UNIT- 1V COST ACCOUNTING

Cost Accounts – Classification of manufacturing costs – Accounting for manufacturing costs. Costs Accounting systems: Job Order costing- Process Costing – Activity Based Costing- Costing and the Value chain- Target Costing- Marginal Costing including decision making- Budgetary Control & Variance Analysis- Standard Cost System

TABLE OF CONTENTS

COST ACCOUNTING

4.1 Cost Accounting

As compared to the financial accounting, the focus of cost accounting is different. In the modern days of cut throat competition, any business organization has to pay attention towards their cost of production.

Computation of cost on scientific basis and thereafter cost control and cost reduction has become of paramount importance. Hence it has become essential to study the basic principles and concepts of cost accounting. These are discussed in the subsequent paragraphs.

Cost :- Cost can be defined as the expenditure (actual or notional) incurred on or attributable to a given thing. It can also be described as the resources that have been sacrificed or must be sacrificed to attain a particular objective. In other words, cost is the amount of resources used for something which must be measured in terms of money. For example – Cost of preparing one cup of tea is the amount incurred on the elements like material, labor and other expenses, similarly cost of offering any services like banking is the amount of expenditure for offering that service. Thus cost of production or cost of service can be calculated by ascertaining the resources used for the production or services.

Costing :- Costing may be defined as 'the technique and process of ascertaining costs'. According to Wheldon, 'Costing is classifying, recording, allocation and appropriation of expenses for the determination of cost of products or services and for the presentation of suitably arranged data for the purpose of control and guidance of management. It includes the ascertainment of every order, job, contract, process, service units as may be appropriate. It deals with the cost of production, selling and distribution.

If we analyze the above definitions, it will be understood that costing is basically the procedure of ascertaining the costs. As mentioned above, for any business organization, ascertaining of costs is must and for this purpose a scientific procedure should be followed. 'Costing' is precisely this procedure which helps them to find out the costs of products or services.

Cost Accounting :- Cost Accounting primarily deals with collection, analysis of relevant of cost data for interpretation and presentation for various problems of management. Cost accounting accounts for the cost of products, service or an operation. It is defined as, 'the establishment of budgets, standard costs and actual costs of operations, processes, activities or products and the analysis of variances, profitability or the social use of funds'.

Cost Accountancy :- Cost Accountancy is a broader term and is defined as, 'the application of costing and cost accounting principles, methods and techniques to the science and art and practice of cost control and the ascertainment of profitability as well as presentation of information for the purpose of managerial decision making.'

If we analyze the above definition, the following points will emerge,

A. Cost accounting is basically application of the costing and cost accounting principles.

B. This application is with specific purpose and that is for the purpose of cost control, ascertainment of

profitability and also for presentation of information to facilitate decision making.

C. Cost accounting is a combination of art and science, it is a science as it has well defined rules and regulations, it is an art as application of any science requires art and it is a practice as it has to be applied on continuous basis and is not a one time exercise.

4.2 Objectives of Cost Accounting :- Objectives of Cost Accounting can be summarized as under

1. To ascertain the cost of production on per unit basis, for example, cost per kg, cost per meter, cost per liter, cost per ton etc.
2. Cost accounting helps in the determination of selling price. Cost accounting enables to determine the cost of production on a scientific basis and it helps to fix the selling price.
3. Cost accounting helps in cost control and cost reduction.
4. Ascertainment of division wise, activity wise and unit wise profitability becomes possible through cost accounting.
5. Cost accounting also helps in locating wastage's, inefficiencies and other loopholes in the production processes/services offered.
6. Cost accounting helps in presentation of relevant data to the management which helps in decision making. Decision making is one of the important functions of Management and it requires presentation of relevant data. Cost accounting enables presentation of relevant data in a systematic manner so that decision making becomes possible.
7. Cost accounting also helps in estimation of costs for the future.

Essentials of a good Costing system :- For availing of maximum benefits, a good costing system should possess the following characteristics.

A. Costing system adopted in any organization should be suitable to its nature and size of the business and its information needs.

B. A costing system should be such that it is economical and the benefits derived from the same should be more than the cost of operating of the same.

C. Costing system should be simple to operate and understand. Unnecessary complications should be avoided.

D. Costing system should ensure proper system of accounting for material, labor and overheads and there should be proper classification made at the time of recording of the transaction itself.

E. Before designing a costing system, need and objectives of the system should be identified.

F. The costing system should ensure that the final aim of ascertaining of cost as accurately possible should be achieved.

Certain Important Terms :- It is necessary to understand certain important terms used in cost accounting.

A. Cost Center :- Cost Center is defined as, ‘a production or service, function, activity or item of equipment whose costs may be attributed to cost units. A cost center is the smallest organizational

sub unit for which separate cost allocation is attempted'. To put in simple words, a cost center is nothing but a location, person or item of equipment for which cost may be ascertained and used for the purpose of cost control. For example, a production department, stores department, sales department can be cost centers. Similarly, an item of equipment like a lathe, fork-lift, truck or delivery vehicle can be cost center, a person like sales manager can be a cost center. The main object of identifying a cost center is to facilitate collection of costs so that further accounting will be easy. A cost center can be either personal or impersonal, similarly it can be a production cost center or service cost center. A cost center in which a specific process or a continuous sequence of operations is carried out is known as Process Cost Center.

B. Profit Center :- Profit Center is defined as, 'a segment of the business entity by which both revenues are received and expenses are incurred or controlled'. (CEMA) A profit center is any sub unit of an organization to which both revenues and costs are assigned. As explained above, cost center is an activity to which only costs are assigned but a profit center is one where costs and revenues are assigned so that profit can be ascertained. Such revenues and expenditure are being used to evaluate segment performance as well as managerial performance. A division of an organization may be called as profit center. The performance of profit center is evaluated in terms of the fact whether the center has achieved its budgeted profits. Thus the profit center concept is used for evaluation of performance.

Costing Systems :- There are different costing systems used in practice. These are described below.
A. Historical Costing :- In this system, costs are ascertained only after they are incurred and that is why it is called as historical costing system. For example, costs incurred in the month of April, 2007 may be ascertained and collected in the month of May. Such type of costing system is extremely useful for conducting post-mortem examination of costs, i.e. analysis of the costs incurred in the past. Historical costing system may not be useful from cost control point of view but it certainly indicates a trend in the behavior of costs and is useful for estimation of costs in future.

B. Absorption Costing :- In this type of costing system, costs are absorbed in the product units irrespective of their nature. In other words, all fixed and variable costs are absorbed in the products. It is based on the principle that costs should be charged or absorbed to whatever is being costed, whether it is a cost unit, cost center.

