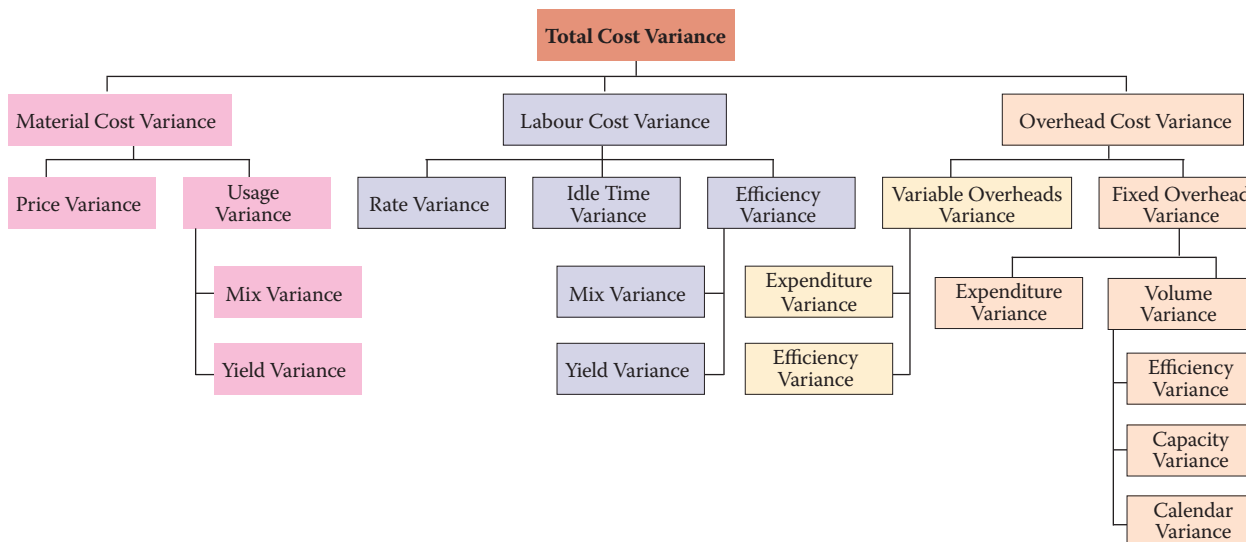
**Current Standards:** These standards reflect the management's anticipation of what actual costs will be for the current period.

