COST ACCOUNTING

Every businessman tries to reduce the cost of manufacture to the minimum in the stage of complexity and competition more particularly in the large-scale production. Therefore, the businessman looks for information to study the cost of a manufacture in the past and on this basis, he assesses what it will cost in the future. Therefore, more importance is given to profit and loss account, which is prepared on the cost principle.

Cost refers to the total expenses which are incurred to produce n article cost includes both variable and fixed cost whereas costing is the body of principles and rules for ascertaining the costs of products and service. It is the day-to-day routine of ascertaining costs.

The I.C.M.A., London has defined costing as- "It refers to the techniques and processes of ascertaining costs and studies the principles and rules concerning the determination of cost of products and services".

It is the method of accounting for cost. The process of recording and accounting for all the elements of cost is called cost accounting.Cost accountancy is the application of costing and cost accounting principles, methods and techniques to the science, art and practice of cost control and ascertainment of profitability. It includes the presentation of information for the purpose decision making.

SCOPE OF COST ACCOUNTING:

The term scope refers to field of activity. Cost ascertainment and control of costs. The information provided to the management is helpful for cost control and cost reduction through functions of planning, decision making and control. In the initial stages of evolution, cost accounting confined itself to cost ascertainment and presentation of the same with the main objective of finding the product cost. With the development of business activity and introduction of large-scale production the scope of cost accounting was providing information for cost control and cost reduction has assumed equal significance along with finding out cost of production. In addition to enlargement of scope the area of application of cost accounting has also widened. Initially cost accounting was applied in manufacturing activities only. Now it is applied in service organization, government organization, local authorities, forms, extractive industries.

OBJECTIVES OF COST ACCOUNTING:

Main objectives of cost accounting are;

a. Ascertainment of cost: The primary objective of cost accounting is ascertainment of cost. It is done through the methods and techniques of costing. Costing is the process of collection, classification and analysis of costs or expenses.

b. Control of cost:A basic function of cost accounting is to control costs. The object is to minimize the cost of manufacturing. Comparison of actual cost with standards cost. If the variances are adverse, the management enters into investigation so as to adopt corrective action immediately.

c. Cost reduction: Cost accounting is helpful to management in cost reduction through the techniques of budgetary control, standard costing, material control, labour control and overhead control.

d. Fixation of selling price: Cost data are useful in the determination of selling price. Apart from cost ascertainment, the cost accountant analyses the total cost into fixed and variable costs. This will help the management to fix the selling price.

e. Forming business policy- Cost accounting helps the management in formulating business policy and decision making. Break even analysis, cost-volume-profit relationship differential costing etc. are helpful to the management in taking decisions regarding: 1) Production or discontinuation of a product. 2) Utilization of ideal capacity. 3) The most profitable sales mix. 4) Export decision. 5) Make or buy decision.

VARIOUS METHODS &TECHNIQUES / TYPES OF COST ACCOUNTING

Different methods of cost findings are used because industries vary in their nature in the types of products, service. The following are important methods of costing.

1) Job costing- Job costing means an industry which produces a definite article against individual order from customers. This type of costing is suitable to printing press, furniture manufacture, and heavy machine.

2) Contract costing- The method of contract costing is applied where the job is big and of longer duration. For each individual contract, separate accounts have to be kept. It applies to concern like constructional work, roads, bridges, buildings.

3) Batch costing- A batch may represent a number of small orders passed in batches through the factory. This type of costing is adopted by industries producing medicines, biscuits, spare parts and components.

4) Multiple costing- It means combination of two or more of the above methods. This system of costing is adopted in manufacturing concerns where varieties of parts are produced separately and later assemble into a final product. This type of costing is adopted by industries produce cycles, radios, typewriters.

5) Process costing-It applies to industries where production is carried on through different stages before becoming a finished product. Finished product of one process becomes the raw material of the subsequent process. This type of cost accounting is suitable for industries such as chemical, oil paint, rubber, glass.

6) Unit costing- Under this method production is continuous and units are identical. This method is suitable to industries producing pencils, dairy products, and steel work.

7) Operation costing-This method is used where there is a mass production and processes are repetitive in nature. This method is adopted by industries like toy-making, leather and spare parts.

8) Operating costing- It is suitable to those industries which render services instead of producing goods. This system is adopted where expenses are incurred for provision of service; for example transport companies, electricity companies, railways, hospitals and canteen.

9) Department costing- It is a method of cost finding adopted to ascertain the cost of operating a department or a cost centre separately. Where the factory is divided into a number of departments this method is adopted.

Technique or types of costing

The following are the main types of costing applied for cost ascertainment.

- **Historical costing**- It is ascertainment of cost after they have been incurred. It aims at ascertaining the cost incurred on the work done in the past.
- **Marginal costing-** This technique classifies the total cost of a product or operation into two class viz i) fixed cost which do not change but remain constant for any level of production and ii) variable cost which proportionately vary to the change in the volume.
- **Absorption costing-** It is also known as total cost approach. It is defined as "the practice of charging all costs, both variable and fixed to operations, process or products.
- **Standard costing**- A standard costing is a predetermined cost. Standard costing is the ascertainment of the standard cost and its comparison with the actual cost in order to ascertain variations.
- **Uniform costing** "The use by several undertakings of the same costing principles and /or practices". – I.C.M.A.

ESSENTIAL CHARACTERISTICS OF COST ACCOUNTING

The ideal system of cost accounting must possess some characteristics. The main characteristics are:

1) Simplicity- It must be simple, flexible and adoptable to the changing conditions. And it must be easily understandable to the personal.

2) Flexibility and Adoptability- The costing system must be flexible to accommodate the changing conditions. The expansion or changes must be adopted in the existing system with minimum changes.

3) Economy- The costing system must suit the finance available. The expenditure must be less than the benefits derived from the system adopted.

4) Comparability- The management must be able to make comparison of the facts and figures with the past figures, figures of other concerns or other departments of the same concern.

5) Suitability to the firms- Before accepting a costing system, the nature, requirements, size, and conditions of a business must be carefully considered.

6) Minimum changes to the existing one- When introducing a costing system, it may cause minimum disturbance to the existing set up of the business.

7) Uniformity of forms-Forms of different colours can be used to distinguish them. Forms must be uniform in size and quality.

8) Less clerical works- Printed forms will involve less labour to fill in as the workers may be a little education, they may not like to spend much time in filing the forms.

9) Efficient material control and wages system- There must be a proper procedure for recording the time spent on different jobs by workers for the payment of wages. The systematic method of wage system will help in the control of labour cost.

10)A sound plan- There must be proper and sound plans to collect to allocate and the overhead expenses on each job or each product in order to find out the cost accurately.

ADVATAGES OF COST ACCOUNTING:

Cost accounting is useful to the management, to the employees, to the public and to the creditors. They are discussed below:

a) To the Management

1. Effective decision making- Cost accounting provides information regarding individual products, departments, divisions and cost centers. This facilitates the management to identify unprofitable operation and improve overall profitability.

2. Measuring efficiency-With the help of cost accounting the management can set budgets and standards for various elements of cost and compare them with actual to measure efficiency.

3. Cost reduction- Cost accounting is helpful to management in reduction of cost through its techniques by efficient and effective utilization of raw materials, labour and optimum production of output.

4. Fixation of selling price- Cost accounting provides information in detail regarding variable and fixed costs helps in selling price under different circumstance.

5. Effective cost control- The fundamental objective of cost accounting is to ascertain and control costs.

6. Increasing efficiency- Under an efficient cost accounting system, proper inventory control, labour utilization and proper analysis of expenditure is possible. This results in increasing efficiency throughout the organization.

7. Effective inventory control- An effective cost accounting system and check are provided on all materials and stores.

8. Reduction of wastages of material and labours- Cost accounting sets predetermined costs for different elements which are compared with actual to reveal variances. The unfavourable variances are dealt with and controlled effectively.

9. Effective utilization of resources- Managerial costing helps in decision making regarding 'make or buy' of components, profit planning, sales mix etc. Standard costing and budgetary control are also helpful in effective utilization of resources.

10. Effective budgeting- Cost accounting records both historical cost and pre-determined costs, which are essential for the technique of budgetary.

b) To the employees

1. Sound wages policy- Cost accounting introduces incentive wages schemes, bonus plans etc, which bring better reward to sincere and efficient workers.

2. Higher bonus plans-Cost accounting leads to an increase in productivity, lowering of cost and increasing in productivity, workers get share in profits in the form of bonus. Higher profit naturally allows higher bonus distribution.

3. Distinction between efficient and inefficient workers-Cost accounting provides standards for the measurement of efficiency of workers. This means increasing in earnings, through the motion study and time study in doing jobs.

4. Security of job-Employees get better remuneration, security of job etc, due to the increasing prosperity of the industries.

c) To the creditors

Before the creditors offer the loan to a firm, they can have better understanding of the progress and profitability of the firm through relevant reports.

d) To the government- Cost data of specific industries and general trend of cost can influence the Government to initiate appropriate changes in granting of subsidies, formulating taxation policies, import and export legislation etc,

e) To the public-Good costing system helps in proper utilization of resources. Cost reduction is helps in fair price of products and profitability of organizations is helpful in prosperity of the industry through more employment opportunities to the members of the public.

LIMITATION OF COST ACCOUNTING:

Cost accounting has becoming indispensable tool to management for exercising effective decision. However the following are the limitation of cost accounting:

a) Cost accounting is costly to operate- Cost accounting involves heavy expenditure to operate. Double set of accounts books has to be maintained and it is not economical for small concerns.

b) It is unnecessary- It is argued that costing is only recently originated and that many industries have prospered well and are still prospering without cost accounting. Therefore the system is unnecessary.

c) Cost accounting involves many forms and statements- It is pointed against cost accounting that it involves usage of many forms and statements. This leads to monotony in filling up of forms and increase of paper work.

d) Costing may not be applicable in all types of industries- Existing methods of cost accounting may not be applicable in all types of industries. Cost accounting methods can be devised for all types of industries and services.

e) It is based on estimations- Some people claim that costing system relies on predetermined data and therefore it is not reliable.

FUCTIONS OF COST ACCOUNTING

1. It helps in optimum utilization of men, material and machine.
2. Cost accounting identified the areas that require corrective action.
3. It helps management in the formulation of policies.
4. It provides appropriate solution to the various problem of management.
5. Costing helps management making short-term decision by the use of techniques managerial costing, standard costing etc
6. It provides useful data for the preparation of final accounts by giving cost of closing stock of raw materials, work-in-progress and finished products.
7. It provides a data-base for reference to Government, wage tribunals, trade union etc.
8. It helps in the formation of cost centre and responsibility centre to exercise control.
9. It helps in fixing prices of products and services.
10. Costing facilitates use of specialized techniques like cost prediction, value analysis etc.

STEPS FOR INSTALLATION OF COSTING

Determination of objectives- The first and important step is to clearly lay down the objectives of the costing system. If the objective is only to ascertain the cost, a simple system will be sufficient. If the objective is to get information for decision making, planning and control, a name elaborate system of costing is necessary.

Study of the nature of business- The nature of the business and other technical aspects like nature of the products, method and stage of production cycle should be carefully analysed. It is necessary to decide the method of costing to be adopted.

Study of the nature of the organization- The costing system should be designed to meet the requirement of the organization.

Deciding the structure of cost accounts- The cost office with adequate staff must be located as close as possible to the factory cost accountant must have the necessary authority to discharge his duties effectively.

