KLE LAW ACADEMY BELAGAVI

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STUDY MATERIAL

for

COST AND MANAGEMENT ACCOUNTING

Prepared as per the syllabus prescribed by Karnataka State Law University (KSLU), Hubballi

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This study material is intended to be used as supplementary material to the online classes and recorded video lectures. It is prepared for the sole purpose of guiding the students in preparation for their examinations. Utmost care has been taken to ensure the accuracy of the content. However, it is stressed that this material is not meant to be used as a replacement for textbooks or commentaries on the subject. This is a compilation and the authors take no credit for the originality of the content. Acknowledgement, wherever due, has been provided.

Content

Cost and Management Accounting

Objectives:

The Course intends to examine the primordial concept of management i.e. 'Costing'. The objective of costing in its entirety is brought in with principles of budgetary aspects. The course also explains the management audit concepts with an emphasis on social audits.

Course contents:

UNIT – I

Budgetary Control : Objectives of Budgetary Control – Preparation of the Budget – Functional Budgets – Sales Budgets – Production Budget – Cost Budget – Plant Utilization Budget - Capital Expenditure Budget – Selling & Distribution Cost Budget – Purchasing Budget & Cost Budget – The Master Budget – Operation of Budgetary Control - Flexible Budgetary Control – Zero Base Budgeting – Case Studies.

UNIT – II

Standard Costing: Objectives – Principles – Determination of Standards for Material – Labor – Direct Expenses & Overhead Costs – Variable and Fixed Costs – Case Studies.

UNIT – III

Variance Analysis: Material, Labor and Overhead Variances – Sales & Profit Variances – Disposition of Variances – Assessing the Significance of Standard Cost Variance – Standard Cost Accounting – Case Studies.

UNIT – IV

Uniform costing & Inter-firm Comparisons: Objectives and Purposes Underlying Uniform Costing – Development of Uniform Costing – Cost Audit – Meaning & Definition – Inclusion of Clause B to Sec.208 to Sub Sec.(d) to Sec. 209 – Indian Companies Act, 1956 – Appointment of Cost – Cost Audit Programme – Records Relating to Materials – Labour Overhead – Depreciation – stores & Sore Parts –work in – progress and Incomplete Contract Cost Auditor's Report – Application of Cost – Audit Report Rules, 1963 – Sachar Committee's Report – Case Studies.

UNIT – V

Management Audit: Meaning & Definition – Objectives & Criticisms – Types of Audits – Arguments for & Against Management Audit – Social Audit-Steps underlying Social Audit Programme – Social Audit Report – Limitations of Social Audits – Case Studies.

Reference Books:

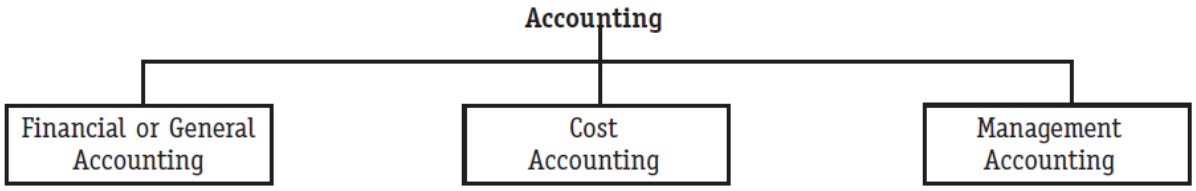
1. Welsh, Glenn A. – Profit, Planning and Control (Prentice Hall)
2. J. Batty – Standard Costing
3. M. R. S. Murthy – Cost Analysis for Management Decisions, Tata M c. Graw Hill

Unit – 1

INTRODUCTION TO COST AND MANAGEMENT ACCOUNTING

Introduction

Accounting is a part of information system of an enterprise. Such information is provided to people who have an interest in the organization, such as shareholders, managers, creditors, debenture holders, bankers, tax authorities and others. Broadly speaking, on the basis of type of accounting information and the purpose for which such information is used, accounting may be divided into three categories:



FINANCIAL ACCOUNTING

Financial accounting is mainly concerned with recording business transactions in the books of account for the purpose of presenting final accounts. It is defined as *"the art of recording, classifying and summarizing in a significant manner and in terms of money, transactions and events, which are in part at least, of a financial character and interpreting the results thereof.*"

The information supplied by financial accounting is summarised in the following two statements at the end of the accounting period, generally one year.

(a) Profit and Loss Account showing the net profit or loss during the period.

(b) Balance Sheet showing the financial position of the firm at a point of time.

The objective of financial accounting is to provide information to external parties such as shareholders, creditors, employees, potential investors, government agencies, etc.

COST ACCOUNTING

CONCEPTS OF COST

Cost is the amount of resource given up in exchange for some goods or services. The resources given up are money or money's equivalent expressed in monetary units.

The Chartered Institute of Management Accountants, London defines cost as "the amount of expenditure (actual or notional) incurred on, or attributable to a specified thing or activity".

This activity of a firm may be the manufacture of a product or the rendering of a service which involves expenditure under various heads, e.g., materials, labour, other expenses, etc. A manufacturing organization is interested in ascertaining the cost per unit of the product manufactured while an organization rendering service, e.g., transport undertaking, canteen, electricity company, municipality, etc., is interested in ascertaining the costs of the service it renders. In its simplest form, the cost per unit is arrived at by dividing the total expenditure incurred by the total units produced or the quantum of service rendered. But this method is applicable if the manufacturer produces only one product. If the manufacturer produces more than one product, it becomes imperative to split up the total expenditure between the various products so that the cost of each product can be ascertained separately. Even if only one product is manufactured, it may be necessary to analyze the cost per unit of each item of expenditure that goes to make up the total cost. The problem becomes more complicated where a multiplicity of products is produced and it is necessary to analyze the cost per unit of each product into various items of expenditures that make up the total cost. For a consumer cost means price. For management cost means 'expenditure incurred' for producing a particular product or rendering a particular service. **The process of ascertaining the cost is known as costing**. It consists of principles and rules governing the procedure of finding out the costs of goods/ services. It aims at ascertaining the total cost and also per unit cost. For instance, in transport companies the total cost for the period is ascertained and used to find out the cost per passenger/mile. i.e. the cost of carrying one passenger for one mile. It provides for analysis of expenditure in such a way that the management gets complete idea about even the smallest item of cost.

It is necessary to specify the exact meaning of "cost". When the term is used specifically, it is modified with such terms as prime cost, fixed cost, sunk cost, etc. Each description implies a certain characteristic which is helpful in analyzing the cost. It helps cost accounting in achieving its three basic objectives namely-cost ascertainment, cost control and cost presentation. A cost must always be studied in relation to its purpose and conditions. Different costs may be

ascertained for different purposes and under different conditions. Work-in-progress is valued at factory cost, while stock of finished goods may be valued at cost of production. Even if the purpose of the study of cost is the same, different conditions may lead to variation in cost. The cost per unit of a product is sure to vary with an increase in the volume of output since the amount of fixed expenses to be borne by each unit of output decreases.

It is also important to note here that there is no such thing as an exact cost or true cost because no figure of cost is true in all circumstances and for all purposes. Most of the costing information is based on estimates; for example, the amount of overheads is generally estimated in advance; it is distributed over cost units, again on an estimated basis using different methods. Many items of cost of production are handled in an optional manner which may give different costs for the same product without going against the accepted principles in any way. Depreciation is one such item, the amount of which will vary in accordance with the method of depreciation being used. Thus, to arrive at an absolutely correct cost may be quite difficult unless one waits for a long time by which time the costing information may lose all its value.

COSTING, COST ACCOUNTING AND COST ACCOUNTANCY:

Costing:

Costing is the techniques and processes of ascertaining costs. These techniques consist of principles and rules which govern the procedure of ascertaining cost of products or services. The techniques to be followed for the analysis of expenses and the processes of different products or services differ from industry to industry. The main object of costing is the analysis of financial records, so as to subdivide expenditure and to allocate it carefully to selected cost centers, and hence to build up a total cost for the departments, processes or jobs or contracts of the undertaking.

Cost Accounting:

Cost accounting is a branch of accounting which specialises in providing information about the detailed cost of products or services being supplied by the undertaking. Compared with financial accounting, cost accounting is relatively a recent development. It has primarily developed to meet the needs of management. Profit and Loss Account and Balance Sheet are presented to management by the financial accountant. But modern management needs much more detailed

information than supplied by these financial statements. Cost accounting provides detailed cost information to various levels of management for efficient performance of their functions. The information supplied by cost accounting acts as a tool of management for making optimum use of scarce resources and ultimately add to the profitability of business.

Cost accounting may be regarded as ``a specialised branch of accounting which involves classification, accumulation, assignment and control of costs. The Costing terminology of **C.I.M.A.** London defines cost accounting 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". **`Wheldon** defines cost accounting as "classifying, recording and appropriate allocation of expenditure for determination of costs of products or services and for the presentation of suitably arranged data for purposes of control and guidance of management". It is thus, a formal mechanism by means of which costs of products or services are ascertained and controlled. Cost accounting is different from costing in the sense that the former provides only the basis and information for ascertainment of costs. Once the information is made available, costing can be carried out arithmetically by means of memorandum statements or by method of integral accounting.

Cost Accountancy:

Cost Accountancy has been defined as "the application of costing and cost accounting principles, methods and techniques to the science, art and practice of cost control and the ascertainment of profitability. It includes the presentation of information derived there from for the purpose of managerial decision making".

OBJECTIVES OF COST ACCOUNTING:

Cost accounting aims at systematic recording of expenses and analysis of the same so as to ascertain the cost of each product manufactured or service rendered by an organisation. Information regarding cost of each product or service would enable the management to know where to economise on costs, how to fix prices, how to maximise profits and so on. Thus, the main objects of cost accounting are the following:

(1) To analyse and classify all expenditures with reference to the cost of products and operations.

(2) To arrive at the cost of production of every unit, job, operation, process, department or service and to develop cost standard.

(3) To indicate to the management any inefficiencies and the extent of various forms of waste, whether of materials, time, expenses or in the use of machinery, equipment and tools. Analysis of the causes of unsatisfactory results may indicate remedial measures.

(4) To provide data for periodical profit and loss accounts and balance sheets at such intervals, e.g., weekly, monthly or quarterly, as may be desired by the management during the financial year, not only for the whole business but also by departments or individual products. Also, to explain in detail the exact reasons for profit or loss revealed in total, in the profit and loss account.

(5) To reveal sources of economies in production having regard to methods, types of equipment, design, output and layout. Daily, weekly, monthly or quarterly information may be necessary to ensure prompt and constructive action.

(6) To provide actual figures of cost for comparison with estimates and to serve as a guide for future estimates or quotations and to assist the management in their price-fixing policy. To show, where standard costs are prepared, what the cost of production ought to be and with which the actual costs which are eventually recorded may be compared.

(8) To present comparative cost data for different periods and various volumes of output.

(9) To provide a perpetual inventory of stores and other materials so that interim profit and loss account and balance sheet can be prepared without stock taking and checks on stores and adjustments are made at frequent intervals. Also to provide the basis for production planning and for avoiding unnecessary wastages or losses of materials and stores.

(10) To provide information to enable management to make short-term decisions of various types, such as quotation of price to special customers or during a slump, make or buy decision, assigning priorities to various products, etc.

IMPORTANCE OF COST ACCOUNTING:

The limitations of financial accounting have made the management to realise the importance of cost accounting. Whatever may be the type of business, it involves expenditure on labour, materials and other items required for manufacturing and disposing of the product. The

management has to avoid the possibility of waste at each stage. It has to ensure that no machine remains idle, efficient labour gets due incentive, byproducts are properly utilised and costs are properly ascertained. Besides the management, the creditors and employees are also benefited in numerous ways by installation of a good costing system. Cost accounting increases the overall productivity of an organisation and serves as an important tool, in bringing prosperity to the nation. Thus, the importance of cost accounting can be discussed under the following headings:

(a) Costing as an Aid to Management

Cost accounting provides invaluable aid to management. It provides detailed costing information to the management to enable them to maintain effective control over stores and inventory, to increase efficiency of the organisation and to check wastage and losses. It facilitates delegation of responsibility for important tasks and rating of employees. For all these, the management should be capable of using the information provided by cost accounts in a proper way. The various advantages derived by the management from a good system of costing are as follows:

1. ***Cost accounting helps in periods of trade depression and trade competition*** - In periods of trade depression, the organisation cannot afford to have losses which pass unchecked. The management must know the areas where economies may be sought, waste eliminated and efficiency increased. The organisation has to wage a war not only for its survival but also continued growth. The management should know the actual cost of their products before embarking on any scheme of price reduction. Adequate system of costing facilitates this.

2. ***Cost accounting aids price fixation*** - Although the law of supply and demand to a great extent determines the price of the article, cost to the producer does play an important role. The producer can take necessary guidance from his costing records in case he is in a position to fix or change the price charged.

3. ***Cost accounting helps in making estimates*** - Adequate costing records provide a reliable basis for making estimates and quoting tenders.

4. ***Cost accounting helps in channelising production on right lines*** - Proper costing information makes it possible for the management to distinguish between profitable and non-profitable activities. Profits can be maximised by concentrating on profitable operations and eliminating non-profitable ones.

5. ***Cost accounting eliminates wastages*** - As cost accounting is concerned with detailed break-up of costs, it is possible to check various forms of wastages or losses.

6. ***Cost accounting makes comparisons possible*** - Proper maintenance of costing records provides various costing data for comparisons which in turn helps the management in formulation of future lines of action.

7. ***Cost accounting provides data for periodical profit and loss account*** - Adequate costing records provide the management with such data as may be necessary for preparation of profit and loss account and balance sheet at such intervals as may be desired by the management.

8. ***Cost accounting helps in determining and enhancing efficiency*** - Losses due to wastage of materials, idle time of workers, poor supervision, etc., will be disclosed if the various operations involved in the production are studied carefully. Efficiency can be measured, costs controlled and various steps can be taken to increase the efficiency.

9. ***Cost accounting helps in inventory control*** - Cost accounting furnishes control which management requires in respect of stock of materials, work-in-progress and finished goods.

(b) Costing as an Aid to Creditors

Investors, banks and other money lending institutions have a stake in the success of the business concern and are, therefore, benefited immensely by the installation of an efficient system of costing. They can base their judgment about the profitability and future prospects of the enterprise on the costing records.

(c) Costing as an Aid to Employees

Employees have a vital interest in their employer's enterprise in which they are employed. They are benefited by a number of ways by the installation of an efficient system of costing. They are benefited, through continuous employment and higher remuneration by way of incentives, bonus plans, etc.

(d) Costing as an Aid to National Economy

An efficient system of costing brings prosperity to the business enterprise which in turn results in stepping up of the government revenue. The overall economic development of a country takes place as a consequence increase in efficiency of production. Control of costs, elimination of wastages and inefficiencies led to the progress of the industry and, in consequence of the nation as a whole.

SCOPE OF COST ACCOUNTING

The Scope of Cost Accounting Is Very Wide and Includes:

(a) *Cost Ascertainment:* The main function of cost accounting is the ascertainment of cost of product or services rendered. It includes collection, analysis of expenses and measurement of production at different stages of manufacture. The collection, analysis and measurement requires different methods of costing for different types of production such as Historical costs, Standard costs, Process cost, Operation cost etc. It can be done in two ways, namely

(i) Post Costing, where the ascertainment of cost is done based on actual information as recorded in financial books.

(ii) Continuous Costing, where the process of ascertainment is of a continuous nature i.e. where cost information is available as and when a particular activity is completed, so that the entire cost of a particular job is available the moment it is completed.

(b) *Control of Costs:* In the era of competition, the goal of every business is to sustain; in costs at the lowest point with efficient operating conditions. To sustain, It is essential to examine each individual item of cost in the light of the services or benefits obtained so that maximum utilisation of the money expended or- it may be recovered. This requires planning and use of standard for each item of cost for locating deviations, if any, and taking remedial measures.

(c) *Proper matching of cost with revenue:* In cost accounting manager prepares monthly or quarterly statements to reflect the cost and income data identified with the sale of that period.

(d) *Aids to Management Decision-making:* Decision-making is a process of choosing between two or more alternatives, based on the resultant outcome of the various alternatives. A Cost Benefit Analysis also needs to be done. All this can be achieved through a good cost accounting system.

CLASSIFICATION OF COSTS

The different bases of cost classification are:

(1) By time (Historical, Pre-determined).

(2) By nature or elements (Material, Labour and Overhead).

(3) By degree of traceability to the product (Direct, Indirect).

(4) Association with the product (Product, Period).

(5) By Changes in activity or volume (Fixed, Variable, Semi-variable).

(6)By function (Manufacturing, Administrative, Selling, Research and development, Pre-production).

(7) Relationship with accounting period (Capital, Revenue).

(8) Controllability (Controllable, Non-controllable).

(9) Cost for analytical and decision-making purposes (Opportunity, Sunk, Differential, Joint, Common, Imputed, Out-of-pocket, Marginal, Uniform, Replacement).

(10) Others (Conversion, Traceable, Normal, Avoidable, Unavoidable, Total).

1. Classification on the Basis of Time

(a) **Historical Costs:** These costs are ascertained after they are incurred. Such costs are available only when the production of a particular thing has already been done. They are objective in nature and can be verified with reference to actual operations.

(b) **Pre-determined Costs:** These costs are calculated before they are incurred on the basis of a specification of all factors affecting cost. Such costs may be:

(i) **Estimated costs:** Costs are estimated before goods are produced; these are naturally less accurate than standards.

(ii) **Standard costs:** This is a particular concept and technique. This method involves:

(a) setting up predetermined standards for each element of cost and each product;

(b) comparison of actual with standard to find variation;

(c) pin-pointing the causes of such variances and taking remedial action. Obviously, standard costs, though pre-determined, are arrived with much greater care than estimated costs.

2. By Nature or Elements

There are three broad elements of costs:

(1) **Material:** The substance from which the product is made is known as material. It can be direct as well as indirect.

Direct material: It refers to those materials which become a major part of the finished product and can be easily traceable to the units. Direct materials include:

(i) All materials specifically purchased for a particular job/process.

(ii) All material acquired and latter requisitioned from stores.

(iii) Components purchased or produced.

(iv) Primary packing materials.

(v) Material passing from one process to another.

Indirect material: All material which is used for purposes ancillary to production and which can be conveniently assigned to specific physical units is termed as indirect materials. Examples, oil, grease, consumable stores, printing and stationary material etc.

(2) **Labour:** Labour cost can be classified into direct labour and indirect labour.

Direct labour: It is defined as the wages paid to workers who are engaged in the production process whose time can be conveniently and economically traceable to units of products. For example, wages paid to compositors in a printing press, to workers in the foundry in cast iron works etc.

Indirect labour: Labour employed for the purpose of carrying tasks incidental to goods or services provided, is indirect labour. It cannot be practically traced to specific units of output. Examples, wages of store-keepers, foreman, time-keepers, supervisors, inspectors etc.

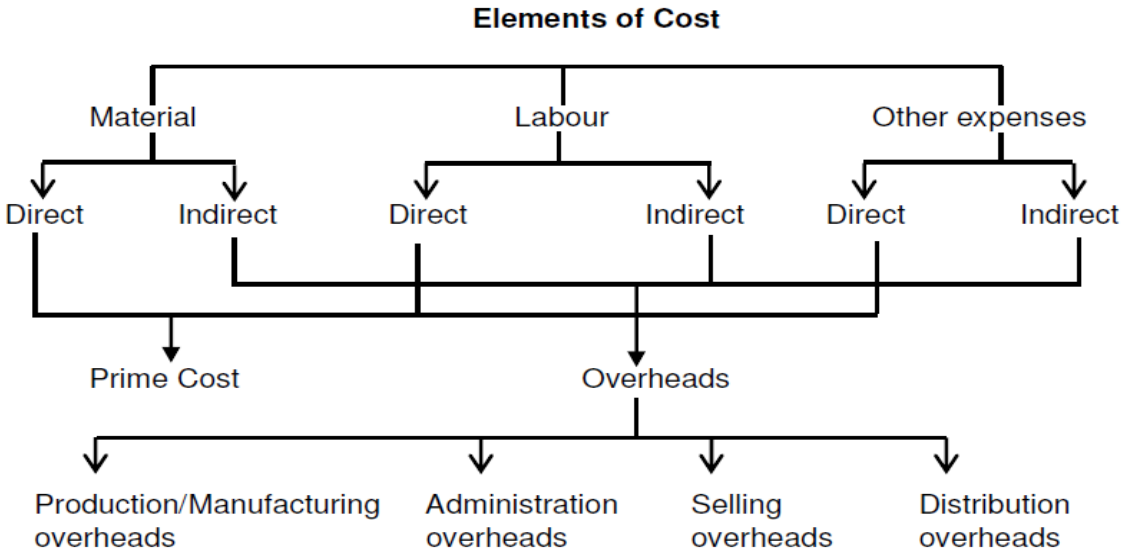
(3) **Expenses:** Expenses may be direct or indirect.

Direct expenses: These expenses are incurred on a specific cost unit and identifiable with the cost unit. Examples are cost of special layout, design or drawings, hiring of a particular tool or equipment for a job; fees paid to consultants in connection with a job etc.

Indirect expenses: These are expenses which cannot be directly, conveniently and wholly allocated to cost centre or cost units. Examples are rent, rates and taxes, insurance, power, lighting and heating, depreciation etc. It is to be noted that the term overheads has a wider meaning than the term indirect expenses. Overheads include the cost of indirect material, indirect labour and indirect expenses. overheads may be classified as

(a) production or manufacturing overheads, (b) administration overheads, (c) selling overheads, and (d) distribution overheads.

The various elements of cost can be illustrated by the following chart:



3. By Degree of Traceability to the Products

Cost can be distinguished as direct and indirect.

Direct Costs: The direct costs are those which can be easily traceable to a product or costing unit or cost center or some specific activity, e.g. cost of wood for making furniture. It is also called traceable cost.

Indirect Costs : The indirect costs are difficult to trace to a single product or it is uneconomic to do so. They are common to several products, e.g. salary of a factory manager. It is also called common costs. Costs may be direct or indirect with respect to a particular division or department. For example, all the costs incurred in the Power House are indirect as far as the main product is concerned but as regards the Power House itself, the fuel cost or supervisory salaries are direct. It is necessary to know the purpose for which cost is being ascertained and whether it is being associated with a product, department or some activity. Direct cost can be allocated directly to costing unit or cost center. Whereas Indirect costs have to be apportioned to different products, if appropriate measurement techniques are not available. These may involve some formula or base which may not be totally correct or exact.

4. Association with the Product

Cost can be classified as product costs and period costs.

Product Costs: Product costs are those which are traceable to the product and included in inventory values. In a manufacturing concern it comprises the cost of direct materials, direct labour and manufacturing overheads. Product cost is a full factory cost. Product costs are used for valuing inventories which are shown in the balance sheet as asset till they are sold. The product cost of goods sold is transferred to the cost of goods sold account.

Period Costs: Period costs are incurred on the basis of time such as rent, salaries, etc., include many selling and administrative costs essential to keep the business running. Though they are necessary to generate revenue, they are not associated with production, therefore, they cannot be assigned to a product.

They are charged to the period in which they are incurred and are treated as expenses.

Selling and administrative costs are treated as period costs for the following reasons:

(i) Most of these expenses are fixed in nature.

(ii) It is difficult to apportion these costs to products equitably.

(iii) It is difficult to determine the relationship between such cost and the product.

(iv) The benefits accruing from these expenses cannot be easily established.

The net income of a concern is influenced by both product and period costs. Product costs are included in the cost of the product and do not affect income till the product is sold. Period costs are charged to the period in which they are incurred.

5. By Changes in Activity or Volume

Costs can be classified as fixed, variable and semi-variable cost.

Fixed Costs: The Chartered Institute of Management Accountants, London, defines fixed cost as " the cost which is incurred for a period, and which, within certain output and turnover limits, tends to be unaffected by fluctuations in the levels of activity (output or turnover)".

These costs are incurred so that physical and human facilities necessary for business operations, can be provided. These costs arise due to contractual obligations and management decisions. They arise with the passage of time and not with production and are expressed in terms of time. Examples are rent, propertytaxes, insurance, supervisors' salaries etc.

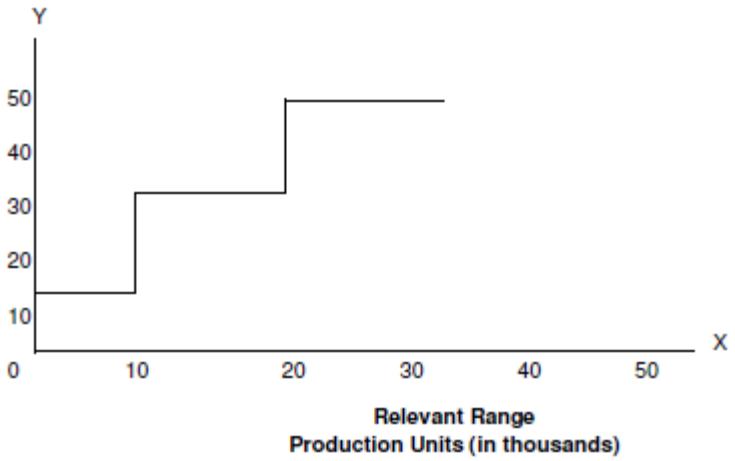
It is wrong to say that fixed costs never change. These costs may vary depending on the circumstances. The term fixed refer to non-variability related to the relevant range. Fixed cost can be classified into the following categories for the purpose of analysis:

(a) ***Committed Costs:*** These costs are incurred to maintain certain facilities and cannot be quickly eliminated. The management has little or no discretion in this cost, e.g., rent, insurance etc.

(b) ***Policy and Managed Costs:*** Policy costs are incurred for implementing particular management policies such as executive development, housing, etc. Such costs are often discretionary. Managed costs are incurred to ensure the operating existence of the company e.g., staff services.

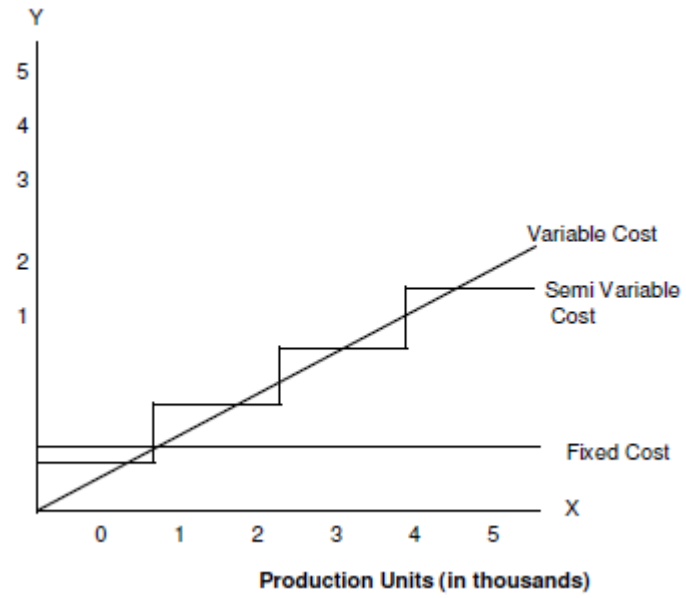
(c) ***Discretionary Costs:*** These are not related to the operations and can be controlled by the management. These costs result from special policy decisions, new researches etc., and can be eliminated or reduced to a desirable level at the discretion of the management.

(d) ***Step Costs:*** Such costs are constant for a given level of output and then increase by a fixed amount at a higher level of output.



Variable Cost: Variable costs are those costs that vary directly and proportionately with the output e.g. direct materials, direct labour. It should be kept in mind that the variable cost per unit is constant but the total cost changes corresponding to the levels of output. It is always expressed in terms of units, not in terms of time. Management decisions can influence the cost behaviour patterns. The concept of variability is relative. If the conditions upon which variability was determined changes, the variability will have to be determined again.

Semi-fixed (Semi-Variable) costs: Such costs contain fixed and variable elements. Because of the variable element, they fluctuate with volume and because of the fixed element; they do not change in direct proportion to output. Semi-variable costs change in the same direction as that of the output but not in the same proportion. Depreciation is an example; for two shifts working the total depreciation may be only 50% more than that for single shift working. They may change with comparatively small changes in output but not in the same proportion.



6. Functional Classification of Costs

A company performs a number of functions. Functional costs may be classified as follows:

(a) ***Manufacturing/production Costs:*** It is the cost of operating the manufacturing division of an undertaking. It includes the cost of direct materials, direct labour, direct expenses, packing (primary) cost and all overhead expenses relating to production.

(b) ***Administration Costs:*** They are indirect and covers all expenditure incurred in formulating the policy, directing the organisation and controlling the operation of a concern, which is not related to research, development, production, distribution or selling functions.

(c) ***Selling and Distribution Cost:*** Selling cost is the cost of seeking to create and stimulate demand e.g. advertisements, market research etc. Distribution cost is the expenditure incurred which begins with making the package produced available for dispatch and ends with making the reconditioned packages available for re-use e.g. warehousing, cartage etc. It includes expenditure incurred in transporting articles to central or local storage. Expenditure incurred in moving articles to and from prospective customers as in the case of goods on sale or return basis is also distribution cost.

(d) ***Research and Development Costs:*** They include the cost of discovering new ideas, process, products by experiment and implementing such results on a commercial basis.

(e) ***Pre-production Cost:*** When a new factory is started or when a new product is introduced, certain expenses are incurred. There are trial runs. Such costs are termed as pre-production costs and treated as deferred revenue expenditure. They are charged to the cost of future production.

7. Relationships with Accounting Period

Costs can be capital and revenue. Capital expenditure provides benefit to future period and is classified as an asset. On the other hand, revenue expenditure benefits only the current period and is treated as an expense. As and when an asset is written off, capital expenses to that extent becomes cost. Only when capital and revenue is properly differentiated, the income of a particular period can be correctly determined. It is not possible to distinguish between the two under all circumstances.

8. Controllability

Cost can be Controllable and Non-Controlable.

Controllable Cost: The Chartered Institute of Management Accountants defines controllable cost as "cost which can be influenced by its budget holder".

Non-Controllable Cost: It is the cost which is not subject to control at any level of managerial supervision. The difference between the terms is very important for the purpose of cost accounting, cost control and responsibility accounting.

A controllable cost can be controlled by a person at a given organisational level. Controllable cost are not totally controllable. Some costs are partly controllable by one person and partly by another e.g., maintenance cost can be controlled by both the production and maintenance manager. The term "controllable costs" is often used to mean variable costs and non-controllable costs as fixed.

Belkaoni has mentioned the following fallacies about controllable costs:

(i) All variable costs are controllable and fixed are not.

(ii) All direct costs are controllable and indirect costs are not.

(iii) All long-term costs are controllable.

Sometimes the time factor and the decision making authority can make a cost controllable. If the time period is long enough, all costs can be controlled. Proper delegation helps in establishing clear responsibility and controllability. But all costs can be controlled by one or another person. The authority and responsibility of cost control is delegated to different levels, though the managing director is responsible for all the costs.