C. Marginal Costing :- In Marginal Costing, only variable costs are charged to the products and fixed costs are written off to the Costing Profit and Loss A/c. The principle followed in this case is that since fixed costs are largely period costs, they should not enter into the production units. Naturally, the fixed costs will not enter into the inventories and they will be valued at marginal costs only.

D. Uniform Costing :- This is not a distinct method of costing but is the adoption of identical costing principles and procedures by several units of the same industry or by several undertakings by mutual agreement. Uniform costing facilitates valid comparisons between organizations and helps in eliminating inefficiencies.

Classification of Costs :- An important step in computation and analysis of cost is the classification of costs into different types. Classification helps in better control of the costs and also helps considerably in decision making. Classification of costs can be made according to the following basis.

A. Classification according to elements :- Costs can be classified according to the elements. There are three elements of costing, viz. material, labor and expenses. Total cost of production/ services can be divided into the three elements to find out the contribution of each element in the total costs.

B. Classification according to nature :- As per this classification, costs can be classified into Direct and Indirect. Direct costs are the costs which are identifiable with the product unit or cost center while indirect costs are not identifiable with the product unit or cost center and hence they are to be allocated, apportioned and then absorb in the production units. All elements of costs like material, labor and expenses can be classified into direct and indirect.

They are mentioned below.

i. Direct and Indirect Material :- Direct material is the material which is identifiable with the product. For example, in a cup of tea, quantity of milk consumed can be identified, quantity of glass in a glass bottle can be identified and so these will be direct materials for these products. Indirect material cannot be identified with the product, for example lubricants, fuel, oil, cotton wastes etc cannot be identified with a given unit of product and hence these are the examples of indirect materials.

ii. Direct and Indirect Labor :- Direct labor can be identified with a given unit of product, for example, when wages are paid according to the piece rate, wages per unit can be identified. Similarly wages paid to workers who are directly engaged in the production can also be identified and hence they are direct wages. On the other hand, wages paid to workers like sweepers, gardeners, maintenance workers etc are indirect wages as they cannot be identified with the given unit of production.

iii. Direct and Indirect Expenses :- Direct expenses refers to expenses that are specifically incurred and charged for specific or particular job, process, service, cost center or cost unit. These expenses are also called as chargeable expenses. Examples of these expenses are cost of drawing, design and layout, royalties payable on use of patents, copyrights etc, consultation fees paid to architects, surveyors etc. Indirect expenses on the other hand cannot be traced to specific product, job, process, service or cost center or cost unit. Several examples of indirect expenses can be given like insurance, electricity, rent, salaries, advertising etc. It should be noted that the total of direct expenses is known as 'Prime Cost' while the total of all indirect expenses is known as 'Overheads'.

C. Classification according to behavior :- Costs can also be classified according to their behavior. This classification is explained below.

i. Fixed Costs :- Out of the total costs, some costs remain fixed irrespective of changes in the production volume. These costs are called as fixed costs. The feature of these costs is that the total costs remain same while per unit fixed cost is always variable. Examples of these costs are salaries, insurance, rent, etc.

ii. Variable Costs :- These costs are variable in nature, i.e. they change according to the volume of production. Their variability is in the same proportion to the production. For example, if the production units are 2,000 and the variable cost is Rs. 5 per unit, the total variable cost will be Rs. 10,000, if the production units are increased to 5,000 units, the total variable costs will be Rs. 25,000, i.e. the increase is exactly in the same proportion of the production.

Another feature of the variable cost is that per unit variable cost remains same while the total variable costs will vary. In the example given above, the per unit variable cost remains Rs. 2 per unit while total variable costs change. Examples of variable costs are direct materials, direct labor etc.

iii. Semi-variable Costs :- Certain costs are partly fixed and partly variable. In other words, they contain the features of both types of costs. These costs are neither totally fixed nor totally variable. Maintenance costs, supervisory costs etc are examples of semi-variable costs. These costs are also called as 'stepped costs'.

D. Classification according to functions :- Costs can also be classified according to the functions/ activities. This classification can be d one as mentioned below.

i. Production Costs :- All costs incurred for production of goods are known as production costs.

ii. Administrative Costs :- Costs incurred for administration are known as administrative costs. Examples of these costs are office salaries, printing and stationery, office telephone, office rent, office insurance etc.

iii. Selling and Distribution Costs :- All costs incurred for procuring an order are called as selling costs while all costs incurred for execution of order are distribution costs. Market research expenses, advertising, sales staff salary, sales promotion expenses are some of the examples of selling costs. Transportation expenses incurred on sales, warehouse rent etc are examples of distribution costs.

iv. Research and Development Costs :- In the modern days, research and development has become one of the important functions of a business organization. Expenditure incurred for this function can be classified as Research and Development Costs.

E. Classification according to time :- Costs can also be classified according to time. This classification is explained below.

I. Historical Costs :- These are the costs which are incurred in the past, i.e. in the past year, past month or even in the last week or yesterday. The historical costs are ascertained after the period is over. In other words it becomes a post-mortem analysis of what has happened in the past. Though historical costs have limited importance, still they can be used for estimating the trends of the future, i.e. they can be effectively used for predicting the future costs.

Predetermined Cost :- These costs relating to the product are computed in advance of production, on the basis of a specification of all the factors affecting cost and cost data. Pre determined costs may be either standard or estimated. Standard Cost is a predetermined calculation of how much cost should be under specific working conditions. It is based on technical studies regarding material, labor and expenses. The main purpose of standard cost is to have some kind of benchmark for comparing the actual performance with the standards. On the other hand, estimated costs are predetermined costs based on past performance and adjusted to the anticipated changes. It can be used in any business situation or decision making which does not require accurate cost.

F. Classification of costs for Management decision making :- One of the important function of cost accounting is to present information to the Management for the purpose of decision making. For decision making certain types of costs are relevant. Classification of costs based on the criteria of decision making can be done in the following manner

I. Marginal Cost :- Marginal cost is the change in the aggregate costs due to change in the volume of output by one unit. For example, suppose a manufacturing company produces 10,000 units and the aggregate costs are Rs. 25,000, if 10,001 units are produced the aggregate costs may be Rs. 25,020 which means that the marginal cost is Rs. 20. Marginal cost is also termed as variable cost and hence per unit marginal cost is always same, i.e. per unit marginal cost is always fi xed. Marginal cost can be effectively used for decision making in various areas.

II. Differential Costs :- Differential costs are also known as incremental cost. This cost is the difference in total cost that will arise from the selection of one alternative to the other. In other words, it is an added cost of a change in the level of activity. This type of analysis is useful for taking various decisions like change in the level of activity, adding or dropping a product, change in product mix, make or buy decisions, accepting an export offer and so on.

