

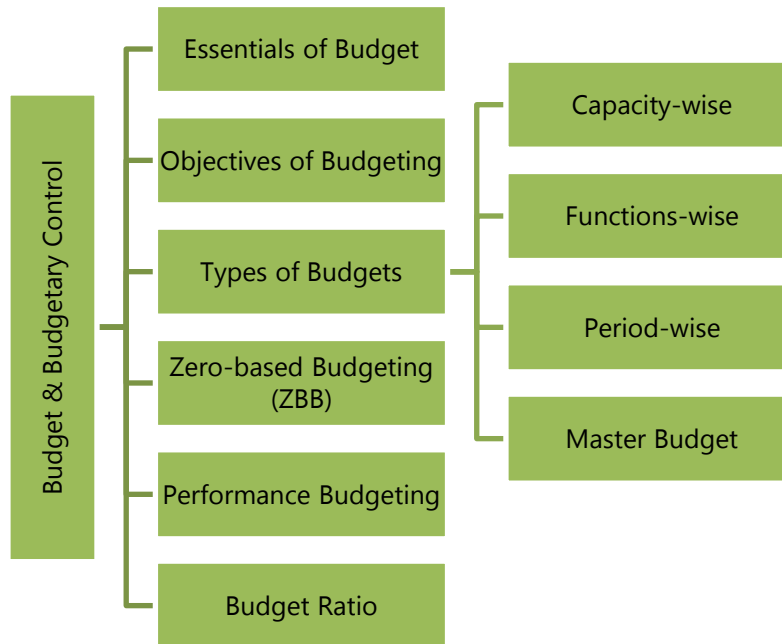
BUDGETS & BUDGETARY CONTROL



LEARNING OUTCOMES

- State the meaning and essentials of budget.
- Discuss the objectives and importance of budget and budgetary control.
- Describe the process of preparing budgets.
- List the different types of budgets.
- Differentiate between fixed and flexible budget.
- Prepare fixed and flexible budget.

CHAPTER OVERVIEW



15.1 INTRODUCTION

Budgetary control and standard costing systems are two essential tools frequently used by business executives for the purpose of cost planning and control. In the case of budgetary control, the entire exercise starts with the setting up of budgets or targets and ends with the taking of an action, in case the actual figures differ with the budgetary ones.

Meaning of Budget and Budgeting

Budget: CIMA Official Terminology has defined the terms 'budget' as "**Quantitative expression of a plan for a defined period of time.** It may include planned sales volumes and revenues; resource quantities, costs and expenses; assets, liabilities and cash flows."

Budgeting: It is a means of coordinating the combined intelligence of an entire organisation into a plan of action based on past performance and governed by rational judgment of factors that will influence the course of business in the future.

 **15.2 ESSENTIALS OF BUDGET**

Essential elements of a budget are as follows:

1. Organisational structure must be clearly defined and responsibility should be assigned to identifiable units within the organisation.
2. Setting of clear objectives and reasonable targets. Objectives should be in consonance with the long term plan of the organisation.
3. Objectives and degree of responsibility should be clearly stated and communicated to the management or person responsible for.
4. Budgets are prepared for the future periods based on expected course of actions.
5. Budgets are updated for the events that were not kept into the mind while establishing budgets. Hence, budgets should flexible enough for mid- term revision.
6. The entire organisation must be committed to budgeting.
7. Budgets should be quantifiable and master budget should be broken down into various functional budgets.
8. Budgets should be monitored periodically. Variances from the set yardsticks (standards) should be analysed and responsibility should be fixed.
9. Budgetary performance needs to be linked effectively to the reward system.

 **15.3 CHARACTERISTICS OF BUDGET**

The main characteristics of budget are as follows:

1. A budget is concerned for a definite future period.
2. A budget is a written document.
3. A budget is a detailed plan of all the economic activities of a business.
4. All the departments of a business unit co-operate for the preparation of a business budget.
5. Budget is a mean to achieve business and it is not an end in itself.

6. Budget needs to be updated, corrected and controlled every time when circumstances change. Therefore, it is a continuous process.
7. Budget helps in planning, coordination and control.
8. Different types of budgets are prepared by industries according to business requirements.
9. A budget acts as a business barometer.
10. Budget is usually prepared in the light of past experiences.
11. Budget is a constant endeavour of the Management.



15.4 OBJECTIVES OF BUDGETING

Planning:

The process of budgeting begins with the establishment of specific targets of performance and is followed by executing plans to achieve such desired goals and from time to time comparing actual results with the target goals. These targets include both the overall business targets as well as the specific targets for the individual units within the business. Establishing specific targets for future operations is part of the planning function of management, while executing actions to meet the goals is the directing function of management. It may be explained as

- **Budget plans are made in synchronisation with the overall objectives of the organisation**, keeping mission and corporate strategy into account. Individual plans at unit level should be in consonance with organisational plan.
- Budgets reflect plans and that planning should have taken place before budgets are prepared.
- Budgets plans are quantified and responsibility is assigned to the persons who are responsible for execution of plan.
- Using the budget to communicate these expectations throughout the organisation has helped many a companies to reduce expenses during a severe business recession.
- Planning not only motivates employees to attain goals but also improves overall decision making. During the planning phase of the budget process, all viewpoints are considered, options identified, and cost reduction opportunities assessed. This process may reveal opportunities or threats

that were not known prior to the budget planning process.

Directing and Coordinating:

- Once the budget plans are in place, they can be used to direct and coordinate operations in order to achieve the stated targets.
- A business, however, is much more complex and requires more formal direction and coordination.
- **The budget is one way to direct and coordinate business activities and units to achieve stated targets of performance.**
- The budgetary units of an organisation are called responsibility centers. Each responsibility center is led by a manager who has the authority over and responsibility for the unit's performance.
- Objectives and degree of performance expected from a responsibility centres are communicated rapidly.

Controlling:

- As time passes, **the actual performance of an operation can be compared against the planned targets. This provides prompt feedback to employees about their performance.** If necessary, employees can use such feedback to adjust their activities in the future.
- Feedback received in the form of budget report from the responsibility centre. This report is helpful to know the performance of the concerned unit.
- Any unexpected changes into the conditions which were prevailing at the time of preparing budget are taken into account and budgets are revised to show true performance yardstick.
- Comparing actual results to the plan also helps prevent unplanned expenditures. The budget encourages employees to establish their spending priorities.

The main objective of Budgeting is to help in achieving the overall objective of the organization.



15.5 MEANING OF BUDGETARY CONTROL

CIMA has defined the terms 'budgetary control' as "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. **“It is the system of management control and accounting in which all the operations are forecasted and planned in advance to the extent possible and the actual results compared with the forecasted and planned ones.**

15.5.1 Budgetary Control Involves:

1. Establishment of budgets
2. Continuous comparison of actual with budgets for achievement of targets.
3. Revision of budgets after considering the changes in the circumstances.
4. Placing the responsibility for failure to achieve the budget targets.