9. Costs for Analytical and Decision Making Purposes

(a) ***Opportunity Costs:*** Opportunity cost is the cost of selecting one course of action and the losing of other opportunities to carry out that course of action. It is the amount that can be received if the asset is utilised in its next best alternative.

Edwards, Hermanson and Salmonson define it as "the benefits lost by rejecting the best competing alternative to the one chosen. The benefit lost is usually the net earnings or profit that might have been earned from the rejected alternative"

Example: Capital is invested in plant and machinery. It cannot be now invested in shares or debentures. The loss of interest and dividend that would be earned is the opportunity cost. Another example is when the owner of a business foregoes the opportunity to employ himself elsewhere. Opportunity costs are not recorded in the books. It is important in decision making and comparing alternatives.

(b) ***Sunk Costs:*** A sunk cost is one that has already been incurred and cannot be avoided by decisions taken in the future. As it refers to past costs, it is called unavoidable cost. The National Association of Accountants (USA) defines a sunk cost as "an expenditure for equipment or productive resources which has no economic relevance to the present decision making process". This cost is not useful for decision making as all past costs are irrelevant. CIMA defines it as the past cost not taken into account in decision making. It has also been defined as the difference between the purchase price of an asset and its salvage value.

(c) ***Differential Cost:*** Differential cost has been defined as "the difference in total cost between alternatives, calculated to assist decision making". Differential cost is the increase or decrease in total costs resulting out of:

(a) Producing and distributing a few more or few less of products;

(b) A change in the method of production/distribution;

(c) An addition or deletion of a product or a territory; and

(d) The selection of an additional sales channel.

The differential cost between any two levels of production is the difference between the marginal costs at these two levels and the increase or decrease in fixed costs, if any. These costs are usually 'specific purpose costs' as they are determined for a particular purpose and under specific circumstances. Incremental cost measures the addition in unit cost for an addition in output. This cost need not be the same at all levels of production. It is usually expressed as a cost per unit whereas the differential cost is measured in total. The former applies to increase in

production and is restricted to the cost only, whereas the differential cost has a comprehensive meaning and application in the sense that it denotes both increase or decrease. Differential costs is useful in planning and decision making and helps to choose the best alternative. It helps management to know the additional profit that would be earned if idle capacity is used or when additional investments are made.

(d) ***Joint Costs:*** The processing of a single raw material results in two or more different products by their basic nature result in two or more products. The jointness results from there being more than one product, and these multi-products are the result of the methods of production or the nature of raw material and not of a decision by management to produce both".

The National Association of Accountants defines it as follows:

"Joint costs relate to two or more products produced from a common production process or element-material, labour or overhead or any combination thereof or so locked together that one cannot be produced without producing the other".

Joint costs can be apportioned to different products only by adopting a suitable basis of apportionment.

(e) ***Common Costs:*** Common costs are those costs which are incurred for more than one product, job, territory or any other specific costing object. They are not easily related with individual products and hence are generally apportioned. The National Association of Accountants defines the term as "the cost of services employed in the creation of two or more outputs which is not allocable to those outputs on a clearly justified basis".

It should be kept in mind that management decisions influence the incurrence of common costs e.g. rent of the factory is a common cost to all departments located in factory.

(f) ***Imputed Costs:*** Some costs are not incurred and are useful while taking decision pertaining to a particular situation. These costs are known as imputed or notional costs and they do not enter into traditional accounting systems.

Examples: Interest on internally generated funds, salaries of owners of proprietorship or partnership, notional rent etc.

(g) ***Uniform Costs:*** They are not distinct costs as such. Uniform costing signifies common costing principles and procedures adopted by a number of firms. They are useful in inter-firm comparison.

(h) ***Marginal Costs:*** It is the aggregate of variable costs, i.e., prime cost plus variable overheads. Thus, costs are classified as fixed and variable.

(i) ***Replacement Costs:*** This is the cost of replacing an asset at current market values e.g. when the cost of replacing an asset is considered, it means the cost of purchasing the asset at the current market price is important and not the cost at which it was purchased.

(j) **Out of Pocket Cost:** It involves payment to outsiders i.e. gives rise to Cash Expenditure as opposed to such costs as depreciation which don't involve any cash expenditure. Such costs are relevant for price fixation during recession or when make or buy decision is to be made.

10. Other Costs

(i) ***Conversion Cost:*** It is the cost of a finished product or work-in-progress comprising direct labour and manufacturing overhead. It is production cost less the cost of raw material but including the gains and losses in weight or volume of direct material arising due to production.

(ii) ***Normal Cost:*** This is the cost which is normally incurred at a given level of output in the conditions in which that level of output is achieved.

(iii) ***Traceable Cost:*** It is the cost which can be easily associated with a product, process or department.

(iv) ***Avoidable Costs:*** Avoidable costs are those costs which under the present conditions need not have been incurred.

Example: (a) Spoilage in excess of normal limit; (b) Unfavourable cost variances which could have been controlled.

(v) ***Unavoidable Costs:*** Unavoidable costs are those costs which under the present conditions must be incurred.

(vi) ***Total Cost:*** This is the sum of all costs associated to a particular unit, or process, or department or batch or the entire concern. It may also mean the sum total of material, labour and overhead. The term total cost however, is not precise, it needs to be made precise by using terms that indicate the elements of cost included.

(vii) ***Value Added:*** Strictly, it is not cost. It means the selling price of the product/service less the cost of materials used in the product or the service. Often depreciation is also deducted for ascertaining "value added".

MANAGEMENT ACCOUNTING

Meaning and Definition

The term 'management accounting' is the modern concept of accounts as a tool of management. It is a broad term and is concerned with all such accounting information that is useful to management. In simple words, the term management accounting is applied to the provision of accounting information for management activities such as planning, controlling and decision-making, etc.

According to the **Institute of Chartered Accountants of England**, *"any form of accounting which enables a business to be conducted more efficiently"* may be regarded as management accounting. Management accounting information can help managers identify problems, solve problems and evaluate performance. In the words of **Robert Anthony**, *"Management accounting is concerned with accounting information that is useful to management."*

The Institute of Cost and Works Accountants of India (ICWAI) has defined management accounting as "*a system of collection and presentation of relevant economic information relating to an enterprise for planning, controlling and decision making."*

The Chartered Institute of Management Accountants (CIMA) of UK has given a very authoritative and comprehensive definition as follows:

"Management accounting is an integral part of management concerned with identifying, presenting and interpreting information used for —

(*i*) formulating strategy;

(*ii*) planning and controlling activities;

(*iii*) decision-making:

(*iv*) optimising the use of resources;

(*v*) disclosure to shareholders and others external to the entity:

(*vi*) disclosure to employees; and

(*vii*) safeguarding assets."

According to **National Association of Accountants** (USA), management accounting is *"the process of identification, measurement, accumulation, analysis, preparation and communication of financial information used by management to plan, evaluate and control within the organisation and to assure appropriate use and accountability for its resources.*

These definitions make it clear that management accounting plays a vital role in providing the necessary information to managers in performing their functions of planning, controlling, organising and decision-making. Management accounting should serve as a decision support system to all levels of management.

CHARACTERISTICS OR NATURE OF MANAGEMENT ACCOUNTING

It is clear from the definitions of management accounting that it is concerned with accounting data that is useful in decision making. The main characteristics of management accounting are as follows:

1. Useful in decision making. The essential aim of management accounting is to assist management in decision making and control. It is concerned with all such information which can prove useful to management in decision making.

2. Financial and cost accounting information. Basic accounting information useful for management accounting s derived from financial and cost accounting records.

3. Internal use. Information provided by management accounting is exclusively for use by management for internal use. Such information is not to be given to parties external to the business like shareholders, creditors, banks, etc.

4. Purely optional. Management accounting is a purely voluntary technique and there is no statutory obligation. Its adoption by any firm depends upon its utility and desirability.

5. Concerned with future. As management accounting is concerned with decision making, it is related with future because decisions are taken for future course of action and not the past.

6. Flexibility in presentation of information. Unlike financial accounting, in management accounting there are no prescribed formats for presentation of information to management. The form of presentation of information is left to the wisdom of the management accountant who decides which is the most useful format of providing the relevant information, depending upon the utility of each type of form and information.

SCOPE OF MANAGEMENT ACCOUNTING

Management accounting has a very wide scope. It includes not only financial accounting and cost accounting but also all types of internal financial controls, internal audit, tax accounting, office services, cost control and other methods and control procedures. Thus scope of management accounting, *inter alia* includes the following:

1. Financial accounting. Financial accounting provides basic historical data which helps management to forecast and plan its financial activities for the future period. Thus for an effective and successful management accounting, there should be a proper and well designed financial accounting system.

2. Cost accounting. Many of the techniques of cost control like standard costing and budgetary control and techniques of profit planning and decision-making like marginal costing, CVP analysis and differential cost analysis are used by the management accounting.

3. Budgeting and forecasting. In order to plan business activities for the future, forecasting and budgeting play a very significant role. Forecasting helps in the preparation of budgets and budgeting helps management accountant in exercising budgetary control.

4. Tax planning. In order to take advantage of various provisions of tax laws, management accountant has to depend upon tax accounting and planning to minimize its tax liabilities and save more funds for the business.

5. Reporting to management. For effective and timely decisions, there should be a system of prompt and intelligent reporting to management. Both routine and special reports are prepared for submission to top management, middle order management and operating level management depending on their requirements.

6. Cost control procedures. Any system of management accounting is incomplete without effective cost control procedures like inventory control, labour control, overhead control, budgetary control, etc.

7. Statistical tools. Various tools of analyzing and presenting statistical data like graphs, tables, charts, etc., are used in preparing reports for use by the management.

8. Internal control and internal audit. Management accountant heavily depends on internal financial controls like internal audit and internal check to plug loop holes in the financial system of the concern.

9. Financial analysis and interpretation. Management accountant employs various techniques to analyse and interpret financial data to make it understandable and useable to the management. Such analysis helps management to achieve objectives of management in a more efficient manner.

10. Office services. Management accountant is expected to maintain and control office routines and procedures like filing, copying, communicating, electronic data processing and other allied services.

FUNCTIONS (OR OBJECTIVES) OF MANAGEMENT ACCOUNTING

Main functions of management accounting are as follows:

1. Planning. Information and data provided by management accounting helps management to forecast and prepare short-term and long-term plans for the future activities of the business and formulate corporate strategy. For this purpose management accounting techniques like budgeting, standard costing, marginal costing, probability, correlation and regression, etc., are used.

2. Coordinating. Management accounting techniques of planning also help in coordinating various business activities. For example, while preparing budgets for various departments like production, sales, purchases, etc., there should be full coordination so that there is no contradiction. By proper financial reporting, management accounting helps in achieving coordination in various business activities and accomplishing the set goals.

3. Controlling. Controlling is a very important function of management and management accounting helps in controlling performance by control techniques such as standard costing, budgetary control, control ratios, internal audit, etc.

4. Communication. Management accounting system prepares reports for presentation to various levels of management which show the performance of various sections of the business. Such communication in the form of reports to various levels of management helps to exercise effective control on various business activities and successfully running the business.

5. Financial analysis and interpretation. In order to make accounting data easily understandable, the management accounting offers various techniques of analysing, interpreting and presenting this data in non-accounting language so that every one in the organisation understands it. Ratio analysis, cash flow and funds flow statements, trend analysis, etc., are some of the management accounting techniques which may be used for financial analysis and interpretation.

6. Qualitative information. Apart from monetary and quantitative data, management accounting provides qualitative information which helps in taking better decisions. Quality of goods, customers and employees, legal judgements, opinion polls, logic, etc., are some of the examples of qualitative information supplied and used by the management accounting system for better management.

7. Tax policies. Management accounting system is responsible for tax policies and procedures and supervises and coordinates the reports prepared by various authorities.

8. Decision-making. Correct decision-making is crucial to the success of a business. Management accounting has certain special techniques which help management in short-term and long-term decisions. For example, techniques like marginal costing, differential costing, discounted cash flow, etc., help in decisions such as pricing of products, make or buy, discontinuance of a product line, capital
expenditure, etc.

Tools and Techniques used in Management Accounting

Management accounting uses a number of tools and techniques to help management in achieving business goals. Some of the important tools and techniques are as follows:

1. Budgeting
2. Standard costing and variance analysis.
3. Marginal costing and cost volume profit analysis.
4. Ratio analysis.
5. Comparative financial statements.
6. Differential cost analysis.
7. Funds flow statement.
8. Cash flow statement.

9. Responsibility accounting.
10. Accounting for price level changes.
11. Statistical and graphical techniques.
12. Discounted cash flow.
13. Risk analysis.
14. Learning curve.
15. Value analysis.
16. Work study, etc.

COST ACCOUNTING AND MANAGEMENT ACCOUNTING — COMPARISON

An examination of the meaning and definitions of cost accounting and management accounting indicates that the distinction between the two is quite vague. Many eminent writers even consider these two areas as synonymous while others distinguish between the two. Horngren, a renowned author on the subject, has gone to the extent of saying, *"Modern cost accounting is often called management accounting. Why ? Because cost accountants look at their organisation through manager's eyes."* Thus managerial aspects of cost accounting are inseparable from management accounting. One point on which all agree is that these two types of accounting do not have clear cut territorial boundaries.

However, distinction between cost accounting and management accounting may be made on the following points:

Basis	*Cost Accounting*	*Management Accounting*
1. **Scope**	Scope of cost accounting is limited to providing cost information for managerial uses.	Scope of management accounting is broader than that of cost accounting as it provides all types of information, *i.e.*. cost accounting as well as financial accounting information for managerial uses.
2. **Emphasis**	Main emphasis is on cost ascertainment and cost control to ensure maximum profit.	Main emphasis is on planning, controlling and decision-making to maximise profit.

Basis	*Cost Accounting*	*Management Accounting*
3. **Techniques employed**	Various techniques used by cost accounting include standard costing and variance analysis, marginal costing and cost volume profit analysis, budgetary control, uniform costing and inter-firm comparison, etc.	Management accounting also uses all these techniques used in cost accounting but in addition it also uses techniques like ratio analysis, funds flow statement, statistical analysis, operations research and certain techniques from various branches of knowledge like mathematics, economics, etc., whichsoever can help management in its tasks.
4. **Evolution**	Evolution of cost accounting is mainly due to the limitations of financial accounting.	Evolution of management accounting is due to the limitations of cost accounting. In fact, management accounting is an extension of the managerial aspects of cost accounting.
5. **Statutory requirements**	Maintenance of cost records has been made compulsory in selected industries as notified by the Govt. from time to time.	Management accounting is purely voluntary and its use depends upon its utility to management.
6. **Data base**	It is based on data derived from financial accounts.	It is based on data derived from cost accounting, financial accoun-ting and other sources.
7. **Status in organisation**	In the organisational set up, cost account-ant is placed at a lower level in hierarchy than the management accountant.	Management accountant is generally placed at a higher level of hierarchy than the cost accountant.
8. **Installation**	Cost accounting system can be installed without management accounting.	Management accounting cannot be installed without a proper system of cost accounting.

LIMITATIONS OF MANAGEMENT ACCOUNTING:

Management accounting is a very useful tool of management. However, it suffers from certain limitations as stated below:

1. Based on historical data. Management accounting helps management in making decisions for the future but it is mainly based on the historical data supplied by financial accounting and cost accounting. This implies that historical data is used for making future decisions. The accuracy

and dependability of such data will leave their mark on the quility of managerial decisions. In other words, if past data is not accurate, management decisions may not be correct.

2. Lack of wide knowledge. The management accountant should have knowledge of not only financial and cost accounting but also many allied subjects like economics, management,

3. Complicated approach. Management accounting provides mass of data using various accounting and non-accounting subjects for decision making purpose. But sometimes management avoids this complicated and lengthy course of decision making and makes decisions based on intuition. This leads to unscientific approach to decision making.

4. Not a substitute of management. Management accounting only provides information to management for decision making but it is not a substitute of management and administration.

5. Costly system. The installation of management accounting system in an organisation is a costly affair as it requires a wide net-work of management information system, rules and regulations. All this requires heavy investment and small concerns may not be able to afford it.

6. Developing stage. Management accounting is a relatively recent development and it has not fully developed as yet. This limits the utility of this system to management in making perfect and correct decisions.

7. Lack of objectivity. The interpretation of information provided by management accounting may be influenced by personal bias of the interpreter of data. This tells upon the quality of managerial decisions.

8. Resistance from staff. The existing accounting and management staff may not welcome the introduction of management accounting system. This may be because they look at the system with suspicion that it will add to their work and responsibilities. taxation, statistical and mathematical techniques etc. Lack of knowledge of these subjects on the part of management accountant limits the quality of management accounting.

Unit – 1
BUDGETARY CONTROL

Introduction

Business budgeting is the most widely used and highest rated management tool of planning and control. *Planning* is the key to good management as it involves looking systematically at the future. Business budgets help managers in developing financial plan to guide them in allocating their resources over a specific future period. *Control* is the process of measuring and correcting actual performance to ensure that plans for implementing the chosen course of action are carried out.

Meaning and Definition of Budget

Budget refers to a plan relating to a definite future period of time expressed in monetary and/ or quantitative terms. In relation to business, a budget is a formal expression of the expected incomes and expenditures for a definite future period. The Chartered Institute of Management Accountants (C.I.M.A.) London, has defined 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."* It may include income, expenditure and employment of capital.

In this words of Gorden Shillinglaw, a business budget is *"a pre-determined detailed plan of action, developed and distributed as a guide to current operations and as a partial basis for subsequent evaluation of performance."*

According to Brown and Howard, *"A budget is a pre-determined statement of management policy during a given period which provides a standard for comparison with the results actually achieved."*

Characteristics – Budgets have the following characteristics :

(*a*) A budget is primarily a planning device but it also serves as a basis for performance evaluation and control.

(*b*) A budget is prepared either in money terms or in quantitative terms or in both.

(*c*) A budget is prepared for a definite future period.

(*d*) Purpose of a budget is to implement the policies formulated by management for attaining the given objectives.

Budgeting

The act of preparing budgets is called budgeting. In the words of J. Batty, *"the entire process of preparing the budgets is known as budgeting."*

Meaning and Definition of Budgetary Control

Budgetary control is a system of controlling costs through preparation of budgets. Budgeting is thus only a part of the budgetary control. According to C.I.M.A., London, *"Budgetary control is the establishment of budgets relating to the responsibilities of executives of a policy and the continuous comparison of the actual with the budgeted results, either to secure by individual action the objective of the policy or to provide a basis for its revision."*

In the words of Brown and Howard, *"Budgetary control system is a system of controlling costs which includes the preparation of budgets, co-ordinating the departments and establishing responsibilities, comparing actual performance with the budgeted and acting upon results to achieve maximum profitability."*

Characteristics—The main characteristics of budgetary control are :

(*a*) *Establishment of budgets* for each function/department of the organisation.

(*b*) *Comparison* of actual performance with the budgets on a continuous basis.

(*c*) *Analysis of variations* of actual performance from that the budgeted performance to know the reasons thereof.

(*d*) Taking suitable *remedial action,* where necessary.

(*e*) *Revision of budgets* in view of changes in conditions.

The principles involved in budgeting have been likened to those followed by the captain of a ship. Before the voyage, he will plan his route, taking into account such factors as shipping hazards, tides and possible adverse weather forecasts. During the journey, he will record details of progress and frequently check actual progress with that planned. Though trying to keep to the plan, he may have to deviate from the plan if prevailing circumstances require it. On completion of the journey, he will compare the conditions he encountered with those he expected.

The experience so gained will be used by him in planning similar voyages in the future. This simple analogy serves to illustrate the basic practice used in budgeting and budgetary control. The technique of budgetary control is now widely used in the business world. Many businesses fail because of lack of efficient planning which could have revealed that the business should not have been started or that one should have been prepared to face serious dangers ahead.

Forecast and Budget

It is important to note carefully the distinction between forecast and a budget. A forecast is a prediction of what may happen as a result of a given set of circumstances. It is an assessment of probable future events. A budget, on the other hand, is a planned exercise to achieve a target. It is based on the pros and cons of a forecast. Forecasting thus precedes the preparation of budget.

Thus the main points of distinction between the two are thus :

1. Budgets relate to 'planned events', *i.e.,* policies and programmes to be pursued. Forecast is concerned with 'probable events', *i.e.,* events expected to happen under anticipated conditions.
2. Budget, being a formal business plan, can be prepared only by the authorized management but forecast can be made by anybody.
3. Budget is a tool of control while the forecast is simply an anticipation of events.
4. Forecasting is a pre-requisite for budgeting while budgeting is not a pre- requisite for forecasting.
5. Budgets relate to economic activities of business, enterprises, government or others. Forecast may relate to economic as well as non economic activities, *e.g.,* weather forecast, stock market forecast, etc.

Objectives of Budgetary Control

The following are the main objectives of a budgetary control system.

1. Planning. A budget provides a detailed plan of action for a business over a definite period of time. Detailed plans are drawn up relating to production, sales, raw material requirements, labour needs, advertising and sales promotion performance, research and development activities, capital additions, etc. Planning helps in anticipating many problems long before they may arise and solutions can be sought through careful study. Thus most business emergencies can be avoided

by planning. In brief, budgeting forces managements to think ahead, to anticipate and prepare for the situation.

2. Co-ordination. Budgeting aids managers in co-ordinating their efforts so that objectives of the organisation as a whole harmonise with the objectives of its divisions. Effective planning and organising contribute a lot in achieving co-ordination. There should be co-ordination in the budgets of various departments. For example, the budget of sales should be in co-ordination with the budget of production. Similarly, the production budget should be prepared in co-ordination with the purchase budget, and so on.

3. Communication. A budget is a communication device. The approved budget copies are distributed to all management personnel which provides not only adequate understanding and knowledge of the programmes and policies to be followed but also alerts about the restrictions to be adhered to. It is not the budget itself that facilitates communication, but the vital information is communicated in the act of preparing budgets and participation of all responsible individuals in this act.

4. Motivation. A budget is a useful device for motivating managers to perform in line with the company objectives. If individuals have actively participated in the preparation of budgets, it acts as a strong motivating force to achieve the targets.

5. Control. Control is necessary to ensure that plans and objectives as laid down in the budgets are being achieved. Control, as applied to budgeting, is a systematised effort to keep the management informed of whether the planned performance is being achieved or not. For this purpose, a comparison is made between plans and actual performance. The difference between the two is reported to the management for taking corrective action. they are performing in meeting targets they have previously helped to set. In many companies there is a practice of rewarding employees on the basis of their achieving the budget targets or promotion of a manager may be linked to his budget achievement record.

Advantages of Budgetary Control

Budgetary control provides the following advantages :

1. Budgeting compels managers to think ahead—to anticipate and prepare for changing conditions.

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

3. It increases production efficiency, eliminates waste and controls the costs.

4. It pinpoints efficiency or lack of it.

5. Budgetary control aims at maximisation of profits through careful planning and control

6. It provides a yardstick against which actual results can be compared.

7. It shows management where action is needed to remedy a situation.

8. It ensures that working capital is available for the efficient operation of the business.

9. It directs capital expenditure in the most profitable direction.

10. It instills into all levels of management a timely, careful and adequate consideration of all factors before reaching important decisions.

11. A budget motivates executives to attain the given goals.

12. Budgetary control system creates necessary conditions for the introduction of standard costing technique.

13. Budgeting also aids in obtaining bank credit.

14. A budgetary control system assists in delegation of authority and assignment of responsibility.

15. Budgeting creates cost consciousness and introduces an attitude of mind in which waste and efficiency cannot thrive.

Limitations of Budgetary Control

The list of advantages given above is impressive, but a budget is not a cure all for organization ills. Budgetary control system suffers from certain limitations and those using the system should be fully aware of them.

The main limitations are :

1. The budget plan is based on estimates. Budgets are based on forecasts and forecasting cannot be an exact science. Absolute accuracy, therefore, is not possible in forecasting and budgeting. The strength or weakness of the budgetary control system depends to a large extent, on the accuracy with which estimates are made. Thus, while using the system, the fact that budget is based on estimates must be kept in view.

2. Danger of rigidity. A budget programme must be dynamic and continuously deal with the changing business conditions. Budgets will lose much of their usefulness if they acquire rigidity and are not revised with the changing circumstances.

3. Budgeting is only a tool of management. Budgeting cannot take the place of management but is only a tool of management. "The budget should be regarded not as a master, but as a servant." Sometimes it is believed that introduction of a budget programme is alone sufficient to ensure its success. Execution of a budget will not occur automatically. It is necessary that the entire organisation must participate enthusiastically in the programme for the realisation of the budgetary goals.

4. Opposition from staff. Employees may not like to be evaluated and thus oppose introduction of budgetary control system. As such, inefficient managers may try to create difficulties in the way of introducing and operating this system.

5. Expensive technique. The installation and operation of a budgetary control system is a costly affair as it requires the employment of specialized staff and involves other expenditure which small concerns may find difficult to incur. However, it is essential that the cost of introducing and operating a budgetary control system should not exceed the benefits derived there from.

ESSENTIALS OF EFFECTIVE BUDGETING

A budgetary control system can prove successful only when certain conditions and attitudes exist, absence of which will negate to a large extent the value of a budget system is any business. Such conditions and attitudes which are essential for effective budgeting are as follows :

1. Support of top management.
2. Participation by responsible executives.
3. Reasonable goals.
4. Clearly defined organisation.
5. Continuous budget education.
6. Adequate accounting system.
7. Constant vigilance.
8. Maximum profits.
9. Cost of the system.
10. Integration with standard costs.

1. Support of top management. If the budget system is to be successful, it must be fully supported by every member of management and the impetus and direction must come from the very top management. No control system can be effective unless the organisation is convinced

that the top management considers the system to be important. Thus the top management must be committed to the budget idea as well as to the principles, policies and philosophy underlying the system.

2. Participation by responsible executives. Those entrusted with the performance of the budgets should participate in the process of setting the budget figures. This will ensure proper implementation of budget programmes.

3. Reasonable goals. The budget figures should be realistic and represent reasonably attainable goals. The responsible executives should agree that the budget goals are reasonable and attainable.

4. Clearly defined organisation. In order to derive maximum benefits from the budget system, well defined responsibility centres should be built up within the organisation. The controllable costs for each responsibility centres should be separately shown.

5. Continuous budget education. The best way to ensure the active interest of the responsible supervisors is continuous budget education in respect of objectives, potentials and techniques of budgeting. This may be accomplished through written manuals, meetings, etc. whereby preparation of budgets, actual results achieved etc., may be discussed.

6. Adequate accounting system. There is close relationship between budgeting and accounting. For the preparation of budgets, one has to depend on accounting department for reliable historical data which primarily forms the basis for many estimates. The accounting system should be so designed so as to set up accounts in terms of areas of managerial responsibility. In other words, responsibility accounting is essential for successful budgetary control.

7. Constant vigilance. Reports comparing budget and actual results should be promptly prepared and special attention focussed on significant exceptions—figures that are significantly different from those expected.

8. Maximum profits. The ultimate object of realising the maximum profit should always be kept uppermost.

9. Cost of the system. The budget system should not cost more than it is worth. Since, it is not practicable to calculate exactly what a budget system is worth, it only implies a caution against adding expensive refinements unless their value clearly justifies them.

10. Integration with standard costing system. Where standard costing system is also used, it should be completely integrated with the budget programme, in respect of both budget preparation and variance analysis.

Preparation of the Budget:

FUNCTIONAL BUDGETS

A functional budget is one which relates to a particular function of the business, *e.g.*, Sales Budget, Production Budget, Purchase Budget, etc. These are components of master budget. Specific functional budgets to be prepared in a business vary from organisation to organisation. The common types of functional budgets for a manufacturing concern are discussed here in brief.

Types of Functional Budgets

1. Sales Budget.
2. Production Budget.
3. Production Cost Budget.
4. Raw Materials Budget.
5. Purchases Budget.
6. Labour Budget.
7. Production Overhead Budget.
8. Selling and Distribution Cost Budget.
9. Administration Cost Budget
10. Capital Expenditure Budget
11. Cash Budget.

1. Sales Budget

In most companies, the sales budget is not only the most important but also the most difficult budget to prepare. The importance of this budget arises from the fact that if sales figure is incorrect, then practically all other budgets will be affected. The difficulties in the preparation of this budget arise because it is not easy to estimate consumer demand, particularly when a new product is introduced. The sales budget is a statement of planned sales in terms of quantity and value. It forecasts what the company can reasonably expect to sell to its customers during the

budget period. The sales budget can be prepared to show sales classified according to products, salesmen, customers, territories and periods, etc.

Factors: The factors to be considered in forecasting sales are the following:

1. Past sales. Analysis of the past sales shows the trends to date and any seasonal or cyclical fluctuations. It is, therefore, not difficult to suggest future trends from the analysis of the past sales.

2. Reports by salesmen. The salesman are in close touch with the market and thus, they may be required to prepare detailed estimates of sales that they are likely to make in their respective areas during the budget period. The report of each salesman should be studied in the light of his past assessment and actual sales.

3. Company conditions. Any change in policies and methods of the company and their effects on sales should be considered. For example, additional spending on advertising, introduction of new channels of distributions, introduction of new products, etc. should all have some effect of a sales budget.

4. Business conditions. Any changes in economic conditions and that in related business activities and their effect on company sales should be considered. Information should be obtained about competing industries to assess the strength of competition and about the customer requirement to determine their demand.

5. Special conditions. In the preparation of sales forecast, any new external developments taking place should also be considered. For example, when an industry manufactures products for another industry, it will be necessary to analyse the trend of sales in that industry. A tyre manufacturer would estimate the sales of cars or scooters on which tyres are used.

6. Market analysis. Some companies depend upon market analysis and research to measure the potential demand for their products. Such an analysis reports on the state of the market, fashion trends, the type of products design required, activities of the competitors and other factors which may have a bearing on the sales of the company.

2. Production Budget

The production budget is a plan of production for the budget period. It is first drawn up in quantities of each product and when the remaining budgets have been compiled and cost ofproduction calculated, then the quantities of production cost are translated into money terms, what in effect becomes a production cost budget.

The production budget is the initial step in budgeting manufacturing operations. In addition to production budget, there are three other budgets relating to manufacturing activities of a company. These are raw materials budget, labour budget and production overhead budget. The principal considerations involved in budgeting production are :

(*a*) **Sales budget.** When sales is the principal budget factor, the production budget will be based on the volume of sales forecast by the sales budget.

(*b*) **Inventory policy.** The management decision regarding quantities needed in stock at all times to meet customer requirements is an important factor. In deciding on the inventory policy, factors like storage facilities, length of the production period, perishability of product, risk of price changes, etc. have to be given due consideration.

(*c*) **Production capacity.** The production capacity of each department should be worked out and budget figures should be within these limits.

However, when production capacity falls short of sales requirements, the following alternatives may be considered :

(*i*) Purchase of additional plant and machinery.

(*ii*) Introduction of additional shift.

(*iii*) Introduction of overtime working.

(*iv*) Hiring machinery.

(*v*) Sub-contracting production of components.

(*d*) **Management policy.** Production policy of the management plays an important role in budgeting production. For example, management may decide to buy a particular component part from outside instead of manufacturing it. This will influence production budget.