# COST AND MANAGEMENT ACCOUNTING ||

## Process followed in Standard Costing

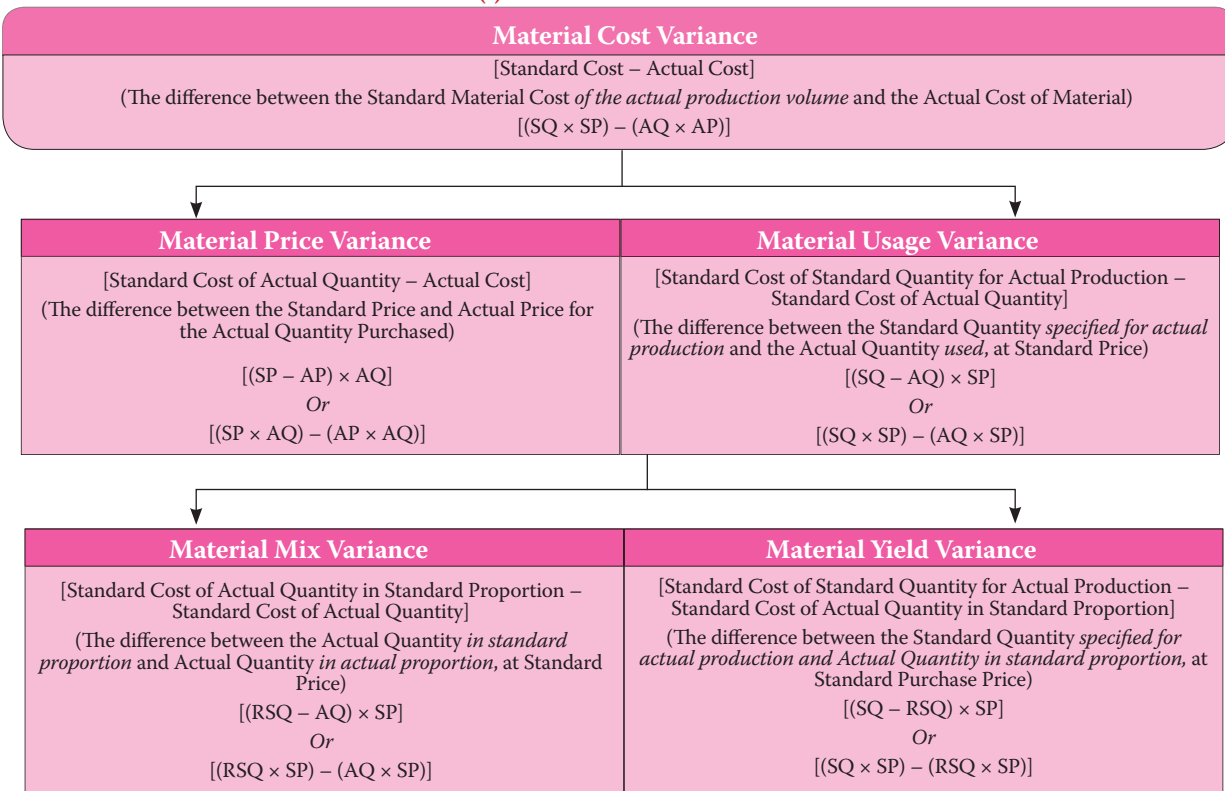


## Variances at a Glance

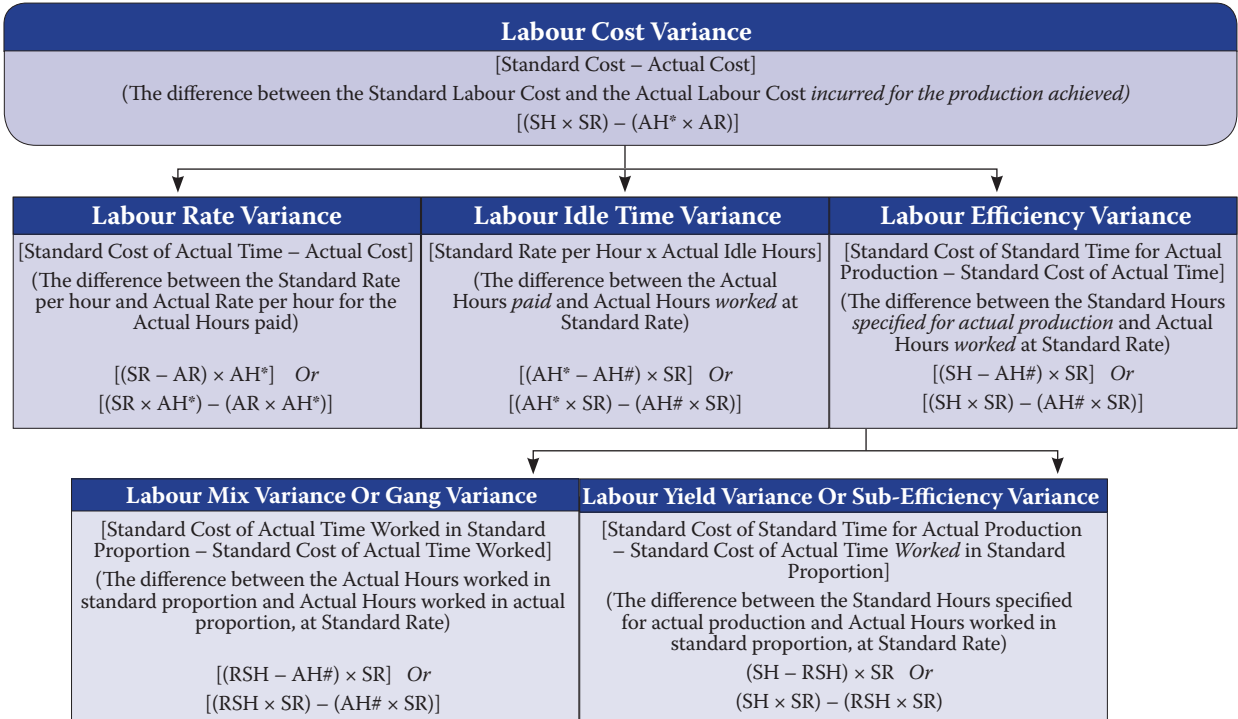


## Variance Analysis

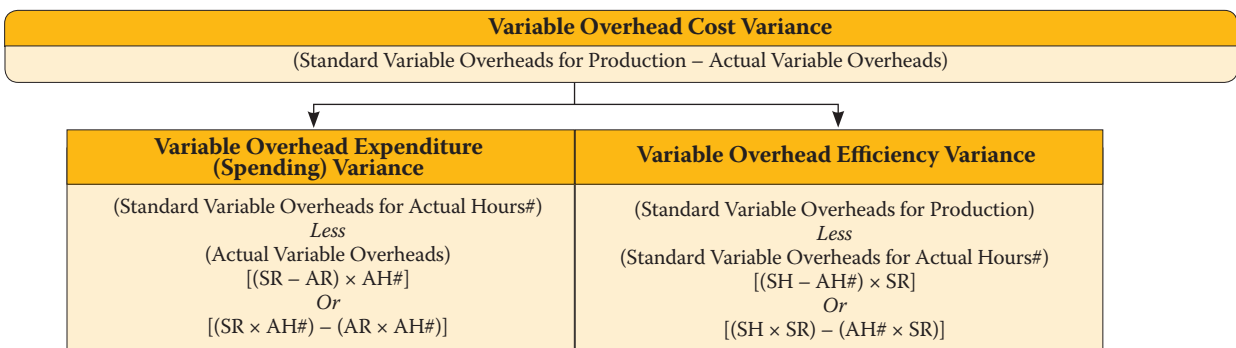
### (i) Material Cost Variance



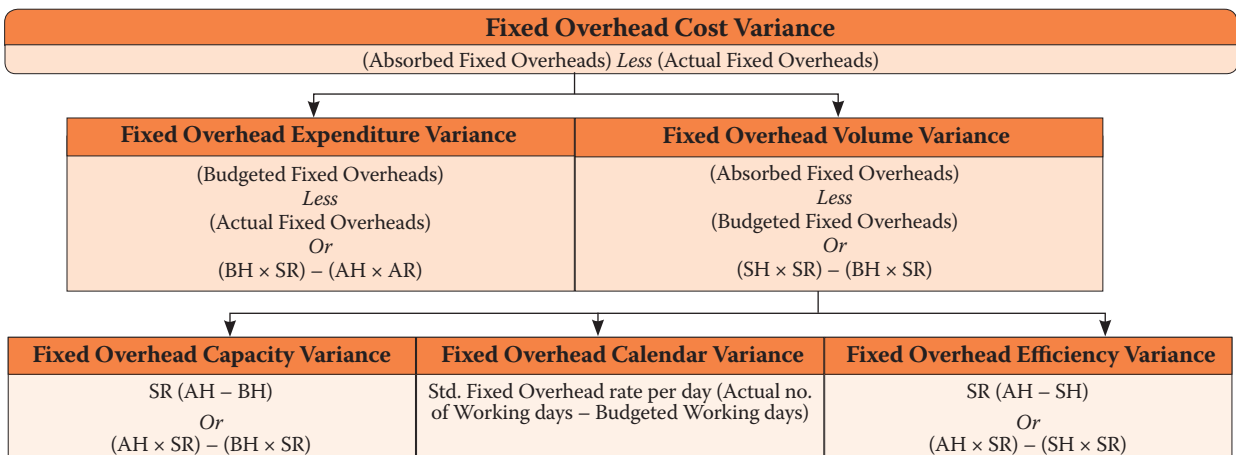
## (ii) Labour Cost Variances



## (iii) Variable Overhead Variances



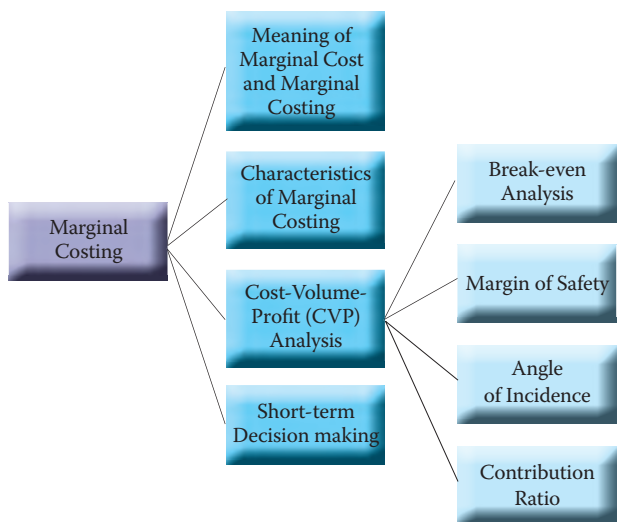
## (iv) Fixed Overhead Variances



AH\* - Actual Hours paid  
 AH# - Actual Hours worked

## Marginal Costing

### Chapter Overview



### Characteristics of Marginal Costing

- All elements of cost are classified into fixed and variable components. Semi-variable costs are also analyzed into fixed and variable elements.
- The marginal or variable costs (as direct material, direct labour and variable factory overheads) are treated as the cost of product
- Under marginal costing, the value of finished goods and work-in-progress is also comprised only of marginal costs. Variable selling and distribution overheads are excluded for valuing these inventories.
- Fixed costs are treated as period costs and are charged to profit and loss account for the period for which they are incurred
- Prices are determined with reference to marginal costs and contribution margin