15.5.2 The salient features of such a system are the following:

1. **Determining the objectives to be achieved**, over the budget period, and the policy or policies that might be adopted for the achievement of these ends.
2. **Determining the variety of activities that should be undertaken** for the achievement of the objectives.
3. **Drawing up a plan or a scheme** of operation in respect of each class of activity, in physical as well as monetary terms for the full budget period and its parts.
4. **Laying out a system of comparison** of actual performance by each person, section or department with the relevant budget and determination of causes for the discrepancies, if any.
5. **Ensuring that corrective action will be taken** where the plan is not being achieved and, if that be not possible, for the revision of the plan.

In brief, it is a system to assist management in the allocation of responsibility and authority, to provide it with aid for making, estimating and planning for the future and to facilitate the analysis of the variation between estimated and actual performance.

In order that budgetary control may function effectively, it is necessary that the concern should develop a proper basis of measurement or standards with which to evaluate the efficiency of operations, *i.e.*, it should have in operation a system of standard costing.

Besides this, the organisation should be so integrated that all lines of authority and responsibility are laid, allocated and defined. This is essential since the

system of budgetary control postulates separation of functions and division of responsibilities and thus requires that the organisation shall be planned in such a manner that everyone, from the Managing Director down to the Shop Foreman, will have his duties properly defined.

15.5.3 Objectives of Budgetary Control System

1. **Portraying with precision the overall aims of the business** and determining targets of performance for each section or department of the business.
2. **Laying down the responsibilities** of each of the executives and other personnel so that everyone knows what is expected of him and how he will be judged. Budgetary control is one of the few ways in which an objective assessment of executives or department is possible.
3. **Providing a basis for the comparison** of actual performance with the predetermined targets and investigation of deviation, if any, of actual performance and expenses from the budgeted figures. This naturally helps in adopting corrective measures.
4. **Ensuring the best use of all available resources** to maximise profit or production, subject to the limiting factors. Since budgets cannot be properly drawn up without considering all aspects usually there is good co-ordination when a system of budgetary control operates.
5. **Co-ordinating the various activities** of the business, and centralising control and yet enabling management to decentralise responsibility and delegate authority in the overall interest of the business.
6. **Engendering a spirit of careful forethought**, assessment of what is possible and an attempt at it. It leads to dynamism without recklessness. Of course, much depends on the objectives of the firm and the vigour of its management.
7. **Providing a basis for revision** of current and future policies.
8. Drawing up long range plans with a fair measure of accuracy.
9. **Providing a yardstick** against which actual results can be compared.

15.5.4 Working of a budgetary control system

The responsibility for successfully introducing and implementing a Budgetary Control System rests with the Budget Committee acting through the Budget Officer. The Budget Committee would be composed of all functional heads and a member from the Board to preside over and guide the deliberations.

The main responsibilities of the Budget Officer are to:

1. **Assist in the preparation of the various budgets** by coordinating the work of the accounts department which is normally responsible to compile the budgets—with the relevant functional departments like Sales, Production, Plant maintenance etc.;
2. **Forward the budget to the individuals who are responsible** to adhere to them, and to guide them in overcoming any practical difficulties in its working;
3. **Prepare the periodical budget reports** for circulation to the individuals concerned;
4. **Follow-up action to be taken on the budget reports;**
5. **Prepare an overall budget working report** for discussion at the Budget Committee meetings and to ensure follow-up on the lines of action suggested by the Committee;
6. **Prepare periodical reports** for the Board meeting. Comparing the budgeted Profit and Loss Account and the Balance Sheet with the actual results attained.

It is necessary that every budget should be thoroughly discussed with the functional heads before it is finalised.

It is the duty of the Budget Officer to see that the periodical budget reports are supplied to the recipients at frequent intervals as far as possible.

The efficiency of the Budget Officer, and through him of the Budget Committee, will be judged more by the smooth working of the system and the agreement between the actual figures and the budgeted figures.

Budgets are primarily an incentive and a challenge for better performance; it is up to the Budget Officer to see that attention of the different functional heads is drawn to it to face the challenge in a successful manner.

15.5.5 Advantages of Budgetary Control System

Points	Description
1. Efficiency	The use of budgetary control system enables the management of a business concern to conduct its business activities in the efficient manner.

2. Control on expenditure	It is a powerful instrument used by business houses for the control of their expenditure. It in fact provides a yardstick for measuring and evaluating the performance of individuals and their departments.
3. Finding deviations	It reveals the deviations to management, from the budgeted figures after making a comparison with actual figures.
4. Effective utilisation of resources	Effective utilisation of various resources like—men, material, machinery and money—is made possible, as the production is planned after taking them into account.
5. Revision of plans	It helps in the review of current trends and framing of future policies.
6. Implementation of Standard Costing system	It creates suitable conditions for the implementation of standard costing system in a business organisation.
7. Cost Consciousness	Budgets are studied by outside fund providers also such as banking and financial institutions, realising that management encourages cost consciousness and maximum utilisation of available resources.
8. Credit Rating	Management which have developed a well ordered budget plans and which operate accordingly, receive greater favour from credit agencies.

15.5.6 Limitations of Budgetary Control System

Points	Description
1. Based on Estimates	Budgets are based on series of estimates which are based on the conditions prevailed or expected at the time budget is established. It requires revision in plan if conditions change.
2. Time factor	Budgets cannot be executed automatically. Some preliminary steps are required to be accomplished

	before budgets are implemented. It requires proper attention and time of management. Management must not expect too much during the development period.
3. Co-operation Required	Staff co-operation is usually not available during budgetary control exercise. In a decentralised organisation each unit has its own objective and these units enjoy some degree of discretion. In this type of organisation structure, coordination among different units are required. The success of the budgetary control depends upon willing co-operation and teamwork,
4. Expensive	Its implementation is quite expensive. For successful implementation of the budgetary control, proper organisation structure with responsibility is prerequisite. Budgeting process start from the collection of requirements to budget and performance analysis. It consumes valuable resources for these purpose, hence, it is an expensive process.
5. Not a substitute for management	Budget is only a managerial tool and must be applied correctly for management to get benefited. Budgets are not a substitute for management.
6. Rigid document	Budgets are considered as rigid document. But in reality, an organisation is exposed to various uncertain internal and external factors. Budget should be flexible enough to incorporate ongoing developments in the internal and external factors affecting the very purpose of the budget.

15.5.7 Components of Budgetary Control System

The policy of a business for a defined period is represented by the master budget, the details of which are given in a number of individual budgets called *functional budgets*. These functional budgets are broadly grouped under the following heads:

1. **Physical budgets:** Those budgets which contain information in terms of

physical units about sales, production etc. for example, quantity of sales, quantity of production, inventories, and manpower budgets are physical budgets.

2. **Cost budgets:** Budgets which provides cost information in respect of manufacturing, selling, administration etc. for example, manufacturing costs, selling costs, administration cost, and research and development cost budgets are cost budgets.
3. **Profit budgets:** A budget which enables in the ascertainment of profit, for example, sales budget, profit and loss budget, etc.
4. **Financial budgets:** A budget which facilitates in ascertaining the financial position of a concern, for example, cash budgets, capital expenditure budget, budgeted balance sheet etc.