Introducing the system- Introducing of the system is an existing organization should be done gradually. Before introducing the feature of the system, its advantages must be explained to the concern employees to secure their co-operation.

Determination of accounting system- Determination of unit of cost, classification of operating expenses, coding system of material, developing the measures of inventory control, cost control, budgetary control, presentation of cost to managerial level of making decisions are the general problem to be dealt with.

Elasticity and economy-The system we adopt must be capable of being flexible and adoptive to the charging circumstances. The system should not be complicated and expensive.

Regularity- Cost data and costing information must reach the person concern regularity and promptly. Otherwise significance of the costing system will be lost.

PROBLEMS OF INSTALLING A COSTING SYSTEM AND STEPS TO OVERCOME PROBLEMS IN INSTALLING A COSTING SYSTEM

The management may face additional difficulties in the installation of costing system, and in brief they are:

1) Lack of support and interest and interest from the employers, executives and the top management.

2) Lack of cost consciousness among the production personnel.

3) Shortage of trained staff.

4) Non-co-operation and resistance from the personnel.

Steps to overcome problems in installing a costing system-

1. Board of system is to be explained to all the employees.

2. The cost accountant would have to explain the advantage of the system to the management and employees.
3. The introduction and filling up of forms and various cost statement have to be made easy.
4. Frequent meeting should be convened to remove any doubts and difficulties the employees have.

DIFFERENCE BETWEEN COST AND FINANCIAL ACCOUNTING

Basis of Difference	**Cost accounting**	**Financial accounting**
Objective	The main objective of cost accounting is to provide cost information to management for decision making.	The main objective of financial accounting is to prepare profit and loss account and balance sheet to report to owners and outsiders.
Legal requirement	Cost accounts are maintained to fulfil the internal requirement of the management as per conventional guidelines.	Financial records are maintained as per the requirement of Companies Act and Income Tax Act
Classification of Transactions	Cost accounting records and analyses expenditure in an objective manner viz., according to purpose for which costs are incurred.	Financial accounting classifies records and analysis transactions in a subjective manner i.e. according nature of expenses.
Stock valuation	In cost accounts stock are valued at cost.	In financial accounts, stocks are valued at cost or realizable value, whichever is less.
Analysis of Profit and Cost	Cost accounts reveal profit or loss of different products, departments separately.	In financial accounts the profit or loss of the entire enterprise is disclosed.
Accounting period	Cost reports are of continuous process and are prepared as per the requirements of managements may be daily, weekly, monthly, quarterly or annually.	Financial reports are prepared annually.

Nature	Cost accounts maintained on both historical and predetermined costs.	Financial accounts are maintained on the basis of historical records.
Wastages	Wastages, shortages, losses etc. are categorized into normal and abnormal losses. Its aims to eliminate abnormal losses.	There are no such categories.
Relative efficiency	It provides information for all operations and compare with standard cost and deviations can analyzed for corrective action.	It does not reveal the relative efficiency of workers plant & machinery etc.
Transaction	It deals with external transactions.	It deals with internal transactions.

DIFFERENCE BETWEEN COST AND MANAGEMENT ACCOUNTING

Cost accounting	**Management accounting**
1. The cost accounting is primarily concerned with the ascertainment of cost and profitability and with the control of costs through budgetary control, standard costing etc.	The management accounting concerned with formation of policies, improvement of productivity, profitability etc.
2. Cost accounting evolved cost of financial accounting.	Management accounting evolved out of cost accounting.
3. Cost accounting suggests to the management the best of the alternatives by use of different cost method.	Management accountant takes into consideration the other non-cost factors also while deciding upon alternatives.
4. Cost accounting provides just cost information for managerial purpose.	Management accounting provides all accounting information.
5. Cost accounting uses both past and present figures.	It is generally concerned with the projection of figures for future.

ELEMENTS OF COST

The total expenditure consisting of material, labour and expenses can further be analysed as under.

Prime cost = Direct materials +Direct labour + Direct expenses

Work cost = Prime cost + Factory overheads

Cost of production = Factory cost + Administration overheads

Total cost = Cost of production + selling and distribution overheads.

Each elements of cost is explained in detail as below:

The elements of cost are:

Material: "The materials cost is the cost of commodities supplied to an undertaking".-I.C.M.A Materials cost is of two types, vis Direct materials cost and indirect materials.

Direct materials cost: Direct material is material that can be directly identified with each unit of the finished products. Cotton used in production of cloth, leather used in the case of production of leather goods etc. any material purchased and used for a specific job are also direct materials.

Indirect materials: Materials used for the product other than the direct materials are called indirect material. In other words, materials cost which cannot be identified with a product, job, process is known as indirect material cost. Small tools, stationary used in works and office stationary etc.

Labour: Labour is the remuneration paid for physical or mental effort expended in production and distribution. Labour cost is also divided into direct and indirect portions.

Direct labour cost: It is also called Direct wages. Direct labour cost is the cost of labour directly engaged in production operations. E.g. workmen engaged in assembling parts, carpenters engaged in furniture making etc.

Indirect labour cost: Indirect labour cost is the remuneration paid for labour engaged in helps the production operations. E.g. inspectors, watchmen, sweepers, store keepers etc.

Expenses: Expenditure other than material and labour is the third element of cost. Expenses are of two types-

i) Direct expenses: These are the expenses which can be directly identified with a unit of output. The direct expenses are also known as chargeable expenses. The examples are: Hire charges of special plant used for a job, Royalty on products etc.

ii) Indirect expenses- Indirect expenses are expenses other than indirect material and indirect labour, cannot be directly identified with units of output, job, process or operation. For example, rent, power, lighting, depreciation, advertising etc.

Overheads: Overheads are the total of all indirect expenses.

Classification of overheads;

On the basis of functions overhead is classified as

i) factory overhead,
ii) administration or office overheads
iii) selling and distribution overhead.

Factory overheads; This is aggregate of indirect material, indirect wages and indirect expenses incurred in the factory. Examples of indirect factory expenses are rent, power, depreciation, lighting and heating incurred in the factory.

Administration or office overheads: All the indirect administration expenses come under this category. Salaries of office staff, accountants, director's fees, rent of office lighting and bank charge etc. are the example.

Selling and Distribution overheads: This includes selling and distribution expenses. Examples are salaries of salesmen, selling commission, advertising, warehouse rent, maintenance of delivery vans, warehouse staff expenses, warehouse lighting etc.

Expenses excluded from costing-The following items are excluded from computation of total cost.

1. Capital cost and capital losses: Purchase of fixed assets, plant and building, machinery etc. loss on sale of fixed assets, abnormal losses, and preliminary expenses.
2. Transfer to reserves, Income Tax, dividend, bonus to shareholders etc.
3. Financial items like cash discount, interest on debentures, interest on loans, interest on own capital etc.

CLASSIFICATION OF COST

Cost classification is the process of grouping costs according to their common characteristics. The important classifications are:

Classification according to nature: According to this classification, the costs are divided into three categories; i.e. **material, labour and expenses**. Material cost means the cost of commodities supplied to an undertaking. Labour cost or wages means the cost of remuneration such as wages, salaries, bonuses etc. of the employees of the undertaking. Expense means cost of services provided to an undertaking and notional cost of the use of owned asset.

Classification according to time:

Historical costs: Costs relating to the past time period which has already been incurred. It is known as traditional costing.

Current costs: Cost relating to present period.

Pre-determined costs: Cost relating to the future period. Cost which is compute in advance predetermined costs are also known estimated costs.

Classification according to function:

Production cost: The cost of the set of operations are commencing with supply of materials, labours and services, and ending with primary packing of products. Thus it is equal to the total of direct materials, direct labour, direct expenses and production overheads.

Administrative cost: Administrative cost is "the cost of formulating the policy, directing the policy, directing the organization and controlling the operations of the undertaking which is not directly related to production, selling, distribution, research or development activity or function"I.C.M.A. Some examples are office rent, accounts department expenses audit and legal expenses, director's remuneration etc.

Selling cost: The cost of seeking to create and stimulate demand and of securing orders these are sometimes called marketing costs. Some examples are advertisement, salesman remuneration, showroom expenses etc.

Distribution cost: The cost of sequence of operations which begins with making the packed product available for dispatch and ends with making the reconditioned returned empty package. Some examples are maintenance of delivery vans, carriage outwards, transporting and storage expenditure incurred in moving article to and from prospective customers.

Research cost: The cost of researching for new or improved products, new applications of materials or improve methods.

Development cost: When new products have to be manufactured or an improved the method is to be adopted. The costs are expected to be higher.

Pre-production cost: The part of development cost incurred in making a trial production run prior to formal production.

Conversion cost: The sum of direct wages, direct expenses and overhead cost of converting raw material into the finished stage or converting a material from one stage of production to another stage.

Classification according to variability:

Fixed cost: There are costs which remain constant at various levels of production. They are not affected by volume of production. E.g. factory rent, insurance etc.

Variable cost: These are costs which tend to change in relation to volume of production. E.g. cost of raw materials, direct wages etc. They increase in total as production increases and vice-versa.

Semi variable cost: These are costs which are partly fixed and partly variable. These are fixed up to a particular volume of production and become variable thereafter for the next level of production. Some examples are repairs and maintenance of electricity, telephone etc.

Classification according to controllability:

Controllable cost: Costs which can be minimized by the executive action are known as controllable costs. Costs are which can be influenced and controlled by the management action.
Non- Controllable cost/ uncontrollable costs: Costs which cannot be minimized by the executive action are known as uncontrollable costs.

Classification according to normality:

Normal cost: It is the cost which is not normally incurred at a given level of output under the conditions in which that level of output is normally attained.

Abnormal costs: It is the cost which is not normally incurred at a given level of output, is normally attained. It is charged to costing profit and loss account.

Classification according to relationship:

Direct costs: Costs which are directly related to the cost centre or the cost unit for example cost of basic raw material use in the finished produce, wages paid to site labour in construction contract etc.

Indirect costs: Costs which are not directly identified with a cost centre or a cost unit for example factory rent incurred over various departments, salary of supervisor engaged in overseeing various construction contracts etc.

MEANING OF COST SHEET

The expenses of a product are analysed under different heads in the form of statement. This statement is called cost sheet.**Walter &Bigg** defined cost sheet as follows "The expenditure which has been incurred upon production for a period is extracted from the financial books and the stores records, and set out in a memorandum or a statement, if this statement is confined to the disclosure of the cost of the units produced during the period, it is termed as a cost sheet".

PURPOSES OF COST SHEET

1. It provides details of total cost under logical classification.
2. It provides cost per unit in different stages.
3. It helps in comparison and control of cost.
4. Cost sheet is helpful in estimation of cost for preparation to tenders.
5. It acts as basis for fixation of selling price.

SPECIMEN AND PREPARATION OF COST SHEET

Cost sheet of …….for the month of ……

Particulars	Rs.	Total Cost	Cost per Unit
Direct material Direct labour Direct expenses A) PRIME COST			
Add:works overheads: Indirect material Indirect wages Factory rent and rates Factory lighting and heating Power and fuel Repairs and maintenance Drawing office expenses Depreciation of plant and machinery Factory stationary Insurance of factory Factory/works managers salary Water consumption in factory Total works overheads			
B) WORKS COST / FACTORY OVERHEADS **Add**: **office/administration overheads:** Office rents and rates Office lighting Office stationary Office furniture depreciation and repairs Office salaries Legal charges Bank commission Telephone and postage Office cleaning			

Total administration overheads			
C) COST OF PRODUCTION **Add: selling and distribution overheads** Salesmen's salaries Salesmen's commission Showroom rent Showroom expenses Advertisement Sales office rent Traveling expenses Warehouse rent and rates Warehouse staff and salaries Repairs and depreciation of delivery vans Carriage outward Total selling & distribution overheads			
D) COST OF SALES			
E) PROFIT / LOSS			
SALES			

INVENTORY/MATERIAL MANAGEMENT

Material is the most important element of cost. More than fifty percent of the total cost of a product or a job is generally composed of material cost in several industries. Therefore, a control on material is quite essential to meet the objective of cost control. The importance of material control lies in that fact that any saving made in the cost of material will go a long way in reducing the cost of production and improving the profitability of the organization.