- Profitability of departments and products is determined with reference to their contribution margin

### Meaning of Terms

In order to understand the concept of marginal costing, let us first define various terminology associated with marginal costing.

Marginal Cost	Marginal Costing	Direct Costing	Differential Cost
Marginal cost as understood in economics is the incremental cost of production which arises due to one-unit increase in the production quantity.	It is a costing system where products or services and inventories are valued at variable costs only.	Direct costing and Marginal Costing is used synonymously at various places and it is so also.	Differential cost is difference between the costs of two different production levels.

### Computation of Contribution and Profit under Marginal Costing

For the determination of cost of a product/ service under marginal costing, costs are classified under variable and fixed. All the variable costs are part of product and fixed costs are charged against contribution margin.

#### Cost and Profit Statement under Marginal Costing

	Amount (Rs)	Amount (Rs)
Revenue		xxx
<b>Product Cost:</b>		
- Direct Materials	xxx	
- Direct employee (labour)	xxx	
- Direct expenses	xxx	
- Variable manufacturing overheads	xxx	
<b>Product (Inventoriable) Costs</b>	<b>xxx</b>	<b>(xxx)</b>
Product Contribution Margin		xxx
- Variable Administration overheads	xxx	
- Variable Selling & Distribution overheads	xxx	(xxx)
<b>Contribution Margin</b>		<b>xxx</b>
<b>Period Cost:</b>		
Fixed Manufacturing expenses	xxx	
Fixed non-manufacturing expenses	xxx	(xxx)
Profit/ (loss)		xxx

## Advantages of Marginal Costing

There are many advantages of marginal costing, some of them are discussed below.



## Cost-Volume-Profit (CVP) Analysis

It is a managerial tool showing the relationship between various ingredients of profit planning viz., cost, selling price and volume of activity.

## Marginal Cost Equation

Marginal Cost Equation =  $S - V = C = F + P$

### Marginal Cost Statement

	(₹)
Sales (S)	xxxx
Less: Variable Cost (V)	xxxx
Contribution (C)	xxxx
Less: Fixed Cost (F)	xxxx
Profit/ Loss (P)	xxxx

## Profit Volume Ratio or P/V ratio

This ratio shows the proportion of sales required to cover fixed cost and profit. P/V ratio is calculated as below:

$$(a) \text{ P/V Ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100$$

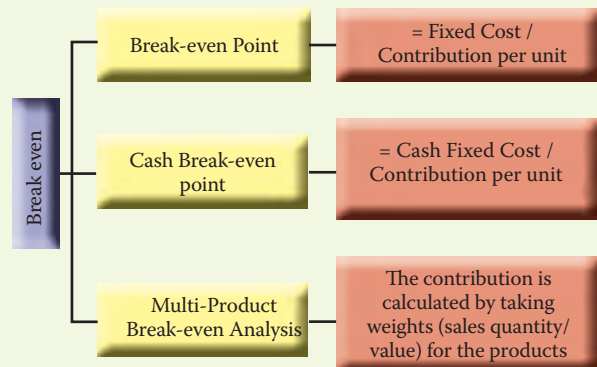
(b) When two years' data is given, P/V Ratio

$$= \frac{\text{Change in contribution/ Profit}}{\text{Change in sales}} \times 100$$

## Break-Even Analysis

Break-even analysis is a generally used method to study the CVP analysis. This technique can be explained in two ways.