15.6 PREPARATION OF BUDGETS

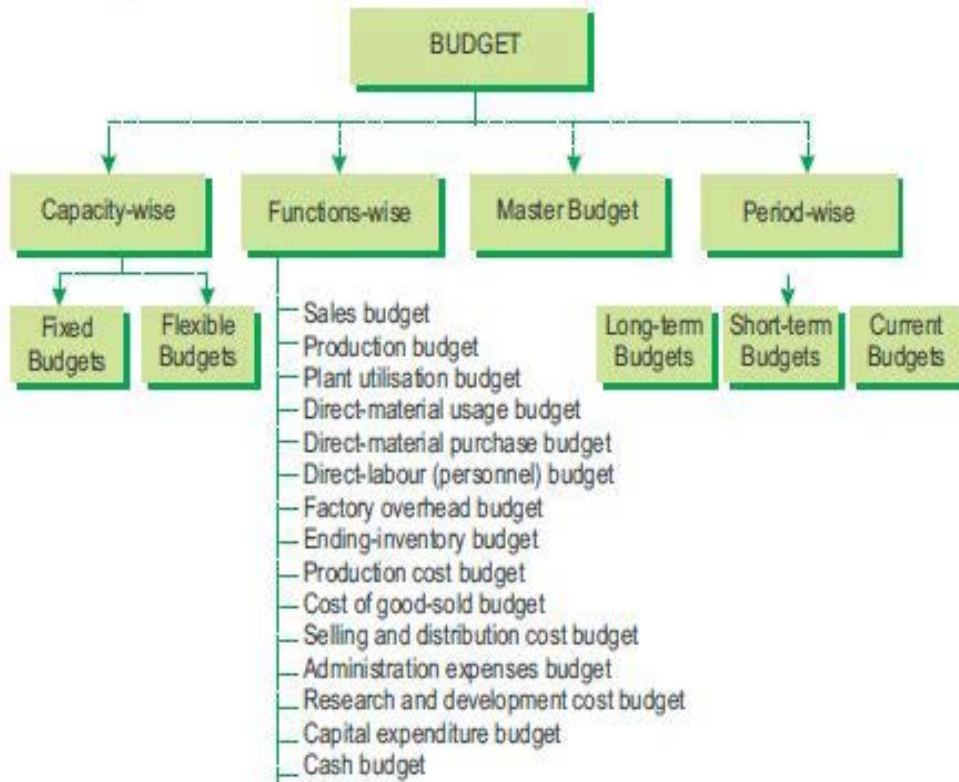
1. **Definition of objectives:** A budget being a plan for the achievement of certain operational objectives, it is desirable that the same are defined precisely. The objectives should be written out; the areas of control demarcated; and items of revenue and expenditure to be covered by the budget stated. This will give a clear understanding of the plan and its scope to all those who must cooperate to make it a success.
2. **Location of the key (or budget) factor:** There is usually one factor (sometimes there may be more than one) which sets a limit to the total activity. For instance, in India today sometimes non-availability of power does not allow production to increase in spite of heavy demand. Similarly, lack of demand may limit production. Such a factor is known as key factor. For proper budgeting, it must be located and estimated properly.
3. **Appointment of controller:** Formulation of a budget usually required whole time services of a senior executive; he must be assisted in this work by a Budget Committee, consisting of all the heads of department along with the Managing Director as the Chairman. The Controller is responsible for coordinating and development of budget programmes and preparing the manual of instruction, known as Budget manual.
4. **Budget Manual:** Effective budgetary planning relies on the provision of adequate information to the individuals involved in the planning process. Many of these information needs are contained in the budget manual. A

budget manual is a collection of documents that contains key information for those involved in the planning process. Typical contents could include the following:

- An introductory explanation of the budgetary planning and control process, including a statement of the budgetary objective and desired results.
 - A form of organisation chart to show who is responsible for the preparation of each functional budget and the way in which the budgets are interrelated.
 - A timetable for the preparation of each budget. This will prevent the formation of a 'bottleneck' with the late preparation of one budget holding up the preparation of all others.
 - Copies of all forms to be completed by those responsible for preparing budgets, with explanations concerning their completion.
 - A list of the organization's account codes, with full explanations of how to use them.
 - Information concerning key assumptions to be made by managers in their budgets, for example the rate of inflation, key exchange rates, etc.
5. **Budget period:** The period covered by a budget is known as budget period. There is no general rule governing the selection of the budget period. In practice the Budget Committee determines the length of the budget period suitable for the business. Normally, a calendar year or a period co-terminus with the financial year is adopted. The budget period is then sub-divided into shorter periods; it may be months or quarters or such periods as coincide with period of trading activity.
6. **Standard of activity or output:** For preparing budgets for the future, past statistics cannot be completely relied upon, for the past usually represents a combination of good and bad factors. Therefore, though results of the past should be studied but these should only be applied when there is a likelihood of similar conditions repeating in the future. Also, while setting the targets for the future, it must be remembered that in a progressive business, the achievement of a year must exceed those of earlier years. Therefore, what was good in the past is only fair for the current year.

In budgeting, fixing the budget of sales and of capital expenditure is most important since these budgets determine the extent of development activity. For budgeting sales, one must consider the trend of economic activity of the country, reactions of salesmen, customers and employees, effect of price changes on sales, the provision for advertisement campaign plan capacity etc.

15.7 DIFFERENT TYPES OF BUDGETS



15.7.1 Classification on the basis of Capacity or Flexibility:

These types of budgets are prepared on the basis of activity level or utilization of capacity. These are also known as "Budgets on the basis of flexibility".

(i) Fixed Budget: According to CIMA, "a fixed budget, is a budget designed to remain unchanged irrespective of the level of activity actually attained".

A fixed budget shows the expected results of a responsibility center for only one activity level.

Once the budget has been determined, it is not changed, even if the activity changes. Fixed budgeting is used by many service companies and for some administrative functions of manufacturing companies, such as purchasing, engineering, and accounting. Fixed Budget is used as an effective tool of cost control. In case, the level of activity attained is different from the level of activity for budgeting purposes, the fixed budget becomes ineffective. Such a budget is quite suitable for fixed expenses. It is also known as a static budget.

Essential conditions:

1. When the nature of business is not seasonal.
2. There is no impact of external factors on the business activities.
3. The demand of the product is certain and stable.
4. Supply orders are issued regularly.
5. The market of the product should be domestic rather than foreign.
6. There is no need of special labour or material in the production of the products.
7. Supply of production inputs is regular.
8. There is a trend of price stability.

Generally, all above conditions are not found in practice. Hence Fixed budget is not important in business concerns.

Merits and Demerits of fixed budgets are tabulated below:

Merits	Demerits
<ol style="list-style-type: none"> 1. Very simple to understand 2. Less time consuming 	<ol style="list-style-type: none"> 1. It is misleading. A poor performance may remain undetected and a good performance may go unrealised. 2. It is not suitable for long period. 3. It is also found unsuitable particularly when the business conditions are changing constantly. 4. Accurate estimates are not possible.