3. Production Cost Budget

This budget shows the estimated cost of production. The production budget (explained above) shows the quantities of production. These quantities of production are expressed in terms of cost in production cost budget. The cost of production is shown in detail in respect of material cost,

labour cost and factory overhead. Thus Production Cost Budget is based upon Production Budget, Material Cost Budget, Labour Cost Budget and Factory Overhead Budget.

Illustration 2.1

The following information has been made available from the records of Precision Tools Ltd. for the six months of 2017 (and the sales of January 2018) in respect of product X;

(*i*) The units to be sold in different months are :

July 2017	1,100	November 2017	2,500
August 2017	1,100	December 2017	2,300
September 2017	1,700	January 2018	2,000
October 2017	1,900		

(*ii*) There will be no work-in-progress at the end of any month.

(*iii*) Finished units equal to half the sales of the next month will be in stock at the end of every month (including June 2017).

(*iv*) Budgeted production and production cost for the year ending 31st Dec., 2017 are thus:

Production (units)		22,000
Direct materials per unit	₹	10
Direct wages per unit	₹	4
Total factory overhead apportioned to production	₹	88,000

You are required to prepare :

(*a*) Production Budget for the six months of 2017, and

(*b*) Summarised Production Cost Budget for the same period.

Solution

Production Budget

for the six months ending Dec. 2017

	July Units	*Aug. Units*	*Sep. Units*	*Oct. Units*	*Nov. Units*	*Dec. Units*	*Total*
Estimated sales	1,100	1,100	1,700	1,900	2,500	2,300	
Add: Closing stock	550	850	950	1,250	1,150	1,000	
	1,650	1,950	2,650	3,150	3,650	3,300	
Less: Opening stock	550	550	850	950	1,250	1,150	
Production	1,100	1,400	1,800	2,200	2,400	2,150	11,050

Production Cost Budget

for the six months ending Dec. 2017

(Production: 11,050 units)

		₹
Direct materials	@ ₹ 10 for 11,050 units	1,10,500
Direct wages	@ ₹ 4 for 11,050 units	44,200
*Factory overhead	@ ₹ 4 for 11,050 units	44,200
Total Production Cost		1,98,900

*Factory overhead per unit = ₹ 88,000 ÷ 22,000 units = ₹ 4.

4. Raw Material Budget

This budget shows the estimated quantities of all the raw materials and components needed for production demanded by the production budget. Raw material budget serves the following purposes:

(*a*) It assists purchasing department in planning the purchases.

(*b*) It helps in the preparation of purchase budget.

(*c*) It provides data for raw material control.

It should be noted that raw material budget generally deals with only the direct materials. Indirect materials and supplies are included in the overhead cost budget.

5. Purchase Budget

Careful planning of purchases offers one of the most significant areas of cost saving in many companies. The purchase manager should be assigned the direct responsi-bility for preparing a detailed plan of purchases for the budget period and for submitting the plan in the form of a purchase budget.

The purchase budget provides details of the purchases which are planned to be made during the period to meet the needs of the business. It indicates:

(*a*) The quantities of each type of raw material and other items to be purchased;

(*b*) The timing of purchases;

(*c*) The estimated cost of material purchases.

Factors: In preparing a purchase budget, a number of factors must be considered, including the following:

(*a*) Opening and closing stocks to be maintained as it will affect material requirements.

(*b*) Maximum and minimum stock quantities.

(*c*) Economic order quantities.

(*d*) Financial resources available.

(*e*) Purchase orders placed before the budget period against which supplies will be received during the period under consideration.

(*f*) Policy of the management regarding materials or components to be manufactured within the business as distinct from those purchased from outside.

Purposes: The main purposes of a purchase budget are as follows :

(*a*) To enable the purchasing department to plan its purchases and enter into long term contracts, where advantageous.

(*b*) To record the material prices on which the plan represented by the budget is based.

(*c*) To facilitate the management of finance of the business by defining the cash requirements in respect of the budget period and for shorter runs.

The purchase budget differs from the raw material budget in that purchase budget specifies both quantities and rupee costs, whereas raw material budget is usually limited to quantities only. *Secondly*, purchase budget includes direct and indirect materials, finished goods for resale, services like electricity and gas, etc. while raw material budget includes only direct material requirements.

Illustration 2.2

The sales manager of Mahindra & Co. Ltd reports that next year he expects to sell 50,000 units of a certain product.

The production manager consults the storekeeper and casts his figures as follows: Two kinds of raw materials *A* and *B* are required for manufacturing the product. Each unit of the product requires 2 kg of *A* and 3 kg of *B*. The estimated opening balances at the commencement of the next year are—Finished Product, 10,000 units; *A*, 12,000 kg; *B* 15,000 kg. The desirable closing balances at the end of the next year are: Finished product, 14,000 units; *A*, 13,000 kg; *B*, 16,000 kg.

Draw up a Materials Purchases Budget for the next year. (*B.Com. Hons. Delhi Adapted*)

Solution

Estimated production quantity during the year is not given, it is calculated as under.

	Sales during the year	50,000 units
Add:	Desired stock at the end of next year	14,000 units
	Total	64,000 units
Less:	Expected stock at the beginning of the next year	10,000 units
	Estimated production	54,000 units

Purchase Budget for the period .....

	Item	*Material A kg*	*Material B kg*
	Consumption during the year :		
	A—54,000 units @ 2 kg per unit	1,08,000	—
	B—54,000 units @ 3 kg per unit	—	1,62,000
Add:	Desired stock at the end of next year	13,000	16,000
		1,21,000	1,78,000
Less:	Expected stock at the commencement of next year	12,000	15,000
	Quantities of materials to be purchased	1,09,000	1,63,000

6. Labour Budget

Labour cost is classified into direct and indirect. Some companies prepare a labour budget that includes both direct and indirect labour, while others include only direct labour cost and include indirect labour in the overhead cost budget.

The labour budget represents the forecast of labour requirements to meet the demands of the company during the budget period. This budget must be linked with production budget and production cost budget. The method of preparing labour budget is like this. The standard direct labour hours of each grade of labour required for each unit of output and standard wage rate for each grade of labour are ascertained. Multiplication of units of finished goods to be produced by the labour cost per unit gives the direct labour cost. The indirect labour is normally a fixed amount, so should be easy to calculate in total for the period.

Purposes: The labour budget serves the following purposes :

(*a*) To estimate the labour cost of production.

(*b*) To determine the direct labour required in terms of labour hours and hence the number and grade of workers required to meet the production requirements.

(*c*) To provide the personnel department with personnel requirements so that it may plan recruitment activities.

(*d*) To provide data for determination of cash requirements for payment of wages.

(*e*) To provide data for managerial control of labour cost.

7. Production Overhead Budget

After budgeting of material and labour cost, next logical step is to prepare a budget for production overheads. The production overhead budget represents the forecast of all the production overhead (fixed, variable and semi-variable) to be incurred during the budget period. The fact that overheads include many dissimilar types of expenses creates considerable problems in:

(*a*) The allocation of production overheads to products manufactured, and

(*b*) Control of production overheads.

The production overhead budget involves the preparation of overhead budgets for each department of the factory as it is desirable to have estimates of manufacturing overheads prepared by those individuals who have the responsibility for incurring them. The budget

expenses for each sub period during the budget period should be indicated and the classification of expenses should be the same as used by the accounting department. The budgeted overhead costs of service departments are totalled and apportioned to production departments according to the services received by each such production department. The budgeted overhead costs of service departments are totalled and apportioned to production departments according to the services received by each such production department.

Factors: The factors to be considered in preparing this budget are as follows:

(*a*) The classification of all overhead costs into fixed and variable elements. In the case of semivariable items, the degree of variability should be ascertained. The level of output at which fixed costs change also be determined.

(*b*) The level of activity likely to be achieved during the budget period like units of output, labour hours, etc.

(*c*) Policy of management regarding matters like overtime work, number of shifts to be worked, depreciation, replacement of hand labour by machines, etc.

(*d*) Individual items of cost incurred in the past.

8. Selling and Distribution Cost Budget

This is closely related to sales budget and represents the forecast of all costs incurred in selling and distributing the company's products during the budget period. As a general rule, the sales budget and the selling and distribution cost budgets are prepared simultaneously, since each has a definite impact on the other.

The sales manager is responsible for selling and distribution cost budget. He prepares this budget with the help of heads of sub-divisions of the sales department. Some companies prepare a separate advertising budget, particularly when spendings on advertising are quite heavy.

9,. Administration Cost Budget

This budget represents forecast of all administration expenses like directors' fees, managing director's salary, office lighting, heating and air conditioning, etc. Most of these expenses are fixed, so should not be too difficult to forecast.

10. Capital Expenditure Budget

This budget represents the expenditure on all fixed assets during the budget period. It includes such items as new buildings, machinery, land and intangible items like patents, etc.

Special Features: The capital expenditure budget has certain characteristic features which distinguish it from other functional budgets. These are :

(*a*) Capital expenditure budget deals with items not directly related to profit and loss account. Expenses related to capital expenditure such as depreciation, repairs and maintenance, etc. are, however, corelated to this budget and they are included in overhead budgets.

(*b*) Capital expenditure is frequently planned a number of year in advance, perhaps five to ten years, in which case it is broken down into convenient periods like years or months. As compared to this, other functional budgets are normally prepared for a shorter period, say, one year.

(*c*) This budget involves large amount of expenditure which needs top management approval. The capital expenditure budget is, therefore, subject to a strict management control.

11. Cash Budget

The cash budget is one of the most important and one of the last to be prepared. It is a detailed estimate of cash receipts from all sources and cash payments for all purposes and the resultant cash balances during the budget period. It makes certain that the business has sufficient cash available to meet its needs as and when these arise. It is a device for coordinating and controlling the financial side of the business to ensure solvency and provide a basis for planning and financing required to cover up any deficiency in cash. Cash budget thus plays an important role in the financial management of a business undertaking.

Purposes: The main purposes of cash budget are outlined below:

(*a*) It ensures that sufficient cash is available when required.

(*b*) It indicates cash excesses and shortages so that action may be taken in time to invest any excess cash or to borrow funds to meet any shortages.

(*c*) It establishes a sound basis for credit.

(*d*) It shows whether capital expenditure may be financed internally.

(*e*) It establishes a sound basis for control of cash position.

Preparation of Cash Budget. There are three methods of preparing cash budget :

(*a*) Receipts and Payments Method.

(*b*) Adjusted Profit and Loss Method.

(*c*) Balance Sheet Method.

a) Receipts and Payments Method: In this method the cash receipts from various sources and cash payments to various agencies are estimated. Delay in cash receipts and lag in payments are taken into account for making estimates. Since this method is based on the concept of cash accounting, accruals and adjustments obviously cannot find place in the preparation of cash budgets. The opening balance of cash of a period and the estimated cash receipts are added and from this, the total of estimated cash payments are deducted to find out the closing balance.

Illustration 1

Prepare a cash budget of M/s Novan Television & Co. on the basis of the following information for the first six months of 2014:

(a) Cost and prices unchanged.

(b) Cash sales - 25% and credit sales - 75%.

(c) 60% of credit sales are collected in the month after sales, 30% in the second month and 10% in the third. No bad debts are anticipated.

(d) Sales forecasts are as follows:

	₹		₹
October 2013	12,00,000	March 2012	8,00,000
November 2013	14,00,000	April 2012	12,00,000
December 2013	16,00,000	May 2012	10,00,000
January 2014	6,00,000	June 2012	8,00,000
February 2014	8,00,000	July 2012	12,00,000

(e) Gross profit margin 20%.

(f) Anticipated purchases:

	₹
January 2014	6,40,000
February 2014	6,40,000
March 2014	9,60,000
April 2014	8,00,000
May 2014	6,40,000
June 2014	9,60,000

(g) Wages and Salaries to be paid:

January 2014	1,20,000
February 2014	1,60,000
March 2014	2,00,000
April 2014	2,00,000
May 2014	1,60,000
June 2014	1,40,000

(h) Interest on ₹10,00,000 @ 12% on debentures is due by the end of March and June.

(i) Excise deposit due in April ₹2,00,000.

(j) Capital expenditure on plant and machinery planned for June ₹1,20,000.

(k) Company has a cash balance of ₹4,00,000 at 31.12.2013.

(l) Company can borrow on monthly basis.

(m) Rent is ₹8,000 per month.

Solution:

M/s Novan Television Company
Cash Budget for six months, January to June, 2014

	January ₹	February ₹	March ₹	April ₹	May ₹	June ₹
Receipts:						
Cash sales	1,50,000	2,00,000	2,00,000	3,00,000	2,50,000	2,00,000
Collections from debtors	11,25,000	7,35,000	6,15,000	5,85,000	7,80,000	7,80,000
Total Receipts (A)	12,75,000	9,35,000	8,15,000	8,85,000	10,30,000	9,80,000
Payments:						
Purchases	6,40,000	6,40,000	9,60,000	8,00,000	6,40,000	9,60,000
Rent	8,000	8,000	8,000	8,000	8,000	8,000
Wages and Salaries	1,20,000	1,60,000	2,00,000	2,00,000	1,60,000	1,40,000
Excise Deposit	—	—	—	2,00,000	—	—
Capital Expenditure	—	—	—	—	—	1,20,000
Interest	—	—	30,000	—	—	30,000
Total Payment (B)	7,68,000	8,08,000	11,98,000	12,08,000	8,08,000	12,58,000
Balance:						
Net Cash Receipts (A - B)	5,07,000	1,27,000	(3,83,000)	(3,23,000)	2,22,000	(2,78,000)
Cash balance at the beginning of the month	4,00,000	9,07,000	10,34,000	6,51,000	4,00,000	5,50,000
Total	9,07,000	10,34,000	6,51,000	3,28,000	6,22,000	2,72,000
Borrowing/(Surplus)	—	—	—	72,000	(72,000)	1,28,000
Cash balance at the close of the month	9,07,000	10,34,000	6,51,000	4,00,000	5,50,000	4,00,000

Note: It is assumed that the company will maintain cash balance of ₹4,00,000 as in the beginning of the budget period, resorting to borrowing, if necessary. The company could also place substantial amounts on short duration deposits, of 15 to 30 days during the first three months.

Working Note:

	Oct. 2013 ₹	Nov. 2013 ₹	Dec. 2013 ₹	Jan. 2014 ₹	Feb. 2014 ₹	March 2014 ₹	April 2014 ₹	May 2014 ₹	June 2014 ₹
Total Sales	12,00,000	14,00,000	16,00,000	6,00,000	8,00,000	8,00,000	12,00,000	10,00,000	8,00,000
Credit Sales	9,00,000	10,50,000	12,00,000	4,50,000	6,00,000	6,00,000	9,00,000	7,50,000	6,00,000
Collections:									
1st month, 60%				7,20,000	2,70,000	3,60,000	3,60,000	5,40,000	4,50,000
2nd month, 30%				3,15,000	3,60,000	1,35,000	1,80,000	1,80,000	2,70,000
3rd month, 10%				90,000	1,05,000	1,20,000	45,000	60,000	60,000
				*11,25,000	7,35,000	6,15,000	5,85,000	7,80,000	7,80,000

* For example: 60% of credit sales in December 2013;
30% of credit sales in November 2013; and
10% of credit sales in October 2013.

b) Adjusted Profit and Loss Account Method: In this method the opening balance is adjusted with the anticipated increases or decreases in current assets and liabilities, provision for depreciation, special receipts and the net profit for the year before taxation and appropriations.

From the aggregate amount of these, the estimated taxation and dividends payable, expenditure on fixed assets and special payments if any are deducted . The resulting balance is the estimated cash in hand at the end of the budget period. The vital point of difference between receipts and payments method and adjusted profit and loss method is that the former takes into account only cash transactions while the latter considers non cash items as it reverses all accruals. Further, adjusted profit and loss method gives only a broad idea of the cash position but receipts and payments method furnishes the maximum possible details.

Illustration 2

Following are the Balance Sheets of Metal Engineering Limited one actual as on 31st December, 2013 and other forecast as on 31st December, 2014:

	2013 (Actuals)	*2014 (Forecast)*
	₹	₹
Cash	18,400	1,36,800
Debtors	49,000	83,200
Stock	61,900	92,500
Investments	1,00,000	90,000
Plant (at cost)	2,20,000	2,40,000
	4,49,300	6,42,500
Accounts Payable	67,300	1,00,000
Debentures	73,500	50,000
Accumulated Depreciation	50,000	30,000
Equity Share Capital	1,25,000	1,75,000
Profit and Loss Account	1,33,500	2,87,500
	4,49,300	6,42,500

The forecast Profit and Loss Account in a summarised form for the budget year ended 31st December, 2014 is as follows:

	₹.		₹
To Accumulated depreciation	22,000	By Gross profit	2,00,000
" Administration and selling expenses	10,000	" Profit on the sale of investments	2,000
" Income-tax	5,000	" Interest	10,000
" Interest charges	3,000		
" Loss on sale of plant	8,000		
" Net profit	1,64,000		
	2,12,000		2,12,000
To Dividend (including CDT)	10,000	By Net profit	1,64,000
" Balance c/d	1,54,000		
	1,64,000		1,64,000

Additional information:

(i) New plant costing ₹80,000 was purchased during the year.

(ii) An old plant, costing ₹60,000 and with accumulated depreciation of ₹ 42,000 was sold for ₹10,000.

(iii) Investments costing ₹10,000 were sold for ₹12,000.

Prepare a cash budget for the management of the company by Adjusted Profit and Loss method.

Solution:

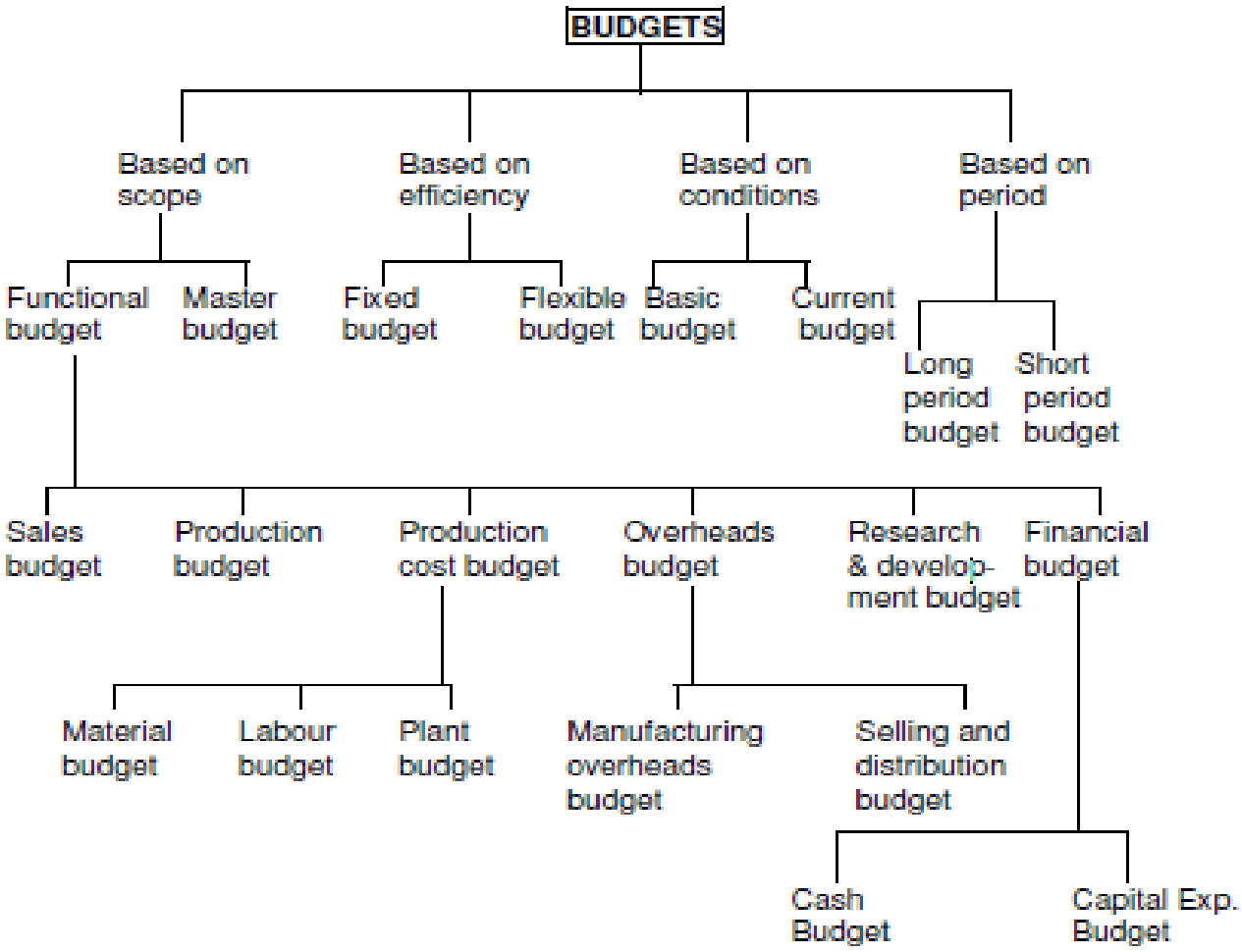
Cash Budget (Adjusted Profit and Loss)
(for the Budget period ended 31st December 2014)

	₹	₹
Opening Balance of Cash		18,400
Add: Additions to Cash:		
Issue of share capital	50,000	
Sale of plant	10,000	
Sale of investments	12,000	
Depreciation written back	22,000	
Loss on sale of plant	8,000	
Increase in creditors	32,700	
Profit of the year	1,64,000	2,98,700
		3,17,100
Less: Reduction in Cash:		
Redemption of debentures	23,500	
Purchase of plant	80,000	
Payment of dividend (including CDT)	10,000	
Profit on sale of investments taken back	2,000	
Increase in stock	30,600	
Increase in debtors	34,200	1,80,300
Closing balance of cash		**1,36,800**

c) Balance Sheet Method: Under this method of preparing cash budget a forecast balance sheet is prepared as at the end of the budget period with all items of assets and liabilities except cash balance which is arrived at as a balancing figure. The magnitude of the two sides of the balance sheet excluding cash balance would determine whether the bank account would show a debit or credit balance i.e. cash balance at bank or bank overdraft.

PREPARATION & MONITORING OF VARIOUS TYPES OF BUDGETS

Depending upon the various bases adopted, budgets may be classified into different categories. Budgets may be classified on the basis of (i) the coverage or scope they encompass (ii) the capacity or efficiency to which they are related (iii) the conditions on which they are based and (iv) the periods which they cover. This is clearly shown with the help of the following diagram:



1. FUNCTIONAL BUDGETS

Budgets for a period are really classified according to the various activities in the organization. All activities are interrelated. The forecasts for individual activities are prepared and co-ordinated with those of other activities and then consolidated to show the total effect of all the activities as a whole. Approved targets for individual functions are known as "functional budgets". The consolidation of all functional budgets is known as the "Master Budget". This is nothing but the targeted profit and loss statement and balance sheet of the organization. Principal functional budgets are:

***(1.1) Sales Budget**:* The sales budget is a forecast of total sales, expressed in terms of money and quantity. The first step in the preparation of the sales budget is to forecast as accurately as possible the sales anticipated during the budget period. Sales forecasts are influenced by a variety of factors, external as well as internal. External factors include general business conditions, Government policy, etc. Internal factors consist of sales-prices, sales trend, new-

products, etc. The sales-budget is based on sales forecasting which is the responsibility of the sales manager and market research staff. The sales budget is regarded as the keystone of budgeting.

(1.2) Production Budget: The production budget is a forecast of the production for budget period. It is prepared in two parts, viz.., production value budget for the physical units of the products to be manufactured and the cost of manufacturing budget detailing the budgeted costs. The main steps involving in the preparation of a production budget are production planning; consideration of capacity; integration with sales forecasts, inventory-policies, management's overall policies. The operation of a production budget results in various advantages, main being: optimum utilisation of productive resources of the enterprise, production of goods according to schedule enabling the concern to adhere to delivery dates, proper scheduling of factors of production.

(1.3) Production Cost Budget: It may be further classified as under:

(1.3.1) Materials Budget: Materials requirement budget, commonly known as materials budget, assist the purchase department in suitably planning the purchases, fixing the maximum and minimum levels of materials, components etc. The timing and amount of funds which will be needed to make purchases are also known with the help of the materials budget.

(1.3.2) Labour Budget: The labour content of each item of production as per the production budget is determined in terms of grades and trades of the workers required and the labour time for each job, operation and process. The rates of pay, allowances, bonus, etc., of each category are then considered and labour cost to be set for each budget centre is calculated by multiplying the wage rate with the labour hours for the number of units of products budgeted.

(1.3.3) Plant Utilisation Budget: *Plant Utilisation Budget* is prepared for the estimation of plant capacity to meet the budgeted production during the budgeted period. It is a forecast of plant capacities available for fulfilling production requirements as specified in the production budget. This budget is expressed in working hours or other convenient units. Followings are the features of Plant Utilisation Budget:

1. It will be base for the requirement of machine for sale and production department.
2. It will provide the base of reasonable depreciation so that machine can be replaced in future.
3. It may be base for the new inventions in the context of plant & machinery.
4. It will indicate the budgeted machine load on departments or machines.

5. It reveals that overloading on some departments, so that sales volume may be increased by providing after-sales service, advertisement campaign reducing selling price.

(1.4) Overhead Budget: It may be further classified as under:

(1.4.1) Manufacturing Overhead Budget: The following steps are required to be taken up to prepare the manufacturing overhead budget:

(i) Classification of expenditure into fixed, variable and semi-variable and collection thereof in accordance with a schedule of standing order numbers;

(ii) Departmentalisation of expenditure;

(iii) Determining the level of activity for setting the overhead rates; and level of activity may be actual, budgeted level or normal capacity; and

(iv) Establishing the variable overhead rates per unit of production or productive hour.

(1.4.2) Selling and Distribution Budget: The selling expenses include all items of expenditure on the promotion, maintenance and distribution of finished products. This budget which is closely related to the sales budget is the forecast of the cost of selling and distribution, for the budgeted period. Selling and distribution expenses may be fixed or variable with regard to the volume of sales; separate budgets are usually established for fixed or variable selling and distribution expenses.

(1.5) Research and Development Budget: This depends mostly on management decisions regarding the research and development effort - the projects already in hand and the proposed projects.

(1.6) Financial Budget: It may be further classified as under

(1.6.1) Cash Budget: Cash forecast precedes a cash budget. A cash forecast is an estimate showing the amount of cash which would be available in a future period. This budget usually of two parts giving detailed estimates of (i) cash receipts and (ii) cash disbursements. Estimates of cash-receipts are prepared on a monthly basis and depend upon estimated cash-sales, collections from debtors and anticipated receipts from other sources such as sale of assets, borrowings etc. Estimates of cash disbursements are based on estimated cash purchases, payment to creditors, employees remuneration, bonus, advances to suppliers, budgeted capital expenditure for expansion etc.

The main objectives of preparing cash budget are as follows:

(i) The probable cash position as a result of planned operation is indicated and thus the excess or shortage of cash is known. This helps in arranging short term borrowings in advance to meet the situations of shortage of cash or making investments in times of cash in excess.

(ii) Cash can be co-ordinated in relation to total working capital, sales investment and debt.

(iii) A sound basis for credit for current control of cash position is established.

(iv) The effect of sudden and seasonal requirements, large stocks, delay in collection of receipts etc. on the cash position of the organisation is revealed.

A cash budget can be prepared by any of the following methods:

(i) Receipts and payments method

(ii) Adjusted profit and loss account method

(iii) Balance sheet method.

(Note: Explanation and the illustration of Cash Budget Methods are included in Functional Budgets.)

(1.6.2) Capital Expenditure Budget: Capital expenditure budget is the plan of the proposed outlay on fixed assets and is very closely related to the cash budget. Capital expenditure forecasting is a continuous process and by nature it is a long-term function. Capital forecasts should be made for a number of years. Alongwith the long-term forecast, there should also be a short-term forecast to cover the general budget period under consideration. It is also essential that the capital expenditure budget be properly co-ordinated with all the operational budgets of the concern so as to form an integral part of the overall plan.

2. MASTER BUDGET

Master budget is a consolidated summary of the various functional budgets. A master budget is the summary budget incorporating its component functional budget and which is finally approved, adopted and employed.

It is the culmination of the preparation of all other budgets like the sales budget, production budget, purchase budget etc. It consists in reality of the budgeted profit and loss account, the balance sheet and the budgeted funds flow statement.

The master budget is prepared by the budget committee on the basis of co-ordinated functional budgets and becomes the target of the company during the budget period when it is finally approved. This budget acts as the company's individualised key to successful financial planning and control. It provides the basis of computing the effect of any changes in any phase of

operations, such as sales volume, product mix, prices, labour costs, material costs or change in facilities. It segregates income, costs and profits by areas of responsibility. Master budget presents all this information to the depth appropriate for the top management action.

In the master budget, costs are classified and summarised by types of expenses as well as by departments. This information extends the range of usefulness of master budget. It is considered as the best mode of understanding the company's micro- economic position relating to the forthcoming budget period. Master Budget is not merely a compendium of theoretical calculations. The figures that it contains, are the reflection of the actual intentions of the company relating to different areas for the forthcoming budget period.

3. FIXED BUDGETS

A budget may be established either as a fixed budget or a flexible budget. A fixed budget is a budget designed to remain unchanged irrespective of the level of activity actually attained. A fixed budget is one which is designed for a specific planned output level and is not adjusted to the level of activity attained at the time of comparison between the budgeted and actual costs. Obviously, fixed budgets can be established only for a small period of time when the actual output is not anticipated to differ much from the budgeted output. However, a fixed budget is liable to revision if due to business conditions undergoing a basic change or due to other reasons, actual operations differ widely from those planned in the fixed budget. These budgets are most suited for fixed expenses but they have only a limited application and is ineffective as a tool for cost control.

4. FLEXIBLE BUDGETS

The Chartered Institute of Management Accountants, London defines flexible budget as a budget which by recognising different cost behaviour patterns, is designed to change as volume of output changes. It is a budget prepared in a manner so as to give the budgeted cost for any level of activity. It is a budget which by recognising the difference between fixed, semi-fixed and variable cost is designed to change in relation to the activity attained. It is designed to furnish budgeted cost at any level of activity attained. Flexible budgeting is desirable in the following cases:

(i) Where the level of activity during the year varies from period to period, either due to the seasonal nature of the industry or to variation in demand.

(ii) Where the business is a new one and is difficult to foresee the demand.

(iii) Where the undertaking is suffering from shortage of a factor of production such as materials, labour, plant capacity, etc.

The main characteristic of flexible budget is that it shows the expenditure appropriate to various levels of output. If the volume changes the expenditure appropriate to it can be established from the flexible budget for comparison with actual expenditure as a means of control. It provides a logical comparison of budget allowances with actual cost. When flexible budget is prepared, actual cost at actual activity is compared with budgeted cost at actual activity i.e. two things to a like base. For preparation of flexible budget, items of cost have to be analysed individually to determine how different items of cost behave to change in volume. Therefore, in-depth cost analysis and cost identification is required for preparation of flexible budget.

Following are the striking features of flexible budgets:

(i) They are prepared for a range of activity instead of a single level.