MEANING OF MATERIAL CONTROL (OR) INVENTORY CONTROL

The material means and include raw material, spare parts, components, factory supplies, packing material etc., the term material control means the regulation of an organization relating to procurement, storage, and usage of material in such a way as to maintain an even flow of production without excessive investment in material stock.

DEFINITION OF MATERIAL CONTROL

Material control can be defined as "a systematic control over purchasing, storing and consumption of material, so as to maintain a regular and timely supply of material, at the same time avoiding over-stocking". There are mainly three stages where material control is exercised

viz., at the time of purchase of material, storage of material, and issue of materials to different jobs.

OBJECTIVES OF MATERIAL CONTROL:

1. To make available all types of material and stores of right quality without any interruption.
2. To make purchase of material of required quality according to the standard fixed for finished product.
3. To make purchase of material at reasonably low cost. Quality should not be¬ sanctified for low cost.
4. Investment in material shall not tie up huge amount of capital which may be used for better activities. Moreover over-storing has its own limitations. Maximum store level should be fixed.
5. To avoid abnormal storage, leakage, theft, etc., of the material storekeeper must be trained to minimize loss of stores.
6. To avoid obsolescence of material by adopting better methods to issue of material
7. To provide the management with information of raw material cost, availability etc.
8. To ensure proper usage and storage of material.

FEATURES OF MATERIAL COST CONTROL

To achieve maximum managerial control on materials:

1. There should be co-operation & co-ordination among the department dealing with material – purchasing, receiving, testing, storage, and production planning of material.
2. Purchasing material should be centralized under expert, personnel, who have been trained.
3. All items in the store should be codified, classified and standardized.
4. Proper forms should be used for dealing of store items, issues, transfer, return of material etc.,
5. Material storage should be carefully planned to avoid losses from theft, deterioration, damage, evaporation, pilferage etc.,
6. Store control measures, like ABC analysis and stock verification, should be introduced.

7. Stock at different level should be fixed to ensure that there is no shortage and overstocking of material.
8. Purchasing quantity should be fixed to reduce the orderly costs and carrying costs.
9. Material& supplies should be properly stored.
10. Requisitions & stock must be priced on a suitable basis in order to ensure reliable costs.
11. Receiving and inspection procedure must be chalked out.
12. Regular reports on material purchased, issued, obsolete, spoiled defective etc., are to be submitted to the management.

ADVANTAGES OF MATERIAL CONTROL

A good system of material control will facilitate the following advantages.

1. Elimination of waste in the use of materials.
2. Availability of the right quality of material in the right time.
3. Avoidance of over stocking.
4. Buying the economic order quantity (ideal quantity).
5. Reduction of risk of loss on account of theft, loss, fraud, etc.,
6. Quick and easy availability of data relating to material, Prevention of production delays.

TECHNIQUES OF INVENTORY CONTROL:

Various techniques commonly used for inventory control are listed below:

1. ABC techniques.
2. Minimum, maximum and re-order levels.
3. Economic Order Quantity.
4. Proper purchase procedure.
5. Proper storage of material.
6. Inventory turnover ratio to overview slow and non-moving material.
7. Perpetual inventory system.
8. Fixation of material cost standards.
9. Preparation of material budgets.

MEANING OF PURCHASE CONTROL

An effective material control requires a good amount of attention to the purchasing procedure of material as to its cost. Quality, volume, timely delivers etc. Low cost material will reflect in the finished product causing more wastage, resulting in high cost and sub-standard articles. Lack of proper purchase interrupts the production. Purchase control is one of the aspects of material control; it generally starts with initiation of purchase requisition and ends with receipt of material by the stores and payment of the bill. Generally, the following procedures are adopted, in most of the concerns.

Purchase department: In small concerns, all the purchases of raw materials are done by the owner himself. But in large firms, job of purchasing is entrusted to an efficient purchasing department headed by a purchase manager or chief buyer.

Centralized Vs. Decentralized purchasing: Whether purchasing should be centralized or decentralized is a matter of policy which is decided after considering number of factors. Centralized purchase means that all the purchases are made by the specialized department. Decentralized purchase means that the purchases are made by the individual departments. The centralized purchasing system has many advantages and is preferred.

PURCHASE PROCEDURE (OR) BILL OF MATERIALS

a. Bill of material (specification of materials): It is a complete schedule of material & components needed for a particular work order. The buying department is informed through the bill of material as to the quality, quantity and other specifications of the material required for a particular work. The advantages are:

i. The purchasing department is able to collect quotations, select suppliers & make quick purchase when the indent is received.
ii. If stock is exhausted, initiate purchase requisition.
iii. Cost of a job can be fixed in advance.
iv. The bill is prepared in five copies, one for each of the following: (a) Purchasing department, (b) Stores, (c) Production section, (d) Cost office, and (e) Office copy which is retained for reference.

b. Purchase requisition (indent for material): A purchase requisition is a formal request, initiated by the store-keeper for the materials required to replenish the stock of items.

Sometimes, the purchase requisition is also initiated by other department. Generally printed forms are sued for this purpose. It is a basis on which the purchasing department is to make the purchase.

c. Selection of supplier: After the receipt of purchase requisition, the source of material supply is to be selected. Generally, the purchasing department keeps a list of suppliers for all needed items. The quotation will be called for, by keeping in view the benefits to the concern-lowest price better quality, quick delivery, reliable supplies according the specifications etc. After receiving the quotations, they are opened at the time prescribed and a comparative statement is prepared.

d. Goods received note & inspection of materials: When the ordered goods arrive at the factory door, the clerk concerned verifies the goods with the help of the delivery. Note and the copy of the purchase order. In big concerns, an inspector is there who inspects all the materials and makes out a material inspection report.

e. Passing the bill: Having checked all the items, the bills is passed and sent to the accounts section, which makes the payment by accepting a stamped receipt.

VARIOUS STOCK LEVELS OF MATERIALS:

One of the objectives of material control is to maintain the stock of raw material as low as possible and ensure the availability of a material as and when required. Over stocking and under stocking load top unnecessary blocking up of working capital and under stocking may interrupt production. The object of fixing stock levels for each items of material is to maintain required quantity of material iin the store and there by the expenses may be reduced.

The different stock levels:

I. **Maximum Stock Level**: It is a stock level above which stock should not be allowed to rise. This is maximum quantity of stock of raw material which can be had is the stock. If it goes above, it will be over stoking and it will lead to the following disadvantages:

Demerits of over stocking:

- Capital is blocked.
- More space is needed.
- Deterioration of stock is possible.
- There will be loss due to obsolescence.
- There is the danger of depreciation in value.

The maximum level is fixed by taking into account the following factors:

- Availability of capital.
- Space available in stores.
- Rate of consumption
- Re-order level.
- Delivery time to obtain fresh stock.
- Chang in price.
- Seasonal nature of supply.
- Restriction imposed by goods.
- Economic order quantity.
- Cost of maintaining the stock.
- Possibility of change in fashion

Formula:

Maximum stock Level = Re-order Level + Re-order Quantity – (Minimum Consumption x Minimum Reorder Period)

II. Minimum Stock Level:

It represents the minimum quantity of an item of materials to be kept in the stores at any time. Material should not be allowed to fall below this level. If the stock goes below this level production may be held up for want of material. This stock is also known as safety stock level or buffer stock. In determining the minimum level the following factors are to the considered:

- Lead time i.e. time required for getting fresh delivery of material.

- Date of consumption of material during the lead time.
- Availability of substitute and re-order level.

Formula:

Minimum stock Level =Re-order Level – (Normal Consumption x Normal Re-order Period).

III. Re-order Level:

It is the point at which the storekeeper should initiate purchase requisition to for fresh supply. This level lies between the maximum stock level and minimum stock levels. The re-ordering point is fixed slightly higher than the minimum stock in such a way that the difference between minimum level & re-ordering level is sufficient to meet the demand for production up to the time of fresh supply. The level depends upon the lead time, state of consumption and economic order quantity.

Formula:

Re-ordering level=Maximum Consumption x Maximum Reorder Period.

IV. Danger Level:

This stock level is below the minimum quantity. It is level at which normal issues of the material are stopped but issued under special instructions. When the materials reach below the minimum level i.e. danger levels the storekeeper must make special arrangement to get fresh so that production may not be held up for want of material.

V. Average Stock Level:

This stock level shown the average quantity of material kept in the store. This is regarded as the average of maximum and minimum stock levels.

Formula:

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

If maximum level is not available:

Average stock level= Minimum Stock Level + 1/2 Re-order quantity.

ECONOMIC ORDER QUANTITY

Economic order quantity refers to the quantity of material to be purchased at one time to optimize the cost thereon. At this point of quantity the total of carrying costs and ordering costs will be the lowest. It is known by different names like 'Optimum quantity', (or) 'Ideal quantity' of purchase etc.

Ordering costs are the expenses incurred for the placement of purchasing order and other related expenses. More quantities of material ordered at one time reduces the ordering costs and if the quantity ordering is less, more frequent purchases are to be made and the ordering cost will increase.

Carrying cost are the expenses incurred for preserving the purchased material. It includes, interest on money invested in material, storage cost like insurance, lighting, rent, salaries of the staff employed in store etc., higher quantities of material purchased increase the carrying cost and vice versa.

Both ordering cost & carrying cost move in opposite direction. At a particular quantity of material purchased the total of both carrying cost & ordering cost will be the lowest, and this level of quantity is called EOQ.

Determination of EOQ:

Formula: $\sqrt{2AB/CS}$

A= Annual usage; B = Buying cost/order; C = Cost/unit; S = Storage & carrying cost / unit.

VARIOUS METHOD OF PRICING OF MATERIAL ISSUE

When materials are issued for any production work or any job, they have to be valued in the costing department. If materials are purchased for any particular job, the total cost of the material can be charged to that job. But generally raw materials are purchased in anticipation and issued whenever they are needed for production, assuming that the rate of raw material is the same. But this is not the case always. Price of everything change on the prevailing condition of the market.

(FIFO, LIFO, SIMPLE AVERAGE AND WEIGHTED AVERAGE METHOD)

I Actual price method:

FIRST IN FIRST OUT METHOD (FIFO):

Under this system, materials are issued in the order in which they are received in the store. The material received first will be issued first. "First come first served". In other words old stocks are

issued first and new stock will be issued afterwards. As a result of this system, when we value the closing stock of material that will be at the latest price.

Advantages:

 The method is simple & easy to operate

 Closing value of material will reflect to current market price.

 This system is good for slow moving materials.

 When prices are falling, this method gives better result.

 "First come, first served" is a logical system.

 Deterioration and obsolescence can be avoided.

Disadvantages:

 When price fluctuate, calculation becomes complicated.

 Complicated calculation will invite clerical errors.