(ii) Flexible Budget: According to CIMA, "a flexible budget is defined as a budget which, by recognizing the difference between fixed, semi-variable and variable costs is designed to change in relation to the level of activity attained." Unlike static(fixed) budgets, flexible budgets show the expected

results of a responsibility center for different activity levels.

You can think of a flexible budget as a series of static budgets for different levels of activity. Such budgets are especially useful in estimating and controlling factory costs and operating expenses. It is more realistic and practicable because it gives due consideration to cost behaviour at different levels of activity. While preparing a flexible budget the expenses are classified into three categories viz.

- (i) Fixed,
- (ii) Variable, and
- (iii) Semi-variable.

Semi-variable expenses are further segregated into fixed and variable expenses.

Flexible budgeting may be resorted to under the following situations:

- (i) In the case of new business venture due to its typical nature it may be difficult to forecast the demand of a product accurately.
- (ii) Where the business is dependent upon the mercy of nature e.g., a person dealing in wool trade may have enough market if temperature goes below the freezing point.
- (iii) In the case of labour intensive industry where the production of the concern is dependent upon the availability of labour.

Merits and Demerits of flexible budgets are tabulated below:

Merits	Demerits
<ol style="list-style-type: none"> 1. With the help of flexible budget, the sales, costs and profit may be calculated easily by the business at various levels of production capacity. 2. In flexible budget, adjustment is very simple according to change in business conditions. 3. It also helps in determination of production level as it shows budgeted costs with classification at various levels of activity along with sales. Hence the management can 	<ol style="list-style-type: none"> 1. The formulation of flexible budget is possible only when there is proper accounting system maintained, perfect knowledge about the factors of production and various business circumstances is available. 2. Flexible Budget also requires the system of standard costing in business. 3. It is very expensive and labour

easily select the level of production which shows the profit predetermined by the owners of the business.	oriented.
4. It also shows the quantity of product to be produced to earn determined profit.	

Suitability for flexible budget:

1. Seasonal fluctuations in sales and/or production, for example in soft drinks industry;
2. a company which keeps on introducing new products or makes changes in the design of its products frequently;
3. industries engaged in make-to-order business like ship building;
4. an industry which is influenced by changes in fashion; and
5. general changes in sales.

Difference between Fixed and Flexible Budgets:

Sl. No.	Fixed Budget	Flexible Budget
1.	It does not change with actual volume of activity achieved. Thus it is known as rigid or inflexible budget	It can be re-casted on the basis of activity level to be achieved. Thus it is not rigid.
2.	It operates on one level of activity and under one set of conditions. It assumes that there will be no change in the prevailing conditions, which is unrealistic.	It consists of various budgets for different levels of activity
3.	Here as all costs like - fixed, variable and semi-variable are related to only one level of activity so variance analysis does not give useful information.	Here analysis of variance provides useful information as each cost is analysed according to its behaviour.

4.	If the budgeted and actual activity levels differ significantly, then the aspects like cost ascertainment and price fixation do not give a correct picture.	Flexible budgeting at different levels of activity facilitates the ascertainment of cost, fixation of selling price and tendering of quotations.
5.	Comparison of actual performance with budgeted targets will be meaningless specially when there is a difference between the two activity levels.	It provides a meaningful basis of comparison of the actual performance with the budgeted targets.

ILLUSTRATION 1

A factory which expects to operate 7,000 hours, i.e., at 70% level of activity, furnishes details of expenses as under:

Variable expenses	₹1,260
Semi-variable expenses	₹1,200
Fixed expenses	₹1,800

The semi-variable expenses go up by 10% between 85% and 95% activity and by 20% above 95% activity. PREPARE a flexible budget for 80, 90 and 100 per cent activities.

SOLUTION

Head of Account	Control basis	70%	80%	90%	100%
Budgeted hours		7,000	8,000	9,000	10,000
		(₹)	(₹)	(₹)	(₹)
Variable expenses	V	1,260	1,440	1,620	1,800
Semi-variable expenses	SV	1,200	1,200	1,320	1,440
Fixed expenses	F	1,800	1,800	1,800	1,800
Total expenses		4,260	4,440	4,740	5,040
Recovery rate per hour		0.61	0.55	0.53	0.50

Conclusion:

We notice that the recovery rate at 70% activity is ₹ 0.61 per hour. If in a particular month the factory works 8,000 hours, it will be incorrect to estimate

the allowance as ₹4,880 @ ₹0.61. The correct allowance will be ₹4,440 as shown in the table. If the actual expenses are ₹4,500 for this level of activity, the company has not saved any money but has over-spent by ₹60 (₹4,500 – ₹4,440).

ILLUSTRATION 2:

A department of Company X attains sale of ₹ 6,00,000 at 80 per cent of its normal capacity and its expenses are given below:

<i>Administration costs:</i>	(₹)
Office salaries	90,000
General expenses	2 per cent of sales
Depreciation	7,500
Rates and taxes	8,750
<i>Selling costs:</i>	
Salaries	8 per cent of sales
Travelling expenses	2 per cent of sales
Sales office expenses	1 per cent of sales
General expenses	1 per cent of sales
<i>Distribution costs:</i>	
Wages	15,000
Rent	1 per cent of sales
Other expenses	4 per cent of sales

PREPARE flexible administration, selling and distribution costs budget, operating at 90 per cent, 100 per cent and 110 per cent of normal capacity.

SOLUTION

Flexible Budget of Department....of Company 'X'

	80% (₹)	90% (₹)	100%(₹)	110%(₹)
Sales	6,00,000	6,75,000	7,50,000	8,25,000
Administration Costs:				
Office Salaries (fixed)	90,000	90,000	90,000	90,000
General expenses (2% of Sales)	12,000	13,500	15,000	16,500
Depreciation (fixed)	7,500	7,500	7,500	7,500

Rent and rates (fixed)	8,750	8,750	8,750	8,750
(A) Total Adm. Costs	1,18,250	1,19,750	1,21,250	1,22,750
Selling Costs:				
Salaries (8% of sales)	48,000	54,000	60,000	66,000
Travelling expenses (2% of sales)	12,000	13,500	15,000	16,500
Sales office (1% of sales)	6,000	6,750	7,500	8,250
General expenses (1% of sales)	6,000	6,750	7,500	8,250
(B) Total Selling Costs	72,000	81,000	90,000	99,000
Distribution Costs:				
Wages (fixed)	15,000	15,000	15,000	15,000
Rent (1% of sales)	6,000	6,750	7,500	8,250
Other expenses (4% of sales)	24,000	27,000	30,000	33,000
(C) Total Distribution Costs	45,000	48,750	52,500	56,250
Total Costs (A + B + C)	2,35,250	2,49,500	2,63,750	2,78,000

Note: In the absence of information it has been assumed that office salaries, depreciation, rates and taxes and wages remain the same at 110% level of activity also. However, in practice some of these costs may change if present capacity is exceeded.

ILLUSTRATION 3

Action Plan Manufacturers normally produce 8,000 units of their product in a month, in their Machine Shop. For the month of January, they had planned for a production of 10,000 units. Owing to a sudden cancellation of a contract in the middle of January, they could only produce 6,000 units in January.