- (i) In narrow sense it is concerned with computing the break-even point.
- (ii) In broad sense this technique is used to determine the possible profit/loss at any given level of production or sales.



## Angle of Incidence

This angle is formed by the intersection of sales line and total cost line at the break-even point. This angle shows the rate at which profit is earned once the break-even point is reached. The wider the angle the greater is the rate of earning profits. A large angle of incidence with a high margin of safety indicates extremely favourable position

## Margin of Safety

This is the difference between the expected level of sales and break even sales (no profit, no loss). The larger is the margin of safety higher is the profit and vice versa.

### Variations of Basic Marginal Cost Equation and other formulae

i. Sales – Variable cost = Fixed cost + Profit / Loss
By multiplying and dividing L.H.S. by S
ii. $\frac{S(S - V)}{S} = F + P$
iii. $S \times \text{P/V Ratio} = F + P$ or Contribution ( $\text{P/V Ratio} = \frac{S - V}{S} \times 100$ )
iv. $\text{BES} \times \text{P/V Ratio} = F$ ( $\because$ at BEP Profit is zero)
v. $\text{BES} = \frac{\text{Fixed cost}}{\text{P/V Ratio}}$
vi. $\text{P/V Ratio} = \frac{\text{Fixed cost}}{\text{BES}}$
vii. $S \times \text{P/V Ratio} = \text{Contribution}$ (Refer to iii)

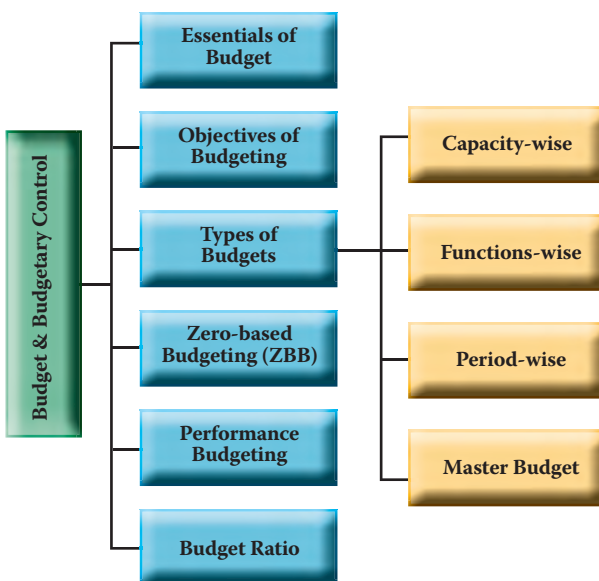
# COST AND MANAGEMENT ACCOUNTING ||

viii.	$\text{P/V Ratio} = \frac{\text{Contribution}}{\text{Sale}} \times 100$
ix.	$(\text{BES} + \text{MS}) \times \text{P/V Ratio} = \text{Contribution (Total sales = BES + MS)}$
x.	$(\text{BES} \times \text{P/V Ratio}) + (\text{MS} \times \text{P/V Ratio}) = \text{F} + \text{P}$
	By deducting $(\text{BES} \times \text{P/V Ratio})$ from L.H.S. and F from R.H.S. in (x) above, we get:
xi.	$\text{M.S.} \times \text{P/V Ratio} = \text{P}$
xii.	$\text{P/V Ratio} = \frac{\text{Change in profit}}{\text{Change in sales}} \times 100$
xiii.	$\text{P/V Ratio} = \frac{\text{Change in contribution}}{\text{Change in sales}} \times 100$

xiv.	$\text{Profitability} = \frac{\text{Contribution}}{\text{Key factor}}$
xv.	$\text{Margin of Safety} = \text{Total Sales} - \text{BES} \text{ or } \frac{\text{Profit}}{\text{P/V Ratio}}$
xvi.	$\text{BES} = \text{Total Sales} - \text{MS}$
xvii.	$\text{Margin of Safety Ratio} = \frac{\text{Total sales} - \text{BES}}{\text{Total Sales}}$

## Budget & Budgetary Control

### Chapter Overview



### Definition and Terminology

Let us first define various important terminologies used in budget and budgetary control.