 Under fluctuating prices, material charged to different but similar jobs vary, leading to non-comparison.

 When prices fall, jobs are charged with higher price of earlier material; the quotations are less competitive.

 When materials are returned to the stores, they are treated as new purchase, for the purpose of next issue.

LAST IN FIRST OUT METHOD (LIFO):

This method is opposite to FIFO. Here, material received last are issued first. Issues are made from the latest purchases. The issues are priced at the unit cost of the latest lot or the most recent purchase. The issues are not in chronological order, and cost of material reflects current market price.

Advantages:

 Material cost represents current price.

 It facilitates complete recovery of material cost.

 It is most suitable when pricing are rising.

 There is better matching of cost & revenue.

Disadvantages:

- It involves considerable clerical work.
- Due to variation of prices, comparison of cost of similar jobs in non-comparable.
- Stock of material shown is balance sheet will not reflect market prices.
- This system is not accepted by IT authorities.

SPECIFIC PRICE METHOD (IDENTICAL COST):

This is the price actually paid for the material for a particular job or work or contract. Under this method, material purchased for specific jobs, are kept separately and when issued, the job is charged with the actual price paid. Material of special nature, costing items etc., when used for specific work, are priced at the actual price & charged to the work. This method is good on individual jobs, contracts etc., against specific orders.

Advantages:

- True or actual price is charged.
- It is suitable when the items are costly.

Disadvantage:

- Separate records have to be kept, when involves clerical work.

BASE STOCK METHOD:

In almost all concerns, a minimum quantity of stock is always kept in store. A fixed minimum stock of the material is always maintained and is known as ‘safety’ or ‘base stock’. This stock is valued at a price at which the first lot of material is received. The stock should not be issued until emergency arises. The quantity in excess of this base stock may be valued either FIFO or LIFO method.

HIGHEST IN FIRST OUT METHOD (HIFO):

Under this method materials of the highest price are issued first. According to this method the closing stock will be of the minimum price or as low as possible. In short, material purchased at the highest price will be first issued, irrespective of the order of purchase; when the whole lot of the highest price is exhausted, material purchased at the next higher price are issued. This

method is suitable for cost plus contracts, but is not common. It rather operates similar to FIFO & LIFO.

II Average price method:

SIMPLE AVERAGE METHOD:

Issue prices of raw material are fixed at the calculated average unit price. When new purchases are made at different rates, and the average changes. This method of simple average is not generally followed, because it fails to recover the cost price of material. For example:

Issue price = total of unit price of material in stock / number of prices

Advantages:

- It is easy to operate.
- It reduces clerical work
- When there are slight fluctuations in price, it gives good result.

Disadvantages:

- Costs are not fully recovered.
- This system is not generally followed.

WEIGHTED AVERAGE METHOD:

This method gives weightage, a part from the price, to the quantity also. Weighted average price is a price obtained by dividing the total cost of material in the stock by the total quantity of material in the stock; and issues are priced accordingly.

Formula:

Weighted average price = value of material in stock / quantity in stock

Advantages:

- It will smooth out fluctuation.
- It facilitates recovery of the cost paid for material
- It is accepted by all.

Disadvantages:

- When a large number of purchases are made at different rates, the calculation is tedious.

PERIODIC SIMPLE AVERAGE PRICE:

The simple average rate is calculated, for a particular period, ignoring the rate of opening stock. The computation of the issue rate is found out by totaling the unit prices of all purchases of opening stock. The rate thus computed is used for all issues of the period & for valuing the closing stock.

Advantages:

- Calculation is easy, as the rate is to be computed only once at the end of the period.
- The issue price of material does not change during the period.
- Comparison of similar jobs in respect of material is easy.

Disadvantages:

- Delay is involved.
- Closing stock will not be in true value.

PERIODIC WEIGHTED AVERAGE PRICE:

Like the weighted average method, the rate is found out by computing the total cost paid for the material and dividing it by the total quantities purchased during a period, say a month, ignoring the opening stock. The rate thus calculated is used for issue as well as for closing stock of material.

Advantages:

- This method is superior to the above.
- Price fluctuations have been removed.

Disadvantages:

- The rate is calculated at the end of the period.
- Pricing of material is delayed.

III Other methods:

STANDARD PRICE METHOD:

This is a method of valuing the issues on a pre-determined price. The standard price of the material is decided, taking into account the quantity purchased, market conditions, future trend of the prices and all other matter connected with the material. Under such circumstances, the cost of the issue of the material will neither be at the cost price not at the market price.

Advantages:

- It is simple in working.
- Material cost can be fixed in advance.
- Comparison of jobs becomes easy.
- Control over purchase is possible.

Disadvantages:

- Sometimes, it fails to recover the cost of material.
- It will reflect the market price.
- Price variance account has to be created, in addition.

MARKET PRICE METHOD (Replacement price method):

This is based on the principle that material issued to any job on a particular day, should be charged at the rate prevalent in the market. In other words, materials issued are valued at a price at which they can be replaced. After the issue, the closing stock is adjusted to the net value.

Advantages:

- Latest price is reflected

Comparison is easy

Disadvantages:

- Lost of production varies with the market trends.
- It is not easy to know the latest price.
- Difference in value arises (purchase price & issue price), and needs adjustment.
- Profit or loss may arise on account of rise and fall in price of raw material.

INFLATED PRICES:

When purchases are made, looking at the invoice, one is able to understand that the seller charges the cost of the material and the expenses like packing, forwarding, freight, etc. Then, after purchasing additional expenses – sorting, preservation, issuing etc., are there.

LABOUR COST

INTRODUCTION:

Labour constitutes the second important major element of cost, but equally important is the cost of raw material. Material can be easily stored to be used as and when required but labour is a perishable commodity, which should it is a waste and ultimately the cost of production will be increased. Labour once appointed, cannot easily be removed. Therefore the right man at the job must be appointed

DIRECT LABOUR:

The labour spent in altering the construction, composition, or condition of product i.e. converting raw material into finished product, is known as Direct Labour cost can easily identified and allocated to cost units.

INDIRECT LABOUR:

Indirect labour cost is the amount of wages paid to workmen, who are not engaged in the production of goods or services, but at the same time, indirectly help the direct labour. In short wages paid such workers cannot be identified with any particular work. Examples of indirect labour cost are wages paid to supervisors, inspectors, watchmen, time keeper, repairers, cleaners etc.

IMPORTANCE OF LABOUR COST

- Fair incentive wage plans can be established.
- Ideal time to men and machines can be known.
- Work method can be improved.
- Labour cost control can be easily exercised.
- Labour cost budget can easily be prepared.
- Percentage of spoiled work can be reduced.
- Lower direct and indirect cost.
- Increased moral of employees.
- Lower labour turnover.
- Better control of production.

 Adds to capacity to face competition.

 Standard time for a job can be determined

MEANING OF LABOUR TURNOVER:

Labour turnover may be defined as the rate of change in the labour force, i.e., it denotes the percentage of change in the labour force of an organization. In other words, it is a term used to describe the movement of shifting into and out of an organization by the employees.

METHODS OR MEASUREMENT OF LABOUR TURNOVER

There are three types of methods of measuring labour turnover:

1. Separation method

2. Replacement method

3. Flux method

 Separation method:

Under this method, labour turnover for any period is measured by dividing the total number of separation by the average number of workers on the roll, then multiply by 100. Thus

Labour Turnover = No. of separation during a period/ Average no. of workers during the period*100

 Replacement method:

Under this method only the actual replacement of labour during a period is taken into account irrespective of the number of workers leaving. Thus

Labour Turnover = No. of replacement during a period/ Average no. of workers during the period*100

When new recruitment is there for expansion purpose they should be excluded from the number of replacement.

 Flux method:

Labour turnover is obtained by dividing the total number of separations and replacement by the average number of workers. Thus

Labour Turnover = (No. of additions + No.of separations)/ Average no. of workers during the period*100

METHODS OF REDUCTION OF LABOUR TURNOVER:

Following measures are suggested to management to maintain a happy and contented labour force.

 Better working conditions may be provided to workers.

 Selection of candidates must be made on the basis of scientific principles and workers must be placed on appropriate jobs.

 Well organized programmes must be chalked out to increase their efficiency.

 There must be a cordial relation between employer and employees.

 There must be job security and opportunities for career advancement.

 A good wages policy and incentive plans must be devised.

 An efficient grievance procedure is to be adopted.

 Labour participation in management must be encouraged.

 A good working condition conducing to health and efficiency should be provided.

 The personal department must prepare a periodical reports relating to causes of labour turnover and suggest remedies.

CAUSES AND EFFECTS OF LABOUR TURNOVER:

The causes can be broadly divided into two categories.

1. Avoidable causes

2. Unavoidable causes

- Quitting the job (due to inefficiency)
- Lack of Work
- Retirement or Death
- Accident/ Illness
- Marriage
- Disliking the job

Effects of Labour Turnover

- Fall in Production
- Increase in Cost, Selection and Training
- Dislocation of even flow of production.

- Increase of scrap, defective work, additional supervision etc.
- Higher accident rate.
- Mishandling of machines.
- Instability of labour & their low team spirit.

COST OF LABOUR TURNOVER:

Preventive Cost- These costs are incurred to prevent the labour turnover. They include administration cost, cost of health care facilities, cost of welfare facilities, old age facilities etc.

Replacement Cost- These costs include recruitment and training cost, cost of machine break down, spares, tools etc.

MEANING OF REMUNERATION:

Remuneration is a reward for the labour and service. Labour are two kind-direct and indirect. Both kind of labour are employed in an organization. They are to be paid remuneration for the services rendered by them. Labour costing is the responsibility o the cost Accounting Department. In order to prepare pay-rolls labour hours are to be converted into money at the rate prevalent.

ESSENTIAL OR FEATURES OF GOOD WAGES SYSTEM:

- The wage system adopted must be simple so that the workers may be able to understand it.
- The system must ensure satisfaction to both the employees and the employer.
- It should be based upon scientific time and motion study
- It should guarantee a minimum wage at satisfactory level.
- It should enable an efficient worker to earn more.
- It should reduce labour turnover.
- It must be accepted by trade unions.
- It must increase the morale of the employees.
- It should be according to the capacity to pay.
- The method should be correlated to the capacity of the firm to pay.

- It should be flexible to adjust to the changes in the cost of living.
- The cost of the scheme must be minimum level.
- It should encourage productivity.
- It should not be in violation of Government policy.
- It should minimize absenteeism.
- **METHODS OF WAGE PAYMENT:**

For convenience, the various method of remuneration may be divided as follows:

- **I) TIME RATE SYSTEM OR DAY RATE OR FLAT RATE:**

This is the simplest, oldest and the most common method of wages payment. Under this method the wages are calculated on the basis of time spend on a job irrespective of the volume of output. The time may be an hour, a day, a week or a month. Total amount of wages is calculated by multiplying time rate with the time spend.

Wages = Time worked X Rate of wages

Time rate at ordinary level:

Under this method payment is made on the basis of time, which may be an hour, day, week or a month, irrespective of the output. It means that a definite amount of payment is guaranteed for the specified period.

Earnings = Hours worked X Rate per hour

Time rate at high level:

In this case the time rate is fixed at a level higher than the rate prevailing in the locality for similar employment. Consequently a high standard of efficiency and output are fixed for the workers. If any worker cannot attain that level of efficiency, he is excluded from the scheme and is paid only ordinary time rate.