III. Opportunity Costs :- It is the value of benefit sacrificed in favor of an alternative course of action. It is the maximum amount that could be obtained at any given point of time if a resource was sold or put to the most valuable alternative use that would be practicable. Opportunity cost of goods or services is measured in terms of revenue which could have been earned by employing that goods or services in some other alternative uses.

IV. Relevant Cost :- The relevant cost is a cost which is relevant in various decisions of management. Decision making involves consideration of several alternative courses of action. In this process, whatever costs are relevant are to be taken into consideration. In other words, costs which are going to be affected matter the most and these costs are called as relevant costs. Relevant cost is a future cost which is different for different alternatives. It can also be defined as any cost which is affected by the decision on hand. Thus in decision making relevant costs play a vital role.

V. Replacement Cost :- This cost is the cost at which existing items of material or fixed assets can be replaced. Thus this is the cost of replacing existing assets at present or at a future date.

VI. Abnormal Costs :- It is an unusual or a typical cost whose occurrence is usually not regular and is unexpected. This cost arises due to some abnormal situation of production. Abnormal cost arises due to idle time, may be due to some unexpected heavy breakdown of machinery. They are not taken into consideration while computing cost of production or for decision making.

VII. Controllable Costs :- In cost accounting, cost control and cost reduction are extremely important. In fact, in the competitive environment, cost control and reduction are the key words. Hence it is essential to identify the controllable and uncontrollable costs. Controllable costs are those which can be controlled or influenced by a conscious management action. For example, costs like telephone, printing

stationery etc can be controlled while costs like salaries etc cannot be controlled at least in the short run.

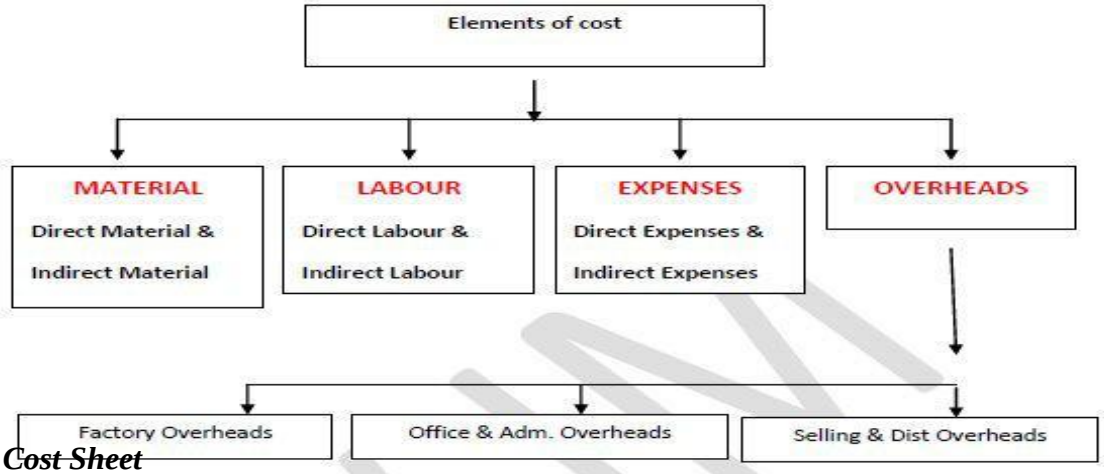
Generally, direct costs are controllable while uncontrollable costs are beyond the control of an individual in a given period of time.

VIII. Shutdown Cost :- These costs are the costs which are incurred if the operations are shut down and they will disappear if the operations are continued. Examples of these costs are costs of sheltering the plant and machinery and construction of sheds for storing exposed property. Computation of shutdown costs is extremely important for taking a decision of continuing or shutting down operations.

IX. Capacity Cost :- These costs are normally fixed costs. The cost incurred by a company for providing production, administration and selling and distribution capabilities in order to perform various functions. Capacity costs include the costs of plant, machinery and building for production, warehouses and vehicles for distribution and key personnel for administration. These costs are in the nature of long-term costs and are incurred as a result of planning decisions.

X. Urgent Costs :- These costs are those which must be incurred in order to continue operations of the firm. For example, cost of material and labor must be incurred if production is to take place.

4.3 Elements of Cost:



4.4 Cost Sheet

Cost Sheet is a statement of cost showing the total cost of production and profit or loss from a particular product or service. A Cost Sheet shows the cost in a systematic manner and element wise.

A typical format of the Cost Sheet is given below.

Cost Sheet for the period.....

Production ..... units

Particulars	Amount (Rs.)	Amount (Rs.)
A. Direct Materials Opening Stock + Purchases		

+ Carriage inwards - Closing Stock B. Direct Wages C. Direct Expenses **I. Prime Cost (A + B + C)** D. Factory Overheads- Indirect materials Loose Tools Indirect wages Rent and Rates (Factory) Lighting and heating (F) Power and fuel Repairs and Maintenance Drawing office expenses Research and experiment Depreciation – Plant (F) Insurance – (F) Work Manager's salary **II. Factory Cost/Works Cost (I + D)** E. Office and Administrative Overheads Rent and Rates – office Salaries – office Insurance of office building and equipment's Telephone and postage Printing and Stationery Depreciation of furniture and office equipment's Legal expenses Audit fees Bank Charges **III. Cost of Production (II + E)** F. Selling and Distribution Overheads Showroom rent and rates Salesmen's salaries and commission Traveling expenses Printing and Stationery – Sales Department		

Advertising Bad debts Postage Debt collection expenses Carriage outwards Depreciation of delivery van Debt collection expenses Samples and free gifts		
IV. Cost of Sales (III + F)		
V. Profit/Loss		
VI. Sales (IV + V)		

A glance at the above cost sheet will reveal that it works out the total cost of production/service in a phased manner. In other words, total costs are segregated into elements like Prime Cost, Factory or Works Cost, Cost of Production, Cost of Sales and finally the profit/loss is worked out by comparing the total cost with the selling price. Appropriate adjustments are made for opening and closing stock of Work in Progress and also opening and closing stock of finished goods. The format of cost sheet may be suitably changed according to the requirements of each firm but the basic form remains the same.

4.5 Process Costing:

Process Costing is also a method of costing which is used in those industries where the production is in continuous process, i.e. the output of one process becomes the input of the subsequent process and so on. Examples of such industries are, paint works, chemical plants, food manufacturing, oil refining, paper mill, textile mills, sugar factories, fruit canning, dairy and so on. In such industries, the input is put in the first process and the output of each process becomes the input of the subsequent process till the final product emerges from the last process. This method is employed where it is not possible to trace the items of prime cost [which consists of all direct costs] to a particular order because its identity is lost in the continuous production. Thus it is not possible to compute the cost of say, 200 liters of oil or 200 kg of sugar produced as thousands of liters of oil or thousands of kg of sugar is manufactured at the same time. We can get the cost per liter or kg by dividing the total cost by the total production produced during that period.