Budget	Budgeting	Budgetary control
Quantitative expression of a plan for a defined period of time	Coordinating the combined intelligence of an entire organisation into a plan of action based on past performance	The establishment of budgets relating to the responsibilities of executives of a policy and the continuous comparison of the actual with the budgeted results, either to secure by individual action the objective of the policy or to provide a basis for its revision

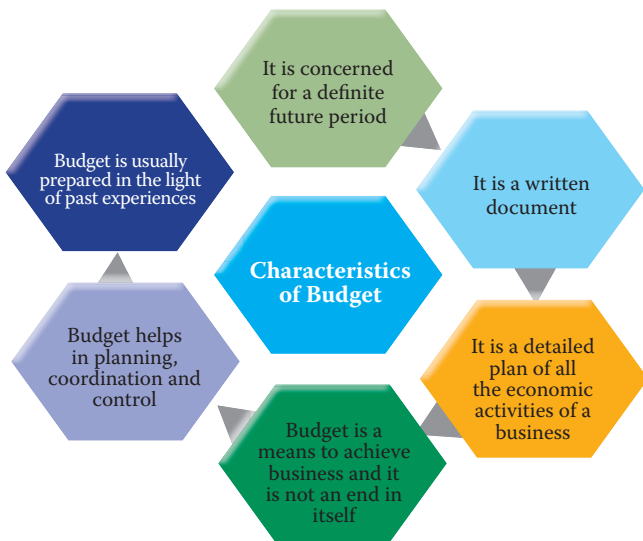
### Essentials of Budget

Essential elements of budget are illustrated below:

Essential elements of a budget					
Organisational structure must be clearly defined	Setting of clear objectives and reasonable targets	Budgets are prepared for the future periods based on expected course of actions	Budgets are updated for the events that were not kept into the mind while establishing budgets	Budgets should be quantifiable and master budget should be broken down into various functional budgets. Budgets should be monitored periodically	Budgetary performance needs to be linked effectively to the reward system

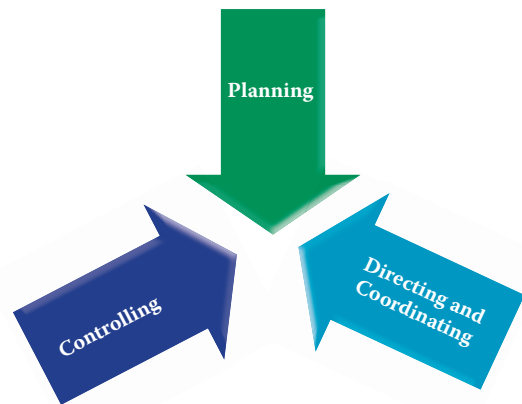
## Characteristics of Budget

Main characteristics of budget are as below:



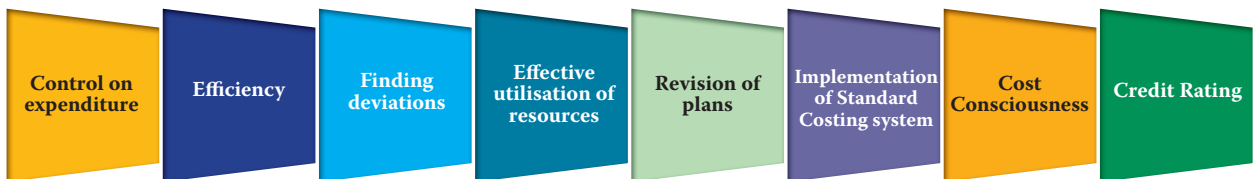
## Objectives of Budgeting

The objective of budgeting begins with planning and ends with controlling. Once the planning is done, they can be used for directing and controlling operations so that the stated targets in planning are achieved.