Guaranteed time rate:

Under this system payment is at time rates, but adjusted to cost of living. Merit awards for personal qualities, skill, ability, punctuality, etc., are also considered. The employer is not losing but compensates, it by increasing the price of the products.

Differential time rate:

Under this system different time rates are fixed for different level of efficiency. A percentage of efficiency is fixed, up to which a worker gets normal time rate. If he crosses that percentage of efficiency his time rate shall increase step by step.

ADVANTAGES OF TIME RATE SYSTEM:

1. Simplicity- An important advantage of time rate system is its simplicity. It is very easy to measure the time spent on the job and to calculate the amount of wages earned.

2. Security to workers- It gives the worker a feeling of security as he known in advance what will be his total remuneration at the end of the period. This will give him an assurance and he can plan his own expenditure accordingly.

3. Equality of wages- All workers doing similar jobs get the same rate of wages and a sense of equality prevails among the workers. This sense of equality among the workers helps in the smooth working of the organization.

4. Better quality- There the quality of products is more important than quantity, time rate is more advantageous.

5. Less wastage- Under this time rate, the workers need not speed up their operations to earn higher wages. So there will be less wastage of material and les wear and tears of tools and machinery.

6. Acceptable to trade unions- This system can be adapted to all kinds of work. Even if a worker does a variety of jobs, he can be compensated on time wages basis.

7. Adaptability- Labour unions always prefer time wages since this form of payment does not make any discrimination between efficient and inefficient workers. This method ensures stable income to all the employees.

DISADVANTAGES OF TIME RATE SYSTEM:

1. Inefficiency- This system does not check employees' inefficiency as there is no link between wages and productivity. The workers may deliberately show down the pace of work.

2. Lack of motivation- This system does not provide any incentive of efficiency. Both efficient and inefficient workers are treated alike.

3. Increased supervision- Time rate system leads to lower productivity so; strict supervision is required to ensure better productivity.

II) PIECE RATE SYSTEM (PAYMENT BY RESULT):

Here speed is the basis of payment, instead of time. This system is opposite to time wage system according to this system, the volume of work done is the basis for payment of wages to workers. Efficiency is recognized in this system. The worker gets payment according to his speed, ability, efficiency etc. A specific rate is fixed per unit of output, and the workers are paid accordingly, irrespective of the time taken by him.

This method is applicable where:

- Quality of the work is not important.
- Work is of a repetitive nature.
- Job rate can easily be fixed.
- There is good demand and Job is standardized one.

ADVANTAGES OF PIECE RATE SYSTEM:

- The output is increased.
- The system works as an incentive to workers.
- Efforts and rewards are correlated.
- Efforts and rewards can be made confidentially and accurately.
- Supervision work is low.
- Breakage of machine will reduce wages; hence machines are handled with care.
- Idle time has no place.
- The worker develops skill and zeal to work.
- The rate of fixed overhead is reduced.

DISADVANTAGES OF PIECE RATE SYSTEM:

- Workers are always in hurry, hence accidents may happen.
- Quality of the products will be examined, as workers are interested in quantity; as a result overhead cost increase.
- In efficient workers will be thrown out.

 High speed work is injurious to the health of the workers.

 In order to maximize production, it is possible that machines are used recklessly.

 Breakdown of machine or power failure may disappoint the workers.

 When there is less demand, over production may arise.

 Fixation of a satisfactory piece rate is a difficult task.

 It is possible that material may be wasted or spoiled, as the workers are only anxious about speed.

TYPES OF PIECE RATE SYSTEM:

 Straight piece rate:

Under this system the workers gets a flat rate per unit of output. His earnings i.e.,

Piece working earnings = Rate per unit X Unit produced

 Piece rate with guaranteed time rate:

Under this system a worker gets a fixed amount of wages and he is also paid for the performance beyond a prescribed limit.

 Differential piece rate:

Under this scheme, the rate per piece is increased, as the output level is increased. That is, there is more than one-piece rate system. In other words, the increase in rates may be proportionate to the increase in output. By this system, inefficient workers are encouraged to earn more.

 Taylor's differential piece rate system:

F.W. Taylor, the father of scientific management, introduced this system.

According to this system:

 There are two piece rate systems – one is lower and the other one is higher.

 Lower price rate is the output below standard and a higher piece rate is for the output above the standard.

 For each job standard time is stipulated.

LEVEL OF EFFICIENCY	Piece Rate
Below Standard	83 % of Ordinary Piece rate
Above Standard	175 % of Ordinary Piece rate

The Merrick's differential piece rate (or) multiple piece rate system:

It is a modification of Taylor system, in order to reduce penalization of slow workers. Thus, these people are encouraged. Therefore, he introduced three rates in place of two. They are:

LEVEL OF EFFICIENCY	Piece Rate
Upto 83 %	Ordinary Piece rate
83% to 100%	110 % of Ordinary Piece rate
Above 100%	120 % of Ordinary Piece rate

Gantt task and bonus plan:

This is combination of time, bonus and piece rate plan based on the differential piece rate principles. A bonus of 20% of time rate is paid when output is achieved, thereafter high piece rate is paid. A standard is set and remuneration is calculated as follows:

LEVEL OF EFFICIENCY	Piece Rate
Below Standard	**Payment at time rate**
At Standard	**payment at time rate plus 20% bonus**
Above Standard	High Piece rate

DISTINGUISH BETWEEN TIME RATE SYSTEM AND PIECE RATE SYSTEM

Time rate system	**Piece rate system**
It is simple to calculate and easy to understand	The rates have to be carefully fixed so as to avoid possible loss to management.
This pertains to hours of work	This pertains to output
General supervision is needed	Careful supervision is needed
It does not promise efficiency	It promise efficiency in working
Individual efficiency is not looked upon	Individual efficiency is measured and accounted

	for
Cost reduction is not possible	Cost reduction is possible
Benefit of efficient worker goes to the employer	Benefit of efficient workers is shared by the worker and the employer
There arises more idle time	There is no chance of idle time

VARIOUS INCENTIVE SCHEMES OR BONUS METHODS:

The system of wage payment is of two types-time rate system and piece rate system. In the plan of incentive wage payment both time and piece rate are blended together. Under time rate system, the worker is not benefited for time saved. Under piece rate system the cost per unit falls even though labour remains constant. The purpose of this scheme is to overcome the limitation of both the system. In order to increase the production through encouragement the benefits are shared by employer and the employee. Before the introduction of incentive plant the following factors may be taken into consideration:

- It must be simple and understandable to workers.
- It must be fair to both – employer & employee.
- The standard should be fixed by time and motion study.
- Standard once fixed may not be altered.
- The cost of operating the scheme should be minimum.
- The work must be repetitive by nature.
- The workers should not raise objections.
- The system must be permanent; once introduced should not be discounted.
- The system should also benefit the indirect workers.
- It must reduce labour turnover.
- Employer – employee – customers are to be benefited.

The various schemes and premium bonus plans should combine time wages and piece rates. The chief schemes of them are:

A) Halsey premium plan:

This system is also known as split bonus plan or fifty-fifty plan. The plan was introduced by F.A.

Halsey, an American engineer. In the plan, the task time is decided on the basis of past experience and scientific studies are set. Under this plan a standard time is fixed for the performance of each job, and the worker is paid the agreed rate per hour for the time spend thereon plus a fixed percentage (may be 50%) of the time be saved on the standard

Total earnings = (Time rate X Time taken) + 50% of (Time saved X Time rate)

(or) Time wages + 50% of time saved X Time rate

Time saved = Standard time – Actual time

Main features:

 Standard time for each job is fixed.

 Time rate is guaranteed.

 50% of the time saved plus normal earnings go to worker.

Merits:

 It is simple to understand and easy to calculate.

 Standard time is fixed for each job or operation.

 Both employer and employee get equal benefit from time saved by the workers.

 It can be easily introduced in any modern industry.

 It provides incentive to efficient workers, at the same time below – average. Workers are not penalized.

 Savings in time reduce both labour cost and overhead expenditure.

 The system is based on time saved and not on output; thus prevents over production.

Demerits:

 Fixation of standard is very difficult.

 If wages rate is low, incentive value may be low.

 Careful supervision is necessary.

 Earnings are reduced at high level efficiency.

B) Halsey weir plan:

Here the workers gwts a bouns of 30% of the time against 50% in the halsey plan. Except this point, halsey plan and halsey-wair scheme are similar.

C) Rowan system:

This scheme was introduced in the year 1991 by David Rowam of Glasgow. The guideliness of Halsey plan have been followed. It is similar to that of Halsey plan expect in regard to the determination of bonus (calculation). Under this plan the bonus is that proportion of the wages of the time taken which the time saved bears to the standard time allowed.

Merits

- It assures the minimum time wages.
- Standard time is fixed; hence rates will not be changed.
- It is suitable for learners and beginners.
- The workers benefit with the employers.
- The employer is protected even if the rate is not properly fixed.
- It plays higher bonus to workers compared to Halsey plan.
- Since bonus decline, at higher level of efficiency, the workers are not tempted to rush work thus over-production can be avoided.

Demerits:

- It is difficult to understand and calculate.
- This affects extraordinary efficiency as if the time saved is more than half; the total earning start decreasing i.e. efficiency beyond certain point is not rewarded.
- The system is more complex and expensive.

D) Barth variable sharing plan:

Under this plan wages are not guaranteed. This system is suitable to beginners and learners. The earning is computed by multiplying the rate per hour by the geometric mean of standard hour and actual hours worked. Thus,

Wages under barth plan= Time Rate* √Standard time*Actual Time

E) Emerson efficiency bonus plan:

It is similar to piece rate system but provides a guaranteed time rate. Incentive bonus paid at both low and high task level.

LEVEL OF EFFICIENCY	Piece Rate
Upto 66 2/3 %	**No bonus (only time wages)**
66 2/3% to 100%	**Bonus increase in steps and rises to 20% at 100 % efficiency**
Above 100%	**20% bonus plus 1% bonus for cash increase of 1% inefficiency**

F) Bedaux point premium system:

It is a premium bonus system which uses minimum as the point and the standard time allowed is known as Bedaux point. Each job is allowed a number of points based on the standard time determined by means of time and motion study. Time rate is guaranteed and in addition a bonus equivalent to 75% of the points saved is allowed.

Bonus = 75% (Standard points – Actual points) X Rate per min.

MEANING OF IDLE TIME:

When workers spend their whole time at different jobs, then the time booked for jobs must agree with the gate time. Ordinarily the time booked for job does not agree with the gate time. It so happens, because of reasons like, waiting for material, machine breakdown, waiting for instruction, power failure etc., and reconciliation of gate time with time booked is facilitated by preparing on idle time card. The idle time card shows the time which has been lost and the reasons thereof.

TYPES OF IDLE TIME:

Idle time is of two types namely

- Normal idle time and
- Abnormal idle time.

Normal idle time:

Normal idle time (or) the time wasted by the worker cannot be avoided. This must be borne by the employer.

Abnormal idle time:

It is the wasted time, which can be avoided.

REASONS OR CAUSES OF IDLE TIME:

- Power failure

 Waiting for work

 Waiting for instruction

 Waiting for tools

 Machine breakdown.

 Bad planning of work

 Accidents, strikes etc.,

 Time worked in changing from one job to another

 Seasonal nature of industry

 Time taken to reach the department form gate.

CONTROL OF IDLE TIME:

Following steps are suggested to control idle time.

 Vigilance must be exercised to control and eliminate idle time.

 The instruction to the workers should be given in advance so that workers need not wait.

 Plant and machine should be maintained properly so that their breakdown can be avoided.