(ii) They provide a very dynamic basis for comparison because they are automatically geared to changes in volume.

(iii) They provide a tailor-made budget for a particular volume.

(iv) These are based upon adequate knowledge of cost behaviour pattern.

Flexible budgets may be prepared in the following method:

a. Tabular method or multi-activity method
b. Formula method or ratio method and
c. Graphic method.

Illustration 3

Following information is available from the records of Jay Ltd. for the year end 31st March 2014.

	₹ (lakhs)
Fixed Expenses	
Wages and salaries	9.5
Rent, rates and taxes	6.6
Depreciation	7.4
Sundry administrative expenses	6.5
Semi-Variable Expenses (at 50% of capacity)	
Maintenance and repairs	3.5
Indirect labour	7.9
Sales department salaries	3.8
Sundry administrative expenses	2.8
Variable Expenses (at 50% of capacity)	
Materials	21.7
Labour	20.4
Other expenses	7.9
	98.0

Assuming that the fixed expenses remain constant for all levels of production, semi-variable expenses remain constant between 45% and 65% of capacity increasing by 10% between 65% and 80% and by 20% between 80% and 100%.

Sales at various levels are :

	₹ (lakhs)
50% capacity	100
60% "	120
75% "	150
90% "	180
100% "	200

Prepare a flexible budget for the year and forecast the profits at 60%, 75%, 90% and 100% of capacity.

Solution:

Flexible Budget

Period.....

	50% ₹ *(lakhs)*	*60%* ₹ *(lakhs)*	*75%* ₹ *(lakhs)*	*90%* ₹ *(lakhs)*	*100%* ₹ *(lakhs)*
Sales	100	120	150	180	200
Variable expenses					
Materials	21.70	26.04	32.55	39.06	43.40
Labour	20.40	24.48	30.60	36.72	40.80
Other expenses	7.90	9.48	11.85	14.22	15.80
Semi-variable expenses					
Maintenance and repairs	3.50	3.50	3.85	4.20	4.20
Indirect labour	7.90	7.90	8.69	9.48	9.48
Sales Deptt. salary, etc.	3.80	3.80	4.18	4.56	4.56
Sundry administrative expenses	2.80	2.80	3.08	3.36	3.36
Fixed expenses					
Wages and salaries	9.50	9.50	9.50	9.50	9.50
Rent, rates and taxes	6.60	6.60	6.60	6.60	6.60
Depreciation	7.40	7.40	7.40	7.40	7.40
Sundry administrative Expenses	6.50	6.50	6.50	6.50	6.50
Total	98.00	108.00	124.80	141.60	152.60
Profit	2.00	12.00	25.20	38.40	47.40

Illustration 4

A firm at present operates at 60% of its capacity. At this level and at the level of 50% utilisation of capacity, the figures relating to its operations could be summarised as stated below:

	50% ₹	60% ₹
Materials	10,00,000	12,00,000
Labour	8,00,000	9,00,000
Manufacturing overheads	6,00,000	6,60,000
Administrative overheads	3,50,000	3,50,000
Selling and distribution overheads	4,50,000	5,00,000
Research and development	1,50,000	2,00,000
Total	33,50,000	38,10,000
Profit	1,50,000	3,90,000
Sales	35,00,000	42,00,000

Draw up the budget at 80% utilisation of capacity assuming that -

(i) sales at this level can be maintained only by a flat 5% reduction in the selling price;

(ii) economy in purchase of material will equal to 2-1/2% of the current amounts;

(iii) the research and development expenditure will be pegged at ₹2,50,000 per annum; and

(iv) administrative overheads will require 10% increase.

Solution:

Budget at 80% capacity utilisation

	60%	80%
	₹	₹
Materials	12,00,000	15,60,000
Labour	9,00,000	11,00,000
Manufacturing overheads	6,60,000	7,80,000
Administrative overheads	3,50,000	3,85,000
Selling and distribution overheads	5,00,000	6,00,000
Research and development	2,00,000	2,50,000
Total	38,10,000	46,75,000
Profit	3,90,000	6,45,000
Sales	42,00,000	53,20,000

Working Notes:

	₹	₹
(1) Materials at 60% capacity	12,00,000	
at 80% capacity	16,00,000	
Less: 2-1/2%	40,000	15,60,000

(2) Variable fixed portions of various expenses

		50%	*60%*	*Increase for 10% (variable)*	*Total variable*	*Fixed*
		₹	₹			
Labour	8,00,000	9,00,000	1,00,000	6,00,000	3,00,000	
Mfg. overhead		6,00,000	6,60,000	60,000	3,60,000	3,00,000
Selling overheads		4,50,000	5,00,000	50,000	3,00,000	2,00,000

(3) At 80% Capacity:

Labour: Fixed	3,00,000	
Variable (₹1,00,000 for every 10%)	8,00,000	11,00,000
Mfg. overheads: Fixed	3,00,000	
Variable (₹60,000 for every 10%)	4,80,000	7,80,000
Selling overheads: Fixed	2,00,000	
Variable (₹50,000 for every 10%)	4,00,000	6,00,000

(4) Sales: at 60% Capacity	42,00,000	
at 80% Capacity	56,00,000	
Less: 5%	2,80,000	53,20,000

Illustration 5

ABC Ltd. produces and sells a single product. Sales budget for the calendar year 2014 for each quarter is as under:

Quarter	*No. of Units to be Sold*
I	12,000
II	15,000
III	16,500
IV	18,000

The year 2014 is expected to open with an inventory of 4,000 units of finished product and close with an inventory of 6,500 units. Production is customarily scheduled to provide for two-thirds of the current quarter's demand plus one-third of the following quarter's demand. Thus production anticipates sales volume by about one month. The standard cost details for one unit of the product is as follows:

- Direct materials 10 Kgs. @ 50 paise per kg.
- Direct labour 1 hour 30 minutes @ ₹4 per hour.
- Variable overheads 1 hour 30 minutes @ ₹1 per hour.
- Fixed overheads 1 hour 30 minutes @ ₹2 per hour based on a budgeted production volume of 90,000 direct labour hours for the year.

Answer the following:

(i) Prepare a production budget for the year 2014 by quarters, showing the number of units to be produced.

(ii) If the budgeted selling price per unit is ₹17, what would be the budgeted profit for the year as a whole?

(iii) In which quarter of the year the company is expected to break-even?

Solution:

Number of units to be sold during the year 2014

Quarter I	12,000 units
Quarter II	15,000 units
Quarter III	16,500 units
Quarter IV	18,000 units
Sales during the year	61,500 units

(i) Production Budget (for the year 2014 by quarters)

	Quarter I Units	*Quarter II Units*	*Quarter III Units*	*Quarter IV Units*	*Total Units*
Units to be produced in each quarter :					

2/3rd of the current quarter's sales demand	8,000 $\left(\frac{2}{3}\times 12{,}000\right)$	10,000 $\left(\frac{2}{3}\times 15{,}000\right)$	11,000 $\left(\frac{2}{3}\times 16{,}500\right)$	12,000 $\left(\frac{2}{3}\times 18{,}000\right)$	41,000
Add : 1/3 of the following quarter's sales demand in first 3 quarters and closing inventory in the 4th quarter	5,000 $\left(\frac{1}{3}\times 15{,}000\right)$	5,500 $\left(\frac{1}{3}\times 16{,}500\right)$	6,000 $\left(\frac{1}{3}\times 18{,}000\right)$	6,500 $\left(\frac{1}{3}\times 19{,}500\right)$	23,000
Total	**13,000**	**15,500**	**17,000**	**18,500**	**64,000**

(1) Variable Cost per unit

		₹	₹
Direct Material :	10 kgs. @ 50 paise per kg.	5.00	
Direct labour :	1-½ hours @ ₹4 per hour	6.00	
Variable overheads:	1-½ hours @ ₹1 per hour	1.50	12.50

(2) Fixed overhead per annum: 90,000 hrs. @ ₹2 = ₹1,80,000

(ii) Statement of Budgeted Profit for the year (as a whole)

	₹
Total Sales : 61,500 units @ ₹17 per unit	10,45,000
Less : Total Variable Cost : 61,500 units @ 12.50 per unit	7,68,750
Contribution	2,76,750
Less : Fixed cost for the year	1,80,000
Profit for the year 2014 as a whole	96,750

(iii) Beak Even Point $= \dfrac{\text{Fixed Overheads}}{\text{Selling Price per unit} - \text{Variable Cost per unit}}$

$= \dfrac{₹1{,}80{,}000}{(₹17 - ₹12.50)} = 40{,}000$ units.

Total sales (in units) by the end of 3rd quarter will be 43,500 (i.e. 12,000 + 15,000 + 16,500).

Therefore, the company will break-even in the later part of the 3rd quarter.

5. BASIC BUDGETS

Basic budget has been defined as a budget which is prepared for use unaltered over a long period of time. This does not take into consideration current conditions and can be attainable under standard conditions.

6. CURRENT BUDGETS

A current budget can be defined as a budget which is related to the current conditions and is prepared for use over a short period of time. This budget is more useful than basic budget, as the target it lays down will be corrected to current conditions.

7. LONG-TERM BUDGETS

A long-term budget can be defined as a budget which is prepared for periods longer than a year'. These budgets help in business forecasting and forward planning. Capital expenditure budgets and research developments budgets are just examples of long-term budgets.

8. SHORT-TERM BUDGETS

This budget is defined as a budget which is prepared for a period less than a year and is very useful to lower levels of management for control purposes. In an ideal situation a short-term budget should perfectly fit into along-term budget.

ZERO BASE BUDGETING

Zero base budgeting is a revolutionary concept of planning the future activities and there is a sharp contradiction from conventional budgeting. Zero base budgeting, may be better termed as "De nova budgeting" or budgeting from the beginning without any reference to any base-past budgets and actual happening. Zero base budgeting may be defined as "a 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 he should spend any money at all. The approach requires that all activities be analysed in decision packages which are evaluated by systematic analysis and ranked in order of importance".

CIMA defines zero base budgeting as "a method of budgeting whereby all activities are re-evaluated each time a budget is set. Discrete levels of each activity are valued and a combination chosen to match funds available."

It is a technique which complements and links the existing planning, budgeting and review processes. It identifies alternative and efficient methods of utilising limited resources in effective attainment of selected benefits. It is a flexible management approach which provides a credible rationale for reallocating resources by focusing on systematic review and justification of the

funding and performance levels of current programmes of activities. The concept of zero base budgeting was developed in U.S.A. Under zero-base budgeting, each programme and each of its constituent part is challenged for its very inclusion in each years budget. Programme objectives are also re-examined with a view to start things afresh. It requires review analysis and evaluation of each programme in order to justify its inclusion or exclusion from final budget. Following steps are usually involved:

(i) Describing and analysing all current or proposed programmes usually called "decision packages". This consists of identification, analysis and formulation assists an evaluation in terms of purposes, consequence, performance measures, alternatives and cause and benefits. Decision units are the lowest level programmes or organisational entity for which budgets are prepared.

(ii) Ranking of decision packages alongwith documents in support of these packages.

(iii) The sources are allocated in accordance with the ranking.

Zero-base budgeting is based on the premise that every rupee of expenditure requires justification. The traditional budgeting approach includes expenditures of previous year which are automatically incorporated in new budget proposals and only increments are subjected to debate. Zero base budgeting assumes that a responsibility centre manager has had no previous expenditure. Important features of zero-base budgeting are:

(i) Concentration of efforts is not simply on "how much" a unit will spend but "why" it needs to spend.

(ii) Choices are made on the basis of what each unit can offer for a specific cost.

(iii) Individual unit's objects are linked to corporate targets.

(iv) Quick budget adjustments can be made if, during the operating year costs are required to maintain expenditure level.

(v) Alternative ways are considered.

(vi) Participation of all levels in decision-making.

Difference between Traditional Budgeting and Zero Base Budgeting

(i) Traditional budgeting is accounting-oriented. Main stress happens to be on previous level of expenditure. Zero base budgeting makes a decision oriented approach.

(ii) In traditional budgeting, first reference is made to past level of spending and then demand is made for inflation and new programmes. In zero base budgeting a decision unit is broken into

understandable decision packages which are ranked according to importance to enable top management to focus attention only on decision packages which enjoy priority to others.

(iii) In traditional budgeting, some managers deliberately inflate their budget request so that after the cuts they still get what they want. In zero base budgeting, a rational analysis of budget proposal is attempted.

(iv) Traditional budgeting is not as clear and responsive as zero base budgeting.

(v) In traditional budgeting, it is for top management to decide why a particular amount should be spent on a particular decision unit. In zero base budgeting this responsibility is shifted from top management to the manager of decision unit.

(vi) Traditional budgeting makes a routing approach while zero base budgeting makes a very straightforward approach and immediately spotlights the decisions packages enjoying priority over others.

Advantages of Zero Base Budgeting:

(i) Zero base budgeting is not based on incremental approach, so it promotes operational efficiency because it require managers to review and justify their activities or the fund requested.

(ii) Since this system requires participation of all managers, preparation of budgets, responsibility of all levels at management in successful execution of budgetary system can be ensured.

(iii) This technique is relatively elastic because budgets are prepared every year on a zero base. This system makes it obligatory to develop financial planning and management information system.

(iv) This system weeds out inefficiency and reduces the cost of production because every budget proposal is evaluated on the basis of cost benefit analysis.

(v) It provides the organisation with a systematic way to evaluate different operations and programmes undertaken by the management. It enables management to allocate resources according to priority of the programmes.

(vi) It is helpful to the management in making optimum allocation of scarce resources because a unique aspect of zero base budgeting is the evaluation of both current and proposed expenditure and placing it some order of priority.

Criticism against zero base budgeting:

(1) Defining the decision units and decision packages is rather difficult.

(2) Zero base budgeting requires a lot of training for managers.

(3) Cost of preparing the various packages may be very high in large firms involving large number of decision packages.

(4) It may lay more emphasis on short term benefits to the detriment of long-term objectives of the organisation.

(5) It will lead to enormous increase in paper work created by the decision packages. The assumptions about costs and benefits in each package must be continually up dated and new packages developed as soon as new activities emerge.

(6) Where objectives are very difficult to quantify as in research and development, zero base budgeting does not offer any significant control advantage.

PROGRAMME BUDGETING

A program budget is a budget designed for a specific activity or program. This budget includes only revenue and expenses for a specific program. Program budgets are used in many organizations including businesses and schools. Establishing a budget by grouping expenditures and revenues into functional activities, or programs. Rather than having a budget item for capital equipment that might be spread over many different programs (as is done in line-item budgeting), a program budget would include only proposed capital expenditures for a specific program. The program budget allocates money to major program areas, focusing on the expected results of services and activities to be carried out. Program areas often utilized by government entities include public safety, public works, human services, leisure services, and general government. The emphasis of program project's is on the attainment of long-term local community goals.

PERFORMANCE BUDGETING

The concept of performance budgeting relates to greater management efficiency specially in government work. With a view to introducing a system's approach, the concept of performance budgeting was developed and as such there was a shift from financial classification to 'cost' or 'objective' classification. Performance budgeting, is therefore, looked upon as a budget based on functions, activities and projects and is linked to the budgetary system based on objective classification of expenditure.

According to National Institute of Bank Management, Bombay performance budgeting technique is, the process of analysing identifying, simplifying and crystallising specific performance objectives of a job to be achieved over a period in the frame work of the organisational objectives, the purpose and objectives of the job. The technique is characterised by its specific direction towards the business objectives of the organisation. Thus, performance budgeting lays immediate stress on the achievement of specific goals over a period of time. It requires preparation of periodic performance reports. Such reports compare budget and actual data and show any existing variances. The purpose of performance budgeting is to focus attention upon the work to be done, services to be rendered rather than things to be spent for or acquired. In performance budgeting, emphasis is shifted from control of inputs to efficient and economic management of functions and objectives. Performance budgeting takes a system view of activities by trying to associate the inputs of the expenditure with the output of accomplishment in terms of services, benefits etc. In performance budgeting, the objectives of the budget makers and setting the task and sub-task for accomplishment of the defined objectives are to be clearly decided well in advance before budgetary allocations of inputs are made. Each homogenous function is broken down into a number of subordinate functions.

The main purposes of performance budgeting are:

1. To review at every stage, and at every level of the organization, so as to measure progress towards the short-term and long-term objectives.
2. To inter-relate physical and financial aspects of every programme, project or activity.
3. To facilitate more effective performance audit.
4. To assess the effects of the decision-making of supervisor to the middle and top-managers.
5. To bring annual plans and budgets in line with the short and long-term plan objectives.
6. To present a comprehensive operational document showing the complete planning fabric of the programmes and prospectus their objectives inter-woven with the financial and physical aspects.

A performance budget presents estimate for expenditure and earnings in terms of functions, programmes, activities and projects. For introducing performance budgeting financial requirements are put up in relation to:

(a) Programmes and outlay indicating the range of work to be done by each categorized agency.

(b) Object-wise classification showing objects of expenditure, e.g. office establishment, etc. is usually shown in the conventional budgets.

(c) Sources of financing.

However, performance budgeting has certain limitations such as difficulty in classifying programmes and activities, problems of evaluation of various schemes, relegation to the background of important programmes. Moreover, the technique enables only quantitative evaluation scheme and sometimes the needed results cannot be measured.

Unit – 2

Standard Costing

INTRODUCTION :

STANDARD COSTING

Cost control, leading to cost reduction, should always be the objective of any firm or institution where scarce resources are used. Even if the firm can sell its goods of services at a very remunerative price, it should still try to reduce the use of factors of production, without jeopardising the quality of the product or the services. The best way of doing this is to constantly think as to whether the cost can be further reduced, but the first step is to try to see that these do not go beyond a level determined beforehand. If this approach is adopted, i.e., if an attempt is made to ascertain beforehand what costs should be and a further attempt is made to see that actual costs do not go beyond this level, the approach will be that of standard costing. In fact, it is the philosophy of standards which will bring the best results and not merely the mechanism of adopting the standard costing techniques. The philosophy of standards, in a nutshell, means scrupulously separating all types of wastages and losses and not allowing them to cloud the cost of production, at least for purposes of internal consumption. Suppose, a worker normally working 8 hours should produce 20 units for a wage of `20; the proper labour cost of production is `1 per unit. Suppose for any reason the worker produces only 12 units. Normally, the payment of `20 will be spread over 12 units and one would say that the labour cost per unit is `1.67. But if the philosophy of standards is practised, one would say that the proper labour cost of 12 units will still remain `1 per unit of `12 in all; 8 units have not been produced and, therefore, at the rate or `1 per unit, there is loss of `8. This amount

INTRODUCTION :

Financial Accounting is only historical costing and is only a post – marten examination of cost and hence, is not very much useful to management for cost control and cost reduction purposes. Besides this, historical costing is not useful to managerial decision making and policy formulating purposes. Hence, to the accounting world, a new concept (or) tool by name "Standard Costing " appeared as a very big way out.

should be charged to a separate account. This account should be shown as a separate item in the revenue accounts of the firm so that management would know, at the end of each period, the extent of losses that have unnecessarily taken place. Of course, if extra efficiency has been obtained, the effect of that efficiency should be credited to a separate account and shown as a separate item in the revenue account.

This really is the essence of standard costing - to set targets of cost, to try to achieve those targets, to compare the actual cost with the targets, to ascertain the reasons and to record the reasons in the books of account, or if a regular record is not maintained, at least to bring the monetary effects of various factors that have operated in the organisation, to the notice of the management. Thus standard costing is an excellent system of control of costs and of measuring efficiency, and of improving upon it.

It may be noted in passing that usually standard costs are also given the name of pre-determined costs. This means that before work is actually started an extremely careful estimate of cost is prepared to serve as the standard against which the actual is to be measured. This term should not be confused with pre-production costs since that would mean the cost to be incurred actually before production commences, such as on trial runs. Further, standards should not be confused with estimates. Estimates connote rather loose forecasts of anything and in fact one thinks of actuals being correct and tends to judge the accuracy of estimates on the basis of actuals. In case of standard costs, the emphasis is that the figures of standard costs are correct and that one must explain why the actuals differ from the standards. Standards are far more exact and exacting than forecasts or estimates.

DEFINITION AND MEANING

Standard costs are the scientifically pre-determined costs of manufacturing a single unit or a number of units of product or of rendering a service during a specified future period. The Chartered Institute of Management Accountants, London, defines standard cost as “a standard expressed in money. It is built up from an assessment of the value of cost elements. Its main uses are providing bases for performance measurement, control by exception reporting, valuing stock and establishing selling prices.”

What is evident from the above definition is that standard costs are planned costs of a product under current or anticipated operating conditions. The dictionary meaning of the word 'standard' is that it is a "thing serving as a basis for comparison", "thing recognised as model for imitation". But it should be noted 'standard' is a relative term. Admittedly, what is standard for one may be substandard for another and vice versa. However, what is significant is that within an organisation, it serves as a desirable target. The term 'standard cost' consists of two parts, viz., 'standard' and 'cost'. 'Standards' can be established in respect of quantities and qualities like materials and labour. Cost involves the expression of the standard so established in values.

CIMA defines standard costing as **"a control technique which compares standard costs and revenues with actual results to obtain variances which are used to stimulate improved performance".**

The technique of standard costing may be summarised as follows:

(i) Pre-determination of technical data related to production, i.e. details of materials and labour operations required for each product, the quantum of losses, level of activity, etc.

(ii) Pre-determination of standard costs, in full details for each element of cost viz. material, labour and overhead.

(iii) Comparison of the actual performances and costs with the standards and working out the variances i.e., the difference between the actuals and the standards.

(iv) Analysis of the variances in order to determine the reasons for deviations of actuals from the standards, and

(v) Presentation of information to the appropriate level

CONCEPT OF STANDARD COSTING : [DEFINITION]

Normally it is understood as a long step by step process of fixing standards, using standards, and their comparisons with the actuals, finding out of variances in between standards and actuals, analysing these variances, finding out of causative factors for these variances, classifying these causes into controllables and uncontrollables, controlling and taking remedial actions, revising these standards if necessary etc. Thus, it is a cost controlling and cost reducing device.

of management for suitable action.

SIGNIFICANCE/ADVANTAGE OF STANDARD COSTING

Though the advantages will be fully comprehended when on has gone through the whole study paper and has studied the various implications of standard costing, we give below the important significance/ advantages:

1. To determine standards which are at once practicable and represent efficient performance, the management will have to be fully aware of all the facilities that are available, the best way in which work can be done (for example, time and motion study is essential if labour standards are to be fixed properly) and will have to gather continuous and up-to-date information about all the happenings; this exercise will enable the firm to locate many sources of wastages and losses and to block them.

2. Human beings often work hard to achieve standards which are within their reach; therefore, setting up of such standards will almost automatically mean greater efficiency in operations. Further, almost everyone will think in terms of setting the targets and of achieving them. This will be specially so if the system of rewards and punishment is also geared to the results.

3. If standards are themselves challenged periodically on a systematic basis, it will mean a constant increase in efficiency.

4. Standard costing involves not only pre-determined quantity standards but also standards in respect of prices and rates. This may mean that all materials issued and labour applied will be evaluated on the basis of standard price and rates. This will itself reduce clerical labour. One can say that in general standard costing is more economical than the ordinary system of costing where quantities and prices vary day by day or week by week.

5. Standard costing will enable objective judgement of the people and to that extent the systems of promotions, etc., will be more acceptable in the firm.

6. The management's own time can be saved to a large extent because the attention of management will be invited only to those matters which really require their attention. This will be done through the analysis of the deviation between the standard costs and actual costs. Management need pay attention only to those factors which have meant efficiency or inefficiency. (Management by Exception).

7. For the purpose of fixing prices, standard costs play a useful role; they exclude the day-to-day fluctuations in cost resulting from inefficient use of resources and movement in prices. Standard cost represent the long-term estimates; cost and price, therefore, can be fixed on a long-term basis.

8. Even for valuation of inventory, standard cost should be the proper basis. If actual costs are high only because there has been a wastage of resources, it is not proper to capitalise those losses by including them in the value of inventory. Nothing becomes more valuable simply because of wastage and, therefore, inventory values should better be determined on the basis of standard costs.

9. In short, one can day that if a firm practices standard costing on proper lines, i.e., standards are themselves determined in a way which will not impose too great a burden on the worker or other employees or the firm, it may infuse in the minds of the staff a desire to achieve the standards and thus show greater efficiency.

10. At every stage of setting the standards, simplification and standardisation of productions, methods and operations are effected and waste of time and material is eliminated. This assists in managerial planning for efficient operation and benefits all the divisions of the concern.

11. Costing procedure is simplified. There is a reduction in paper work in accounting and less number of forms and records are required. There is considerable saving in clerical time and expenditure leading to reduction in the cost of the costing system.

12. This system facilitates delegation of authority and fixation of responsibility for each department or individual.

13. Where constantly reviewed, the standards provides means for achieving cost reduction. This is attained through, improved quality of products, better materials and men, effective selection and use of capital resources etc.

14. Standard costs assist in performance analysis by providing ready means for preparation and interpretation of information.

15. This facilitates the integration of accounts so that reconciliation between cost accounts and financial accounts may be eliminated.

APPLICATIONS OF STANDARD COSTING

Standard costing is quite useful to the management in its function say planing, controlling etc and most important in decision making and performance evaluation. Standard costing can be used for:

1. Projecting the profit level of the business at any level of production.
2. To help in execution of management's function effectively i.e. planning and controlling of cost.
3. To analyse the impact of cost if sales volume increase/decrease by certain percentage.
4. To measure the efficiency of production.
5. To measure the performance of each segment.
6. To identify and measurement of variances between standards and actuals.
7. To design performance measurement systems to encourage employees to participate for the betterment of the Organization.

Controlling Process in standard Costing :

• **Formulation of Standard Costs:** For all elements of cost viz., Materials, Labour and Expenses, standard costs are fixed very much scientifically by experts based on multiple criteria.

• **Matching Actuals with Standards :** In this step, actual costs are compared with standard costs for the purposes of verifying whether actual cost is more or less than the standard costs.

• **Variances and Analysis thereof :** The difference between actual and the standard is known as variance and this is further analysed to find out whether variance is debit variance (or) Credit variance.

• **Analysis of causative factors for variances :** For all debit (or) unprofitable variances, causative factors (or) reasons responsible are unearthed and then are classified into controllable and uncontrollable reasons.

• **Corrective Measures :** In relation to controllable causes, the people responsible are held up and are instructed to take necessary remedial measures and see that they do not repeat in the time to come.

• **Reporting to Management :** Depending upon the degree of severity of the variances, information by following the principle of "Management by Exception", will be reported to the concerned management level for necessary cost control measures.

• **Revising the standards :** With regard to uncontrollable variances, an idea of revising the standards watching the changed scenario, may be though of.

What is Standard Cost ?

The whole of standard costing revolves around standard costs. Hence, we are very much obliged to explain what is standard cost. It is a predetermined cost computed in advance of production on the basis of specification of all factors affecting costs.

Blocker and Weltmer defines : Standard cost is a common sense cost reflecting the best Judgement of management as to what costs ought to be if this plant is operated with the highest degree of efficiency.

TYPES OF STANDARDS :

Importantly, there are : Basic, current, Ideal, Expected and Normal standards.

• **Basic standards :** It is a standard set for a long term in an unaltered way. It is suitable mostly to those products whose costs / prices do not change much.

• **Current Standard :** It is a standard set for a relatively shorter period based on current market conditions. It claims to be more realistic and most companies use it.

• **Ideal Standard :** It is self explanatory as this is set based on all idealistic conditions which are never seen.

• **Expected Standard :** It is a standard set based on certain conditions which are expected to be attained. Conditions prevailing in industry and that are likely to hit the industry in future are all considered while this standard is set. So, it is attainable standard.

• **Normal Standard :** It is a standard set on the basis of average conditions (or) normal conditions. Since we do not have any control over future, this normal standard may not be of much use.

STANDARD COSTING SYSTEM

Standard costing system provides standard cost for budgeting purpose to plan future performance. Standards are pre-determined and it helps organisation to achieve its objectives in economic and efficient manner. It can be used to motivate employee to achieve set standards of production/expenses level i.e. ideal standards. It provides some allowances for wastage and idle

time (attainable standards), it recognizes the fact the labour are likely to waste some material and will become absent for various reasons like sickness.

A standard costing system initially records the cost of production at standard. Units of inventory flow through the inventory accounts (work-in-process finished goods cost of goods sold) at their per-unit standard cost. Standards are compared with actual outcomes to find deviations and reasons for these deviations, so that corrective action can be taken. It helps in managing human resources by giving them signal that their performances are being measured, compared and analysed. Rewards can be given and Disciplinary action can be taken based on pre-defined criteria communicated to them, so that decisions regarding whatever action taken can be justified to avoid resentment among workforce. The management evaluates the performance of a company by comparing it with some predetermined measures. Therefore, it can be used as a process of measuring and correcting actual performance to ensure that the plans are properly set and implemented.

INSTALLATION OF A STANDARD COSTING SYSTEM

The installation of a standard costing system involves the following steps:

- To Set the predetermined standards for sales margin and production costs
- To ascertain and collect the actual results
- To compare the actual performance with pre-determined standards
- To determine the variances
- To analyze and investigate the variances
- To ascertain the causes of variance
- To take corrective action where necessary.
- To adjust the budget in order to make the standards more realistic

FUNCTIONS OF STANDARD COSTING SYSTEM

- **Valuation:** Assigning the standard cost to the actual output.
- **Planning:** Use the current standards to estimate future sales volume and future costs.
- **Controlling:** Evaluating performance by determining how efficiently the current operations are being carried out.

FEATURES OF A STANDARD COSTING SYSTEM

• The fact that standards are based on estimates.

• Standards will change according to conditions.

• It provides continual incentive for employee to keep costs and performance in line with predetermined standard.

• A standard cost system helps focus management's attention on the following questions and their causes:

(a) Were materials purchased at prices above or below standard?

(b) Were materials used in quantities above or below standard?

(c) Is labour being paid at rates above or below standard?

(d) Is labour being used in amounts above or below standard?

STANDARD COSTS FOR MATERIAL, LABOUR AND OVERHEAD

It should be noted that though standards must be set for materials, labour and overheads, only an integrated approach will bring the best results. There can be saving in labour, for example, if materials of certain quality or size are purchased or if more automatic machines are introduced. When standards are to be laid down, the exact process of production and the facilities that are to be used for the purpose should be decided and taken into account. Then only the standards can be fixed properly.

The first step in the development of a standard costing system is to set standard cost, i.e., to predetermine the standards in respect of each element of cost - direct material, direct labour and overheads. Extreme care is essential in the fixation of standards as the success of a standard costing system depends largely upon the accuracy of the standard costs used. While setting production cost standards, the following factors should be considered:

(i) Technical and operational aspects of the concern.

(ii) Industrial engineering criteria for materials, labour, etc.

(iii) The type of standard to be used.

(iv) Proper classification of the accounts so that variance may be determined properly.

(v) Responsibility for setting standards. As definite responsibility for variances from standards is ultimately to be laid on individuals or departments, it is obvious that all those individuals or departments should be associated with setting of standards.