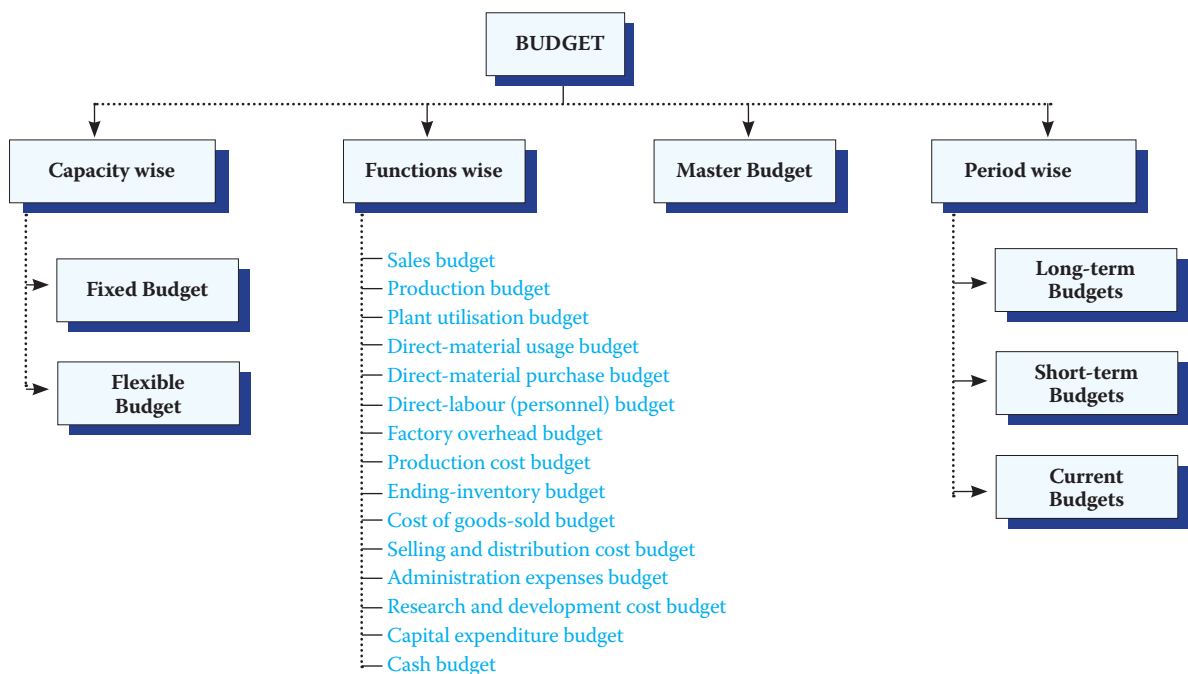


## Advantages of Budgetary Control System

There are many advantages of budgetary control system, and some of the them are illustrated below:



## Classification of Budget



## Definition of different types of Budget

<b>Functional Budgets</b>	Budgets which relate to the individual functions in an organisation are known as Functional Budgets. For example, purchase budget; sales budget; production budget; plant-utilisation budget and cash budget.
<b>Master Budget</b>	It is a consolidated summary of the various functional budgets. It serves as the basis upon which budgeted P & L A/c and forecasted Balance Sheet are built up.
<b>Long-term Budgets</b>	The budgets which are prepared for periods longer than a year are called long-term budgets. Such budgets are helpful in business forecasting and forward planning. Capital expenditure budget and Research and Development budget are examples of long-term budgets.
<b>Short-term Budgets</b>	Budgets which are prepared for periods less than a year are known as short-term budgets. Cash budget is an example of short-term budget. Such types of budgets are prepared in cases where a specific action has to be immediately taken to bring any variation under control, as in cash budgets.
<b>Basic Budgets</b>	A budget which remains unaltered over a long period of time is called basic budget.
<b>Current Budgets</b>	A budget which is established for use over a short period of time and is related to the current conditions is called current budget.
<b>Fixed Budget</b>	According to CIMA official terminology, "a fixed budget, is a budget designed to remain unchanged irrespective of the level of activity actually attained".
<b>Flexible Budget</b>	According to CIMA official terminology, "a flexible budget is defined as a budget which, by recognizing the difference between fixed, semi-variable and variable costs is designed to change in relation to the level of activity attained".