 The causes of the idle time should be found out and the root cause must be removed.

 Regular and timely supply of raw material must be made available through a good system of storing materials

RECORDING OF LABOUR TIME AND IDLE TIME

TIME KEEPING:

Time keeping is the recording of each worker's time of coming in and going out of the factory for the purpose of attendance and wage calculations.

THE OBJECTS OF TIME KEEPING ARE:

 The wages of time workers can be correctly calculated.

 The record of attendance meets the statutory requirements.

 It ensures punctuality and discipline.

 The waste of time or idle time of workers can be known.

 Cost of labour chargeable to the job, product or process can be ascertained.

 In certain cases, it helps in charging of overheads on the basis of wages.

 It helps in reducing the idle time and idle resources in the concern.

METHODS OF TIME KEEPING:

Time keeping methods are broadly classified into Manual methods and Mechanical methods. The methods which are done by human effort are said to be manual whereas the methods undertaken with the help of machines are mechanical methods.

 Manual methods:

The manual methods of time keeping are as follows:

Attendance register or muster roll:

This is an old system of time keeping. At the factory gate or department, attendance register is kept under the custody of the time keeper. The register contains name of the workers, identification number, time of arrival and departure. The employees may be required to sign the register both at the time of entering and leaving the factory, noting down the time in and time out.

Under this method, each worker is allotted a token or disc bearing his identification number. All such tokens or discs are hanged on a board near the main gate in a serial order. As and when the worker enters, he removes his token from the board and puts it in a box kept nearby. The box is removed after the grace period. Late comers will have to give their tokens to the time keeper personally, so that the exact time of arrival may be noted. The tokens still left on the board represent the absentee workers. With the help of the token in the box, the time keeper records the attendance in a register.

 Mechanical methods:

The mechanical methods of time keeping may be as follows:

 Card time recorder:

Each worker is given a clock time card bearing his identity number and other details. The machine may be installed at the factory gate. There will be a rack placed inside as well as outside gate. The clock time cards are serially arranged and kept in outer rack. When a worker enters the factory, he takes his card and inserts it into the machine which marks the exact time of his arrival. Late arrivals are marked in red ink. Then, the card is deposited in the inside rack. While going out, the same procedure is repeated.

 Ideal time recorder:

This recorder has a clock like face with several holes (about 150) around it. Each hole is serially numbered and each worker is allotted one hole. There is an arm at the centre of the dial. When the worker enters into the factory, he has to press the dial arm after placing it in the hold allotted to him. His incoming time is recorded along with his number on the paper roll kept inside the machine. Similarly, outgoing times are recorded.

TIME BOOKING:

A worker is not paid for his mere attendance in the factory. He is paid for the work he does or the time he works. The process of recording the time spent by a worker on different jobs is known as time booking.

OBJECTS OF TIME BOOKING:

 To ascertain the labour cost of each job;

 To ensure that the time for which the worker has been paid is properly utilized;

 To ascertain the idle time so as to control it;

 To provide basis for the apportionment of overhead expenses to various jobs;

 To compare the actual time taken and time allowed for a job so as to know the efficiency of workers and to pay bonus.

METHODS OF TIME BOOKING:

 Daily time sheet:

In small concerns, a daily time sheet is allotted to each worker. In it, he enters daily the time spent by him on each job and hands it over to the foreman for verification and signature.

 Weekly time sheet:

The purpose of this time sheet is the same as that of daily time sheet. Weekly time sheet is allotted to each worker for a week. In it, he enters the time spent by him on each job during the week.

 Job card:

Under this system a separate card is issued for each job. The card contains columns to record the time spent by a worker on each job. It helps to ascertain the labour cost of each job. It also contains instructions for doing the job.

ACCOUNTING TREATMENT:

NORMAL IDLE TIME:

The cost of labour of normal idle time can be treated in two ways.

A worker has to work for 8 hours a day's but he actually puts in only 7 ½ hours on job and half an hour is wasted. The labour cost of the normal idle time (here half an hour), may be charged to factory on cost and 7 ½ hours to the job concerned.

The hourly rate may be raised and the cost of complete labour may be charged to the job concerned. This is preferred.

ABNORMAL IDLE TIME:

Abnormal idle time expenditure or cost should not be included in cost. Such labour cost on account of abnormal nature may be debited to costing profit and loss account.

CALCULATION OF MACHINE HOUR RATE:

The cost of running a machine per hour can be called machine hour rate. A separate rate for each machine or group of machines can be established, which can be related to overhead costs of the production department the actual or pre-determined rate of manufacturing overhead (factory overhead) absorption is computed by dividing the manufacturing cost to be absorbed by the number of hours for which a machine or a group of machines are operated or expected to be operated. Thus

periodagiven a during hours Machine overhead Factorty rate hour Machine

MERITS OF CALCULATING MACHINE HOUR RATE:

- It is a scientific and logical method, where the time factor is taken into account.
- We can compare the relative efficiencies and cost of operating different machines.
- The difference between the usefulness of machine work and manual work can be known by the management.
- It reveals the idle time of machine.

DEMERITS OF CALCULATING MACHINE HOUR RATE

- It leads more clerical work in finding out the working hours of machines.

 Expenses which are not proportional to the working hours of machines are not taken into account.

METHODS OF COMPUTATION OF MACHINE HOUR RATE:

 Each time or group of machine is treated as accost centre in order to identify overhead expenses.

 Machine overheads are two type-Standing charges (fixed), and machine expenses (variable or running).

1. The standing charges e.g. Rent, Rates, Supervision etc. remaining constant and do not vary with the use of machine. These standing charges are estimated for a given period for every machine. The estimated figures divided by the total working hours of the period will show an hourly rate for standing charges.

2. The machine expenses e.g. Power, Depreciation, Repairs etc. are variable with the use of machines. These machinery expenses are estimated separately and the divided by the normal working hours to given hourly rate for each item. Normal working hours are calculated by given allowance for idle time, for maintenance for setting up etc.

 The sum of standing charges and the machine expenses rate will give the machine hour rate.

The following are suitable basis of apportionment of different expenses for calculating of machine hour rate:

S.No	**Expenses**	**Basis of apportionment**
1	Factory rent.	Area in sq. meters or sq. feet.
2	Power.	Kilowatt hours (k.w.h.)
3	Indirect material.	Direct material.
4	Indirect wages.	Direct wages.
5	Repairs to plant.	Plant value.
6	Depreciation.	Plant value.
7	Lighting.	Light points/floor area(former preferable)
8	Supervision.	No.of employees.

9	Fire insurance of stock.	Stock value.
10	Fire insurance of capital assets.	Value of capital assets.
11	ESI /PF contribution of employer.	Wages of each department.
12	Labour welfare expenses.	Number of employees.
13	General factory overheads.	Labour hours/ direct wages.

MARGINAL COSTING

Marginal cost is the additional cost of producing an additional unit of a product. It is the amount by which total cost increase when one extra unit is produced or the amount of cost, which can be avoided by producing one unit less.

Marginal cost is defined by ICMA, London as "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. In practice, this is measured by the total variable costs attributable to one unit".

FEATURES OF MARGINAL COST

1. It is usually expressed in terms of one unit.
2. It varies proportionate to variation in output.
3. It is charged to operation, processes or products.
4. It is the total of prime cost-plus variable overhead of one unit.

MARGINAL COSTING

Marginal costing is one of the most useful techniques available to the management. It guides the management in pricing, decision making and assessment of profitability. It reveals the inter-relationship between cost, volume of sale and profit.

Marginal costing is defined by ICMA as "the ascertainment of marginal costs and of the effect on profit of changes in volume or type of output by differentiating between fixed cost and variable cost".

In the words of J Bally, Marginal costing is “a technique of cost accounting which pays special attention to the behaviour of costs with changes in the volume of output”.

FEATURES OF MARGINAL COSTING

1. Marginal costing is a technique of working of costing which is used in conjunction with other methods of costing.

2. Fixed and variable costs are kept separate at every stage. Semi variable costs are also separated in the fixed and variable.

3. As fixed costs are period costs, they are excluded from product cost or cost of production or cost of sales. Only variable costs are considered as the cost of the product.

4. When evaluation of finished goods and work-in-progress are taken into account, they will be only variable cost.

5. A fixed cost is period costs, they are charged to profit and loss account during the period in which they are incurred.

6. They are not carried forward to the next year’s income.

7. Marginal income or marginal contribution is known as the income or profit.

8. The difference between contributions is known as the income or profit.

9. Fixed cost remains constant irrespective of level of activity.

10. Sales price and variable cost per unit remain the same.

11. Cost volume profit relationship is fully employed to reveal the state of profitability at various level of activity.

ASSUMPTION OF MARGINAL COSTING

The technique of marginal costing is based on the following assumptions.

1. All elements of cost can be divided into fixed and variable.

2. The selling price per unit remains unchanged at all levels of activity.

3. Variable cost / unit remains constant irrespective of level of output and fluctuates directly in proportion to changes in the volume of output.

ADVANTAGES AND LIMITATION OF MARGINAL COSTING.

Marginal costing is an important technique of managerial decision-making. It is a tool for cost control and profit planning. Marginal costing technique commands the following advantages:

1. It is simple to understand and can be combined with standard costing.

2. It gives a clear understanding of the relationship between cost, selling price and volume of output.

3. It brings out clearly the 'contribution' of the each product to the profit, which helps in better decision-making.

4. It helps in working out the maximum overall profit that can be earned.

5. By not charging fixed overhead to cost of production, the effect of varying charges per unit is avoided.

6. It prevents the illogical carry forward in stock valuation of some proportion of current year's fixed overheads.

7. It eliminates large balances left in overhead control accounts.

8. It helps in taking a number of managerial decisions, e.g. closing down of unprofitable activities, 'make or buy' decisions, etc.

9. It enables effective cost control through flexible budgeting by dividing costs into fixed and variable component.

Disadvantages of Marginal Cost

1. This technique is useful only for short term analysis, it has little use for long-term analysis.

2. The separation of costs into fixed and variable is difficult and sometimes gives misleading results.

3. Normal costing systems also apply overheads under normal operating volume. Hence, no advantage is gained by marginal costing.

4. Application of variable overhead depends on estimates and not on actual, as there may be under or over recovery

5. Volume variance in standard costing also discloses the effect of fluctuations in volume on fixed overhead.

6. Control affected by means of budgetary control is also acceptable by many. To know the net profit, fixed overhead, is a valuable item.

7. In actual practice, the sales price, fixed cost and variable cost per unit may vary.

8. The income tax authorities do not recognize the marginal cost for inventory valuation.

9. Insurance claim for loss or damage of stock based on marginal costing valuation will be unfavorable to business.

CONTRIBUTION

Contribution is the different between sales and variable cost or marginal cost of sales. Contribution enables to meet fixed cost and add to the profit. Contribution is also known as gross margin. Fixed costs are covered by contribution; and the balance amount is an addition to the net profit.

SIGNIFICANCE (OR) USES (OR) ADVANTAGES OF CONTRIBUTION

The concept of contribution is helpful to the management in the following ways:

 It helps the management in the fixation of selling price.

 It helps management in the selecting the most profitable product mix.

 It helps in choosing from among alternative methods of production; the method, which gives highest contribution.

 It helps in deciding whether to purchase or manufacture a product (or) a component.

 It assists in determining the Break Even Point.

 It helps in taking a decision as regards to adding a new product in the market.