Preparing Process Cost Accounts

1) As explained above, the objective of process costing is to work out the cost of each process, transfer the same to the subsequent process and finally ascertain the total cost of production. Therefore it is necessary to charge various costs to each process. For this, the factory is divided into distinct processes or operations and an account is kept of each process to which all the costs are debited. The following are the various elements of cost, which are shown in the process accounts.

Materials: Raw materials required for each process is drawn from stores against material requisitions. Proper procedure like preparing and authorizing the requisition, pricing of the issues, return of materials to the stores, transfer of material from one process to another should be followed while issuing the materials. Cost of materials consumed should be computed as per the method employed for pricing of the issues and the cost should be debited to the process account.

Labor: Wages paid to workers and supervisory staff should be charged to the particular process if they can be identified with it. If workers work on two or more processes, proper allocation should be made according to some basis like time spent on each process.

Direct Expenses: If expenses are identifiable with a particular process, they should be charged to that process. For example, cost of electricity, depreciation may be charged directly to a process if they are identifiable with it.

Overheads: By nature, overheads are indirect expenses and hence cannot be identified with a particular process. These expenses can be apportioned on some suitable basis and charged to the process.

2) ***Important aspects an Process Accounts:*** While preparing process cost accounts, some important aspects are to be taken into consideration. These aspects are given below.

Normal Loss: Normal loss is a loss, which is inevitable in any process. Thus if the input is 100, the output may be 95 if the normal loss is anticipated as 5%. Accounting treatment of normal loss is explained and illustrated in the subsequent paragraphs.

Abnormal Loss/Abnormal Gain: If the actual output is less than the normal output [Normal output = Input – Normal Loss], the difference between the two is the abnormal loss. On the other hand if the actual output is more than the normal output, the difference between the two is abnormal gain. Thus in the example given above, the normal output is 95 which is 100 – 5% of 100 as the normal loss. If the actual output is 93 units, 2 units will be abnormal loss and if the actual output is 97 units, 2 units will be abnormal gain. Abnormal loss/gain is to be treated differently and is illustrated subsequently.

Inter Process Profits: Sometimes, while transferring the cost of one process to the subsequent one, some percentage of profit is added in it. This is called as inter process profits. This is done when a process is treated as profit center. In such cases, unrealized profit is to be computed and shown separately. This is also illustrated separately.

3) Pro Forma of Process Account [Without normal/abnormal loss/gain]: A simple process account is prepared in the following manner.

Process I Account

Debit **Credit**

Particulars	Qty	Rate (Rs.)	Amount (Rs.)	Particulars	Qty	Rate (Rs.)	Amount (Rs.)
Direct Materials				Output Transferred to Process II			
Direct Labour							
Direct Expenses							

Production Overheads							
Total				Total			

Note: Process II and subsequent Process Accounts will be prepared in the same fashion. In the final process, the cost and output will be transferred to the finished goods stock account.

4.6 Activity Based Costing

Meaning :- CIMA defines Activity Based Costing as, 'cost attribution to cost units on the basis of benefit received from indirect activities e.g. ordering, setting up, assuring quality.' One more definition of Activity Based Costing is, 'the collection of financial and operational performance information tracing the significant activities of the firm to product costs.'

Working of Activity Based Costing

The working of Activity Based Costing is explained below.

• ***Understanding and analyzing manufacturing process :-*** For installation of any costing system, study of manufacturing process is essential. For Activity Based Costing system also, it is necessary to study the manufacturing process and ascertain various stages involved in the same so that 'activities' involved in the same can be identified.

• ***Study of the Activities involved* :-** The next step is to study the activities involved in the manufacturing process. This step is very crucial as the entire Activity Based Costing is based on identification of activities. In this step, the activities involved in a process are identified. For example, in a bank, opening of an account is one of the services offered to customers. In this service, activities involved are studied. It may be revealed that opening of a new account involves activities like issuing the application form, verification of the same and accepting the initial amount required for opening of an account. Similarly in case of a manufacturing company, purchase procedure may involve activities like receiving of purchase requisition for concerned department or the stores department, inviting quotations from various suppliers, placing of an order, follow up of the same and finally receiving and inspection of the goods. In case of an educational institute, activities in a library may include activities like issue of books, receipt of books, ordering new books, giving accession numbers, stock taking, removing obsolete and outdated books, identification of slow moving and fast moving items etc. In this manner, whether in manufacturing or in service sector, activities are identified and the next step is to divide the activities into value adding and non value adding. The objective behind this is that attention can be focused on the value adding activities while non value adding activities can be eliminated in the future.

• ***Activity Cost Pool* :-** Cost pool is defined by CIMA as, 'the point of focus for the costs relating to a particular activity in an activity based costing system.' For example, in case of a library, the cost of issue and receipts, cost of ordering, stock taking costs etc. can be identified with 'Library Cost'. In other words, 'Library' will the cost pool in which all the costs mentioned above may be clubbed. In case of a manufacturing organization, as regards to stores, cost of classification, cost of issue of stores requisitions, inspection costs etc. can be pooled under the heading 'stores'. Thus cost pool concept is similar to the concept of cost center. The cost pool is the point of focus or in other words, it is the total

cost assigned to an activity. It is the sum of all the cost elements assigned to an activity.

• ***Cost Drivers*** **:-** According to CIMA, 'cost driver is any factor which causes a change in the cost of an activity, e.g. the quality of parts received by an activity is a determining factor in the work required by that activity and therefore affects the resources required. An activity may have multiple cost drivers associated with it.' In other words, cost driver means the factors which determine the cost of an activity. For example, if we repeat the example of library, the number of receipts and issue of books will be cost drivers, in a stores, no. of stores requisitions will be cost drivers, in customer order processing the no. of customers as well as no. of orders will be cost drivers. Thus a cost driver is an activity which generates cost. Activity Based Costing is based on the belief that activities cause costs and therefore a link should be established between activities and product.

• ***Identification of costs with the products*** **:-** The final stage in Activity Based Costing is to identify the cost with the final products which can also be called as cost objects. Cost objects include, products, services, customers, projects and contracts. As mentioned earlier, direct costs can be identified easily with the products but the indirect costs can be linked with the products by identifying activities and cost drivers. Thus Activity Based Costing is the process of tracing costs first from resources to activities and then from activities to specific products.