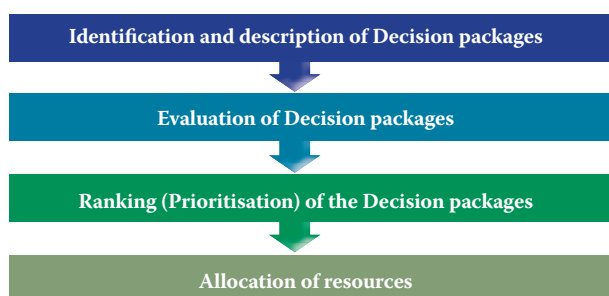
## Differences between Fixed Budget and Flexible Budget

Sl. no.	Fixed Budget	Flexible Budget
1.	It does not change with actual volume of activity achieved. Thus it is known as rigid or inflexible budget	It can be re-casted on the basis of activity level to be achieved. Thus it is not rigid.
2.	It operates on one level of activity and under one set of conditions. It assumes that there will be no change in the prevailing conditions, which is unrealistic.	It consists of various budgets for different levels of activity.
3.	Here as all costs like - fixed, variable and semi-variable are related to only one level of activity, so variance analysis does not give useful information.	Here, analysis of variance provides useful information as each cost is analysed according to its behaviour.
4.	If the budgeted and actual activity levels differ significantly, then the aspects like cost ascertainment and price fixation do not give a correct picture.	Flexible budgeting at different levels of activity facilitates the ascertainment of cost, fixation of selling price and tendering of quotations.
5.	Comparison of actual performance with budgeted targets will be meaningless specially when there is a difference between the two activity levels.	It provides a meaningful basis of comparison of the actual performance with the budgeted targets.

## Zero- Based Budgeting (ZBB)

It is defined as 'a method of budgeting which requires each cost element to be specifically justified, although the activities to which the budget relates are being undertaken for the first time, without approval, the budget allowance is zero'.

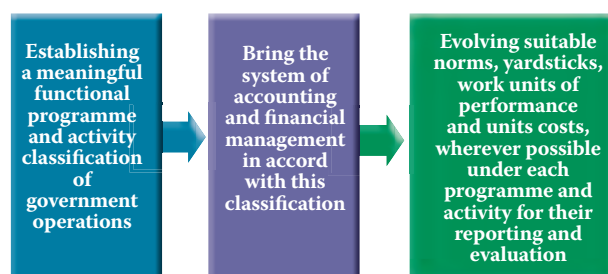
### Stages in Zero-based budgeting



## Performance Budgeting

A performance budget is one which presents the purposes and objectives for which funds are required, the costs of the programmes proposed for achieving those objectives, and quantitative data measuring the accomplishments and work performed under each programme.

### Steps in Performance Budgeting





## Budget Ratio

Budget ratios provide information about the performance level, i.e., the extent of deviation of actual performance from the budgeted performance and whether the actual performance is favourable or unfavourable.

**The following ratios are usually used by the management to measure development from budget**

### Efficiency Ratio

This ratio may be defined as standard hours equivalent of work produced expressed as a percentage of the actual hours spent in producing the work.

### Standard Capacity Employed Ratio

This ratio indicates the extent to which facilities were actually utilized during the budget period.

### Level of Activity Ratio

This may be defined as the number of standard hours equivalent to work produced expressed as a percentage of the budget of standard hours.

### Capacity Usage Ratio

This is the relationship between the budgeted number of working hours and the maximum possible number of working hours in a budget period.

### Calendar Ratio

This ratio may be defined as the relationship between the number of working days in a period and the number of working days as in the relative budget period.



### Budget Ratios:

(i) **Efficiency Ratio** =  $\frac{\text{Standard Hours}}{\text{Actual Hours}} \times 100$

(iv) **Standard Capacity Usage Ratio** =  $\frac{\text{Budgeted Hours}}{\text{Max. possible hours in the budgeted period}} \times 100$

(ii) **Activity Ratio** =  $\frac{\text{Standard Hours}}{\text{Budgeted Hours}} \times 100$

(v) **Actual Capacity Usage Ratio** =  $\frac{\text{Actual Hours worked}}{\text{Max. possible working hours in a period}} \times 100$

(iii) **Calendar Ratio** =  $\frac{\text{Available working days}}{\text{Budgeted working days}} \times 100$

(vi) **Actual Usage of Budgeted Capacity Ratio** =  $\frac{\text{Actual working Hours}}{\text{Budgeted Hours}} \times 100$