DIRECT MATERIALS STANDARDS

The standard cost of direct materials is closely related to the quantities and prices of materials to be used in production. Hence, two related standards are set:

(i) Materials Usage Standard: The object of setting the materials usage standard is to achieve maximum efficiency in materials usage. The first step in this connection lies in specifying the size and quality of materials. This is followed by an analysis of the materials requirements. A list is prepared showing the details of materials-size, grade, quantity etc. - for setting the standard. This is known as a 'Standard Materials Specification.' The standard quantities of materials to be used per unit of production can be laid down by one of the following means:

(a) By reference to the weight of materials in the final production.

(b) On the basis of past performance with due allowance for change in conditions.

(c) By means of test runs conducted under different conditions and taking an average of quantities used. Due allowance must be made for normal wastage. This is generally based on an estimate wastage which is unavoidable, e.g., normal loss through evaporation, off-cuts, broken parts, etc.

(ii) Materials Price Standard: Standards are set for material prices after due consideration of the efficiency of purchasing and store-keeping functions. The aim of setting materials price standard is to achieve maximum efficiency in these function, and thus minimise direct materials costs. The price standard should provide for discount on purchases, economy of bulk purchasing and anticipated changes in market price.

STANDARD COST FOR DIRECT LABOUR

Direct labour costs depends upon labour time and wage rates and therefore, setting standard cost for direct labour involves setting two related standard:

(i) Standard Labour Time: This indicates the precise time (hours) that labour of a particular grade should take to perform a given operation. The main object of setting standard labour time is to derive maximum efficiency in the use of labour time. The standard time may be set on the basis of past performance with adjustments for change of conditions. Time and motion studies are a great help in setting standard time.

(ii) Labour Rate Standard: This refers to the wage rates expected to be paid to different grades of labour employed in the organisation. The object is to plan for the actual wages to be paid. A variety of factors should be considered and allowance made for them while setting standard wage rates, principal of them are-future trend of wages which can be anticipated; collective agreement between labour and management; guaranteed minimum wages; and overtime wages, if the level of activity makes overtime inevitable. Both these standards must be set after a detailed study of labour work involved. Besides, the workers employed must be graded on a standard basis.

STANDARD OVERHEAD RATES

The principal object of setting standard overhead rates is to minimise the overhead costs chargeable to production. Following steps are necessary for setting standard rates:

(i) The level of activity of production departments and the work to be done by the service departments should be determined.

(ii) Overheads costs should be classified into fixed, variable and semi-variable overheads. The costs expected to be incurred under each head for each of the production and service departments should be calculated for a given period. The expected costs may be laid down in details in the form of cost-budgets based on past experience, present conditions and future trends.

(iii) The standard overhead rates for each of the service departments should be calculated, and applied to the producing departments.

(iv) The standard overhead rates for the producing departments may be determined as a direct labour hour rate, or a machine hour rate, or as a percentage of direct wages. The rates may be computed using the following ratios:

$$\text{Direct Labour rate} = \frac{\text{Amount of overheads}}{\text{Labour hours during a given period}}$$

$$\text{Machine hour rate} = \frac{\text{Amount of overheads}}{\text{Machine hours during a given period}}$$

$$\text{Percentage of Direct Wages} = \frac{\text{Amount of overheads}}{\text{DirectLabourCost during a given period}}$$

STANDARD ADMINISTRATION COSTS

The object of setting standard administration cost is to secure the maximum quantity and quality of administrative services at minimum cost. For this purpose, all administrative functions should be studied in detail. O and M division by examining the office operations and suggesting simplification and standardization of methods and procedures may help a lot in this.

The standard quantity of work to be performed may be set by one or more of the following methods:

I. On the basis of past performance:

II. On the advice of organisation and methods team;

III. Time and motion studies; and

IV. Choosing appropriate 'work units' and fixing standard costs per work-unit.

Administrative costs should be classified into fixed, variable and semi-variable items before setting the standard rates.

STANDARD COST FOR SELLING AND DISTRIBUTION

Since selling and distribution expenses are primarily related to volume of sales, a sales forecast is essential before setting standards of selling and distribution costs. The classification of these costs into fixed, variable and semi-variable items is necessary. Another pre-requisite for setting standards is a detailed examination of the functions and determining standard units of operation.

Unit – 3

VARIANCE ANALYSIS

The primary object of standard costing is to reveal the difference between actual cost and standard cost. A 'variance' in standard costing refers to the divergence of actual cost from standard cost. Variances of different cost items provide the key to cost control. They indicate whether and to what extent standards set have been achieved. This enables management to correct adverse tendencies.

After standard costs have been established, the next step is to ascertain the actual cost under each element and compare them with the standard cost. The difference between these two is termed as cost variance. Cost variance is the difference between a standard cost and the comparable actual cost incurred during a given period.

The Chartered Institute of Management Accountants London, defines variance as ***"the difference between planned, budgeted, or standard cost and actual cost; and similarly for revenue".*** Variance analysis can be defined as "the analysis of performance by means of variances". It is the process of computing the amount of and isolating the cause of variances between actual costs and standard costs.

Variance analysis involves:
(a) Computation of individual variances, and
(b) Determination of the cause(s) of each variance.

Actual cost which is higher than the standard costs would be a sign of inefficiency and the difference would be termed as unfavourable or adverse. A variance that reduces profit is adverse or unfavourable. A variance that increases profit is favourable. Variance are computed under each element of cost for which standards have been established. Each variance is analysed to ascertain the causes so that the management can exercise proper control. The cause is affixed to the variance, for example, materials price variance will show that the variance arose due to change in the price of materials. Some of the variance are controllable while others are not. The purpose of such classification is that proper emphasis can be placed on the controllable variance. This follows the principle of management by exception.

Variances occurring in a period may be compared with variances on the same account expressed as a percentage of the standard costs and compared with the percentage for the previous month. Comparison may be made between the standard and actual or between basic standard and current standard.

As already stated, the origin and causes of the variances need to be traced by analysing the total variances into their components parts in order to determine and isolate the causes giving rise to

each variance. Equal emphasis should be laid on favourable and unfavourable variances. An unfavourable variance points out the inefficiency in use or waste of materials, labour, and resources. A favourable variance may be due to improvement in efficiency or production of substandard products or an incorrect standard. An unfavourable variance may be off-set by a favourable variance; hence the need for analysis and appropriate action.
A detailed probe into the variances, particularly the controllable variance, helps the management to ascertain:
(a) the amount of variance;
(b) its occurrence;
(c) the factors responsible for it;
(d) the executive responsible for the variance;
(e) corrective action which should be taken to obviate or reduce the variance.

Favourable and Unfavourable Variance: If the actual cost is less than standard cost, the difference is known as a favourable variance, credit variance or positive variance denoted by (F) or Cr. - it increases the profit. on the other hand, if actual cost exceeds, standard costs, the divergence is known as an unfavourable variance, debit variance, negative variance or adverse variance denoted by (A) or Dr. - it reduces the profit.

Controllable and Uncontrollable Variance: When the variance with respect to any cost item reflects the degree of efficiency of an individual or department, i.e., a particular individual or departmental head is responsible for the variance, the variance is known as a controllable variance. Obviously, such a variance is amenable to control by suitable action. An uncontrollable variance is one which is not amenable to control by individual or departmental action. Such a variance is caused by external factors like change in market conditions, fluctuations in demand and supply, etc. No particular individual within the organisation can be held responsible for it. When variances are reported, attention of the management is particularly drawn towards controllable variances. If a variance has been caused by multiple factors, the part of cost variance relevant to each factor should be determined.

There are certain variances which may arise under material, labour or overhead due to change in the basic condition on which the standards are established.
Revision Variance: This is amount by which a budget is revised but which is not incorporated in the standard cost rate as a matter of policy. The standard costs may be affected by wage rate changes after wage accords, fiscal policy etc. The standard costs are not disturbed to account for these uncontrollable factors and to avoid the amount of labour and cost involved in revision, the basic standard costs are allowed to stand. It is essential to isolate the variance arising out of non-revision in order to analyse the other variances correctly.

Method Variance: It is the difference between the standard cost of the product manufactured or operation performed by the normal methods and the cost of operation by alternative method. Standards usually take into account the best method applicable, and any deviation will result in an unfavourable variance. Hence such deviations should be as few as possible.

Variance analysis usually proceeds after amending the standards according to the revision variance and the methods of variance.

Illustration 1

Standard cost of a product in a factory is predetermined as follows:

	₹
Material (5 units @ ₹4 each)	20
Labour (20 hours @ ₹1.50 per hour)	30
Overhead expenses	10
Total	60

During a period, 8,000 units were produced whose actual cost was as follows:

	₹
Material (40,500 units @ ₹5 each)	2,02,500
Labour (1,50,000 hours @ ₹1.60 each)	2,40,000
Overhead expenses	90,000
Total	5,32,500

Prepare a statement showing standard cost, actual cost and variances.

Solution:

Statement of Standard Cost, Actual Cost, and Variances

Particulars	*Standard cost (₹)*	*Actual cost (₹)*	*Variance (₹)*
Material	1,60,000	2,02,500	42,500 (A)
Labour	2,40,000	2,40,000	—
Overhead expenses	80,000	90,000	10,000 (A)
Total	4,80,000	5,32,500	52,500 (A)

The above statement shows the variance in respect of each element of cost. Each such variance can be further analysed. Before making such analysis it is necessary to recognise the two broad process in cost accumulation. The cost is first incurred and then charged to production. For example, materials are purchased first (normally) and then issued for production and wages are incurred first and then charged to production on the basis of time spent on production. Thus, there are two stages in cost accumulation, namely, (i) the incurring stage, (ii) the recovery stage. The recognition of these two stages is essential because variances arise both at the incurring and recovery stages. Analysis involves identifying and quantifying the variances at both these stages. Before we proceed to analyse the variances, the following essential points should be noted regard to the utility of the variance analysis:

(i) Variances should not be automatically applied for control purposes. They are just indicators of where the reason for higher cost exists. It is upto the controlling authority to judge whether the higher costs are well justified. The actual cost may be higher due to factors absolutely out of the control of the responsible authority and perhaps the responsible authority had contributed in preventing the actual cost from escalating too high. In such a situation applying controls implicit on the basis of variances disclosed will lead to demoralisation of staff.

(ii) While comparing the actual costs with the standards, the level of activity should be checked up for comparability. If standards have been evolved for a budgeted level of activity and if the actual level is different, a simple comparison of actuals with budgets would be erroneous. The standards should be revised in accordance with the actual level of activity attained. But, in doing so care should be taken to distinguish between fixed costs and variable costs. The difference between the original standard and revised standard is known as “Revision Variance”.

(iii) While working out the variance in respect of fixed costs (particularly fixed overheads), it should be kept in mind that what is charged to cost is not the actual cost but an amount based on predetermined recovery rates multiplied by the output which may be expressed in standard hours.

TWO-WAY ANALYSIS OF VARIANCEs

Each variance has to be analysed as (i) incurring variance, and (ii) recovery variance. Also, broadly, the causes leading to a variance may be either efficiency or inefficiency in the use of resources or change in the price paid for the resources. Accordingly, we have the following analysis:

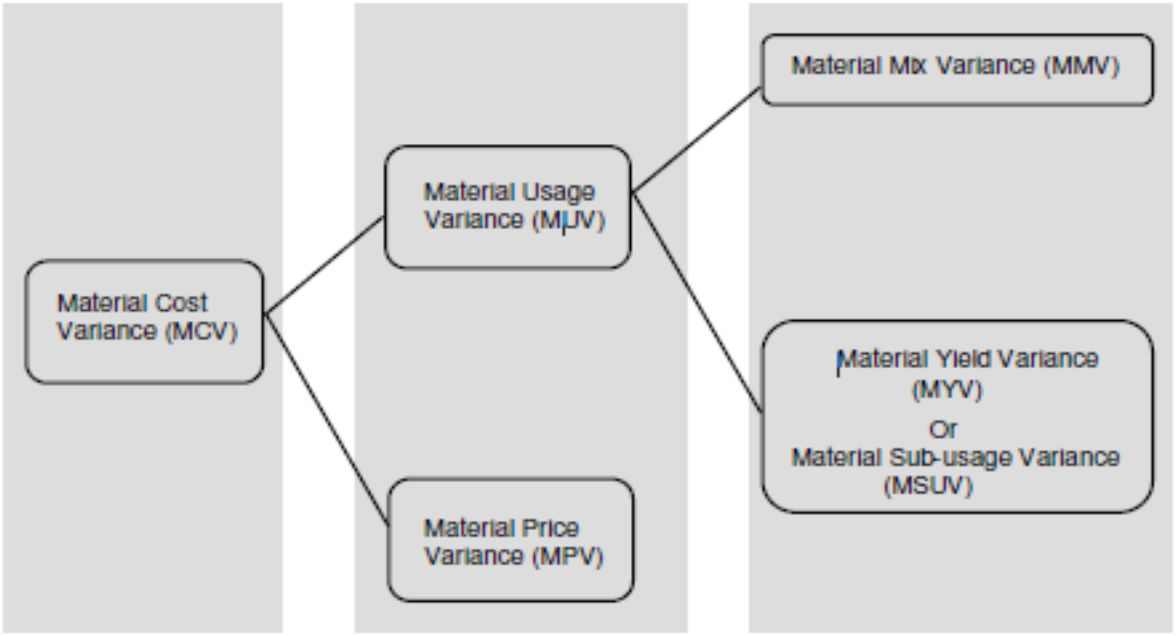
(i) Material cost variance - Material price variance - Material usage variance

(ii) Labour cost variance - Labour rate variance - Labour time variance

(iii) Overheads cost variance - Overhead expenditure variance - Overhead volume variance As each element of cost is analysed into two broad groups. It is known as “Two- way Analysis”.

MATERIAL VARIANCE

Classification of material variances are as under:



MATERIAL COST VARIANCES

Materials cost variance is the difference between the standard cost of materials specified and the actual cost of materials used.

Material Cost Variance= Standard Cost of Material for Actual Output – Actual Cost of Materials Used

OR

(TSC – TAC)

OR

(SQ × SP) – (AQ × AP)

Material cost variances arise due to variation in the price of the material or in its usage. In accordance with this, material cost variances may be analysed under two heads, viz. material price variance and material usage variance.

MATERIAL PRICE VARIANCE

This is that portion of the material cost variance which is due to the difference between the standard price specified and the actual price paid. Material price variance is that portion of the direct materials cost variance which is the difference between the standard price specified and actual price paid for the direct materials used. This is an "incurring" variance. This reflects the extra price paid on the units purchased. While making this calculation standard consumption of units should not be given any consideration. It is computed by multiplying the actual quantity by the difference between the standard price and the actual price. The formula is:

Material Price Variance = Actual Quantity (Standard unit price – Actual unit price)

OR

AQ (SP – AP)

In other words, material price variance is the difference between 'what it actually cost and what it would have cost if the actual usage had been paid for at the standard price'.

Causes of Material Price Variance

The reasons for material price variance may be one or more of the following:

(i) Changes in market price of materials used;

(ii) Changes in quantity of purchase or uneconomical size of purchase order resulting in a different price;

(iii) Failure to obtain cash and/or trade discounts which were provided while setting standards;

(iv) Rush order to meet shortage of supply;

(v) Failure to take advantage of off-season price, or failure to purchase when price is cheaper;

(vi) Emergency purchase on the request of production/sales manager;

(vii) Changes in issue price due to differences in changes related to store-keeping, materials handling, carriage inward expenses etc.;

(viii) Changes in the amount of taxes and duties;

(ix) Changes in quality or specification of materials purchased;

(x) Use of substitute material having a higher or lower unit price;

(xi) Changes in the pattern or amount of taxes and duties.

The materials price variance is generally the responsibility of the purchase manager. However, the variance may be ultimately traceable to factors beyond his control like changes in the market price.

MATERIAL USAGE VARIANCE

This is that portion of material cost variance which is due to the difference between the standard quantity of materials specified and the actual quantity used. Material usage variance is that portion of the direct material cost variance which is the difference between the standard quantity

specified for the production achieved and the actual quantity used both valued at standard prices. The difference of actual quantity of materials used from the standard quantity set, multiplied by the standard price is known as the materials usage variance. The formula for the calculation of this variance is:

Material Usage Variance = Standard Price (Actual Quantity – Standard Quantity)

I.e. SP (AQ – SQ)

Causes of Material Usages Variance

The usage variance may have been caused by one or more of the undernoted factors:
(i) Lack of due care in the use of materials;
(ii) Defective production necessitating additional materials for correction;
(iii) Abnormal wastage through pilferage or other losses in the use of materials;
(iv) Inefficiency in production due to improper method or lack of necessary skill in workmen;
(v) Use of a material-mix other than the standard mix; and
(vi) Yield from materials in case excess of or less than that provided as the standard yield;
(vii) Purchase of inferior materials or change in quality of materials;
(viii) Rigid technical specifications and strict inspection leading to more rejections which require more materials for rectifications;
(ix) Use of substitute material leading to poor quality;
(x) Improper maintenance of machine leading to breakdowns and more use of materials; and
(xi) Poor inspection of raw materials.

A favourable variance may not always be advantageous for the concern. For instance, a saving in material usage may perhaps be effected by a reduction in wastage by slowing down the work but the resulting increase in the labour and overhead costs may far exceed the favourable materials usage variance. Material usage variance may further classified into:

MATERIAL MIX VARIANCE

One of the reasons for material usage variance is change in the composition of the materials mix. It results from a variation in the material mix used in production. Thus, if a larger proportion of the more expensive material is used than that laid down in the standard mix, materials usage will reflect a higher cost than the standard. Contrarily, the use of cheaper materials in large proportions will indicate a lower cost of materials usage than the standard.

It is that portion of the material usage variance which is due to the difference between the standard and actual composition of a mixture of materials. In other words, this variance arises due to a change in the ratio of actual material mix from the standard ratio of material mix. It is

calculated as the difference between the standard price of standard mix and the standard price of actual mix.

Suppose for producing an article the materials standard is 6 kg. of material A @ ` 5 per Kg. and 4 Kg. of material B @ ` 6 per kg. and the actual quantities used are 5 kg. of material A and B each. The total quantity used is still 10 kg. but the materials cost will increase as shown below:

		₹	₹
Standard:	Material A 6 kg. @ ₹ 5	30.00	
	Material B 4 kg. @ ₹ 6	24.00	54.00
Actual:	Material A 5 kg. @ ₹ 5	25.00	
	Material B 5 kg. @ ₹ 6	30.00	55.00

Due to the change in the relative proportions of the two materials, the total cost has risen; this is the nature of the mix variance. It is calculated by comparing (revised) standard mix at standard prices and the actual mix at standard prices.

Material Mix Variance = Standard Price (Revised Standard Quantity – Actual Quantity)
I.e. SP (RSQ - AQ)

Revised Standard Quantity (RSQ)

$$= \frac{\text{Total of Actual quantities of all types of material (TAQ)}}{\text{Total of Standard quantities of all types of material (TSQ)}} \times \text{Standard Quantity of each material}$$

MATERIALS YIELD VARIANCE

Yield variance is the difference between the standard yield specified and the actual yield obtained. In other words, the difference between actual yield of materials in manufacture and the standard yield (i.e. expected yield from a given standard input) valued at standard output price is known as materials yield variance. This variance is of great significance in processing industries, in which the output of one process becomes the input of the next process till the finished product is obtained at the final stage. The analysis of this variance helps effective control over usage. A low actual yield is unfavourable yield variance which indicates that consumption of materials was more than the standard. A high actual yield indicates efficiency, but a constant high yield is a pointer for the revision of the standard.

Material Yield Variance = Standard cost per unit (Actual yield – Standard yield)
i.e. SC p.u. (AY-SY)

Note: AY will never change. SY will calculate for actual mix of quantity as under:

$$\text{New SY} = \frac{\text{Old SY}}{\text{TSQ}} \times \text{TAQ}$$

The yield variance may be caused by such factors as: defective methods of operation, sub-standard quality of materials purchased, lack of due care in handling, lack of proper supervision etc.

Illustration 2

For producing one unit of a product, the materials standard is:
Material X : 6 kg. @ ₹8 per kg., and
Material Y : 4 kg. @ ₹10 per kg.

In a week, 1,000 units were produced the actual consumption of materials was:
Material X : 5,900 kg. @ ₹9 kg., and
Material Y : 4,800 kg. @ ₹9.50 per kg.

Compute the various variances.

Solution:

Standard cost of materials of 1,000 units:

	₹
Material X: 6,000 kg. @ ₹ 8	48,000
Material Y: 4,000 kg. @ ₹ 10	40,000
Total	88,000
Actual cost: Material X 5,900 kg. @ ₹ 9	53,100
Material Y 4,800 kg. @ ₹ 9.50	45,600
Total	98,700
Total materials cost variance	10,700 (A)

Analysis

Material Price Variance: Actual Quantity (Standard Price - Actual Price)

X = 5900 (₹ 8 - ₹ 9)	= ₹5,900 (A)
Y = 4800 (₹ 10 - ₹ 9.50)	= ₹2,400 (F)
	3,500 (A)

Material Usage Variance: Standard Price (Standard Quantity - Actual Quantity)

X = ₹8 (6,000 - 5,900)	= ₹ 800 (F)
Y = ₹10 (4,000 - 4,800)	= ₹8,000 (A)
	7,200 (A)

Verification

Material Cost Variance = Materials price variance [₹3,500 (A)] + Material Usage Variance

10,700 (A) = 3500 (A) + 7200 (A)

Material Mix Variance = SP (RSQ – AQ)

For Material X = ₹8 (6420 – 5900)

= ₹4160 (F)

For Material Y = 10 (4280 – 4800)

= ₹5200 (A)

₹4160 (F) + ₹5200 (A) = ₹1040 (A)

Note: $RSQ = \frac{TAQ}{TSQ} \times SQ$

For X $= \frac{10700}{10} \times 6 = 6420$ kg.

For Y $\frac{10700}{10} \times 4 = 4280$ kg.

Material Yield Variance = SC per unit × (AY – SY)

= 88(1,000 – 1,070)

= ₹ 6,160

$SC \text{ per unit} = \frac{TSC}{SY}$

$= \frac{88}{1} = 88$ per unit

TSC = Standard cost of material X and material Y

= (6 × ₹8) + (4 × ₹10)

= ₹48 + ₹40

= ₹88

AY given in question i.e. 1000 kg.

$New \ SY = \frac{Old \ SY}{TSQ} \times TAQ$

$= \frac{1}{10} \times 10700$

= 1070 kg.

Illustration 3

In a manufacturing process, the following standards apply:

Standard Price: Raw material A ₹1 per kg.
Raw materials B ₹5 per kg.
Standard Mix 75% A; 25% B (by weight)
Standard Yield : 90%

In a period the actual costs, usage and output were as follows:

Used: 4,400 kgs. of A costing ₹4,650
1,600 kgs. of B costing ₹7,850
Output: 5,670 kgs. of products

Solution:

Standard yield from 6,000, i.e. (4,400 + 1,600) kgs. of output is

		₹
6,000 kgs. × 90%,	i.e. 5,400 kgs.	
Material A (75%)	= 4,500 kgs. @ ₹1	4,500
Material B (25%)	= 1,500 kgs. @ ₹5	7,500
	6,000 kgs.	12,000
Less:	600 kgs. (loss)	—
Output:	5,400 kgs.	12,000

Standard cost of actual output (5,670 kgs.)

$$\frac{₹12000}{₹5400} \times 5670 = ₹12,600$$

Actual cost

	Kgs.		₹
Material A	4,400		4,650
Material B	1,600		7,850
	6,000		12,500
Less:	330	(loss)	—
	5,670		12,500

Variance Analysis

Material cost variance = Actual cost - Standard cost

= ₹12,500 - ₹12,600 = ₹100 (F)

Price Variance = AQ (SP - AP)

OR

= (AQ × SP) – (AQ × AP)

OR

= (AQ × SP) – AC

Material A = (4400 × ₹1) – ₹4650 = ₹250 (A)

Material B = (1600 × ₹5) – ₹7850 = ₹150 (F)

= ₹100 (A)

Mix Variance = SP (RSQ – AQ)

Material A = ₹1 (4500 – 4400) = ₹100 (F)

Material B = ₹5 (1500 – 1600) = ₹500 (A)

= ₹400 (A)

RSQ for A, B is computed above in start.

Yield Variance = Standard cost per unit (Actual yield - Standard yield)

$\frac{₹12000}{₹5400}$ (5670 – 5400) = ₹600 (F)

Total Material Cost Variance

	₹
Price Variance	100 (A)
Mix Variance	400 (A)
Yield Variance	600 (F)
	100 (F)

Reconciliation

	₹
Standard cost of materials	12,600
Price Variance	100 (A)
Mix Variance	400 (A)
Yield Variance	600 (F)
Actual Cost	12,500

Illustration 4

The standard material input required for 1,000 kgs. of a finished product are given below:

Material	*Quantity (Kg.)*	*St. Rate per Kg. (₹)*
P	450	20
Q	400	40
R	250	60
	1,100	
Standard loss	100	
Standard output	1,000	

Actual production in a period was 20,000 kg. of finished product for which the actual quantities of material used and the prices paid therefore were as under:

Material	*Quantity (Kg.)*	*Purchase price per Kg. (₹)*
P	10,000	19
Q	8,500	42
R	4,500	65

Calculate:

(I) Material cost variance;

(II) Material price variance;

(III) Material usage variance; and

(IV) Material yield variance.

Also show a reconciliation of the variances.

Solution

Material	*Standard for 20,000 kg. Output*			*Actual for 20,000 kg. Output*		
	Qty. (kg.)	*Rate (₹)*	*₹*	*Qty. (kg.)*	*Rate (₹)*	*₹*
P	9,000	20	1,80,000	10,000	19	1,90,000
Q	8,000	40	3,20,000	8,500	42	3,57,000
R	5,000	60	3,00,000	4,500	65	2,92,500
	22,000		8,00,000	23,000		8,39,500
Less: Loss	2,000			3,000		
	20,000			20,000		

Calculation of Variances

(I) Material Cost Variance = Standard Cost – Actual Cost

= ₹ 8,00,00 – ₹8,39,500 = ₹ 39,500 (A)

(II) Material price variance = Actual quantity (Standard price – Actual price)

P = 10,000 (₹20 – ₹19)	= ₹10,000 (F)
Q = 8,500 (₹40 – ₹42)	= ₹17,000 (A)
R = 4,500 (₹60 – ₹65)	= ₹22,500 (A)
	= ₹29,500 (A)

(III) Material usage variance = Standard price (Standard price – Actual quantity)

P = ₹20 (9,000 – 10,000)	= ₹20,000 (A)
Q = ₹40 (8,000 – 8,500)	= ₹20,000 (A)
R = ₹60 (5,000 – 4,500)	= ₹30,000 (F)
	= ₹10,000 (A)

(IV) Material yield variance = Standard cost per unit (Actual yield – Standard yield)

$$\text{Standard cost per unit} = \frac{₹8,00,000}{20,000} = ₹40$$

$$\text{New Standard Yield} = \frac{20,000}{22,000} \times 23,000 = 20,909$$

Material yield variance = ₹ 40 (20,000 – 20,909) = ₹ 36,360 (A)

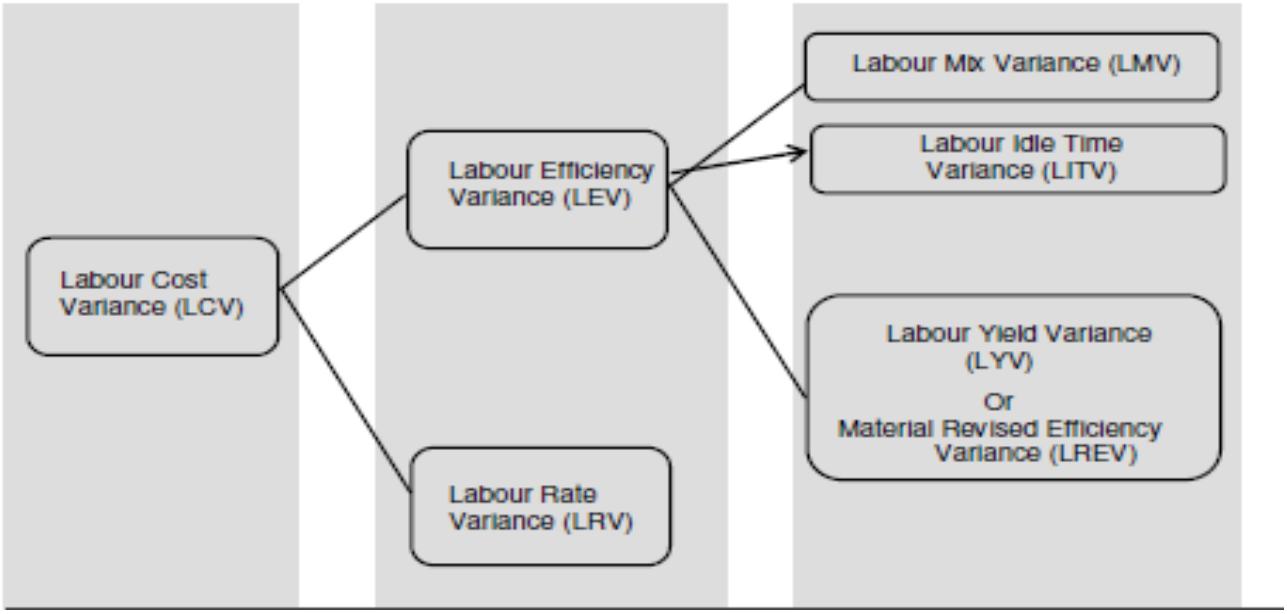
Reconciliation:

Material Cost Variance = Material Price Variance + Material Usage Variance

₹ 39,500 (A) = ₹29,500 (A) + ₹10,000 (A)

LABOUR VARIANCE

Classification of labour variances as under:



LABOUR COST VARIANCES

Labour cost variance (also termed as direct wage variance) is the difference between the standard direct wages specified for the activity achieved and the actual direct wages paid. The formula for labour cost variance is:

LCV = (Standard Hours x Standard Rate) - (Actual Hours x Actual Rate)

OR

LCV = (SH x SR) – (AH x AR)

As the cost of labour is determined by labour time and wages, the labour cost variance is composed of either or both of variances relating to labour time and labour rate. As such, labour cost variance is analysed into two separate variances, viz., wages (labour) rate variance and labour efficiency variance.

LABOUR RATE VARIANCE

This is that portion of the wages variance which is due to the difference between the actual rate and standard rate of any specified. It is calculated like the materials price variance.

Labour Rate Variance = Actual Hours (Standard Rate - Actual Rate)

OR

LRV = AH x (SR – AR)

CAUSES OF WAGES (LABOUR) RATE VARIANCE

Wage rate variance occurs due to the following causes:
(i) Change in basic wage structure or change in piece work rate.
(ii) Overtime work in excess of that provided in the standard rate.
(iii) Employment of one or more workers of a different grade than the standard grade.
(iv) Payment of guaranteed wages to workers who are unable to earn their normal wages if such guaranteed wages form part of direct labour cost.
(v) New workers not being allowed full normal wage rates.
(vi) Use of different method of payment i.e. payment of day rates while standards are based on piece work method of remuneration.
(vii) Higher wages paid on account of overtime for urgent work.
(viii) The composition of a gang as regards the skill and rate of wages being different from that laid down in the standard. Wage rates are usually determined by factors beyond the control of the personnel department such as conditions in the labour market, wage awards by wage boards, etc. Wage rate variances are therefore, mostly uncontrollable except for the portion which arises due to deployment of wrong grade of labour for which the departmental executive may be held responsible.