• ***Conclusion*** **:-** It can be concluded that the Activity Based Costing is a costing system which tries to charge the indirect costs to the products and services fairly accurately. However for effective implementation there is a need of involvement of the staff and their training on continuous basis. Similarly there is a need to review the working of the system at periodic intervals and keep a follow up of the feedback received. These actions will ensure effective implementation of the system. Support of top management is also required for effective implementation of this system. Activity Based Costing system is definitely a better system but much depends on the implementation of the same.

4.7 Budgetary control

Budgetary control is the process of preparation of budgets a various activities and comparing the budget figures for arriving at derivations.

Production Budget

It is a forecast of budgeted production based on sales, productive capacity, and requirement of inventories etc,.

Sales budget

The sales budget is a forecast of a total sales classified according to group of products expected to be sold in what quantity and what prices. A sales budget is generally regarded as a key stone of budgeting.

Fixed budget

A fixed budget is designed to remain unchanged irrespective of the volume of output or turnover attained. The budget remains fixed over a given period and does not change with

the change in the volume of production or level of activity attained.

Flexible budget

It is also known as variable budget. A flexible budget is designed to change along with the changes in the output or turnover. It changes according to the level of activity.

Cash budget

A cash budget deals with cash, including its equivalent like bank balance and bill receivable. It shows the inflows of cash and outflow of cash during a particular period of time. It can be prepared for a year but for better control and management of cash it is normally prepared on monthly basis.

Zero base budget

Zero base budgets is a management tool which provides a systematic method of evaluating all operations and programs, current or new, allows for budget reductions and expansions in a rational manner and allows reallocation of sources from low to high priority programs.

The Chartered Institute of Management Accountants, London, defines budgetary controls as "the establishment of budgets relating to the responsibilities of executives to the requirements of a policy, and the continuous comparison of actual with budgeted results, either to secure by individual action the objective of that policy or to provide a basis for its revision". According to J.A.Scott, "it is the system of management control and accounting in which all operations are forecasted and so far as possible planned ahead, and the actual results compared with the forecasted and planned ones".[3] Thus, budgetary control involves the following.

Essential steps for budgetary

It should be noted that while making estimates for the future, past performance will be a useful basis. However, a mechanical use of past performance will be of no avail. In order to have an effective system of budgetary control, it will be appropriate to take the following steps:

1. Determination of the Objectives

It has already been stated above that introduction of a system of budgetary control requires a clear perspective of the objectives that are sought to be achieved by the system of budgetary control. The objective in most cases is to achieve the desired/greater profits. Having determined the objective(s) of budgetary control the following further problems will have to be sorted out:

(i) Laying down of a plan for the implementation of the firm's objectives.
(ii) Coordination of the activities of the different department.

(iii) Controlling each function so that best possible results can be achieved.

The steps required for sorting out each of these problems are being explained din the following pages.

2. Organization for Budgeting

The setting up of a definite plan of organization is the second step to be taken prior to beginning the real work of installing budgetary control. The responsibility of each executive must be clearly defined. There should be no uncertainty regarding the point where the jurisdiction of one executive ends and that of another begins.

3. Budget Manual

The budget manual is a written document or booklet which specifies the objectives of the budgeting organization and procedures.

The Chartered Institute of Management Accountants, London, defines it as a document which sets out, alia, the responsibilities of the persons engaged in, the routine of, and the forms and records required for budgetary control". Following are some of the important matters covered in a budget manual:

1. A statement regarding the objectives of the organization and how they can achieved through budgetary control.
2. A statement regarding the functions and responsibilities of each executive by designation both regarding preparation and execution of budgets.
3. Procedures to be followed for obtaining the necessary approval of budget. The authority of granting approval should be state in explicit terms which one, two or more signatures are to be required on each document should also be clearly stated.
4. Time-tables for all stages of budgeting.
5. Reports, statements, forms and other records to be maintained.
6. The accounts classification to be employed. It is necessary that the framework within which the costs, revenues and other financial amounts are classified must be identical both in the accounts and budget departments.

There are many advantages attaching to the use of budget manual. Since it is a formal record defining the function and responsibilities of each executive, the methods and procedures of budgetary control are well standardized. Moreover, there is a synchronization of the efforts of all which result in maximization of the profits of the organization.

4. Responsibility for Budgeting

(i) **Budget Controller.** Of course, the chief executive is ultimately responsible for the budget programme but it will be better if the large part of the supervisory responsibility is delegated to an official designated as Budget Controller or Budget Director. The Budget Controller or Budget Director should have knowledge of the technical side of the business and should report direct to the President.

(ii) **Budget Committee**. The Budget Controller will be assisted in his work by the Budget Committee. The Budget Committee will consist of Heads of the various Departments as Production, Sales, Finance, etc., with Budget Controller as its Chairman. It will be the duty of the Budget Committee to submit, discuss and finally approve of the Budget Committee to submit, discuss and finally approve of the budget figures. Each Head of the Department will have his own sub-committee with executives working under him as its members.

5. Fixation of the Budget Period

"Budget period" means the period for which a budget is prepared and employed. The budget period will depend upon (i) the nature of the business and (ii) the control techniques to be applied. For example, a seasonal industry will budget for each season (and off season). An industry requiring long periods to complete work will budget for 3 or 4 or 5 years. However, it is necessary from the point of view of control that the budget should not be for a period longer than that what is necessary.

6. Budget Procedure

After the establishment of budgeting organization and fixation of the budget period, the actual work of budgetary control begins. The procedure followed in designing and operating a budgetary control system largely depends upon the nature of the business. However, the usual pattern is as follows:

(ii) Determination of Key Factor. Key factor is that factor the extent of whose influence must first be assessed in order to ensure that functional budgets (relating to different functions of a business, e.g., sales, production, purchases, cash, etc) are reasonably capable of fulfillment. This is also termed as 'Principal Budget' or 'Limiting' 'Governing' factor. It is essential to consider this factor before preparing the budgets. In some concerns the key factor might be sales while in others it might be production, materials, labour, machinery or capital. The

most important factor which governs the whole process of preparation of budgets should be pre-determined. The budget relating to that particular factor should be prepared first, then other budgets should be based upon it. A coordinated plan should then be finally approved.

The examples of key factor, which can be one or even more than one in a particular concern, are as under:

First, sales may be the key factor and if it is so, it would be because of the restricted demand in the market or limited efforts for sales promotion. Secondly, management might be another important factor because of deficiency of capable managers or limited funds at the disposal of the executives. Thirdly, materials may be the limiting factor on account of inadequate availability of supply, fixed quotas, licence restrictions, etc. Labour is yet another key factor because there might be dearth of workers in general or in certain grades. Lastly, plan may be the governing factor. Plant capacity might be limited due to shortage in supply or lack of capital or space.