Indirect manufacturing costs are carefully planned and monitored in the Machine Shop and the Foreman of the shop is paid a 10% of the savings as bonus when in any month the indirect manufacturing cost incurred is less than the budgeted provision.

The Foreman has put in a claim that he should be paid a bonus of ₹88.50 for the month of January. The Works Manager wonders how anyone can claim a bonus when the Company has lost a sizeable contract. The relevant figures are as under:

<i>Indirect manufacturing</i>	<i>Expenses for a normal month</i> (₹)	<i>Planned for January</i> (₹)	<i>Actual in costs January</i> (₹)
<i>Salary of foreman</i>	1,000	1,000	1,000
<i>Indirect labour</i>	720	900	600
<i>Indirect material</i>	800	1,000	700
<i>Repairs and maintenance</i>	600	650	600
<i>Power</i>	800	875	740
<i>Tools consumed</i>	320	400	300
<i>Rates and taxes</i>	150	150	150
<i>Depreciation</i>	800	800	800
<i>Insurance</i>	100	100	100
	5,290	5,875	4,990

Do you agree with the Works Manager? Is the Foreman entitled to any bonus for the performance in January? Substantiate your answer with facts and figures. EXPLAIN.

SOLUTION

Flexible Budget of "Action Plan Manufacturers" (for the month of January)

Indirect manufacturing cost	Nature of cost	Expenses for a normal month (₹)	Planned expenses (₹)	Expenses as per flexible budget (₹)	Actual expenses (₹)	Difference (₹)
	(1)	(2)	(3)	(4)	(5)	(6) = (5) - (4)
Salary of foreman	Fixed	1,000	1,000	1,000	1,000	Nil
Indirect labour (WN 1)	Variable	720	900	540	600	60
Indirect material (WN 2)	Variable	800	1,000	600	700	100
Repair and maintenance (WN 3)	Semi-variable	600	650	550	600	50

Power (WN 4)	Semi-variable	800	875	725	740	15
Tools consumed (WN 5)	Variable	320	400	240	300	60
Rates and taxes	Fixed	150	150	150	150	Nil
Depreciation	Fixed	800	800	800	800	Nil
Insurance	Fixed	100	100	100	100	Nil
		5,290	5,875	4,705	4,990	285

Conclusion: The above statement of flexible budget shows that the concern's expenses in the month of January have increased by ₹285 as compared to flexible budget. Under such circumstances assuming the expenses are controllable and based on the financial perspective the Foreman of the company may not be entitled for any performance bonus for the month of January.

Working notes:

1. Indirect labour cost per unit $\frac{₹ 720}{8,000} = ₹ 0.09$

Indirect labour for 6,000 units = 6,000 × ₹ 0.09 = ₹540.

2. Indirect material cost per unit $\frac{₹800}{8,000} = ₹0.10$

Indirect material for 6,000 units = 6,000 × ₹0.10 = ₹600

3. According to high and low point method of segregating semi-variable cost into fixed and variable components, following formulae may be used.

$$\text{Variable cost of repair and maintenance per unit} = \frac{\text{Change in expense level}}{\text{Change in output level}}$$

$$= \frac{₹650 - ₹600}{2,000} = ₹ 0.025$$

For 8,000 units

Total Variable cost of repair and maintenance = ₹200

Fixed repair & maintenance cost = ₹400

Hence at 6,000 units output level, total cost of repair and maintenance should be

$$= ₹ 400 + ₹ 0.025 \times 6,000 \text{ units} = ₹ 400 + ₹ 150 = ₹ 550$$

$$4. \text{ Variable cost of power per unit} = \frac{₹875 - ₹800}{2,000 \text{ units}} = 0.0375$$

For 8,000 units

Total variable cost of power = ₹300

Fixed cost = ₹500

Hence, at 6,000 units output level, total cost of power should be

$$= ₹500 + ₹0.0375 \times 6,000 \text{ units} = ₹500 + ₹225 = ₹725$$

$$5. \text{ Tools consumed cost for 8,000 units} = ₹320$$

$$\text{Hence, tools consumed cost for 6,000 units} = (₹320/8,000 \text{ units}) \times 6,000 \text{ units} \\ = ₹240$$

15.7.2 Classification on the basis of Function

A functional budget is one which is related to function of the business as for example, production budget relating to the manufacturing function. Functional budgets are prepared for each function and they are subsidiary to the master budget of the business.

The various types of functional budgets to be prepared will vary according to the size and nature of the business.

The various commonly used functional budgets are:

- (i) Sales budget
- (ii) Production budget
- (iii) Plant utilisation budget
- (iv) Direct-material usage budget
- (v) Direct-material purchase budget
- (vi) Direct-labour (personnel) budget
- (vii) Factory overhead budget
- (viii) Production cost budget
- (ix) Ending-inventory budget
- (x) Cost-of-goods-sold budget

- (xi) Selling and distribution cost budget
- (xii) Administration expenses budget
- (xiii) Research and development cost budget
- (xiv) Capital expenditure budget
- (xv) Cash budget

The important functional budgets (also known as schedules to master budget) and the master budget are discussed and illustrated below:

(i) Sales Budget:

- **Sales forecast is the commencement of budgeting and hence sales budget assumes primary importance.** The quantity which can be sold may be the principal budget factor in many business undertakings. In any case in order to chalk out a realistic budget programme, there must be an accurate sales forecast.
- The sales budget indicates for each product:
 1. the quantity of estimated sales and
 2. the expected unit selling price. These data are often reported by regions or by sales representatives.
- In estimating the quantity of sales for each product, past sales volumes are often used as a starting point. These amounts are revised for factors that are expected to affect future sales, such as the factors listed below.
 - (i) backlog of unfilled sales orders
 - (ii) planned advertising and promotion
 - (iii) expected industry and general economic conditions
 - (iv) productive capacity
 - (v) projected pricing
 - (vi) findings of market research studies
 - (vii) relative product profitability.
 - (viii) competition.
- Once an estimate of the sales volume is obtained, **the expected sales revenue can be determined by multiplying the volume by the expected unit sales price.** The sales budget represents the total sales

in physical quantities and values for a future budget period. Sales managers are constantly faced with problem like anticipation of customer requirements, new product needs, competitor strategies and various changes in distribution methods or promotional techniques.

- The purposes of sales budget are not to attempt to estimate or guess what the actual sales will be, but rather to develop a plan with clearly defined objectives towards which the operational effort is directed in order to attain or exceed the objective. Hence, sales budget is not merely a sales forecast. A budget is a planning and control document which shows what the management intends to accomplish. Thus, the sales budget is active rather than passive.
- A sales forecast, however, is a projection or estimate of the available customer demand. A forecast reflects the environmental or competitive situation facing the company whereas the sales budget shows how the management intends to react to this environmental and competitive situation.
- A good budget hinges on aggressive management control rather than on passive acceptance of what the market appears to offer. If the company fails to make this distinction, the budget will remain more a figure-work exercise than a working tool of dynamic management control.