LABOUR TIME OR EFFICIENCY VARIANCE

Also termed as labour efficiency variance, is that portion of the direct wages variance which is due to the difference between the standard labour hours specified and the actual labour hours expended. Obviously, this variance provides a key to the control of workers' efficiency and labour cost. In effect, it is a usage variance. The computation of variance is as follows:

Labour Efficiency Variance = Standard Wage Rate (Standard Hours of Production – Actual Hours Worked)

OR

LEV = SR x (SH – AHW)

CAUSES OF LABOUR EFFICIENCY VARIANCE

The causes giving rise to labour efficiency variance are as follows:
(i) Lack of proper supervision or stricter supervision than specified;
(ii) Poor working conditions;
(iii) Defective machinery and equipment;
(iv) Discontentment in workers due to unsatisfactory personnel relations;
(v) Increase in labour turnover;
(vi) Use of non-standard material requiring more or less operation time;
(vii) Basic inefficiency of workers due to insufficient training, faulty instructions, incorrect scheduling of jobs, etc.
(viii) Wrong selection of workers.

LABOUR COST VARIANCE = LABOUR EFFICIENCY VARIANCE + LABOUR RATE VARIANCE

OR

LCV = LEV + LRV

Calculation of wage variance is illustrated below:

Example:

Assuming

Actual hours worked	5,600
Actual wage paid	₹7,840
Standard rate per hour	₹2
Standard hours produced	4,000

Answer:

Wages variance = Standard cost – Actual cost
(4,000 × ₹2) = ₹8,000 – ₹7,840 = ₹160 (F)

Wages rate variance = Actual hours (Standard rate - Actual rate)
= 5600 (2-1.4)
= ₹3,360 (F)

$$\text{Actual Rate} = \frac{₹7840}{5600} = ₹1.4$$

Labour efficiency rate variance
2 (4,000 – 5,600) = ₹3,200 (A)

Labour Cost Variance= Labour Rate Variance + Labour Efficiency Variance
= 3360 (F) + 3200 (A)
= ₹160 (F)

Labour efficiency variance is sub-divided into the following variances:

(i) Idle time variance
(ii) Labour mix variance
(iii) Labour yield variance (or Labour revised-efficiency variance)

IDLE TIME VARIANCE

This variance which forms a portion of wages efficiency variance, is represented by the standard cost of the actual hours for which the workers remain idle due to abnormal circumstances.

Labour Idle Time Variance (LITV) =
(Actual hours paid for x Standard rate) – (Actual hours worked x Standard rate)
OR
Idle Hours x Standard rate.

It is always adverse. Suppose in the example given above the actual time includes 1,000 idle hours. The Idle Time Variance will then be ₹2,000 (A); the efficiency variance will be then ₹1,200 (A), making a total of ₹3,200 (A).

LABOUR MIX VARIANCE

It is also known as Gang Composition Variance. This is a sub-variance which arises due to change in the composition of a standard gang or combination of labour force.

Labour mix variance =
(Actual hours at standard rate of actual gang – Actual hours at standard rate of standard gang)
OR
Standard rate (Revised standard labour hours - Actual labour hours)
OR
LMV = (RSH – AHW) x SR

$$\text{Revised labour hours} = \frac{\text{Total actual time}}{\text{Total standard time}} \times \text{Standard time}$$

The calculation is just like that the materials. It is included in the efficiency or time variance discussed above.

LABOUR YIELD VARIANCE

This is due to the difference in the standard output specified and the actual output obtained. This is computed as follows:

Labour yield variance =

Standard labour cost unit (Actual output – Standard output)

OR

(Standard loss of actual total input – Actual loss) x Average standard rate per unit.

OR

LYV = SC p.u. (AY – SY)

Note: AY will never change. SY will calculate for actual mix of hour as under:

$$\text{New SY} = \frac{\text{Old SY}}{\text{TSH}} \times \text{TAH}$$

If the actual output is more than standard output, it is favourable variance and vice versa.

Point to be noted

(i) Ensure the Level of output (yield i.e. AY/SY) is the same for actual data and standard data, if same are the different then calculate new SY)

(ii) Always prepare cost sheet or put all given figure in a table before starting question for both standard data and actual data for same level of output.

(iii) Write formula before computing variances.

(iv) Mix variance is computed when any difference is found in standard hour and actual hour worked for same level of output.

(v) Labour Yield Variance (LYV) is also known as Labour Sub Usage Variance. Computed on the basis of actual hour worked irrespective of standard hour.

(vi) For calculating the LYV actual yield (AY) will never change whereas standard yield (SY) may be changed.

Illustration 5

A factory, working for 50 hours a week, employs 100 workers on a job work.

The standard rate is ₹1 an hour and standard output is 200 units per gang hour.

During a week in June, ten employees were paid at 80 p. an hour and five at ₹1.20 an hour. Rest of the employees were paid at the standard rate.

Actual number of units produced was 10,200

Calculate labour cost variances.

Solution:

(I) Cost Variance

Standard Cost – Actual Cost

₹5,100 – ₹4,950 = ₹150 (F)

Workings:

(a) Calculation of Actual Cost:

	₹
85 workers for 50 hours @ ₹1 per hour	= 4,250
10 workers for 50 hours @ 80 p. per hour	= 400
5 workers for 50 hours @ ₹1.20 per hour	= 300
Total actual cost	4,950

(b) Calculation of Standard Rate:

Standard cost per (gang hour)= 100 × 50 × ₹1 = ₹5000

Standard production (per gang hour)

= 100 × 200 × 50

= 10000 unit

Standard rate per unit = $\frac{₹5000}{10000}$ = 50 p. per unit.

(c) Calculation of Standard Cost:

Actual production × Standard rate

10,200 units × 50 p. per unit = ₹5,100

(II) Rate Variance:

As the actual wage rate has deviated from the standard in respect of only 15 workers from out of a total of 100 workers, wages rate variance would be calculated only in respect of these 15 workers.

Actual Hours (Standard Rate – Actual Rate)

Therefore,

500 Hours (₹1 – 80 p.) = ₹100 (F)

250 Hours (₹1 – ₹1.20) = ₹50 (A)

Thus, the total rate variance is ₹50 (F).

(III) Efficiency Variance:

Efficiency variance is indicated by the fact that, as compared with standard production of 10,000 units (200 units × 50 hours), the actual production is 10,200 units

Standard Rate (Standards Hours – Actual Hours)

₹1 (5,100 - 5,000) = ₹100 favourable.

Calculation of Standard Hours= $\frac{5000}{10000} \times 10200$ = 5,100 hours.

Yield Variance:

Standard labour cost per unit of output (SY – AY)

0.50 (10,000 – 10,200) = ₹100 (F)

Verification:

Cost Variance = Rate Variance + Efficiency Variance

₹150 (F) = 50 (F) + ₹100 (F)

OVERHEAD COST VARIANCES

The total overhead cost variance is the difference between the standard cost of overhead allowed for the actual output achieved and the actual overhead cost incurred. In other words, overhead cost variance is the under or over absorption of overheads.

However before we proceed to study these variances, we should aware about the basic terms used in the computation of overhead variance:

(I) Standard overhead rate (per unit) $= \frac{\text{Budgeted overhead}}{\text{Budgeted output in units}}$

(II) Standard overhead rate (per hour) $= \frac{\text{Budgeted overhead}}{\text{Budgeted hours}}$

(III) Standard hours for actual output $= \frac{\text{Budgeted hours} \times \text{Actual output}}{\text{Budgeted output}}$

(IV) Standard output for actual hours $= \frac{\text{Budgeted output (in units)} \times \text{Actual hours}}{\text{Budgeted hours}}$

(V) Absorbed (or Recovered) overhead = Standard Rate per hour × Actual Output
Or standard rate per unit × standard hours for actual output

(VI) Budgeted overhead = Budgeted output × Std. overhead rate per unit
Or Budgeted hours × Std. overhead rate per hour

(VII) Standard overhead = Std. output for actual time × Std. overhead rate per unit
Or Actual hours × Std. overhead rate per hour

(VIII) Actual overhead = Actual output × Actual overhead rate per unit
Or Actual overhead = Actual output × Actual overhead rate per unit

OVERHEAD COST VARIANCE

[Actual Output × Standard Overhead Rate Per Unit] – Actual Overhead Cost

OR

[Standard Hours for Actual Output × Standard Overhead Rate Per Hour] – Actual Overhead Cost

Overhead cost variances can be classified as:

- Variable overhead variance
- Fixed overhead variance

VARIABLE OVERHEAD VARIANCE

It is the difference between the standard variable overhead cost allowed for the actual output achieved and the actual variable overheads. Normally this variance is represented by expenditure (cost) variance only because variable overhead cost will vary in proportion to production so that only a change in expenditure can cause such variance.

It is calculated as:

Variable Overhead Variance =

(Standard Variable Overhead Rate × Actual Output) - Actual Variable Overheads

OR

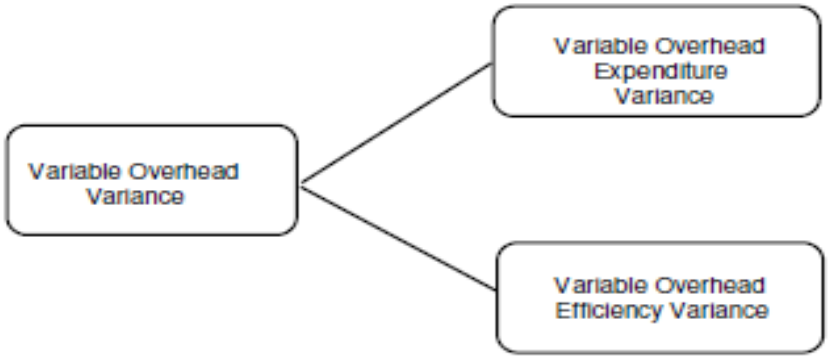
(Standard Hours for Actual Output × Standard Variable Overhead Rate) – Actual Variable Overheads

OR

(Standard Rate × Actual output) – (Actual Rate × Actual output)

The variable overhead cost variance is usually calculated in total only since variable overheads vary according to output and not according to time, hence, there is only one variance. However, some accountants argue that certain variable overhead may vary according to time also, hence variable overhead efficiency variance arise just like labour efficiency variance and it can be calculated if information relating to actual time taken and allowed is given. In such case variable overhead variance can be segregated into two parts.

Classification of labour variances as under:



(I) Variable Overhead Expenditure Variance (VOExV) =

(Actual Hours × Standard Variable Overhead Rate per Hour) – Actual Variable Overhead

OR

Actual Hours (Standard Variable Overhead Rate per Hour – Actual Variable Overhead Rate per Hour)

(II) Variable Overhead Efficiency Variance (VOEfV) =

(Standard Time for Actual Production × Standard Variable Overhead Rate per Hour) – Actual Hours Worked × Standard Variable Overhead Rate per Hour).

OR

Standard Variable Overhead on Actual Production – Standard Variable Overhead for actual time.

OR

Recovered Overheads – Standard Overheads

It is better to compute variance related to variable overhead on the basis of hours rather then on the basis of units.

Illustration 7

The following data is obtained from the books of a manufacturing company regarding variable overheads:

Budgeted production for January	300 units
Budgeted variable overhead	₹7,800
Standard time for one unit	20 hours
Actual production for January	250 units
Actual hours worked	4,500 hours
Actual variable overhead	₹7,000

Solution

Variable Overhead Variance = Standard Cost – Actual Cost

= ₹6,500 – ₹7,000 = ₹500 (A)

Workings:

(a) Standard variable overhead cost of actual output

= 250 units × ₹26 per unit = ₹6,500

(b) Standard variable cost per unit

$= \frac{₹7800}{300}$ or ₹26 per unit

Sometimes, a little refinement is introduced in the calculation of variable overhead variance and, therefore, the computation is as follows:

(I) Variable Overhead Expenditure Variance

= Actual Cost – Standard overheads on hours worked

₹7,000 – ₹5,850 = ₹1,150 (A)

(a) Standard variable overhead on hours worked is—

4,500 hours × ₹1.30 per hour = ₹5,850

(b) Standard variable overhead per hour

$$= \frac{₹7800}{20 \times 300} = ₹1.3$$

(ii) Variable Overhead Efficiency Variance

= Standard variable overhead on hours worked – Standard variable overhead on actual output.

₹5,850 – ₹6,500 = ₹650 (F)

(iii) Variable Overhead Total Variance

= Expenditure Variance + Efficiency Variance

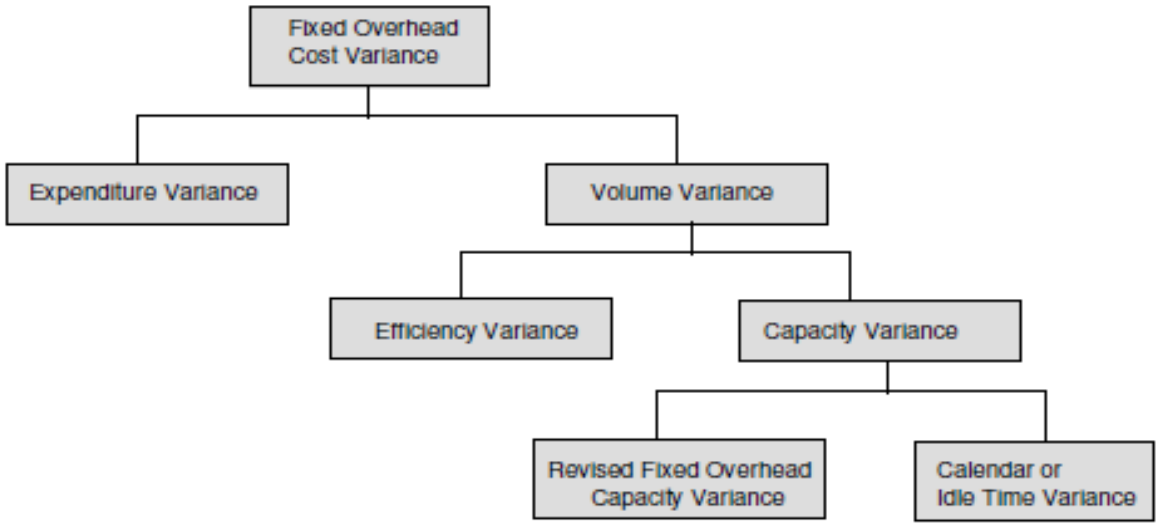
₹1,150 (A) + ₹650 (F) = ₹500 (A)

This is the same as variable overhead variance already arrived at.

FIXED OVERHEAD VARIANCE

Fixed overhead represents all items of expenditure which are more or less remain constant irrespective of the level of output or the number of hours worked.

CLASSIFICATION OF FIXED OVERHEAD VARIANCES



FIXED OVERHEAD COST VARIANCE

Fixed overhead cost variance is the difference between the standard costs of fixed overhead allowed for the actual output achieved and the actual fixed overhead cost incurred i.e.

FOCV= (Actual output × Standard fixed overhead rate) – Actual fixed overheads

OR

(Standard hours produced × Standard fixed overhead rate per hour) – Actual fixed overheads

OR

Recovered fixed overhead – Actual fixed Overhead

Standard overhead produced means hours which should have been taken for the actual output.

Fixed overhead variance may broadly be divided into:

(I) Expenditure variance and

(II) Volume variance.

(i) EXPENDITURE VARIANCE

This is also known as budget variance. This is obtained by comparing the total overhead cost actually incurred against the budgeted overhead cost i.e.

Budgeted fixed overhead – Actual fixed overhead

OR

(Budgeted hours × Std. fixed overhead rate) – Actual fixed overhead

If the actual overheads are more, it shall result in an adverse variance and vice versa. This variance gives a measure of efficiency of spending.

Illustration 8

The following information relates to the month of June, 2013

	Budgeted	*Actual*
Output	20,000 units	22,000 units
	₹	₹
Overheads - Variable	1,00,000	1,07,000
- Fixed	1,50,000	1,58,000

Compute the overheads variance.

Solution:

Variable overheads allowed or budgeted for actual output

	₹
Standard Overhead for actual output (10000/20000 × 22000)	1,10,000
Actual amount spent	1,07,000
Variable overhead variance	3,000 (F)
Fixed overheads for the period (change in output having no effect on expenditure)	1,50,000
Actual fixed overhead	1,58,000
Fixed overheads expenditure variance	8,000 (A)
Total overheads variance	5,000 (A)

(ii) VOLUME VARIANCE

The difference between overhead absorbed on actual output and those on budgeted output is termed as volume variance. This variance shows the over or under absorption of fixed overheads during a particular period. If the actual output is more than the standard output, there is over-recovery of fixed overheads and volume variance is favourable and vice versa if the actual output is less than the standard output.

Volume Variance (FOVV)= (Actual output × Standard rate) – Budgeted fixed overheads
OR
Standard rate (Actual output - Standard output)
OR
Standard rate per hour (Standard hours produced - Budgeted hours)
OR
(Absorbed overhead – Budgeted overhead)

N.B.: Standard hour produced means number of hours which should have been taken for the actual output as per the standard laid down.

VERIFY:-

F.O. COST VARIANCE = F.O. EXPENDITURE VARIANCE + F.O. VOLUME VARIANCE

Volume variance can be further sub-divided into the following variances:

(a) EFFICIENCY VARIANCE

It arises due to the difference between the output actually achieved and the output which should have been achieved in the actual hours worked. This variance will be favourable if the actual production is more than the standard production in actual hours.

Fixed Overhead Efficiency Variance (FOEfV)=

Standard Fixed Overhead Rate per hour [Standard Production – Actual Production]

(b) CAPACITY VARIANCE

It is that portion of the volume variance which is due to working at higher or lower capacity than the standard capacity. It is related to the under or over utilisation of plant and equipment. If the capacity utilization is more than the budgeted capacity, the variance is favourable, otherwise it will be adverse. It is represented as:

F. O. Capacity Variance=

Standard rate (Standard quantity – Budgeted quantity)

(c) REVISED CAPACITY VARIANCE

This variance indicates the difference in capacity utilization due to working for more or less number of days than the budgeted one. The computation of this variance is done by using the following formula.

Fixed Overhead Revised Capacity Variance (FORCV) =

Standard Rate [Standard Quantity – Revised Budgeted Quantity]

(d) CALENDAR (IDLE TIME) VARIANCE

It is that portion of the volume variance which is due to the difference between the number of working days anticipated in the budget period and the actual working days in the period to which the budget is applied. If the actual working days exceed standard days, the variance will be favourable and vice-versa.

It is calculated as:

FO Calender Variance = Standard rate (Revised budgeted units – Budgeted units)

OR

Increase or decrease in production due to more or less working days at the rate of revised capacity × Standard rate per unit.

Illustration 9

The budgeted capacity of a factory per month of 25 days was 2,00,000 hours and the budgeted fixed overheads were ₹2,40,000. The management increased the capacity by 20% in the beginning of October, 2000, the actual number of working days in that month were 23. Compute the variance that emerge.

Solution:

Budgeted fixed overheads recovery rate ₹1.20 i.e. 2,40,000/2,00,000.

Actual production in terms of hours (2,00,000 + 20%) × 23/25 or 2,20,800

Volume Variance: Fixed overheads absorbed on 2,20,800 hours @ ₹1.20 per hours ₹2,64,960

Budgeted fixed overheads ₹2,40,000

Volume Variance 24,960 (F)

(or 20,800 hours @ ₹1.20)

Analysis

Capacity Variance: Production in terms of hours at new capacity - i.e. 2,00,000 + 20%	Hrs. 2,40,000
Fixed overheads absorbed @ of ₹1.20 per hour	₹ 2,88,000
Fixed overheads, budgeted	₹ 2,40,000
	₹ 48,000 (F)
Calendar Variance: Loss of hours due to 2 extra Holidays	
2,40,000 × 2/26	19,200
Loss of fixed overheads absorbed because of loss of hours	
19,200 × 1.20	₹ 23,040 (A)

Unit – 4

COST AUDIT

COST AUDIT

Cost audit is an independent examination of cost records and other related information of an entity including a non-profit entity, when such an examination is conducted with a view to expressing an opinion thereon. Cost audit comprises of the followings:

(a) Verification of the cost accounting records for the accuracy of the cost accounts, cost reports, cost statements and cost data and

(b) Examination of these records to ensure that they adhere to the cost accounting principles, plans, procedures and objectives.

It, therefore, means that the cost auditors' approach should be to ensure that the cost accounting plan is in consonance with the objectives set by the organisation and the system of accounting is geared towards the attainment of these objectives.

The cost auditor should also establish the correctness or otherwise of the figures by the processes of vouching verification, reconciliation etc.

Section 2(13)(iv) of the Companies Act 2013, contains the provisions relating to maintenance of cost accounting records and Section 148 of the Act contains the provisions relating to Cost Audit. Introducing statutory requirement of maintenance of cost accounting records and audit thereof as applicable by a ualified cost accountant, the Government has the objectives and reasons for ensuring that the companies keep proper records was to inculcate a culture of cost consciousness among industries for better resource management, to make the efficiency audit possible, and to make cost data available to the Government. The objectives of this lesson are to enable the student to understand the meaning of cost accounting records, the purposes for which cost records are being maintained, meaning of cost audit, various techniques used in cost audit etc. The study of this lesson will help one to understand the nature, scope and utility of cost accounting records and cost audit.

PROVISIONS OF COMAPNIES ACT, 2013 PERTAINING TO COST ACCOUNTING RECORDS

Section 2(13) and section 128 of the Companies Act, 2013 deals with the books of accounts to be kept by a company. According to section 2(13) on the Companies Act, 2013 "books of account" includes records maintained in respect of-

(i) all sums of money received and expended by a company and matters in relation to which the receipts and expenditure take place;

(ii) all sales and purchases of goods and services by the company;

(iii) the assets and liabilities of the company; and

(iv) the items of cost as may be prescribed under section 148 in the case of a company which belongs to any class of companies specified under that section;

Section 128 on the Companies Act, 2013 provides that every company shall prepare and keep at its registered office books of account and other relevant books and papers and financial statement for every financial year which give a true and fair view of the state of the affairs of the company, including that of its branch office or offices, if any, and explain the transactions effected both at the registered office and itsbranches and such books shall be kept on accrual basis and according to the double entry system of accounting.

Further all or any of the books of account aforesaid and other relevant papers may be kept at such other place in India as the Board of Directors may decide and where such a decision is taken, the company shall, within seven days thereof, file with the Registrar a notice in writing giving the full address of that other place. Provided further that the company may keep such books of account or other relevant papers in electronic mode in such manner as may be prescribed. In exercise of powers conferred by section 469(1) and (2) read with section 2(13)(iv), section 128 and section 148 of the Companies Act, 2013, the Central Government prescribes the Companies (Cost Records and Audit) Rules, 2014 for the maintenance of cost records relating to the utilization of materials, labour and other items of cost, in the manner as prescribed by specified class of companies, including foreign companies defined in section 2(42) of the Companies Act, 2013, engaged in the production of such goods or providing such services as may be prescribed.

PROVISIONS OF COMPANIES ACT, 2013 PERTAINING TO COST AUDIT

Section 148 of the Companies Act, 2013 deals with the audit of Cost Accounting records. The section provides as follows:

(1) Notwithstanding anything contained in Chapter X of Companies Act 2013, the Central Government may, by order, in respect of such class of companies engaged in the production of such goods or providing such services as may be prescribed, direct that particulars relating to the utilisation of material or labour or to other items of cost as may be prescribed shall also be included in the books of account kept by that class of companies:

Provided that the Central Government shall, before issuing such order in respect of any class of companies regulated under a special Act, consult the regulatory body constituted or established under such special Act.

(2) If the Central Government is of the opinion, that it is necessary to do so, it may, by order, direct that the audit of cost records of class of companies, which are covered under sub-section (1) and which have a net worth of such amount as may be prescribed or a turnover of such amount as may be prescribed, shall be conducted in the manner specified in the order.

(3) The audit under sub-section (2) shall be conducted by a Cost Accountant in practice who shall be appointed by the Board on such remuneration as may be determined by the members in such manner as may be prescribed:

Provided that no person appointed under section 139 as an auditor of the company shall be appointed for conducting the audit of cost records:

Provided further that the auditor conducting the cost audit shall comply with the cost auditing standards. Explanation.—for the purposes of this sub-section, the expression "cost auditing standards" mean such standards as are issued by the Institute of Cost and Works Accountants of India, constituted under the Cost and Works Accountants Act, 1959, with the approval of the Central Government.

(4) An audit conducted under this section shall be in addition to the audit conducted under section 143.

(5) The qualifications, disqualifications, rights, duties and obligations applicable to auditors under this Chapter shall, so far as may be applicable, apply to a cost auditor appointed under this

section and it shall be the duty of the company to give all assistance and facilities to the cost auditor appointed under this section for auditing the cost records of the company:

Provided that the report on the audit of cost records shall be submitted by the cost accountant in practice to the Board of Directors of the company.

(6) A company shall within thirty days from the date of receipt of a copy of the cost audit report prepared in pursuance of a direction under sub-section (2) furnish the Central Government with such report along with full information and explanation on every reservation or qualification contained therein.

(7) If, after considering the cost audit report referred to under this section and the information and explanation furnished by the company under sub-section (6), the Central Government is of the opinion that any further information or explanation is necessary, it may call for such further information and explanation and the company shall furnish the same within such time as may be specified by that Government.

(8) If any default is made in complying with the provisions of this section,—

(a) the company and every officer of the company who is in default shall be punishable in the manner as provided in sub-section (1) of section 147;

(b) the cost auditor of the company who is in default shall be punishable in the manner as provided in sub-sections (2) to (4) of section 147.

PURPOSE OF COST AUDIT

The primary purpose of Cost audit is to express an opinion on the cost accounts of the company whether these have been properly maintained and compiled according to the cost accounting system followed by the enterprise or not. However the purposes of cost audit may be segregated into general and social objectives.

The general objectives can be described to include the following:

(1) Verification of cost accounts with a view to ascertaining that these have been properly maintained and compiled according to the cost accounting system followed by the enterprise.

(2) Ensuring that the prescribed procedures of cost accounting records rules are duly adhered to.

(3) Detection of errors and fraud.

(4) Verification of the cost of each “cost unit” and “cost centre” to ensure that these have been properly ascertained.

(5) Determination of inventory valuation.

(6) Facilitating the fixation of prices of goods and services.

(7) Periodical reconciliation between cost accounts and financial accounts.

(8) Ensuring optimum utilization of human, physical and financial resources of the enterprise.

(9) Detection and correction of abnormal loss.

(10) Inculcation of cost consciousness.

(11) Advising management, on the basis of inter-firm comparison of cost records, as regards the areas where performance calls for improvement.

(12) Promoting corporate governance through various operational disclosures.

Social purposes of cost audit

The following deserve special mention

1. Facilitate in fixation of reasonable prices of goods and services produced by the enterprise.

2. Improvement in productivity of human, physical and financial resources of the enterprise.

3. Channelise enterprise resources to most optimum, productive and profitable areas.

4. Availability of audited cost data as regards contracts containing escalation clauses.

5. Facilitate in settlement of bills in the case of cost-plus contracts entered into by the Government.

6. Pinpointing areas of inefficiency and mismanagement, if any for the benefit of shareholders, consumers, etc., such that necessary corrective action could be taken in time.

APPLICABILITY FOR COST AUDIT

Every such class of company and with such threshold limit as may be prescribed in the Companies (Cost Records and Audit) Amendment Rules, 2014, shall be required to get such cost records audited by a cost auditor.

Cost Audit

Every company covered under Rule 3 of the Companies (Cost Records and Audit) Amendment Rules, 2014 and with such threshold limits as specified in the Rules shall within one hundred and eighty days of the commencement of every financial year appoint a cost auditor. The company shall inform the cost auditor concerned of his or its appointment as such and file a notice of such

appointment with the Central Government within a period of thirty days of the Board meeting in which such appointment is made or within a period of one hundred and eighty days of the commencement of the financial year, whichever is earlier, through electronic mode, in form **CRA-2,** alongwith the fee as specified in Companies (Registration Offices and Fees) Rules, 2014.

Further every cost auditor appointed as such shall continue in such capacity till the expiry of one hundred and eighty days from the closure of the financial year or till he submits the cost audit report, for the financial year for which he has been appointed. The cost auditor, who conducts an audit of the cost records of a company, shall submit the cost audit report along with his or its reservations or qualifications or observations or suggestions, if any, in **form CRA-3.**

The cost auditor shall forward his report to the Board of Directors of the company within a period of one hundred and eighty days from the closure of the financial year to which the report relates and the Board of directors shall consider and examine such report particularly any reservation or qualification contained therein.

Every company covered above shall, within a period of thirty days from the date of receipt of a copy of the cost audit report, furnish the Central Government with such report alongwith full information and explanation on every reservation or qualification contained therein, in **form CRA-4** alongwith fees specified in the Companies (Registration Offices and Fees) Rules, 2014.

The provisions of section 143(12) of the Companies Act, 2013 and the relevant rules made thereunder shall apply mutatis mutandis to a cost auditor during performance of his functions under section 148 of the Companies Act, 2013 and the Companies (Cost Records and Audit) Rules, 2014.

Exemptions

The requirement of Cost Audit is not applicable for the following categories of companies even if they are covered under applicable class of companies:

• whose revenue from exports, in foreign exchange, exceeds 75 per cent of its total revenue or

• which is operating from a special economic zone

ADVANTAGES OF COST AUDIT

Cost audit provides numerous benefits to the management, society, shareholders and the government. The **Advantages to Management**

(i) Management gets reliable data for its day-to-day operations like price fixing, control, decisionmaking, etc.

(ii) A close and continuous check on all wastages will be kept through a proper system of reporting to management.

(iii) Inefficiencies in the working of the company will be brought to light to facilitate corrective action.

(iv) Management by exception becomes possible through allocation of responsibilities to individual managers.

(v) The system of budgetary control and standard costing will be greatly facilitated.

(vi) A reliable check on the valuation of closing stock and work-in-progress can be established.

(vii) It helps in the detection of errors and fraud.

Advantages to Society

(i) Cost audit is often introduced for the purpose of fixation of prices. The prices so fixed are based on the Audit Cost data and so the consumers are saved from exploitation.

(ii) Since price increase by some industries is not allowed without proper justification like increase in cost of production, inflation through price hikes can be controlled and consumers can maintain their standard of living.

Advantages to Shareholder

Cost audit ensures that proper records are kept as to purchases and utilisation of materials and expenses incurred on wages, etc. It also makes sure that the valuation of closing stocks and workin- progress is on a fair basis. Thus the shareholders are assured of a fair return on their investment.

Advantages to Government

(i) Where the Government enters into a cost-plus contract, cost audit helps government to fix the price of the contract at a reasonable level.

(ii) Cost audit helps in the fixation of ceiling prices of essential commodities and thus undue profiteering is checked.

(iii) Cost audit enables the government to focus its attention on inefficient units.