We are giving below the general list of key factors in different industries:

Industry	**Key factor**
(i) Motor Car	Sales demand
(ii) Aluminium	Power
(iii) Petroleum Refinery	Supply of crude oil
(iv) Electro optics	Skilled technicians
(v) Hydel power generation	Monsoon.

The key factors should be correctly identified and diagnosed. Budgets will be meaningless unless the key factors are considered in depth. However, the key factors are not of a permanent nature and they can be overcome by the management in the dealing in more profitable products, introducing new methods, changing material mix, working overtime or extra shifts, providing incentives to workers, hiring new machinery, etc.

(ii) Making of Forecasts. Forecasts, as explained earlier, means an estimate about the probabilities for a given period of time. It differs from a budget. Budget is an operating and financial plan of a business enterprise. It is a sort or a target which the management seeks to attain on the basis of the forecasts made. Forecasts are made regarding sales, production cost and financial requirements of the business. Physical quantities as well as monetary values are estimated separately.

(iii) Consideration of Alternative Combinations of Forecasts. Alternative combinations of forecasts are considered with a view to obtain the most efficient overall plan so as to maximize profits. When the largest combination of forecasts is selected, the forecast should be regarded as being finalized.

(iv) Preparation of Budgets. On finalization of the forecasts the budgets will be prepared. Production budget will be prepared on the basis of the sales budget and also after taking into consideration the available productive capacities. Costs of production budget will also be prepared on the basis of the production budget. Financial Budget will be prepared on the basis of sales forecast and production budget. All these budgets will be combined and coordinated into one Master Budget. These budgets may be revised from time to time taking into account the current developments.

(v) Choice between Fixed Flexible Budgets. A budget may be fixed or flexible. A fixed budget is based on a fixed volume of activity. It is ineffective and meaningless primarily because the actual capacity utilization may vary from month to month or quarter to quarter. A flexible budget is prepared for changing levels of activity. The flexible budget considers the fixed and variable costs separately because of their behaviour. Fixed costs tend to remain unchanged within the given levels. They change only when there is a change in the capacity level while variable costs change in director proportion of output. The budget controller can analyze the variance between the actual cost and budgeted cost depending upon the actual level of activity attained during a period if flexible budget approach is adopted. This is explained in detail later.

4.8 Classification of Budgets

Budgets can be classified into different categories from different points of view. The following are most common basis of classification:

(1) According to Time.
(2) According to Function.
(3) According to Flexibility.

Classification According to Time

In terms of time, the Budget can broadly be classified into four categories:

(a) Long-term Budget. A budget designed for a long period (generally for a period of 5 to 10 years) is termed as a Long-term Budget. These budgets are concerned with planning of the operations of a firm over a considerably long period of time. They are generally prepared in terms of physical quantities.

(b) Short-term Budget. These budgets are designed for a period generally not exceeding 5 years. They are generally prepared in physical as well as in monetary units.

(c) Current Budgets. These budgets cover a very short period, say, a month or a quarter they are essentially short-term budgets adjusted to current conditions or prevailing circumstances.

(d) Rolling Budgets. Some companies follow the practice of preparing a rolling or progressive budget. In case of such companies there will always be a budget for a year in advance. A new budget is prepared after the end of each month / quarter for a full year ahead. The figures for the month or quarter which has rolled down are dropped and the figures for the next month or quarter are added. For example, if a budget has been prepared for the year 1998, after the expiry of the first quarter ending 31st March 1998, a new budget for the full year ending 31st March 1999 will be prepared by dropping the figure of the quarter which has rolled down (i.e., quarter ending 31st March 1998) and adding figure for the new quarter ending 31st March 1999. The figures for the remaining three quarters ending 31st Dec. May also be revised, if necessary. This practice will continue whenever a quarter ends and a new quarter begins.

Classification According to Function

Budgets can be classified on the basis of functions they are meant to perform. These budgets are, therefore, also termed as Functional budgets. Their number depends on the size and the nature of the business. The following are the usual functional budgets:

(a) Sales Budget. The budget forecasts total sales in terms of quantity, value, items, periods, areas, etc.

(b) Production Budget. The budget is based on Sales Budget. It forecasts quantity of production in terms of items, periods, areas, etc.

(c) Cost of production Budget. The budget forecasts the cost of production. Separate budgets are prepared for different elements of cost such as direct materials budget, direct overheads budget, etc.

(d) Purchase Budget. The budget forecasts the quantity and value of purchases required for production. It gives quantity-wise, money-wise and period-wise information about the materials to be purchased.

(e) Personnel Budget. The budget anticipates the quantity of personnel required during a

period for production activity. This may be further split up between direct and indirect personnel budgets.

(f) Research Budget. The budget relates to the research work to be done for improvement in quality of the products or research for new products.

(g) Capital Expenditure Budget. The budget provides a guidance regarding the amount of capital that may be required for procurement of capital assets during the budget period.
(h) Cash Budget. The budget is a forecast of the cash position by time period for a specific duration of time. It states the estimated amount of cash receipts and the estimation of cash payments and the likely balance of cash in hand at the end of different periods.

(i) Master Budget. It is a summary budget incorporating all functional budgets in capsule form. It interprets different functional budgets and covers within its range the preparation of projected income statement and projected balance sheet.

Classification According of Flexibility

On the basis of flexibility, budgets can be divided into two categories:

(1) Fixed Budget.
(2) Flexible Budget.

(1) Fixed Budget. A budget prepared on the basis of a standard or a fixed level of activity is called a fixed budget. It does not change with the change in the level of activity.

(2) Flexible Budget. A budget designed in a manner so as to give the budgeted cost of any level of activity is termed as a flexible budget.

Some of the important types of budgets covered by the above classification have been discussed in the following pages.

4.9 Zero-Base Budgeting

Zero-base Budgeting (ZBB) is a new technique designed to revitalize budgeting. This technique was first used by the U.S. Department of Agriculture as long back as in 1961. Texas Instruments, a multinational company, pioneered its use in the private sector. However, it was Peter A. Pyhrr who designed its logical basic framework in 1970 and successfully

developed, implemented and popularized its wider use in the private sector. He is, therefore, rightly termed as the 'Father of Zero-Base Budgeting'. The technique gained further momentum in USA when the President of USA, Mr. Carter, government agencies. Thus, ZBB replaced the conventional budgeting technique at the federal government level. The State Governments of USA also started taking interest in the ZBB technique and today more than a dozen States are using this technique in one or the other form. The technique is now also gaining tremendous foot-hold in many Commonwealth countries particularly in Canada. In our country, the Institute of chartered Accountants of India and the Institute of Costs and Works Accountants of India have conducted seminars to acquaint people with the ZBB technique. The Institute of Chartered Accountants of India has also prepared a research monograph for the application of the ZBB approach in the country, keeping in view the national environment and requirements. However, the system has not yet been implemented in real terms in our country.