The sales budget may be prepared under the following classification or combination of classifications:

1. Products or groups of products.
2. Areas, towns, salesmen and agents.
3. Types of customers as for example: (i) Government, (ii) Export, (iii) Home sales, (iv) Retail depots.
4. Period—months, weeks, etc.

The illustrative format of a sales budget is as under :

	Last Year		Budgeted Year Total		Northern Region		Southern Region		Central Region	
	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value
Product X										
1 st Qtr.										
2 nd Qtr.										
3 rd Qtr.										

4 th Qtr.									
Product Y									
1 st Qtr.									
:									
Total									

Example of sales budget:

XYZ COMPANY

Sales Budget for the year ending March, 20....

	Units	Selling price Per unit (₹)	Total (₹)
Product A	5,000	75	3,75,000
Product B	10,000	80	8,00,000
			11,75,000

(ii) **Production Budget:**

Production budget shows the production for the budget period based upon:

1. Sales budget,
2. Production capacity of the factory,
3. Planned increase or decrease in finished stocks, and
4. Policy governing outside purchase.

Production budget is normally stated in units of output. Production should be carefully coordinated with the sales budget to ensure that production and sales are kept in balance during the period. **The number of units to be manufactured to meet budgeted sales and inventory needs for each product is set forth in the *production budget*.**

The production facility available and the sales budget will be compared and coordinated to determine the production budget. If production facilities are not sufficient, consideration may be given to such factors as working overtime, introducing shift working, sub-contracting or purchasing of additional plant and machinery. If, however, the production facilities are surplus, consideration should be given to promote advertising, reduction of prices to increase the sales, sub-contracting of surplus capacity, etc.

One of the conditions to be considered in all the compilation of production budget is the level of stock to be maintained.

- **The level of stocks will depend upon three factors viz.:**
 1. seasonal industries in which stocks have to be built up during off season to cater to the peak season,
 2. a steady and uniform level of production to utilise the plant fully and to avoid retrenchment or lay-off of the workers, and
 3. to produce in such a way that minimum stocks are maintained at any time to avoid locking up of funds in inventory.
- **Production budget can, therefore, show:**
 1. stabilised production every month, say, the maximum possible production or
 2. stabilised minimum quantity of stocks which will reduce inventory costs.
 3. In the case of stabilised production, the production facility will be fully utilised but the inventory carrying costs will vary according to stocks held. In the case of stabilised stocks method, however, the inventory carrying will be the lowest but there may be under-utilisation of capacity.

Example of production budget:

XYZ COMPANY

Production budget in units for the year ending March 31, 20....

	<i>Products</i>	
	<i>A</i>	<i>B</i>
Budgeted sales	5,000	10,000
<i>Add</i> : Desired closing stock	500	1,000
Total quantity required	5,500	11,000
<i>Less</i> : Opening stock	1,500	2,000
Units to be produced	4,000	9,000

(iii) Plant Utilisation Budget:

Plant utilisation budget represents, in terms of working hours, weight or other convenient units of plant facilities required to carry out the programme laid down in the production budget.

The main purposes of this budget are:

1. To determine the load on each process, cost or groups of machines for the budget period.
2. To indicate the processes or cost centres which are overloaded so that corrective action may be taken such as: (i) working overtime (ii) sub-contracting (iii) expansion of production facility, etc.
3. To dovetail the sales production budgets where it is not possible to increase the capacity of any of the overloaded processes.
4. Where surplus capacity is available in any of the processes, to make effort to boost sales to utilise the surplus capacity.

(iv) Direct Material usage Budget:

The steps involved in the compilation of direct materials usage budget are as under:

1. The quality standards for each item of material have to be specified. In this connection, standardisation of size, quality, colour, etc., may be considered.
2. Standard requirement of each item of materials required should also be set. While setting the standard quality consideration should be given to normal loss in process. The standard allowance for normal loss may be given on the basis of past performance, test runs, technical estimates etc.
3. Standard prices for each item of materials should be set after giving consideration to stock and contracts entered into.

After setting standards for quality, quantity and prices, the direct materials budget can be prepared by multiplying each item of material required for the production by the standard price.

Example of direct material usage budget is as under:

XYZ COMPANY					
Direct material usage in units and in amount for the year ending March 31, 20...					
<i>Direct Materials</i>					
Type of material	Product A (4,000 units)	Product B (9,000 units)	Total direct material usage (Units)	Material cost per unit (₹)	Total cost of material used (₹)
X (12 units per finished product)	48,000	1,08,000	1,56,000	1.50	2,34,000
Y (4 units per product A & 2 units per product B)	16,000	18,000	34,000	2.50	85,000
				Total	3,19,000

(v) Purchase Budget:

- **The production budget is the starting point for determining the estimated quantities of direct materials to be purchased.**
- Multiplying these quantities by the expected unit purchase price determines the total cost of direct materials to be purchased.

Two important considerations that govern purchase budgets are as follows:

- (i) Economic order quantity.
 - (ii) Re-order point with safety stocks to cover fluctuations in demand.
- The direct material purchases budget helps management maintain inventory levels within reasonable limits, for this purpose, the timing of the direct materials purchases should be coordinated between the purchasing and production departments.

An example of material purchase budget is as under:

XYZ Company			
Direct material purchase budget for the year ending March 31, 20.....			
	<i>Material X</i>	<i>Material Y</i>	<i>Total</i>
Desired closing stock (units)	3,000	500	

Units required for production	1,56,000	34,000	
<i>Add:</i>			
Total needs	1,59,000	34,500	
<i>Less:</i> Opening stock (units)	4,000	300	
Units to be purchased	1,55,000	34,200	
Unit price (₹)	1.50	2.50	
Purchase cost (₹)	2,32,500	85,500	3,18,000

(vi) Personnel (or Labour cost) Budget:

- Once sales budget and Production budget are compiled and thereafter plant utilisation budget is settled, detailed amount of the various machine operations involved and services required can be arrived at. This will facilitate preparation of an estimate of different grades of labour required.

From this, the standard hours required to be worked can be prepared. The total labour complement thus budgeted can be divided into direct and indirect. Standard rates of wages for each grade of labour can be introduced and then the direct and indirect labour cost budget can be prepared.

Merits/advantages:

- It defines the direct and indirect labour force required.
- It enables the personnel department to plan ahead in recruitment and training of workers so that labour turnover can be reduced to the minimum.
- It reveals the labour cost to be incurred in the manufacture, to facilitate preparation of manufacturing cost budgets and cash budgets for financing the wage bill.