(iv) Cost audit enables the government to decide in favour of giving protection to certain industries.

(v) Cost audit facilitates settlement of trade disputes brought to the government.

(vi) Cost audit and consequent management action can create a healthy competition among the various units in an industry. This imposes an automatic check on inflation.

APPOINTMENT AND REMUNERATION OF COST AUDITOR

As per the Companies (Cost Records and Audit) Rules, 2014, cost audit will be performed by a Cost auditor who shall be a Cost Accountant in practice. "Cost Accountant in Practice" means a cost accountant as defined in section 2(1)(b) of the Cost and Works Accountants Act, 1959, who holds a valid certificate of practice under section 6(1) of that Act and who is deemed to be in practice under section 2(2) thereof, and includes a firm or limited liability partnership of cost accountants.

The companies covered under the Cost audit category shall within 180 days of the commencement of every financial year, appoint a cost auditor at remuneration to be determined in accordance with provisions of section 148(3) of the Companies Act, 2013 and rules made there under.

Provided that before such appointment is made, written consent of the cost auditor to such appointment, and a certificate that the appointment, if made, shall be in accordance with the provisions of section 139, section 141 and section 148 of the Companies Act, 2013 and the rules made thereunder, as applicable shall be obtained from the cost auditor.

For the purpose of sub-section (3) of section 148 of the Companies Act, 2013—

(a) in the case of companies which are required to constitute an audit committee*—

(i) the Board shall appoint an individual, who is a cost accountant in practice, or a firm of cost accountants in practice, as cost auditor on the recommendations of the Audit committee, which shall also recommend remuneration for such cost auditor;

(ii) the remuneration recommended by the Audit Committee under (i) shall be considered and approved by the Board of Directors and ratified subsequently by the shareholders;

(b) in the case of other companies which are not required to constitute an audit committee, the Board shall appoint an individual who is a cost accountant in practice or a firm of cost accountants in practice as cost auditor and the remuneration of such cost auditor shall be ratified by shareholders subsequently.

RIGHTS AND RESPONSIBILITIES OF COST AUDITOR

Section 148 of the Companies Act, 2013 gives the cost auditor same powers as the financial auditor has under section 143 of the Companies Act, 2013, which requires that the company and every officer thereof, shall make available to the cost auditor, such information and explanation as he may consider necessary for the performance of his duties as cost auditor and submit his report within the prescribed time limit.

Rights of Cost Auditor

The powers of the cost auditor under sub-Section (1) of Section 143 are as under:

- Right to access at all times the books of account and vouchers of the company, whether kept at the head office of the company or elsewhere.
- Entitled to require from the officers of the company such information and explanations as he may think necessary for the performance of his duties as an auditor.

COST AUDIT TECHNIQUES

There are no specific techniques being used by cost auditor in carrying out the cost audit assignments.

Techniques employed by a Cost auditor in effectively carrying out his audit are –

(i) Accounting or economic techniques

1. Vouching.
2. Physical Verification.
3. Comparison of data with Peer.
4. Break-even analysis.
5. Budgetary control including flexible budget system.
6. Cost management techniques indicating how an organization's assets should be allocated over competing projects or to decide whether it is worth proceeding with the investment, keeping in view proportionate value of expenditure on such projects.
7. Discounted cash flow and net present value methods.
8. Cost benefit analysis.
9. Standard costing and marginal costing.
10. Activity based costing to test the relevance of cost to activities.

11. Quality analysis of company transactions.

(ii) Scientific Techniques

(a) *Computer Models:* There are many types of problems which can be solved on a computer e.g. decision on material mix, product mix, make or buy decisions etc.

(b) *Network analysis:* To analyse strings of tasks to arrange them in sequential or parallel order so that the project is completed in a shortest possible time.

(c) Mathematical Programme solving by heuristic (trial and error) techniques to determine the best material mix, best use of organization's transport fleet, the best mix of products to obtain or to maximize profits and optimum use of labour, finance, equipments, etc.

(iii) Statistical Techniques

(a) Activity Sampling: It is one of the many ways in which the present workloads can be measured to obtain controls to be exercised by management.

(b) Monte Carlo Simulation: In this a number of variables are drawn from large statistical population which have equal choice of being selected and obtain the best sample possible.

(c) Exponential smoothing

(d) Inter firm comparison

(iv) Personnel Techniques

(a) Attitude survey

(b) Ergonomic (Man-machine relationship)

(c) Training methods

(d) Profitability and productivity measurement

(v) General techniques

(a) Statistical theory of management is an attempt to emphasize what should be the practical approach to a problem by –

• Analyzing the problem to establish the basic difficulties and factors involved. Establish management by objectives.

• Identifying the likely ways of tackling the problems in the light of objectives to develop a solution.

• Determine the key factors affecting management decision-making.

• Evaluating alternative courses of action.

• Evaluating each alternative in terms of economy, efficiency and best fit.

• Specifying the action required to exploit the situation to the best advantage of the organization.

(b) Brain storming

(c) Transfer pricing

(d) Management by objectives

(e) Management by exception

(f) Corporate planning

(g) Information theory

COST AUDIT PROGRAMME

Cost audit programme is an essential prerequisite for conducting an audit. It is a plan of action drawn in advance before taking up the audit, and to help the auditor to cover the entire area of his function thoroughly. The audit programme should include all the usual broad steps that a financial auditor include in his audit programme. However, the significant things that should not be missed are: proper vouching of expenses, capital and revenue character determination, allocation of expenses, apportionment of overheads, arithmetical accuracy, the statutory requirements, examination of contracts and agreements, review of the Board's and shareholders' minute books to trace important decisions having bearing on costs, verification of title deeds and documents relating to properties and assets, etc. Cost audit, in order to be effective, should be completed at one time as far as practicable. The exact content of cost audit largely depends on the size of the organisation, range of products, production process, the existence of a well organised costing department and of a well designed costing system, and the existence of a capable internal auditing system. Other relevant considerations may be:

(A) Review of Cost Accounting Records

This will include:

1. Method of costing in use - batch, process or unit.

2. Method of accounting for raw materials; stores and spares, wastages, spoilage, defectives, etc.

3. System of recording wages, salaries, overtime and spares, wastages, etc.

4. Basis of allocation of overheads to cost centres and apportionment of service department's expenses.

5. Treatment of interest, recording of royalties, research and development expenses, etc.

6. Method of accounting of depreciation.

7. Method of stock-taking and its valuation including inventory policies.

8. System of budgetary control.

9. System of internal auditing.

(B) Verification of cost statements and other data

This will include the verification of:

(i) Licensed, installed and utilised capacities.

(ii) Financial ratios.

(iii) Production data.

(iv) Cost of raw material consumed, wages and salaries, stores, power and fuel, overheads, provision for depreciation etc.

(v) Sales realisation.

(vi) Abnormal, non-recurring and special costs.

(vii) Reconciliation with financial books.

COST AUDIT REPORT

Cost audit report means the report duly audited and signed by the cost auditor including attachment, annexure, qualifications or observations etc. to cost audit report. Every cost auditor, who conducts an audit of the cost records of the company, shall within 180 days from the close of the company's financial year to which the report relates, submit the cost audit report along with his reservations or qualifications or observations or suggestions in the Form CRA-3 to the Board of Directors of the company.

Every cost auditor shall forward his report to the Board of Directors of the company within a period of 180 days from the closure of the financial year to which the report relates and the Board of Directors shall consider and examine such report particularly any reservation or qualification contained therein.

UNIT – 5
MANAGEMENT AUDIT

Management Audit Management audit is a new concept in auditing. A management audit is an independent review, analysis and assessment of the competencies and capabilities of a company's management in carrying out the corporate objectives. The purpose of a management audit is not to appraise individual executive performance but to evaluate the management team in its effectiveness to work in the interests of all the stakeholders, maintain good relations with the employees, and uphold reputational standards. There is no formal management audit committee for the board of directors. The board members assess the performance of individual executives by using quantitative information like organic sales, EBIT margins, segment margins, operating cash flows, and EPS and unquantifiable or intangible elements like efforts toward acquisition integration etc. A management audit is an assessment of how well an organization's management team is applying its strategies and resources. A management audit evaluates whether the management team is working in the interests of shareholders, employees, and the company's reputation. The independent consultants will be hired by the board of directors to conduct the management audit. Area of Management audit is beyond conventional audit; it reviews all aspects of management. It is an audit of overall performance of management. It covers planning, organizing, coordination and control, etc. Management audit detects and diagnoses the problem and suggests various means to avoid and solve the problems. Management audits are often conducted before mergers, restructurings, bankruptcies, and succession planning; they can identify weaknesses in a company's management.

Objectives of Management Audit:

- It helps management in setting sound and effective targets.
- It suggests management in getting desired results and to reveal any defect and irregularities in the process of management.
- Management audit helps the management in effective discharge of their duties.
- It helps in co-ordination of various department.
- It facilitates training of personnel and marketing strategies.
- It also helps in comparing inputs with outputs.
- It ensures strong relations with outsiders.

- It also helps in ensuring that the organisation have the most efficient internal organization.

Need for Management Audit:

The reports on matters of policies and their implementation is very important to improve the efficiency of the management. Management Auditors advise the management on various matters related to performance of various departments as well as of the organization as a whole. Management Auditors may or may not be any finance and accountancy person. Management Auditors evaluate the actual performance by comparing it with predetermined standards. Auditors reveal any kind of defect and irregularities in the working of management. It can be said management audit helps in improving the performance and efficiency of management.

Advantages of Management Audit:

- It is helpful in making plan, objectives and policies of the management.
- It is beneficial for achieving the set objectives of the management by coordinating with the personnel.
- It is very helpful to create strong communication system with outsiders and within the various departments.
- It is helpful to evaluate the performance of management.
- To establish good relations with employees.
- To elaborate duties, rights and liabilities of staff members and to make market strategies. It is helpful in preparation of budgets of organizations.
- It is helpful in resource management.

Appointment of Management Auditors:

Management audit is not compulsory under law. The shareholders or board of directors may appoint the management auditor. No specific qualifications have been prescribed for the management auditor. Generally chartered accountant are appointed as the management auditor. The terms and conditions of appointment, the scope of audit work, the period to be covered, the time frame of the submission of audit report and similar issues are settled through the letter of appointment of the auditor. The management audit team has experts with expertise in different

fields of Management. Management audit team coordinates with the other levels of management and runs a smooth audit process. It is a team of experts with full knowledge about management science. Most of the team members have practical working experience of being a part of management. Such experience helps them handle actual work situations in a better way.

Qualities of Management Auditor:

- The management auditor should have the following qualities:
- A management auditor should have good knowledge and experience of Managerial Functions. An Auditor should have good knowledge of the financial statements analysis techniques.
- An auditor should have the knowledge of human resource accounting and social accounting.
- He should have the knowledge about economics and business laws, etc.
- Understanding about the working of organization and its problems is also required.
- An Auditor should have sound knowledge of preparation and understanding about financial statements.
- He should know and understand the objectives of organization very well.
- He should understand about planning, budgets, rules and procedures to be applied in management.
- He should be well-versed with the entire production process.
- He should have enough knowledge and experience to understand the reason behind the lack of co-ordination between different departments.
- He should have the quality of giving practical and achievable solutions to the problems in the organization.

Scope of Management Audit:

The scope of the audit is narrow but it is comprehensive including many key aspects of the responsibilities of a management team. A management audit might address many important questions like: What is the organizational structure that has been set up by management? What are the policies and procedures of the finance group, and are these always in compliance? How effective are the measures of current risk management? How are the relations among the

employees of the organization? In what way the management put together its annual budget? Is the management quiet responsive to all the stakeholders? Is management taking enough steps to ensure the company is a "good corporate citizen"? Is management taking all the steps to guide the company toward its financial targets? It is not possible to define complete working of management audit and the scope of work and the areas covered by management audit.

Following are a few important areas covered by Management Audit:

- Administration
- Sales Management
- Purchase Management
- Distribution Management
- Stores and Inventories Management
- Production Management
- Personnel Management
- Finance and Accounts Management
- Management Information System
- Advertisement and Sales promotion

Management Audit Program:

Management Audit Program means the planning of the outlines for the whole process and procedures of management audit from the beginning to the end. The program can be designed in the following way:

- To study the structure of the organization.
- To study whether the principles of a good organization have been followed or not.
- To have a detailed discussion with the top management about the objectives and the plans.
- To study the current policies adopted to achieve the desired objectives.
- To decide the area of improvement whether it is planning or its implementation or both
- To give recommendations for improvements.
- To study whether the control system of an organization is adequate and effective.

- To study the manufacturing process for locating the factors that are hindering the maximization of production.
- To observe the personnel departments for policies, training and motivational schemes adopted currently for employees of the organization.
- To check whether there is optimum utilization of the space available and of the physical equipment in the organisation.

Audit Report:

The report submitted by a management auditor should give true and correct assessment of the working of the organization and should contain suggestions for improvements as required in management policies, procedures or any other area. He should not hesitate in criticizing the management but on the other hand his report should not be merely condemning in nature. The management auditor should cover the following areas in his report:

- He should see whether the relations between staff members and the management is cordial or not.
- He should highlight the areas of weakness and the suggestions for improvement.
- He should cover the methods and procedures of production.
- He should tell about operating efficiency.
- He should also explain about rate of return on investment.
- He is also supposed to tell whether the return to shareholders is adequate or not.

Criticism of Management Audit

In spite of having many advantages of management audit in modern business world, it has faced criticism too. According to managers and accountants it is just a vague concept which serves no material purpose. The management auditors usually pin point shortcomings of managers in action, therefore they hesitate to take initiative. It is believed that the normal practice of managers is to keep their record up to date instead of improving efficiency and reducing costs.

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17th September 2020

UNIT-1

Bridge Course:

→ Cost sheet:

It is a statement showing the details of the total cost of the job, order, or operation. It shows the total cost as well as different components of the total cost and cost per unit.

SPECIMEN OF COST SHEET:

Cost Sheet of ——— for the month of ———

Particulars	Details	Total cost	Cost/unit
Direct Material (Raw Material Consumed):			
Opening stock of Raw material	x		
Add: Material Purchased	x		
Add: Carriage inward	x		
	x		
Less: Closing stock of Raw material	(x)	x	x
Direct Labour		x	x
Direct Expenses		x	x
PRIME COST		x	x
Add: Factory Overhead:			
Indirect Material	x		
Indirect Labour (Wages)	x		
Factory Rent and Rates	x		
Power and Fuel	x		
Factory Lighting & supervision	x		
Factory / Works Manager salary	x		
Factory Water supply	x		

Factory Insurance	x		
Factory stationery	x		
Factory Cleaning	x		
Drawing office Expenses	x		
Depreciation of Plant & Machinery	x		
Cost of Research & Equipment	x		
Other Factory expenses	x		
	(x)	x	
Less: Sale of scrap		x	x
		x	x
Add: Opening stock of Work-in-progress		x	x
		(x)	x
Less: Closing stock of Work in progress		x	x
Works Cost			
Add: Office & Administration Overhead:			
Office Rent & Rates	x		
Office lighting	x		
Office stationery	x		
Depreciation & Repairs of Office Furniture	x		
Office Salaries	x		
Depreciation & Repairs of Office Furniture	x		
Office Salaries	x		
Management Expenses	x		
Office Telephone and Postage charges	x		
Legal charges	x		
Bank charges and commission	x		
Office Cleaning	x		
Audit Fees	x		
Office Insurance	x		
Other office expenses	x	x	x
Cost of Production		x	x
Add: Finished Goods (Opening)		x	
		x	
Less: Finished Goods (Closing)		(x)	
Cost of Production of Goods Sold		x	x

→ Continuing specimen of cost sheet:

Add: selling & Distribution overhead:			
Salesmen salaries	X		
Salesmen commission	X		
Showroom Expenses	X		
Showroom rent & Rates	X		
Advertisement	X		
Sales Office rent & rates	X		
Travelling expenses	X		
Warehouse Rent & Rates	X		
Warehouse staff salaries	X		
Depreciation and Repairs of Delivery vehicle	X		
Carriage Outwards	X		
Debt Collection charges	X		
Other selling & Distribution expenses	X	X	X
Total cost / Cost of goods sold		X	X
Profit / Loss [Difference of Sales & Costs]		X/(X)	X
Sales		X	X

Items excluded from cost:

→ The following items are of financial nature & thus not included while preparing a cost sheet;

1. Cash discount
2. Interest paid
3. Preliminary expenses written off
4. Goodwill written off
5. Provision for taxation
6. Provision for bad debts
7. Transfer to reserves
8. Donations
9. Income-tax paid
10. Dividend paid
11. Profit / loss on sale of fixed assets
12. Damages payable at law, etc.,

1. (7) (cost sheet with opening and closing stock of raw material)

A manufacturer presents the following details about the various expense incurred by him: Stock of raw materials on 1.1.2016 ₹24,000; Stock of raw material on 31.12.2016 ₹31,400; Purchase of raw materials ₹92,000; Drawing office salary ₹3,200; Counting house salary ₹6,000; Carriage inwards ₹2,300; Bad Debts ₹2,000; Rent and Rates: Factory ₹4,200, Office ₹1,500, Carriage outwards ₹2,100; Productive wages ₹60,500; Depreciation on plant and machinery ₹3,200; Depreciation on office furniture ₹150; Gas and water: Factory ₹800, Office ₹300, Traveller's commision ₹2,400; Advertisement samples ₹2000; Rent of warehouse ₹1,000; Printing and stationery ₹1,200; Telephone charges: Factory ₹200, Office ₹1,200, Sales ₹2,23,500

You are required to prepare a statement showing prime cost, factory cost, cost of production, total cost and profit.

→ Cost sheet for the year ended 31.12.2016

Particulars	Amt ₹	Amt ₹
Opening stock of raw materials	24,000	
Add: Purchase of raw materials	92,000	
Carriage inwards	2,300	
	1,18,300	
Less: Closing stock of raw materials	31,400	
Materials consumed	86,900	
Add: Productive wages	60,500	
Prime cost		1,47,400
Add: Factory overheads:		
Drawing office salary	3,200	
Rent and rates	4,200	
Depreciation on plant & machinery	3,200	
Gas & water	800	
Telephone charges	800	

		12,200
Work cost / Factory cost		1,59,600
Add: Office or Administrative overheads		
Rent and Rates	1,500	
Depreciation on office furniture	150	
Gas and water	300	
Counting house salary	6,000	
Printing and stationery	1,200	
Telephone charges (office)	1,200	10,350
		1,69,950
Cost of production		
Add: Selling and Distribution overheads		
Travellers commission	2,400	
Bad debts	2,000	
Carriage outwards	2,100	
Rent of warehouse	1,000	
Advertisement and samples	2,000	9,500
TOTAL COST		1,79,450
Profit (B/F)		44,050
Sales		2,23,500

2. Mr. Arjun furnishes the following data relating to (5) the manufacture of a standard product for the month of January 2016.

Materials - 90,000
Direct wages - 60,000
Depreciation of machinery - 11,500
Power & consumable stores - 12,000
Indirect wages at factory - 15,000
Lighting of factory - 5,500
Cost of rectification of defective work - 3,000
Sale of scrap - 2,000
Office and selling overhead - 39,000
Selling price - 3,16,000
Prepare the cost sheet.

Cost Sheet

Particulars	Amt	Amt
Materials		90,000
Direct wages		60,000
Prime cost		1,50,000
Add: Factory overhead		
Power & consumable stores	12,000	
Indirect wages	15,000	
Lighting of factory	5,500	
Cost of rectification of defective work	3,000	
Depreciation of machinery	11,500	
	47,000	
Less: Scrap value	2,000	45,000
Work cost		1,95,000
Add: Office & selling overhead		39,000
		2,34,000
Profit (balancing fig.)		82,000
Selling price		3,16,000

3. (6) From the following figures prepare a cost sheet showing the cost per unit and profit for the period.

Raw material consumed ₹40,000
Direct wages ₹24,000
Machine hours worked 4,000
Machine hour rate ₹2
Office overhead 10% of factory cost
Selling overhead ₹1.50 per unit
Units produced 2,000
Units sold 1,800 at ₹50 each

Particulars	Total cost	Unit produced 2,000 Cost Per unit
Raw material consumed	40,000	20
Direct wages	24,000	12
Prime cost	64,000	32
Add: Work or Factory Overheads		
Machine hours (4,000 × 2)	8,000	4
Factory cost	72,000	36
Add: Office or Administrative Overhead (10% of Factory cost)	7,200	3.6
Cost of Production	79,200	39.6
Less: Closing stock of finished goods (2,000 − 1,800) = 200 × 39.6	7,920	
	71,280	39.6
Add: Selling and Distribution Overhead		
Selling overhead	2,700	1.50
Total Cost	73,980	41.1
Profit (balancing fig.)	16,020	8.9
Sales	90,000	50

(4) In a factory the expenses are as follows:
Material ₹2,00,000
Labour ₹1,50,000
Factory expenses ₹98,000
Office expenses ₹65,000 &
sales total upto ₹5,10,000
Prepare a cost sheet

– Cost sheet for the years ending:

Particulars	Amount
Material	2,00,000
Labour	1,50,000
Prime cost	3,50,000
Add: Factory expenses	98,000
Factory cost / cost of production	4,48,000
Add: Office expenses	85,000
cost of goods sold	5,33,000
Loss (balancing fig.)	23,000
Sales	5,10,000

(12) A factory produces a standard product. The following information are given to you from which you are required to prepare a cost sheet for January 2016

Raw materials consumed - ₹ 2,91,000

Direct wages ₹1,29,000

Other direct expenses - ₹81,000

Factory overheads - 80% of direct wages

Office overheads - 10% of work cost

Selling & Distribution expenses - ₹20 per unit sold

Units produced and sold during the month - 10,000

Find the selling price per unit when the profit earned is at 20% on selling price.

Cost sheet for the year 2016

Units produced 10,000

Particulars	Total Cost (₹)	Cost per unit
Raw Materials consumed	2,91,000	29·1
Add: Direct wages	1,29,000	12·9
Other direct expenses	81,000	8·1
Prime Cost	5,01,000	50·1
Add: Factory or work overhead		
Factory overhead (80% of direct wages)	1,03,200	10·32
Factory Cost	6,04,200	60·42
Add: Office or Administrative overhead		
Office overheads (10% on work cost)	60,420	6·04
Cost of production	6,64,620	66·46
Add: Selling & Distribution overhead		
Selling & Distribution expenses (10,000 × 20)	2,00,000	20·00
Total Cost	8164620	86·46
Profit (25% on cost) or (20% on sale)	2,16,155	21·62
Sales	10,80,745	108·07

18) Estimated cost sheet (Tenders & Quotations)
In respect of a factory the following figures have been obtained for the year 2016. Materials ₹12,00,000; Direct Wages ₹10,00,000; Factory overhead ₹6,00,000; Administration overheads ₹6,72,000, Selling overheads ₹4,48,000; Distribution overheads ₹2,80,000, Profit ₹8,40,000
The factory wants to execute a work order in the year 2017, which requires ₹16,000 towards materials and ₹10,000 towards wages. Determine the price at which the work order should be accepted so as to earn the same rate of profit on selling price as in 2016.

Cost sheet for the year 2016

Particulars	Amount
Direct materials	12,00,000
Direct wages	10,00,000
Prime cost	22,00,00
Add: Factory overhead	6,00,000
Work cost / Factory cost	28,00,000
Add: Administration overheads	6,72,000
Cost of production	34,72,000
Add: Selling overheads 4,48,000	
Distribution overheads 2,80,000	7,28,000
Total cost	42,00,000
Add: Profit	8,40,000
Sales*	50,40,000

Calculation of percentage of overheads for estimated cost sheet

1. Factory overheads on direct wages

$$= \frac{6,00,000}{10,00,000} \times 100 = 60\%$$

2. Administration overhead on work cost

$$= \frac{6,72,000}{28,00,000} \times 100 = 24\%$$

3. Selling & distribution overhead on work cost

$$= \frac{7,28,000}{28,00,000} \times 100 = 26\%$$

4. Profits on Total cost

$$= \frac{8,40,000}{42,00,000} \times 100 = 20\%$$

Estimated cost sheet for the year 2017

Particulars	Amount
Direct materials	16,000
Direct wages	10,000
Prime cost:	26,000
Add: Factory overhead on Direct wages at 60% [10,000 × 60%]	6000
Work cost -	32,000
Add: Administration overhead on work cost [32,000 × 24%]	7,680
cost of production	39,680
Add: Selling overhead & Distribution overhead on work cost [32,000 × 26%]	8,320
Total cost	48,000
Add: Profit on Total cost [48,000 × 20%]	9600
Sales*	57,600

20) On input of a factory, the following particulars have been extracted for the year 2016.

Cost of material - 6,00,000
Wages - 5,00,000
Factory overheads - 3,00,000
Administration charges - 3,36,000
Selling charges - 2,24,000
Distribution charges - 1,40,000
Profit - 4,20,000

A work order had to be executed in 2017, & estimated expenses are: Material ₹,8000; Wages ₹5,000. Assuming that in 2017, the factory overheads will go by 20%, distribution charges will come down by 10% & selling and administration charges will go up each by 15%. At what price the product to be sold, so as to earn same rate of profit on selling price as in 2016? Factory overheads are based on wages & administration, selling & Distribution overheads on factory cost. Actual cost sheet for the year ending 2016

Particulars		Amount
Cost of Material		6,00,000
Wages		5,00,000
	Prime cost	11,00,000
Add: Factory overheads		3,00,000
	Work cost / Factory cost	14,00,000
Add: Administration charges		3,36,000
	Cost of production	17,36,000
Add: Selling charges		2,24,000
Distribution charges		1,40,000
	Total cost	21,00,000
Add: Profit		4,20,000
	Sales*	25,20,000

Percentage of overheads for estimated cost sheet

1. Factory overheads on direct wages

$$= \frac{F/O/H}{\text{wages}} \times 100 = \frac{3,00,000}{5,00,00} \times 100 = 60\%$$

2. Administration overheads on work cost

$$= \frac{A/O/H}{W/C} \times 100 = \frac{3,36,000}{14,00,000} \times 100 = 24\%$$

3. Selling & Distribution overheads on work cost

Selling overhead

$$= \frac{S/O/H}{W/C} \times 100 = \frac{2,24,000}{14,00,000} \times 100 = 16\%$$

$$= \frac{D/O/H}{W/C} \times 100 = \frac{1,40,000}{14,00,000} \times 100 = 10\%$$

4. Profit on ~~work~~ cost Total

$$= \frac{\text{Profit}}{T/C} \times 100 = \frac{₹20,000}{₹1,00,000} \times 100 = 20\%$$

Estimated cost sheet for the year 2017

Materials		8,000
Wages		5,000
	Prime cost	13,000
Add: Factory overhead on direct wages [5,000 × 60%]	3000 (-) 600	2400
		15,400
less: Decrease in factory overhead @20% [3000 × 20%]	Factory cost	
Add: Administration overhead on work cost [15400 × 24%]	3696 (+) 554 ₹ 250	4250
		19,650
Add: Increase in A/O/H @15% [3696 × 15%]	C/O/P	
Add: Selling & distribution overhead		2834
selling 16% on work cost [15400 × 16%]	2464 (+) 370	
Add: ↑ in S/O/H @15% [2464 × 15%]		
Distribution o/h on work cost [15,400 × 10%]	1540 (+) 154	+694 1386
less: ↓ in D/O/H 10% [1540 × 10%]		

Total cost	23,870 ~~24,178~~
Profit on Total cost 20% [23870 × 20%]	4,774
Sales	28,644

21) The following particulars relate to the costing of the manufacture of certain fans of uniform quality for the three months period:

Completed stock on 1st October 2016	- Nil
Completed stock on 31st December 2016	- ₹20,250
Stock of raw materials on 1st October 2016	- ₹5,000
Stock of raw materials on 31st December 2016	- ₹3,500
Direct wages	- ₹75,000
Indirect wages	- ₹1,500
Material purchased	- ₹32,500
Sales	- ₹1,12,500

No of fans manufactured during the period ~~ending~~ of 3 months was 3,000. Prepare a statement showing the cost per fan and the price to be quoted for 450 fans to realize the same percentage of profit as was realised during the 3 months. Refer to above assuming the identical cost. Actual cost sheet for 3 months ending 31/12/16

(output 3000 fans) — 3000 fans

Particulars	Total cost	~~Amount~~ per fan
Opening stock of raw materials 5000		
Add: ~~Direct wages~~ Raw material purchased 32,500		
37,500		
Less: Closing stock of Raw material - 3,500 (Material consumed)	34,000	11.33
Add: Direct wages	75,000	25.50
Prime cost	1,09,000	36.33
Add: Factory overhead Indirect wages	1500	0.50
	110500	36.83
Add: Office & Administration overhead		
Opening stock of finished goods	—	—
Less: Closing stock of finished goods	20,250	—

Cost of production	90250	36·83
Add: Selling & distribution overhead	–	–
Total cost	90,250	36·83
Profit* balancing figure	22250	–
Sale figure	112500	–

Estimated cost sheet for 750 fans

Particulars		Amount
Materials	3000 – 34000 750 – ?	8500
Direct wages	3000 – 75000 750 – ?	18750
	Prime cost :	27250
Add: Factory overhead		
Indirect wages	3000 – 1500 750 – ?	375
	Work cost	27625
Add: Selling & Distribution overhead		—
	Cost of production	27625
Add: Office & Administration overhead		–
	Total cost	27625
Profit [27625 × 24·65]		6809 or 6828
(or) Sale*		34434 34453

Calculation % of profit on pre Actual cost sheet

$= \frac{\text{Profit}}{\text{cost}} \times 100$

$= \frac{22250}{90250} \times 100$

$= 24·65$

or

$\rightarrow \frac{\text{Profit}}{\text{Sale}} \times 100 = \frac{22250}{112,500} \times 100 = 19·82\%$

$\text{Profit} = \frac{\text{Total cost}}{100 - \text{Sale}\%} \times \text{Sale}\%$

$= \frac{27625}{100 - 19·82} \times 19·82$

$= \frac{27625}{80·18} \times 19·82$

$= 344·53 \times 19·82$

$= 6828·72$ or 6829

$27625 + 6828 = 34453$

8) A manufacturer presents the following details about the various expenses incurred by him. Raw materials consumed ₹70,000; Carriage inwards ₹2,000; Factory rent ₹2,400; Bad debts ₹440; Printing and stationery ₹620; Legal expenses ₹350; Carriage outwards ₹1,540; Indirect materials ₹560; Power ₹4,600; Depreciation on furniture ₹160; Postage expenses ₹465; Repairs of plant & machinery ₹1,200; Salesman expenses ₹3,400; Advertising ₹500; Direct wages ₹85,000; General Manager salary ₹36,000; Factory Manager salary ₹18,000; Depreciation of plant & machinery ₹1,240; Audit fee ₹350; Agent's commission ₹5,750; Warehouse rent ₹1,800; Travelling expenses ₹1,400; Donations ₹150; Interest on capital ₹2,000; Bank charges ₹100. From the above prepare cost sheet.