"ZBB is a technique which complements and links the existing planning, budgeting and review processes. It identifies alternative and efficient methods of utilizing limited resources in effective attainment of selected benefits. It is a flexible management approach which provides a credible rationale for re-allocating resources by focusing on the systematic review and justification of the funding and performance levels of current programmes or activities"

4.10 Process of Zero-Base Budgeting

The process of zero-base Budgeting involves the following steps:

(i) Determine of the Objective of Budgeting. The determination of the objectives of budgeting is the first step in the system of introducing zero-base Budgeting. The objective may be to effect cost reduction in staff overhead or analyze and drop the projects which do not fit in the organizational structure or which are not likely to help in achieving the organization's objectives etc.

(ii) Determination of the extent to which the Zero-base Budgeting is to be introduced. This requires going through the organization chart or evaluating the pending re-organization or programme re-alignment. After studying the organizational structure, the management can decide whether Zero-base Budgeting is to be introduced in all areas of organization's activities or only in a few selected areas on trial basis.

(iii) Development of Decision Units. Decision units refer to units regarding which cost benefit analysis will be done to arrive at a decision whether they should be allowed to continue or should they be dropped. It may be a functional department, a programme, a product-line or a sub-line. Each decision unit must be independent of all the other units so

that if the cost analysis proves unfavorable that unit can be dropped. While selecting such decision units, the following points should be kept in mind:

(a) They should be capable of being meaningfully reviewed and analyzed. They should, therefore, neither be too low nor too high in the organizational hierarchy.
(b) The managers of these decision units should be capable of being taking significant decisions keeping in view the scope, direction and quality of work to be performed.

(iv) Development of Decision Packages. This is the most important step involved in the ZBB process. After identification of decision units, the manager of each decision unit has to analyse the activities of his own decision unit or units. He examines the alternative ways of accomplishing his objectives. He does cost benefit analysis and selects the best alternative. He then prepares the decision packages which effectively summarize his plans and the resources required to achieve them. The general practice is that a decision unit manager prepares and submits to such packages.

A decision package can be defined as a set of documents which identifies and describes activities of the decision units in such a way that the management can evaluate and rank them against other activities competing for limited resources and decide whether to approve or disapprove them.

A decision package consists of answers to the following questions:

(a) It is necessary to perform the activity at all? If the answer is in the negative there is no need of proceeding further.
(b) How much has been the actual cost of the activity and what has been the actual benefit both in tangible as well as intangible forms?
(c) What should be the estimated cost of the level of activity and the estimated benefit from such activity?
(d) Should the activity be performed in the way in which it is being performed and what should be the cost?
(e) If the project or activity is dropped, can the unit be replaced by outside agency or shelved altogether?

(v) Review and Ranking of Decision Packages. The decision packages or (budget requests) after being developed and formulated are submitted to next level of responsibility within the organization for ranking purposes. The objective of such ranking is to put the limited resources at the disposal of the organization to the best use. The management ranks the various decision packages in order of decreasing benefit or importance to the organization. The preliminary ranking is done by the decision unit manager himself who has developed the decision packages. They are then sent to the superior officers who once again review and

rank the decision packages keeping in view the overall objectives of the organization in mind.

(vi) Preparation of Budgets. This is the last stage involved in the ZBB process. Once the top management has ranked the various decision packages keeping in view the cost benefit analysis and the availability of funds, a cut-off point is established. All packages which come within this cut-off point are accepted and others are rejected. The resources are then allocated to the different decision units and budgets relating to each unit are prepared.

The above analysis shown that zero-base budgeting is simply extension of the cost benefit analysis method to the area of the corporate budgeting. It can therefore, be understood by all concerned.

Sales Budget

Problem

Quick Products Ltd. Sells two products X and Y in two divisions North and South. The following were the budgeted and actual sales for the year 1999.

	Budget				Actual			
	North		South		North	South		
	Units	Rs. Per unit	Units	Rs. Per unit	Units	Rs. Per unit	Units	Rs. Per unit
Product 'X'	500	180	300	180	600	180	400	180
Product 'Y'	300	430	200	430	200	430	150	430

For the year 2000, the board of directors has approved the proposal of sales department to increase the price of 'X' to Rs. 200 and decrease the price of 'Y' to 400. The sales estimates from the divisional managers were as follows:

North: 'X' 800 units 'Y' 500 units

South: 'X' 600 units 'Y' 300 units

An intensive advertising campaign proposed by advertising consultants is expected to result in additional sales of 20% of each product in each division over the estimated sales. Prepare the sales budget for the year 2000 and present it together with the budgeted and actual sales for 1999.

Quick Products Ltd
Sales Budget for the year 2000

Division	Product	Budget for 2000			Budget for 1999			Actual sales for 1999		
		Qty units	Price Rs	Amount Rs	Qty Units	Price Rs.	Amount Rs.	Qty Units	Price Rs.	Amount Rs.
North	X	960	200	1,92,000	500	180	90,000	600	180	1,08,000
	Y	600	400	2,40,000	300	430	1,29,000	200	130	86,000
	Total	1,560	–	4,32,000	800	–	2,19,000	800	–	1,94,000
South	X	720	200	1,44,000	300	180	54,000	400	180	72,000
	Y	360	400	1,44,000	200	430	86,000	150	150	64,500
	Total	1,080	-	2,88,000	500	-	1,40,000	550		1,36,500
Total (summary)	X	1,680	200	3,36,000	800	180	1,44,000	1,000	180	1,80,000
	Y	960	400	3,84,000	500	430	2,15,000	350	430	1,50,500
	Total	2,640	-	7,20,000	1,300	-	3,59,000	1,350	-	3,30,500

Material Purchase Budget

Problem

Martin Limited plans to sell for the next year 50,000 units of a particular product. Two kinds of raw materials 'A' and 'B' are required for manufacturing the product. Each unit of the product requires 2 units of 'A' and 3 units of 'B'. The estimated opening balances at the commencement of the next year are:

Finished product – 8,000 units
Raw materials – 'A' 12,000 units, 'B' – 15,000 units
The desired closing balances at the end of the next year are:
Finished product – 6,000 units
Raw materials – 'A' 13,000 units, 'B' 16,000 units
Draw up a raw materials purchase budget for the next year.