Example of direct-labour cost budget:

XYZ COMPANY				
Direct-labour cost budget				
for the year ending March 31, 20...				
	<i>Units to be produced</i>	<i>Direct labour hour, per unit</i>	<i>Total hours</i>	<i>Total budget cost (₹) @ ₹ 2 per hour</i>
Product A	4,000	7	28,000	56,000
Product B	9,000	10	90,000	1,80,000
			1,18,000	2,36,000

(vii) Production or Factory overhead Budget:

- Production overheads consist of all items such as indirect materials, indirect labour and indirect expenses. Indirect expenses include power, fuel, fringe benefits, depreciation etc. These estimated factory overhead costs necessary for production make up the factory overhead cost budget.
- This budget usually includes the total estimated cost for each item of factory overhead.
- The production overhead budget is useful for working out the pre-determined overhead recovery rates.
- A business may prepare supporting departmental schedules, in which the factory overhead costs are separated into their fixed and variable cost elements. Such schedules enable department managers to direct their attention to those costs for which they are responsible and to evaluate performance
- A careful study and determination of the behaviour of different types of costs will be essential in preparation of overhead budget.
- A few examples are given below to show how the expenses are estimated.
 1. Fixed expenses are policy cost and hence they are based on policy matters.
 2. For estimating indirect labour, work study is resorted to and a flexible estimate of number of indirect workers required for each level of direct workers employed is made—for example, one supervisor for every twenty direct workers.
 3. In regard to the estimate of consumption of indirect materials, the age and condition of the plant and machinery are taken into consideration.

Example of factory overhead budget:

XYZ COMPANY		
Factory overhead budget for the year ending March 31, 20....		
<i>(Anticipated activity of 1,18,000 direct labour hours)</i>		
	(₹)	(₹)
Supplies	12,000	
Indirect labour	30,000	

Cost of fringe benefits	10,000	
Power (variable portion)	22,000	
Maintenance cost (variable portion)	<u>15,000</u>	
Total variable overheads		89,000
Depreciation	10,000	
Property taxes	2,000	
Property insurance	1,000	
Supervision	12,000	
Power (Fixed portion)	800	
Maintenance (Fixed portion)	<u>3,200</u>	
Total fixed overheads		<u>29,000</u>
Total factory overheads		<u>1,18,000</u>
Factory overhead recovery rate is:		
$\frac{\text{₹1,18,000}}{1,18,000 \text{ labour hours}}$	= ₹1 per direct labour hour	

(viii) Production Cost Budget:

Production cost budget covers direct material cost, direct labour cost and manufacturing expenses. After preparing direct material, direct labour and production overhead cost budget, one can prepare production cost budget.

(ix) Ending Inventory Budget:

This budget shows the cost of closing stock of raw materials and finished goods, etc. This information is required to prepare cost-of-goods-sold budget and budgeted financial statements *i.e.*, budgeted income statement and budgeted balance sheet.

Example of ending inventory budget:

XYZ Company ending-inventory budget March 31, 20....				
	<i>Units</i>	<i>Unit cost</i>	<i>Amount</i>	<i>Total</i>
		(₹)	(₹)	(₹)
Direct material				
X	3,000	1.50	4,500	
Y	500	2.50	<u>1,250</u>	5,750
Finished goods				
A	500	49.00*	24,500	
B	1,000	53.00*	<u>53,000</u>	<u>77,500</u>
Total				<u>83,250</u>

* Unit cost of finished goods have been computed as below:

	Unit cost of input (₹)	Product A		Product B	
		Units	Amount (₹)	Units	Amount (₹)
Material X	1.50	12	18.00	12.00	18.00
Material Y	2.50	4	10.00	2.00	5.00
Direct labour	2.00	7	14.00	10.00	20.00
Factory overhead	1.00	7	<u>7.00</u>	10.00	<u>10.00</u>
			<u>49.00</u>		<u>53.00</u>

(x) Cost of Goods Sold Budget:

This budget covers direct material cost, direct labour cost, manufacturing expenses and cost of ending inventory of finished products.

We present below the cost-of-goods-sold budget on the basis of the data taken from the various budgets already illustrated:

**XYZ Company cost-of-goods-sold budget for the year ending
March 31, 20....**

	Amount (₹)
Direct materials used	3,19,000
Direct labour	2,36,000
Factory overhead	<u>1,18,000</u>
Total manufacturing costs	6,73,000
Add : Finished goods (opening)	<u>1,79,500*</u>
	8,52,500
Less : Finished goods (closing)	<u>77,500*</u>
Total cost of goods sold	<u>7,75,000</u>

*Assumed figure

In the above budget if adjustments for opening and closing inventory of finished goods are not shown. The budget will be called production cost budget.

(xi) Selling and Distribution Cost Budget:

- Selling and distribution are indispensable aspects of the profit earning function. At the same time, the pre-determination of these costs is also very difficult.
- **Selling cost is defined as the cost of seeking to create and stimulate demand and of securing orders.** These costs are, therefore, incurred to maintain and increase the level of sales. All expenses connected with advertising, sales promotion, sales office,

salesmen, credit collection, market research, after sales service, etc. are generally grouped together to form part of the responsibility of the sales manager.

- While making a budget, selling costs are divided into fixed and variable. Semi-variable costs should also be separated into variable and fixed elements.

The problems faced in the preparation of selling cost budgets are:

1. Heavy expenditure on selling and sales promotion may have to be incurred when the volume of sales is falling off. This will increase the percentage of such costs to total sales, and
2. Sometimes intensive sales and promotion efforts are called for in one year and the benefit of such efforts accrue in the subsequent years. This makes it difficult to establish a proportion of selling cost to sales.
3. In spite of these problems, some relationship between selling cost and volume of sales has to be established and it is the duty of the Budget Controller to determine the amount of selling costs to be incurred to achieve the desired level of sales volume.

Using the past experience as a guide, consideration should be given to the future trend of sales, possible changes in competition etc., in pre-determination of selling costs.

- **Distribution cost has been defined as the cost of the sequence of operations which begins with making the packet of product available for despatch and ends with making the re-conditioned return of empty package, if any available for re-use.** It includes transport cost, storage and warehousing costs, etc.
- Preparation of the advertising cost budget is the responsibility of the sales manager or advertisement manager. When preparing the advertisement cost budget consideration should be given to the following factors:
 1. The best method of advertisement must be selected; costs will vary according to the method selected.
 2. The maximum amount to be spent in a period, say one year, has to be decided.
 3. Advertising and sales should be co-ordinated. It means that money should be spent on advertisement only when sufficient

quantities of the product advertised are ready for sale.

4. An effective control over advertisement expenditure should be exercised and the effectiveness of the advertisement should be measured.
 5. The choice of the method of advertising a product is based on the effectiveness of the money spent on advertisement in increasing or maintaining sales. If the output sold increases, the production cost will come down because of the economies of large scale production.
- The amount to be spent on advertisement appropriation may be settled on the basis of the following factors:
 1. A percentage on the total sales value of the budget period or on the expected profit may be fixed on the basis of past experience.
 2. A sum which is expected to be incurred by the competitors may be fixed to be spent during the budget period.
 3. A fixed sum per unit of output can be fixed and added to cost.
 4. An amount is fixed on the basis of the ability of the company to spend on advertising.
 5. An advertisement plan is decided upon and the amount to be spent is determined.
 - Depending upon the nature of the product and the effectiveness of the media of the advertising the company prepares a schedule of various methods of advertisement, to be used for effective sales promotion. The number of advertisements (insertions) are determined and the cost calculated as per the rates applicable to each of the media selected. This is a sound method.