Break Even Analysis for Profit Planning and Control

Break even analysis is a method of cost volume profit analysis widely used in practice. Break even analysis is used in two senses – in narrow sense and in broad sense. In narrow sense, it refers to a technique of determining that level of operation where total revenues equal the total expenses i.e., the point of no profit no loss. In this broad sense, break even analysis refers to the study of relationship of cost volume and profit at different level of activities.

MERITS AND DEMERITS

Advantages

1. Total cost, variable cost and fixed cost can be determined.

2. Break even output or sales value can be determined.

3. Cost, volume and profit relationship can be studied, and they are very useful to the managerial decision making.

4. Inter-firm comparison is possible.

5. It is useful for forecasting plans and profits.

6. The best products mix can be selected.

7. Total profit can be calculated.

8. Profitability of different level of activity, various products of profit, i.e., plans can be known.

9. It is helpful for cost control.

Limitations

1. Exact and accurate classification of cost into fixed and variable is not possible. Fixed costs vary beyond a concern level or output. Variable cost per unit is constant and it varies in proportion to the volume.

2. Constant selling price is not true.

3. Detailed information cannot be known from the chart. To know all the information about fixed cost, variable cost and selling price, a number of charts must be drawn.

4. No importance is given to opening and closing stock.

5. Various product mixes on profits cannot be studied as the study is concerned with only one sales mix or product mix.

6. Cost, volume and profit relation can be known; capital amount, market aspects, effects of government policy etc., which are important for decision making cannot be considered from break even chart.

7. If the business condition charges during a period the breakeven chart becomes out of date as it assume no change in business condition.

ASSUMPTION OF BREAK-EVEN ANALYSIS

1. Fixed cost will remain constant with the change in output.

2. Prices of variable cost factors viz., wage rates, price of materials, services etc. will remain unchanged.

3. Semi variable costs can be bifurcated into variable and fixed elements.

4. Product specifications and methods of manufacturing and selling will not undergo a change.

5. Operating efficiency will not increase or decrease.

6. There will be no change in pricing policy due to change in volume, competition etc.

7. All the units produced during a period will be sold and as such there will be no opening or closing stock.

Fixed cost:

Fixed costs are those costs, which do not change with changes in the volume of level of activity within the limits of plant capacity. It depends upon the passage of time and does not vary directly with the volume of output. Hence, even if there is no production for a particular period, the usual amount of fixed expenses will be incurred. Fixed cost is also known as period cost or stable or stand by cost.

Variable cost:

The term variable cost is defined by ICWA, England "A cost which, in the aggregate tends to vary in direct proportion to changes in the volume of output or turnover". The term such as variable cost, marginal cost, production cost etc., "are synonymously used by cost accounts to mean the same this". Though marginal cost and variable cost are used to mean the same, marginal cost is expressed for one unit of output which as the term variable cost is used for the aggregate amount of variable expenditure for the entire production.

Profit volume ratio: (PV Ratio)

Profit volume ratio, which is popularly known as PV ratio, explains the relationship of contribution to sale another name for this is contribution sales ratio or marginal income ratio or reliable profit ratio. The ratio expressed as a percentage, indicates the relative profitability of different product.

PV Ratio= Contribution/Sales*100

Margin of safety:

Margin of safety is the excess of sales over break even sales. It is the margin or range at which the concern is safe from the point of view of profit. The length of margin and safety measures the degree of profitability of an organization. The higher the margin of safety, the more is the profitability of the concern. A low margin indicates low profitability. Therefore, management strives to widen the gap between sales and break even sales.

Margin of safety= Actual sales- break even sales

Margin of safety= Profit/ PV Ration

Angle of incidence:

Angle of incidence is an angle formed at break even point at which the sales line intersects the total cost line. This angle indicates the rate at which the profits are being made large angle of incidence indicates high rate of profit and a small angle indicates a low rate of profit. A large angle of incidence with a high margin of safety indicates the most favourable position of a business.

Break even point:

If we divide the term into three words, then it does not require further explanation. Break – divide, even – equal, Point – Place or position.

Break Even point refers to the point where total cost is equal to total revenue. It is a point of no profit, no loss. This is also a minimum point of production where total costs are recovered. If sales go up beyond the Break-even point, the organization makes a profit. If they come down, loss is increase.

Break even point (in units)= Fixed Expenses/ Contribution per unit*100

Break even point (in rupees)= Fixed Expenses/ Contribution*100

PRACTICAL APPLICATIONS OF MARGINAL COSTING TECHNIQUES IN DIFFERENT SITUATION

The management tackles many problems which are faced in the practical business. “All the introduction of marginal cost principles does is to give the management a fresh, and perhaps a refreshing, insight into the progress of their business”. Now, we explain the application of the

techniques of marginal cost in certain important spheres: Marginal cost helps the management in decision making in respect of the following vital areas:

- **Cost control:** The two types of cost – variable and fixed – are controllable and not-controllable respectively. The

variable cost is controlled by production department and the fixed cost is controlled by the management.

- **Fixation of selling price:** Product pricing is a very important function of management. One of the purposes of cost accounting is the ascertainment of cost for fixation of selling price.
- **Closure of a department (or) discounting a product:** Marginal cost technique shows the contribution of each product to fixed cost and profit. If a department or a product contributes the least amount, then the department can be closed or its production can be discontinued. It means the product which gives a higher amount of contribution may be chosen and the rest should be discontinued.
- **Selection of a profitable product mix:** In a multi-product concern, a problem is faced by the management as to which product mix or sales mix will be give the maximum profit. The product mix which gives the maximum profit must be selected.
- **Profit planning:** Profit planning is a plan for future operation or planning budget to attain the given objective or to attain the maximum profit. The volume of sale required to maintain a desired profit can be known from the formula:

Desired Sales= (Fixed Expenses+ Desired Profit)/PV Ratio

- **Decision to make or buy:** A firm may make some product, parts or tools or sometimes it may buy the same from outside. The management must decide which is more profitable to the firm.
- **Decision to accept a bulk order or foreign market order:** Larger scale purchases may demand products at less than the market price. A decision has to be taken now whether to accept the order or to reject it.
- **Introduction of a new product:** A producing firm may add additional products with the availability facility. The new product is sold in the market at a reasonable price, in order to sell it large quantities.

- **Choice of technique:** Every management wishes to manufacture the products at a most economical way. For this, the managerial costing is a good guide as to the products at different stages of production.
- **Evaluation of performance:** Marginal cost helps the management in the measuring the performance efficiencies of a department or a product line or sales division. The department or the product or division which gives the highest profit volume ratio will be the most profitable one (or) that it having the highest performance efficiency.
- **Decision making:** Price must not be lesser than the total cost under normal condition. Marginal cost acts as a price fixes and a high margin will contribute to the fixed cost and profit.
- **Maintaining a desired level of profit:** An industry has to cut prices of its products firm time to time due to competition, government policies, regulation etc. Marginal costing techniques are ascertained how many units have to be sold to maintain the same level of profit.
- **Level of activity planning:** Where different levels of production and / or selling activities are being considered and the management has to decide the optimum level of activity, the marginal costing techniques helps the management.
- **Alternative method of production:** Marginal costing techniques are also used in comparing the alternative method of manufacture i.e., machine work (or) hard work, whether one machine is to be employed instead of another etc.
- **Introduction of new product or product line:** The technique to assess the profitability of line extension product is the incremental contribution estimates.

BUDGET AND BUDGETARY CONTROL

The word **'budget'** is derived from a French word **'Bougette'** representing leather pouch into which funds are appropriated to meet the anticipated expenses. The word **'budget'** therefore refers in the business enterprise, to a plan in the form of quantitative and financial statement of the firm about the work to be done by the executives and their officials.

ICMA defines a budget as "A financial and / or quantitative statement, prepared prior to a defined period of time, of the policy to be pursued during that period for the purpose of attaining a given objective".

ESSENTIAL FEATURES OF BUDGET

1. A budget is a financial statement but it can be a statement of quantities also with or without monetary data:

2. Budget is prepared for a particular period and it is prepared in advances.

3. Budget is a detailed plan of the policy to be pursued during the period for which the budget is prepared.

4. The function of the budget is to attain a specific objective.

BUDGETING

Budgeting refers to the whole process of designing, implementing and operating budgets. It involves a detailed study of business environment clearly grasping the management objectives, the available resources of the enterprise and capacity of the enterprise.

Budgetary control starts with budgeting and ends with control. Budgeting is defined as:

William **J.Batty**"Budgeting is a kind of future tense accounting in which the problems of future are met on paper before than transactions actually occur".

Shlilinglow, " Budgeting is the preparation of comprehensive operating and financial plans for specific intervals of time".

CHARACTERISTICS OF GOOD BUDGETING

1. A good budgeting system should involve persons at different levels while preparing the budget.

2. Authority and responsibility should be properly fixed.

3. The target of the budgets should be realistic.

4. The system should get the whole-hearted cooperation of the top management.

5. Employees should be imparted budget education.

6. A proper reporting system should be introduced and the actual results should be promptly reported, so that performance appraisal is undertaken.

7. A good system of accounting is essential to make the budgeting successful.

BUDGETARY CONTROL

Control may be defined as "Company operating results with the plans, and taking corrective action when results deviate from the plans". Control is a mechanism according to which something or some one is guided to follow the predetermined course.

Control requires two things; first that there is a clear-cut & specific plan according to which any work is to proceed. Secondly, that it is possible to measure the results of operations with a view to detecting deviations only then action can be taken to prevent or correct deviations.

budgetary control is the end result budgetary control is a continuous process which helps in planning and coordination. It also provides a method of control.

According to Brown & Howard "Budgetary control is a system of coordinating costs which includes the preparation of budgets. Coordinating the work of departments and establishing responsibilities, comparing the actual performance with the budgeted and acting upon results to achieve maximum profitability".

ICMA defines budgetary control as "the establishment of budgets, relating the responsibilities of executes to the requirements of a policy, and the continuous comparison of actual with budgeted results either to secure by individual action the objectives of that policy or to provide a basis for its revision".

OBJECTIVES OF BUDGETARY CONTROL

Following are the main objectives of a budgetary control system:

1. To plan and control the income and expenditure of manufacturing and trading operations.
2. To predetermine the capital expenditure of a business
3. To co-ordinate the activities of the business in such a manner that each is a part of the total.
4. To establish divisional and sub-divisional responsibility, thus decentralizing it.
5. To prevent waste, reduce expenses and operate most efficiently the various departments so as to attain the maximum profitability.
6. To plan and control expenditure on research and development.
7. To arrange for the financing of the operations so that adequate working capital will be available as required.
8. To act as a means of communication.

IMPORTANCE (OR) ADVANTAGES, AND DISADVANTAGES

1. It helps the management in planning and formulation of policies and there by enables them to think ahead.

2. It co-ordinates the activities of various departments and functions of the business.

3. It defines the objectives and policies of the undertakings as a whole.

4. It enhances production efficiency, eliminates waste and control the costs.

5. It helps in maximizing the profit through optimum and best utilization of the available resources.

6. It set out plan of action and targets to be achieved by departments as well as by individuals, so that everyone knows for what he is responsible and how should he do it; this develops team spirit.

7. It motivates executives to attain the given goals.

8. It ensures the availability of sufficient working capital and diverts capital expenditure into the most profitable directions.

9. It helps in identifying the deviations form the plans, thus pinpointing the centers of weakness and inefficiencies, thus, enabling the management to apply the principle of 'management by Exception'(MBE).