Material Purchase Budget (Quantitative)

Particulars	Material A units	Material B units

	Material required for production:		
	Material 'A' @ 2 units for 48,000 finsished units		
	Material 'B' @ 3 units for 48,000 finished units	96,000	1,44,000
Add.	Desired closing balance of material at the end of the budget period		
Less:	Estimated opening balance of materials at the beginning of the budget period	12,000	15,000
	Materials to be purchased during the budget period	97,000	1,45,000

Working note: Estimated production:

= Expected sales + Desired closing stock – Estimated opening stock

=(50,000 + 6,000) – 8,000

=48,000 units

Production Budget

Problem

You are required to prepare a production budget for the half year ending June 2000 from the following information:

Product	Budgeted sales quantity	Active stock on 31-12-99	Desired stock on 30-06-2000
	Units	Units	Units
S	20,000	4,000	5,000
T	50,000	6,000	10,000

Solution:

Production Budget for the half year ending 30-06-2000

Particular	Products	Total

		Units	
	S units	T units	
Sales (Budgeted) Add: Closing stock (desired) as on 30-6-2000 Less: Opening stock as on 1-1-2000 Quantity to be produced			

Note:

(1) Production = Estimated sales + Desired closing stock – Estimated opening stock
The formula is presented in the form of a statement. Horizontally different products can be shown, with a total column at the end.

(2) If production costs are available, they may be incorporated into the production budget. In that case, it will be a 'cost of production budget'.

(3) If production is planned month wise, or week wise or quarter wise, the production budget can be shown with columns for each month or quarter, horizontally.

Cash Budget

Problem

From the following data forecast the cash position at the end of April May and June 1998.

Month 1998	Sales Rs.	Purchases Rs.	Wages Rs.	Sales expenses Rs.
February	1,20,000	80,000	10,000	7,000
March	1,30,000	98,000	12,000	9,000
April	70,000	1,00,000	8,000	5,000
May	1,16,000	1,03,000	10,000	10,000
June	85,000	80,000	8,000	6,000

Further information:

Sales at 10% realized in the month of sales. Balance equally realized in two subsequent months.

Purchases: Creditors are repaid in the month following the month of supply.

Wages: 20% paid in arrears in the following month.
Sundry expenses paid in the month itself.
Incomes tax Rs.20,000 payable in June.
Dividend Rs.12,000 payable in June.
Income from investment Rs.2,000 received half-yearly in March and September.
Cash balance on hand as on 1-4-88 Rs. 40,000.

Solution:

Cash Budget for Three months ending June 1998

Particular	April Rs.	May Rs.	June Rs.
Opening balance of cash	40,000	47,700	29,700
Add: Receipts of cash:			
Cash sales	7,000	11,600	8,500
Cash from debtors:			
1st month (W.N.)	58,500	31,500	52,200
2nd month (W.N.)	54.000	58,500	31,500
Total receipts 1	1,59,500	1,49,300	1,21,900
Payments: Creditors for purchases	98,000	1,00,000	1,03,000
Wages: Current			
Arears	6,400	8,000	6,400
Sundry expenses	2,400	1,600	2,000
Income tax	5,000	10,000	6,000
Dividend	-		20,000
	-		12,000
Total payments II	1,11,800	1,19,600	1,49,400
Closing balance of cash – II	47,700	29,700	27,500 (O.D)

Note:

(1) Out of total sales. 10% are cash sales. Balance 90% are credit sales. In any given month 50% of credit sales of the previous two months are collected.
(2) In any given month, 80% of the wages of the same month and 20% of previous month's wages are paid.
(3) Income from investments is ignored because it is not received during April to June.

Working Note: Collections of Sales:

	Feb. Rs.	March. Rs.	April Rs.	May Rs.	June Rs.
Total sales	1,20,000	1,30,000	70,000	1,16,000	85,000
Less: Cash sales at 10%	12,000	13,000	7,000	11,600	8,500
Credit sales	1,08,000	1,17,000	63,000	1,04,400	76,500
Collection in 1st month after credit sale		54,000	58,500	31,500	52,200
Collection in 2nd month after credit sale			54,000	58,500	31,500
Total Collection of credit sales			1,12,500	90,000	83,700

Fixed Budget

Problem

A company which supplies its output on contract basis as component to an assembling firm has a contract to supply 10,000 units of its only product during 1999. The following were the budgeted expenses and revenue.

Material Rs.15 per unit
Wages Rs. 10 per unit
Work expenses-(Fixed) Rs.40,000
Variable Rs. 4 per unit
General expenses(all fixed) Rs.60,000
Profit is 20% on sales price.
Prepare the budget for 1999 showing the costs and profit.

Solution:

Master Budget Output 10,000 units

Particulars	Total Rs.	Per unit
Materials	1,50,000	15.00

Wages	1,00,000	10.00
Prime cost	2,50,000	25.00
Add:Works expenses: Fixed	40,000	4.00
Variable	40,000	4.00
Works cost	3,30,000	33.00
Add: General expenses	60,000	6.00
Total cost	3,90,000	39.00
Add: Profit	97,500	9.75
Sales	4,87.500	48.75

Flexible Budget

Problem

Draw up a flexible budget for production at 75% and 100% capacity on the basis of the following data for a 50% activity.

	Per unit Rs.
Materials	100
Labour	50
Variable expenses (direct)	10
Administrative expenses (50% fixed)	40,000
Selling and distribution expenses (60%fixed)	50,000
Present production (50% activity):	1,000 units

Solution:

Flexible Budget

Particulars	Capacity Level					
	50% 1,000 units		75% 1,500 units		100% 2,000 units	
	Per unit Rs. P	Total Rs.	Per unit Rs.P	Total Rs.	Per unit Rs. P	Total Rs.
Materials	100	1,00,000	100.00	1,50,000	100	2,00,000
Labour	50	50,000	50.00	75.000	50	1,00,000
Variable expenses	10	10,000	10.00	15,000	10	20,000
Prime cost	160	1,60,000	160.00	-	160	3,20,000
Administration expenses:				2,40,000		
Fixed (50%)	20	20,000	20.00		20	40,000
Fixed (50%)	20	20,000	13.33	30,000	10	20,000
Cost of production				20,000		
Selling and Distribution	200	2,00,000	193.33		190	3,80,000
Expenses:				-		
Variable (40%)	20	20,000	20.00	2,90,000	20	40,000
Fixed (60%)	30	30,000	20.00		15	30,000
				30,000		
Total cost	250	2,50,000	233.33	30,000	225	4,50,000
				3,50,000		

Note:

(1) Variable costs per unit remain constant at all the capacity levels. Fixed costs remain constant in total at all the capacity levels.

(2) The effect of constant fixed cost is that the cost per unit goes on decreasing with every increase in capacity level. However, beyond 100% capacity level, fixed costs also may change.