- Cost sheet for the year ended

Particulars	Amt	Amt
Raw materials consumed	70,000	
Carriage inwards	2,000	
Direct wages	85,000	
Prime cost		1,57,000
Add: Factory overheads		
Factory rent	2,400	
Indirect materials	560	
Power	4,600	
Repairs of plant & machinery	1,200	
Factory manager salary	18,000	
Depreciation on plant & machinery	1,240	28,000
Work cost / Factory cost		1,85,000
Add: Office and administration overheads		
Printing & stationery	620	
Legal expenses	350	
Depreciation on furniture	160	
Postage expenses	465	
General Manager salary	36,000	
Audit fee	350	37,945
Cost of Production		2,22,945
Add: Selling and Distribution overheads		
Bad debts	440	
Carriage outwards	1,540	

Salesmen expenses	3,400	
Advertising	500	
Agent's commission	5,750	
Warehouse rent	1,800	
Traveling expenses	1,400	14,830
Total cost		2,37,775

Budgetary Control

Sales Budget

1. Shri Ramu manufactures two types of toys, Raja & Rani & sell them in Agra and Mumbai markets. The following information is made available for the current year 2003-20

Place/ Market	Type of Toys	Budgeted Sales 2002-2003	Actual Sales 2002-2003
Agra	Raja	400 at Rs. 9 each	500 at Rs. 9 each
	Rani	300 at Rs. 21 each	200 at Rs. 21 each
Mumbai	Raja	600 at Rs. 9 each	700 at Rs. 9 each
	Rani	500 at Rs. 21 each	400 at Rs. 21 each

Market studies reveal that Raja is popular as it is under priced. It is observed that if its price is increased by Rs. 10 it will find a ready market, on the other hand, Rani is over-priced and market could absorb more sales if its selling price is reduced to Rs. 20. The management has agreed to give effect to the above price changes.

On the above basis, the following estimates have been prepared by sales Manager:

Product	% Increase in sales over current Budget	
	Agra	Mumbai
Raja	+10%	+5%
Rani	+20%	+10%

With the help of an intensive advertisement campaign, the following additional sales above the estimated sale are possible:

Product	Agra	Mumbai
Raja	60 units	30 units
Rani	40 units	50 units

You are required to prepare a budget for sales incorporating the above estimates.

Budget for the year	Product	Budgeted sales 2002-2003			Actual sales 2002-2003			Budgeted sales 2003-2004		
Place		Units	Price (in Rs.)	Value (in Rs.)	Units	Price (Rs.)	Value (Rs.)	Units	Price (Rs.)	Value (Rs.)
Agra	Raja	400	9	3,600	500	9	4500	500	10	5 000
	Rani	300	21	6,300	200	21	4200	400	20	8000
	Total (A)	700	30 –	9,900	700	–	8700	900	–	13,000
Mumbai	Raja	600	9	5400	700	9	6300	700	10	7000
	Rani	500	21	10,500	400	21	8400	600	20	12,000
	Total (B)	1100	–	15,900	1100	–	14700	1300	–	19,000
Total (A+B)	Raja	1000	9	9,000	1200	9	10,800	1200	10	12,000
	Rani	800	21	16,800	600	21	12,600	1000	20	20,000
	Grand Total	1800	–	25,800	1800	–	23,400	2200	–	32,000

Working notes:

2003-2004 [Estimated sales Budget]

	Agra	Mumbai
a) Raja	400	600
Increase in sales (400×10·1) (600×5·1)	40	30
	440	630
(+) Advertisement effect	60	70
	500	700
b) Rani	300	500
Increase in sales (300×20·1.) (500×10·1.)	60	50
	360	550
(+) Advertisement effect	40	50
	400	600

2. Prepare the sales Budget from the following data:

Product	January	February
X	1200 units	1800 units
Y	3600 units	5400 units

The sales area A & B account for 60% & 40% sale of product X & 30% & 70% sale of product Y respectively.

The selling price per unit of product X ~~₹25~~ ₹24 and the selling price per unit of product Y ₹30 in both the sales area.

Jan sales Budget

Product	Area	Units	₹ (per unit)	₹
X	A 1200×60%	720	24	17280
	B 1200×40%	480	24	11520
	Total	1200	-	28,800
Y	A 3600×30%	1080	30	32,400
	B 3600×70%	2520	30	75 600
	Total	3600	-	108000

February sales budget

Product	Area	Unit	₹ (per unit)	₹
X	A 1800×60%	1080	24	25 920
	B 1800×40%	720	24	17280
	Total	1800	-	43200
Y	A 5400×30%	1620	30	48600
	B 5400×70%	3780	30	113400
	Total	5400	-	1,62,000

Total sales Budget

Product	Area	Unit	₹ (per unit)	₹
X	A	1800	24	43,200
	B	1200	24	28,800
	Total	3000	-	72,000
Y	A	2700	30	81,000
	B	6300	30	1,89,000
	Total	9000	-	2,70,000

3. A factory is currently working at 50% capacity and produces 30,000 units and also sold each at ₹205 per unit. Prepare a Flexible Budget and estimate the profit of the company when it works to 75% & 90% capacity. Assume that all units produced are sold at the same selling price per unit as shown above:

Following information is provided to you:

1. Variable expenses

Material	₹60 per unit
Labour	₹40 per unit
Other expenses	₹15 per unit

2. Semi-variable expenses: (at 50% capacity)

Indirect labour	₹1,50,000
Indirect material	₹2,10,000
General administrative Expenses	₹2,70,000
Repairs & Maintainence	₹1,20,000
Salesmen Salaries	₹1,80,000

3. Fixed expenses:

Office & Management Salaries	₹5,40,000
Office & Factory rent & taxes	₹6,00,000
Sundry Administrative expenses	₹7,20,000
Depreciation on Machinery & Furniture	₹4,50,000

4. Semi-variable expenses remain constant up to 60% of capacity, increasing by 10% between 60% & 80% capacity & by 20% between 80% & 100% capacity.

5. Rate per unit of variable expenses remains same.

Flexible budget

Particulars	30,000 @ 50% (₹)	45,000 @ 75% (₹)	54,000 @ 90% (₹)
1. Variable expenses			
Material	18,00,000	27,00,000	32,40,000
Labour	12,00,000	18,00,000	21,60,000
Other expenses	4,50,000	6,75,000	8,10,000
Total A	34,50,000	5,175,000	6,210,000
2. Semi-variable expenses		(1,50,000×10%) + 1,50,000	(1,50,000×20%) + 1,50,000
Indirect labour	1,50,000	1,65,000	180,000
Indirect material	2,10,000	2,31,000	2,52,000
General administrative expenses	2,70,000	2,97,000	3,24,000
Repairs & maintainence	1,20,000	132,000	1144,000
Salesman salaries	1,80,000	1,98,000	2,16,000
Total B	9,30,000	10,23,000	1,116,000

50% - 30,000
75% - ?
90% - ?

45,000

54,000

1,50,000

3. Fixed expenses	remain same at all capacities		
Office & Mgt salaries	5,40,000	5,40,000	5,40,000
Office Factory rent & Taxes	6,00,000	6,00,000	6,00,000
Sundry Adm. expenses	3,20,000	3,20,000	3,20,000
Depreciation on Machinery & Furniture	4,50,000	4,50,000	4,50,000
Total C:	2,3,10,000	23,10,000	23,10,000
			9436,000
Total cost A+B+C	66,90,000	85,06,000	9636,000
Sales (@ 225 per unit)	30,000 × 225 =	45,000 × 225 =	54,000 × 225 =
	67,50,000	1,01,2500 0	1,21,50,000
At sales is more than cost so profit			
Profit = sales − total cost	60,000 16,17,000	16,17,000	25,14,000

→ Company is enjoying enough profit at 90% capacity than 50% & 75%.

Note: Variable expense: Remain multiplication
Semi variable expense: as per adjustment @ 50% capacity it remains same at 75% capacity increased by 10%. at 90% capacity increased by 20%.

Fixed expenses: Remain constant at all the capacities

(4)
4. A manufacturing company is operating at 75% of its full capacity. It is prepared to offer a price reduction of 5% to 10% depending upon volume desired. Given below are the relevant data:

Capacity	75%	85%	100%
Output (units)	75,000	85,000	1,00,000
Selling price/unit	₹96	5% off	10% off
Material cost per unit	₹40	10% less	15% less
Wages cost per unit	₹10	₹10	₹10

- Fixed overheads:

Production ₹ 14,00,000

Selling and distribution ₹ 5,00,000

- Variable overheads (at full capacity)

Selling and administration ₹ 4,40,000

Production ₹ 14,00,000

a. Prepare a statement showing variable cost, fixed cost, total cost and profit/loss in terms of ₹ & per unit at 75%, 85% and 100% capacity.

b. Indicate which of the three levels is most profitable.

- Flexible budget: working column:
1. Material cost at 85% has reduced at 10% therefore on 40/- it is 4 i.e. 40-4=36
at 100% has reduced at 15% i.e. on 40/- it is 6 i.e. 40-6=34

Particulars	75% - 75000 units		85% - 85000 units		100% - 1,00,000 units	
	Per unit cost	Amt (Rs.)	Per unit cost	Amt (Rs.)	Per unit cost	Amt (Rs.)
Direct expenses						
Material	40	30,00,000	36	30,60,000	34	34,00,000
Wages	10	7,50,000	10	8,50,000	10	10,00,000
Total A	50	37,50,000	46	39,10,000	44	44,00,000
Variable overheads						
Selling & Adm.	4.4	3,30,000	4.4	3,74,000	4.4	4,40,000
Production	14	10,50,000	14	11,90,000	14	14,00,000
Total B	18.4	13,80,000	18.4	15,64,000	18.4	18,40,000
Fixed overhead						
Production	18.67	14,00,000	16.47	14,00,000	14	14,00,000
Selling & dist.	6.67	5,00,000	5.88	5,00,000	5	5,00,000
Total C	25.34	19,00,000	22.35	19,00,000	19	19,00,000
Total = A+B+C cost	93.74	70,30,000	86.75	73,74,000	81.4	81,40,000
Sales	96	72,00,000	91.2	77,52,000	86.4	86,40,000
Profit = Sales - Total cost	2.27	1,70,000	4.47	3,78,000	5	5,00,000

→ 100% capacity is more profitable.

2. Variable expenses: per unit cost remains the same and total cost will be variable as per the output.

3. Fixed cost: On the total remains the same & per unit column change at all the levels of output.

5. The expenses budgeted for production of 10,000 units in a factory are furnished below:

	Per unit ₹
Materials	70
Labour	25
Variable factory overheads	20
Fixed factory overheads (₹1,00,000)	10
Variable Expenses (Direct)	5
Selling Expenses (10% fixed)	13
Distribution expenses (20% fixed)	7
Administrative expenses (Fixed - ₹50,000)	5
Total cost of sale per unit	155

You are required to prepare a budget for the production of 6000 units and 8000 units.

Flexible budget

Particulars	Output 6000 units		Output 8000 units	
	Per unit (Rs.)	Amt (Rs.)	Per unit (Rs.)	Amt (Rs.)
1. Direct expenses:				
Material	70	4,20,000	70	5,60,000
Labour	25	1,50,000	25	2,00,000
Variable expenses	5	30,000	5	40,000
Prime cost:	100	6,00,000	100	8,00,000
2. Factory overhead:				
Fixed F/O/H	16.67	1,00,000	12.5	1,00,000
Variable F/O/H	20	1,20,000	20	1,60,000
Work cost / Factory cost	136.67	8,20,000	132.5	12,60,000
3. Administration overhead:				
Adm expenses:	8.33	50,000	6.25	50,000
Cost of production	145	8,70,000	138.75	11,10,000
3. Selling & Distribution overhead				
Selling expenses:				

Fixed (10%)	2.14	15,000	1.62	15,000
Variable (90%)	11.7	70,200	11.7	93,600
Distribution expenses				
Fixed (20%)	2.33	14,000	1.75	14,000
Variable (80%)	5.6	33,600	5.6	44,800
Total Cost	166.8	10,00,800	159.42	12,75,400

1. Selling expenses; 10% fixed = Rs. 13 × 10,000 = 13,0000
= 130000 × 10%
= 13000

90% variable = ₹ 13 × 10,000 = 1,30,000
= 1,30,000 × 90%
= 117000 → 10,000 units
= 70,200 → 6,000
= 93,600 → 8,000

2. Distribution expenses; 20% fixed = 7 × 10,000 = 70,000
= 70,000 × 20%
= 14,000

80% variable = 7 × 10,000 = 70,000
= 70,000 × 80%
= 56,000 → 10,000
33,600 → 6000
44,800 → 8000

- Cash Budget:

1. Saurashtra Co. Ltd wishes to arrange overdraft facilities with its bankers from the period August to October 2010 when it will be manufacturing mostly for stock. Prepare a cash budget for the above period from the following data given below:

Month	Sales (Rs.)	Purchases (Rs.)	Wages	Mfg. exp	office exp.	Selling exp
June	1,80,000	1,24,800	12,000	3,000	2000	2000
July	1,92,000	1,44,000	14000	4000	1000	4000
August	1,08,000	2,43,000	13000	3000	1500	2000
September	1,74,000	2,46,000	12,000	4500	2000	5000
October	1,26,000	2,68,000	15,000	5000	2250	4000
November	1,40,000	2,80,000	17,000	5,500	3000	4,500
December	1,60,000	3,00,000	18,000	6,000	3000	5000

Additional information:

- Cash on hand 1-08-2010 Rs. 25,000
- 50% of credit sales are realised in the month following the sale and the remaining 50% in the second month following. Creditors are paid in the month following the month of purchase.
- Lag in payment of manufacturing expenses half month.
- Lag in payment of other expenses one month.

→ Particulars	August (Rs.)	September (Rs.)	October (Rs.)
Opening stock	25,000	44,500	66,750
Add: Receipts:			
Sales	1,86,000	1,50,000	1,41,000
Total: A	211000	194500	74250
Less: Payments:	211,000		
Purchases	1,44,000	2,43,000	2,46,000
wages	14,000	11,000	12,000
Office expenses	1000	1500	2000
Selling expenses	4000	2000	5000
Manufacturing expenses	3500	3750	4750
Total: B	1,66,500	2,61,250	2,69,750
Profit/Loss = A - B (Closing balance)	44,500	-66750	-1,95,500

Working Note: Sales:

	June	July	August	Sept	Oct	November	
1st Instalment		90,000	96,000	54,000	87,000		
2nd Instalment			90,000	96,000	54,000	87,000	
Total			186000	150000	141000		
Manufacturing expense:							
1st Instalment	1500	2000	1500	2250	2500	2750	
2nd Instalment		1500	2000	1500	2250	2500	2750
Total			3500	3750	4750		

2. Prepare a Cash budget from the data given below for a period of six months (July to December)

a. Month — Sales — Raw materials

May	75,000	37,500
June	75,000	37,500
July	1,50,000	52,500
August	2,25,000	3,67,500
September	3,00,000	1,27,500
October	1,50,000	97,500
November	1,50,000	67,500
December	1,37,500	—

b. Collection estimates:
* Within the month of sale: 5%.
* During the month following the sale: 80%.
* During the second month following the sale: 15%.

c. Payment for raw materials made in the next month.

d. Salary Rs. 11,250, Wage payment Rs. 3750, Misc. Exp Rs. 1150, are paid each month

e. Monthly Depreciation Rs. 15,000

f. Income tax Rs. 26,250 each in September and December.

g. Payment for Research in October Rs. 75,000

h. Opening balance on 1st July Rs. 55,000.

Cash Budget
For 6 months from July to December:

Particulars	July (Rs.)	August (Rs.)	September (Rs.)	October (Rs.)	Novem (Rs.)	December (Rs.)
Opening stock	55,000	80,100	1,53,950	-38,450	24,150	83,000
Add: Receipts:						
Collection from debtors	78,750	1,42,500	2,17,500	281,250	1,72,500	1,49,375
Total A:	1,33,750	2,22,600	3,71,450	2,42,800	1,96,650	2,32,375
Less: Payments						
Payment to supplier (RM)	37,500	52,500	3,67,500	1,27,500	97,500	67,500
Salary	11,250	11,250	11,250	11,250	11,250	11,250
Lease payment	3,750	3,750	3,750	3,750	3,750	3,750
Misc. expenses	1,150	1,150	1,150	1,150	1,150	1,150
Income tax			26,250			26,250
Payment for research				75,000		
Total: B	53,650	68,650	4,09,900	2,18,650	1,13,650	1,09,900
Profit/loss A-B (Closing balance)	80,100	1,53,950	-38,450	24,150	83,000	1,22,475

Note: Depreciation is a non-cash items, it does not involve cash flow. Hence, depreciation will not be considered as payment through cash.

Working Note: Sales:	May	June	July	Aug	Sep	Oct	Nov	Dec
Sales	75,000	75,000	1,50000	2,25,000	3,00000	1,50,000	150000	1,37,500
1st Installment - 5%.	3750	3750	7500	11,250	15,000	7,500	7,500	6875
2nd Install - 80%.		60,000	60000	120000	180,000	2,40000	120000	120000
3rd Install - 15%.			11,250	11,250	22,500	33,750	45000	22500
Total Sales			78,750	1,42500	2,17,500	2,81,250	1,72,500	1,49,375

Production Budget & Purchase Budget

1. The following are the estimated sales of a company for eight months ending 30/11/2008.

Months		Estimated sales (Units)
April	2008	12,000
May	2008	13,000
June	2008	9,000
July	2008	8,000
August	2008	10,000
September	2008	12,000
October	2008	14,000
November	2008	12,000

It is a matter of policy, the company maintains the closing balance of finished goods & raw materials as follows:

Stock items	Closing balance of a month
Finished goods	50% of the estimated sales for the next month
Raw materials	Estimated consumption for the next month

Each unit of production requires 5kg of raw material costing Rs 5 per kg.

Prepare Production Budget (in units) and Raw material Purchase Budget (in units and cost) of the company for the half year ending 30th September, 2008.

- Production Budget Calculation:

Total Production (in units) = Estimated sales + Cl. Stk − Op. Stk

Total Production (in Rs.) = Total Production (in units) × Per unit cost of production.

- Purchase Budget:

Total Purchase (in units) = (Production in units × Price per unit) + Cl. Stk − Op. Stk

Total Purchase (in Rs.) = Total Purchase (in units) × Per unit cost of purchase.

Production budget from 1st April 2008 to 30th September 2008.

Particulars	April	May	June	July	Aug	Sept	Oct	Nov
Estimated Sales (units)	12,000	13,000	9000	8000	10,000	12,000	14,000	12,000
	50%	50%	50%	50%	50%	50%	50%	
Add: Closing Stk	6500	4500	4000	5000	6000	7000	6000	
Total	18500	17,500	13,000	13,000	16,000	19,000	20,000	
Less: Opening Stk	6000	6500	4500	4000	5000	6000	7000	
production (in units)	12,500	11,000	8,500	9,000	11,000	13,000	13,000	

Total Production: 65,000 units

Purchase Budget from 1st April to 30th September

Production (in units)	12,500	11,000	8,500	9,000	11,000	13,000	13,000
Consumption (5 Kg)	62,500	55,000	42,500	45,000	55,000	65,000	65,000
Add: Closing Stk	55,000	42,500	45,000	55,000	65,000	65,000	
Total	1,17,500	1,07,500	87,500	1,00000	1,20000	1,30000	
Less: Op Stk	62,500	55,000	42,500	45,000	55000	65,000	
Purchases (in unit)	55,000	52,500	45,000	55,000	65,000	65,000	

Total Purchase (in Rs.) = 327500 × Rs 5 = Rs 16,37,500/-

10 November 2020

Unit-2

Material variance:

1. A manufacturing concern, which has adopted standard costing, furnished the following information:

-> Standard Material for 70 Kg finished product : 100 Kg
-> Price of material : Re. 1 per kg.
-> Actual output : 2,10,000 Kg.
-> Material used : 2,80,000 kg.
-> Cost of material : Rs. 2,52,000.

Calculate; Material Usage Variance, Material Price Variance, Material Cost Variance.

=> 1. Standard Qty:

For 70 Kg of material = 100 Kg output
Actual output 2,10,000 Kg ?

$$210000 \times \frac{100}{70} = 300000 \text{ std qty}$$

2. Actual price per unit = cost of material / Material used

$$= \frac{2,52,000}{2,80,000}$$

$$= \text{Re. } 90$$

a. MUV = Std Rate (Std qty for actual output - Actual quantity)

$$= 1(3,00,000 - 2,80,000)$$
$$= 1(20,000)$$
$$= \text{Rs } 20,000/- \text{ (Favourable)} \Rightarrow \text{positive}$$

b = MPV = Actual qty (Std price - Actual price)

$$= 2,80,000(\text{Re. } 1 - \text{Re. } 90)$$
$$= 2,80,000 \text{ Kgs} \times \text{Re } 0.10$$
$$= \text{Rs. } 28,000 \text{ (Favourable)}$$

c. MCV = (Std qty for actual output x standard rate) - (Actual quantity x Actual rate)

$$= (3,00,000 \text{ kg} \times 1/-) - (2,80,000 \text{ Kgs} \times 90/-)$$
$$= \text{Rs } 48000/- \text{ (Favourable)}$$

Verification : MCV = MPV + MUV

48000 = 28,000 + 20,000

48,000 = 48,000 (Favourable)

Q. The std mix to produce one unit of ... is as follows:

Material A	60 units @ Rs. 15 per unit	= Rs. 9,00
Material B	80 units @ Rs. 20 per unit	= Rs. 1,600
Material C	100 units @ Rs. 25 per unit	= Rs. 2,500
	240 units	Rs 5,000

During the month of April, 10 units were actually produced and consumption was as follows:

Material A	640 units @ Rs. 17.50 per unit	= Rs. 11,200
Material B	950 units @ Rs. 18.00 per unit	= Rs. 17,100
Material C	870 units @ Rs. 27.50 per unit	= Rs. 23,925
	2460	Rs. 52,225

Calculate all material variances -

1) MUV = Std Rate (Std qty - Actual quantity)

A = 15 (600 - 640)
= Rs 600 (Adverse/unfavourable)

B = (800 - 950) 20
= Rs 3000 (A)

C = 25 (1000 - 870)
= Rs 3250 (Favourable)

MUV = Rs. 350 (A)

2) MPV = Actual quantity (Std price - Actual price)

A = 640 (15 - 17.5) = Rs 1600 (A)

B = 950 (20 - 18) = 1900 (Favourable)

C = 870 (25 - 27.50) = Rs. 2175 (A)

MPV = Rs. 1,875 (A)

3) MCV = (Std qty for actual output x standard rate) - (Actual quantity x Actual rate)

Or

= Std cost - Actual cost

= 56,000 - 52,225

MCV = Rs. 2,225 (A)

4) MYV = Material Yield Variance

= (Actual yield - Std yield) x Std output price

= (10 - 10.25) x 5000 = Rs. 1250 (A)

Standard yield = Actual total qty / Std Mixed qty

= 2460 / 240 = 10.25 units

5. Material Mix Variance (MMV)

= (Revised std Qty - Actual Qty) x Std price

A = (615 - 640) 15 = Rs. 375 (A)

B = (820 - 950) 20 = Rs. 2600 (A)

C = (1025 - 870) 25 = Rs. 3875 (F) MMV = Rs. 900 (F)

1) Working note:

Material	Standard - 10 units			Actual - 10 units		
	Qty	Rate (per unit)	Amt Rs	Qty	Rate	Amt Rs
A	600 units	15	9,000	640 units	17.50	11,200
B	800 units	20	16,000	950 units	18	17,100
C	1,000 units	25	25,000	870 units	27.50	23,925
Total	2400		50,000	2460		52,225

5) Material A: total std Qty in units :- each material

Revised std Qty ? total actual qty :- ?

2400 - 600

2460 - ?

A = 615 units

B = 2400 - 800

2460 - ?

B = 820 units

C = 2400 - 1000

2460 - ?

C = 1025 units.

3. Indid Ltd. Manufacture a particular product, the std direct labour cost of which is Rs. 120 per unit which manufacture involves the following:

Types of workers	Hours	Rate (Rs.)	Amount (Rs.)
A	30	2	60
B	20	3	60
	50		120

During a period, 100 units of the product were produced, the actual labour cost of which was as follows;

Types of workers	Hours	Rate (Rs.)	Amt (Rs.)
A	3,200	1.50	4,800
B	1,900	4.00	7,600
	5,100		12,400

Calculate: 1. Labour cost variance 2. Labour Rate variance 3. Labour Efficiency variance 4. Labour mix variance.

Types of workers	Standard 100 units			Actual - 100 units		
	Hrs	Rate	Amt (Rs.)	Hrs	Rate	Amt
A	30 × 100 = 3000	2	6000	3200	1.5	4800
B	20 × 100 = 2000	3	6000	1900	4	7600
	5000 Hrs		12,000	5100		12400

1. Labour cost variance = SC − AC = 12,000 − 12400
= Rs. 400 (A)

2. Labour Rate Variance = (SR − AR) × AH

A = (2 − 1.5) × 3200 = 1600 (F)

B = (3 − 4) × 1900 = 1900 (A)

Rs. 300 (A)

3. LEV = (SH − AH) × SR

A = (3000 − 3200) × 2 = Rs. 400 (A)

B = (2000 − 1900) × 3 = Rs. 300 (F) = Rs. 100 (A)

4. LMV = (RSH − AH) × SR

Working note:

Revised std hours

A = 3000 × 5100/5000 = 3060 hrs

B = 2000 × 5100/5000 = 2040 hrs

> RSH

RSH = Std Hr × Total Actual Hrs / total std. hrs

A = (3060 − 3200) × 2 = Rs 280 (A)

B = (2040 − 1900) × 3 = Rs. 420 (F)

Rs. 140 (F)

5 Calculate labour cost variance from the information:

Standard production : 100 units

Standard hrs : 500 hrs

Wage rate per hr : Rs. 2

Actual production : 85 units

Actual time taken : 450 hrs

Actual wage rate paid : Rs. 2.10 per hour

- Labour cost variance = (Std. Hrs of Actual production × Std. Rate) − (Actual Hrs × Actual rate)

= (425 hrs × 2) − (450 hrs × 2.10)

= Rs 95 (A)

Working note:

Std time per unit = 500 hrs / 100 hrs = 5 hrs

Std hrs of actual production = actual production × std hrs per unit of production.

= 85 units × 5 hrs = 425 hrs

5. Std wage rate is Rs. 2 per hour & std time is 10 hours. But actual wage rate is Rs. 2.25 per hr & actual hrs used are 12 hrs. Calculate labour cost variance.

- Labour cost variance = (Std. Hrs of Actual Production × Std Rate) − (Actual Hrs × Actual Rate)

= (10 hrs × Rs. 2) − (12 hrs × Rs. 2.25)

= Rs. 20 − Rs. 27

= Rs. 7 (A)

6. Std labour hrs & rate for production of one unit of Article P is given below:

	Per unit hrs	Rate per hr	Total (Rs.)
Skilled workers	5	1.50	7.50
Unskilled workers	8	0.50	4.00
Semi-skilled workers	4	0.75	3.00

Actual Data	Rate per hr	Total (Rs.)
Article produced 1000 units		
Skilled workers 4500 hrs	2.00	9000
Unskilled workers 10,000 hours	0.45	4500
Semi-skilled workers 4200 hrs	0.75	3,150

Calculate labour cost variance:

- LCV = (Std hrs for actual production × Std Rate) − (Actual hrs × Actual Rate)

1. Skilled workers = (5000 units (1000 × 5) × Rs 1.5) − (4500 × 2)

= Rs 1500 (A)

2. Unskilled workers = (8000 (8 × 1000) × 0.50) − (10,000 × 0.45)

= Rs 1.500 (A)

3. Unskilled workers = (4000 (4 × 1000) × 0.75) − (4200 × 0.75)

= Rs 150 (A)

4. Total labour cost = Rs 2150 (A) ~~Total std cost − total~~

Overhead variance:

Formula:

I. Fixed OH Variance:

a. Fixed OH cost Variance = Recovered OH − Actual OH

b. Fixed OH Expenditure Variance = Budgeted OH − Actual OH

c. Fixed OH Volume Variance = Recovered OH − Budgeted OH

d. Fixed OH Efficiency Variance = Recovered OH − Std OH

e. Fixed OH Capacity Variance = Standard OH − Revised Budgeted OH

f. Calendar Variance = (Actual days − Budgeted days) × Std rate per day.

II. Variable OH Variance:

a. Variable OH Cost Variance = Recovered OH − Actual OH

b. Variable OH Expenditure Variance = Std OH − Actual OH

c. Variable OH Efficiency Variance = Recovered OH − ~~Actual~~ Std OH

1. MLM Ltd. furnished you the following information for the month of January:

	Budget	Actual
Output	30,000	32,500
Hours	30,000	33,000
Fixed OH	45,000	50,000
Variable overhead	60,000	68,000
Working days	25	26

Calculate overhead variances.

- Working Note:

1. Std hr per unit = Budgeted hr / Budgeted units = 30000/30,000 = 1 hr

2. Std hr for actual output = Actual output × Std hr per unit = 32500 × 1 = 32500 hr

3. Std OH rate per hr = Budgeted OH / Budgeted hrs

   1. For fixed OH = 45000/30000 = Rs. 1.50 per unit
   2. For variable OH = 60000/30000 = Rs. 2 per unit

4. Std fixed OH rate per day = Budgeted fixed OH / Budgeted no. working day = 45000/25 = Rs. 1800

5. Recovered OH = Std hrs for actual output × Std rate

   1. Fixed OH = 32500 hrs × Rs. 1.5 = Rs. 48750
   2. Variable OH = 32500 hrs × Rs. 2 = Rs. 65000

6. Std OH = Actual hrs × Std Rate

1. Fixed OH = 33000 hrs × 1.50 = Rs. 49500

2. Variable OH = 33000 hrs × 2 = Rs. 66,000

7. Revised budgeted hrs = Budgeted hrs / Budgeted days × Actual days

= 30000 / 25 × 26 = 31200 hrs.

8. Revised budgeted OH = Revised budgeted hrs × Std OH Rate per hrs

= 31200 hrs × 1.5 = Rs. 46800

Fixed OH Variances

→ Fixed OH cost variance = Revised OH − Actual OH

= 48750 − 50000 = Rs. 1250 (A)

Fixed OH Expenditure variance = Budgeted OH − Actual OH

= 45000 − 50000 = Rs. 5000 (A)

Fixed OH Volume Variance = Revised OH − Budgeted OH

= 48750 − 45000 = Rs. 3750 (F)

Fixed OH efficiency variance = Revised OH − Std OH

= 48750 − 49500 = Rs. 750 (A)

Fixed OH Capacity variance = Std OH − Revised Budgeted OH

= 49500 − 46800 = Rs. 2700 (F)

Calendar Variance = (Actual days − Budgeted days) × Std rate per day

= (26 − 25) × 1800 = Rs. 1800 (F)

Variable OH Variances

→ Variable OH Cost variance = Revised OH − Actual OH

= 65000 − 68000 = Rs. 3000 (A)

Variable OH Expenditure Variance = Std overhead − Actual OH

= 66000 − 68000 = Rs. 2000 (A)

Variable OH efficiency Variance = Revised OH − Std OH

= 65000 − 66000

= Rs. 1000 (A) //