10. It also helps in proper delegation of authority.

11. It can provide suitable basis for establishing incentive systems and internal audit.

12. A well established budgetary control system can go a long way in the successful installation of the system of standard costing.

Limitations of budgetary control

Although budgetary control is immensely valuable but a budget is not a cure for all the ills of an organisation. Budgetary control system suffers form certain limitations and those using the system should be fully aware of them. The main limitations are as follows:

1. As the budget is always based on estimates, any error in estimates may lead to far-reaching effects.

2. It is not easy to install a system of budgetary control in small industries owing to expenditure involved.

3. The success of budgetary control largely depends on the willing co-operation or team work of all concerned; if there is no co-operation, the whole system will collapse.

4. Budgeting is only a tool of management but it cannot replace management.

5. Budgets often remain static and independent of the new techniques that may have been used in a number of operating costs. As a result, they may get boiled down to periodic reports.

6. The installation of budgeting system, generally, takes several years as it has to be tired, improved and discarded depending upon the changing circumstances.

ESSENTIAL OF SUCCESSFUL BUDGETARY CONTROL

A budget is both a plan as well as control tool. A business budget is a plan covering all phases of operations for the definite period in future. It is a formal expression of policies, plans, objectives and goals laid down in advance by the top management for the concern as a whole and for every sub-division thereof. For an effective system of budgetary control, certain pre-requisites must be present. These essential are:

1. The budgetary control system should have full support of top management.

2. There should be well-planned organizational set-up, with responsibility and authority clearly demarcated.

3. The accounting system should provide accurate and timely information.

4. Variation should be reported promptly and clearly to the appropriate level of management

5. Budgets have no meaning unless they lead to control action as a consequence of feed back provided.

6. Staff should be strongly and properly motivated towards the system.

7. The budget should lay down the targets which are realistic and attainable.

8. Budgets should actually aim as a coordinating device rather than control device.

9. The budgets should be flexible enough to permit the adjustments in the light of changed operational circumstances.

DIFFERENT TYPES OR CLASSIFICATIONS OF BUDGETARY CONTROL

1. Classification according to time:

Long term Budget

The budgets are prepared to depict long term planning of the business. The period of long term budgets varies between five to ten years. Long term budgets are prepared for some sectors of the concern such as capital expenditures, research and development, long term finance etc., the long term budget planning is done by the top level management.

Short term Budget

These budgets are generally for one or two years and are in form of monetary terms. The consumer goods industries like sugar, cotton, textiles etc., use short term budgets.

Current Budgets

The period of current budgets is generally of months and weeks. The budgets are related to the current activities of the business. Current budget is a budget which is established for use over a short period of time and is related to current conditions.

2. Classification according to flexibility:

Fixed Budget A fixed budget, sometime known as static budget is one which remains unchanged irrespective of changes in volume of output or level of activity. This budget is drawn for one level of activity and some set of conditions, on the assumption that the forecast of a business activity will prove correct. It does not takes into consideration any change in expenditure arising out of change in the level of activity.

ICMA London defines a fixed budget as, "A budget designed to remain unchanged irrespective of the level of activity actually attained.

Production Budget

It is a budget prepared by the production manager, showing the forecast of output. The objective is to determine the quantity of production for a budgeted period. It is in quantity of units to be produced during the budget period. It is based on the sales budget.

 Cost of production budget:

Cost of production budget is divided into material cost budget, labour cost budget and overhead cost budget, because cost of production include3s material, labour, and overhead. Therefore separate budgets are required each item.

Purchase or Raw Material Budget

To carry out the production satisfactorily regular supply of material during the budget period is ensured by preparing a budget. In this, the decision regarding the quantity of material as shown at different time during that period is followed. The material budgets help proper planning of

purchase. It shows the estimated quantities as well as the cost of raw material, required for production as per production budget.

 Labour budgets:

It is a part of the production budget. The budget is prepared by the personnel department and it shows an estimate of the requirements of labour to meet the production target, on the basis of previous records and budgeted production. This budget gives detailed information relating to the number of workers, sales of wages and cost of labour hours to be employed.

 Work overhead budgets:

It sets out the estimated costs of indirect material, indirect labour and indirect factory expenses, during the budget period in order to achieve the target. This is classified into fixed, variable and semi variable.

 Administrative overhead budgets:

This budget covers the expenditure of administrative, office and management salaries. It is prepared with the help of past experience and expected change in future. The administrative cost of each budget centre is drawn separately and incorporated in administration cost budget.

 Selling and distribution overhead budget:

This budget relates to selling and distribution of production for the budget period and based on sales budget. It is generally prepared territory wise by the sales manager of each territory. The costs are divided into fixed, variable and semi variable; and estimated is taken on the basis of past records.

 Capital expenditure :

This budget shows the estimated expenditure on fixed assets land, building etc. It is a long term budget. The capital expenditure budget is necessitated on account of replacement of old machine increased demand of products etc.

Sales Budget

Generally sales factor becomes a key-factor in the majority of cases, and therefore, it is the starting point. This is the most important budget, as it is usually the most difficult to forecast. It is prepared by sales managers. In the preparation, the sales manager should consider the following points:

1. Analysis of the sales of the previous year

2. Salesman's assessment

3. General trade condition

4. Availability of raw material.

5. Availability of funds

6. Plant capacity

7. Seasonal fluctuation

8. Restrictions imposed by the government

9. Competition and consumer's preference

10. Efficiency of advertising.

Cash Budget

This budget represents the amount of cash receipts and payments, and a balance during the budgeted period. It is prepared after all the functional budget are prepared by the chief accountant either monthly or weekly giving the following hints.

1. It ensures sufficient cash or business requirement.

2. It proposes arrangements to be made overdraft to meet any shortage of cash.

3. It reveals the surplus amount, and the effect of the seasonal fluctuation on cash position.

The objective of cash budget is the proper coordination of total working capital, sales, investment and credit.

Master budget:

A master budget is the summary budget for entire enterprise and embodies the summarized figures for various activities. This is also known as summary budget or finalized profit plan. This budget includes the budgeted position of the net profit & loss as well as balance sheet. Master budget is prepared by the committees and becomes a target for the company.

Flexible Budget

Flexible budget is one which is prepared in such a manner as the facilitate determination of the budgeted cost for any level of activity. It is also known as 'variable budget' or 'sliding scale budget'.

ICMA London defines a flexible budget as, "a budget designed to change in accordance with the level of activity actually attained".

STEPS IN THE INSTALLATION OF A SYSTEM OF BUDGETARY CONTROL

1. Organization chart:

These must be an organizational chart to show the authority and responsibility of each executive of the firm. This will enable him to know his relationship with other executives. The budget director derives power from the chief executive, helps in coordination and drawing up all budgets and suggests changes, if necessary. The sales manager, production manager, purchase manager, personal manager and accountant will prepare their budgets.

2. Budget centre:

For the purpose of effective budgetary control budgets centres are defined. A budget centre may be a department, or a section of the undertaking. Separate budgets are prepared for each department and the departmental head is responsible for carrying out budgets. Departmental heads should have effective control over the execution of the budget, to prevent unfavourable variation.

3. Budget:

In small firms the chief accountant prepares the budgets and coordinates various activities. In big concerns a committee is appointed for this task.

4. Budget manual:

It is a document which sets out the responsibilities of persons engaged in the routine work. Budget manual lays down the objectives of the organization, responsibilities of all executive and the procedure to be followed for budgetary control. Duties, authorities, powers of each official of the different department are clearly defined so as to avoid conflicts among personnel.

5. Budget period:

This is the period or time for which the budget is prepared and remains in operations. Generally budgets are prepared for one year. Industries with huge capital expenditure require long-term budgeting, whereas seasonal industries may adopt short period budgets.

6. Budget committee:

A budget committee is a permanent standing committee consisting all the departmental heads as members and usually general manager as the chairman.

The budget committee is an advisory committee and is entrusted with the following duties.

1. To formulate a general programme for budgeting.
2. To coordinate departmental budgets resolving any conflict between them.
3. To receive and discuss departmental budget estimates and make recommendations.

4. To revise budgets if conditions warrant.

5. To consider changes in budget policies and procedures.

6. To study variation of actual performance from budget and make appropriate suggestion.

7. Budget officer:

This chief executive of the organization appoints some person as the budget office. The budget officer is empowered to scrutinize the budget prepared by different functional heads and make changes in them if the situation so demands.

8. Key factor:

Key factor is also known as limiting factor of governing factor which means this is the factor the extent of whose influence must first be assessed in order to ensure that the functional budgets are seasonally capable of fulfillment. The key factor may be shortage of raw material, non-availability of labour, limited sales restriction etc. First locate the key factor before preparing a budget as it influences other budgets.

Fixed Budget	**Flexible Budget**
1. A fixed budget remains the same irrespective of the level of output	1. A flexible budget will vary in accordance with the level of output.
2. A fixed budget assumes that conditions will remain constant.	2. This budget is charged if level of activity varies.
3. If fixed budgets, costs are not classified according to their nature	3. The costs are classified into fixed, variable and semi-variable.
4. Under changed circumstances cost cannot be	4. Cost can be easily ascertained under

ascertained	different levels of activities which helps in fixing prices
5. If the level of activity changes, the budgeted and actual results cannot be compared because of change in basis.	5. The budgets are re-drafted as per changed volume & comparison between budgeted and actual figures will be possible.

ZERO BASE BUDGET

The purpose of management control is to ensure better performance and better utilization of scarce resources. Traditional budgeting fails to achieve this objective of management effectively. Zero base budget provides a solution towards this end.

Peter A.Pyhrr has defined zero base budget as "an operating, planning and budgeting process which requires each manager to justify his entire budget request in detail from scratch (hence zero base) and shifts the burden of proof to each manager to justify why we should spend any money at all".

PROCESS IN PREPARING THE ZERO BASE BUDGET

A decision unit should be identified in terms of functional responsibility centres or cost centres. The decision making centre may be a segment of an organization or a project for which separate budgets are to be prepared and decisions are made regarding the amount to be spent and quantum and quality of work to be done.

2. Development of decision packages:

Formulation of decision packages is a set of documents which identify and describe activities of the unit in such a way the management can evaluate and rank them against other competing for resources and decide whether to approve (or) disapprove.

3. Prioritization of activities:

Zero base budgets is the ranking of proposed alternatives included in decision package for various decision units or of various decision package for the same decision unit. The ranking of

the decision package begins at the level of the decision units by the operational manager on the basis of organizational needs and other related activities.

4. Allotment of funds:

The resource of the organization are allocated to various decisions units keeping in mind the alternative selected and approved as a result by ranking process.

MERITS AND DEMERITS OF ZERO BASE BUDGETS

Zero base budgeting offers the following advantages:

1. It represents a move towards allocation of resources by need and benefit and thus results in more efficient allocation of resources.

2. It is a planning tool used in management which helps in identification of wasteful and obsolescent items of expenditure.

3. It adds psychological impetus to employees to avoid wasteful expenditure.

4. It leads to increased staff involvement which may lead to improved motivation and greater interest in the job.

5. It allows for quick budgets adjustment during the year, if there is any shortfall of income. It provides flexibility in budget.

6. It is useful especially for service departments where it can be difficult to identify output.

The following are the important limitations of Zero base budgeting:

1. It is very time consuming and a large amount of additional paper work is involved.

2. It expects a high degree managerial skill because it demands a clear understanding by the organisation as a system.

3. Its application is limited; it cannot directly be applied to direct materials, direct labour and overheads associated with production function.