Example of selling and distribution cost budget:

**XYZ Company selling and distribution cost budget
for the year ending March 31, 20....**

	Amount
<i>Direct selling expenses:</i>	(₹)
Salesmen's salaries	14,500
Salesmen's commission	7,000
Travelling expenses	<u>19,000</u>

	<u>40,500</u>
<i><u>Distribution expenses:</u></i>	
Warehouse wages	6,000
Warehouse rent, rates, electricity	4,500
Lorry expenses	<u>11,000</u>
	<u>21,500</u>
<i><u>Sales office expenses:</u></i>	
Salaries	16,000
Rent, rates, electricity	12,000
Depreciation	2,000
Stationery, postage and telephone	12,500
General expenses	<u>3,000</u>
	<u>45,500</u>
<i><u>Advertising:</u></i>	
Press	4,500
Radio and television	18,500
Shop window displays	<u>4,000</u>
	<u>27,000</u>
Total	<u>1,34,500</u>

(xii) Administrative expenses Budget:

The administrative expenses are mostly policy costs and are, therefore, fixed in nature. **The most practical method to follow in preparing estimate of these expenses is to follow the past experience with due regard to anticipated changes either in general policy or the volume of business.** To bring such expenses under control, it is necessary to review them frequently and to determine at regular intervals whether or not these expenses continue to be adjusted. Examples of such expenses are: audit fees, depreciation of office equipment, insurance, subscriptions, postage, stationery, telephone, telegrams, office supplies, etc.

**XYZ Company administrative expenses budget
for the year ending March 31, 20...**

	(₹)
Salaries of clerical staff	28,000
Executives' salaries	8,000
Audit fee	600

Depreciation on office equipment	800
Insurance	250
Stationery	1,250
Postage and telegrams	950
Telephones	850
Miscellaneous	<u>5,300</u>
Total administrative expenses	<u>46,000</u>

(xiii) Research and Development expense Budget:

Research is required in order to develop and/or improve products and methods. When research results in definite benefit to the company, development function begins. After development, formal production can commence on commercial scale and then production function starts. Since the areas of research and development cannot be precisely defined, the costs incurred under both the functions are clubbed together as research and development costs. Research and Development (R & D) plays a vital role in maintaining the business. For example, automobile manufacturers, and those who produce drugs, spend considerable sums on R & D to improve the products.

Research may be either pure research or applied research. Pure research increases knowledge whereas applied research aims at producing definite results like improved methods of production, etc.

Research and development expenses should be controlled carefully and hence a limit on the spending is placed, *i.e.*, the amount to be spent is carefully determined or allocated.

- The following are the methods of allocation of R & D expenses.
 1. A percentage based on total sales value. This method is good if sales value is steady from year to year.
 2. A percentage based on net profit.
 3. A total sum is estimated on the basis of past experience and future R & D plans and policies.
 4. A sum is fixed on the basis of cash resources available with the company.

All factors which affect the importance of R & D are considered. For example, factors like demand for existing products, competition,

economic conditions, etc., are considered carefully and a sum is set as R& D budget.

(xiv) Capital expenditure Budget:

The capital expenditure budget represents the planned outlay on fixed assets like land, building, plant and machinery, etc. during the budget period. This budget is subject to strict management control because it entails large amount of expenditure. The budget is prepared to cover a long period of years and it projects the capital costs over the period in which the expenditure is to be incurred and the expected earnings.

- **The preparation of this budget is based on the following considerations:**
 1. Overhead on production facilities of certain departments as indicated by the plant utilisation budget.
 2. Future development plans to increase output by expansion of plant facilities.
 3. Replacement requests from the concerned departments.
 4. Factors like sales potential to absorb the increased output, possibility of price reductions, increased costs of advertising and sales promotion to absorb increased output, etc.

Merits/Advantages

1. It outlines the capital development programme and estimated capital expenditure during the budget period.
2. It enables the company to establish a system of priorities. When there is a shortage of funds, capital rationing becomes necessary.
3. It serves as a tool for controlling expenditure.
4. It provides the amount of expenditure to be incorporated in the future budget summaries for calculation of estimated return on capital employed.
5. This enables the cash budget to be completed. With other cash commitments capital expenditure commitment should also be considered for the completion of the budget.
6. It facilitates cost reduction programme, particularly when modernisation and renovation is covered by this budget.

ILLUSTRATION 4

A single product company estimated its sales for the next year quarter-wise as under:

Quarter	Sales (Units)
I	30,000
II	37,500
III	41,250
IV	45,000

The opening stock of finished goods is 10,000 units and the company expects to maintain the closing stock of finished goods at 16,250 units at the end of the year. The production pattern in each quarter is based on 80% of the sales of the current quarter and 20% of the sales of the next quarter.

The opening stock of raw materials in the beginning of the year is 10,000 kg. and the closing stock at the end of the year is required to be maintained at 5,000 kg. Each unit of finished output requires 2 kg. of raw materials.

The company proposes to purchase the entire annual requirement of raw materials in the first three quarters in the proportion and at the prices given below:

Quarter	Purchase of raw materials % to total annual requirement in quantity	Price per kg. (₹)
I	30%	2
II	50%	3
III	20%	4

The value of the opening stock of raw materials in the beginning of the year is ₹ 20,000. You are required to PREPARE the following for the next year, quarter wise:

- (i) Production budget (in units).
- (ii) Raw material consumption budget (in quantity).
- (iii) Raw material purchase budget (in quantity and value).
- (iv) Priced stores ledger card of the raw material using First in First out method.

SOLUTION**Working Note:**

Sales in 4 quarters

Total Annual Production (in units)

1,53,750 units

Add: Closing balance	16,250 units
	1,70,000 units
Less: Opening balance	<u>10,000</u> units
Total number of units to be produced in the next year	<u>1,60,000</u>

(i) **Production Budget (in units)**

Quarters	I Units	II Units	III Units	IV Units	Total Units
Sales	30,000	37,500	41,250	45,000	1,53,750
Production in current quarter (80% of the sale of current quarter)	24,000	30,000	33,000	36,000	
Production for next quarter (20% of the sale of next quarter)	7,500	8,250	9,000	12,250*	
Total production	31,500	38,250	42,000	48,250	1,60,000

* Difference figure.

(ii) **Raw material consumption budget in quantity**

Quarters	I	II	III	IV	Total
Units to be produced in each quarter: (A)	31,500	38,250	42,000	48,250	1,60,000
Raw material consumption p.u. (kg.): (B)	2	2	2	2	
Total raw material consumption (Kg.): (A × B)	63,000	76,500	84,000	96,500	3,20,000

(iii) **Raw material purchase budget (in quantity)**

Raw material required for production (kg.)	3,20,000
Add : Closing balance of raw material (kg.)	<u>5,000</u>
	3,25,000
Less : Opening balance (kg.)	<u>10,000</u>
Material to be purchased (kg.)	<u>3,15,000</u>

Raw material purchase budget (in value)

Quarters	% of annual requirement (Qty.) for purchasing raw material (kg.)	Quantity of raw material to be purchased	Rate per kg.	Amount
(1)	(2)	(3)	(₹) (4)	(₹) (5) = (3) × (4)
I	30	94,500 (3,15,000 kg. × 30%)	2	1,89,000
II	50	1,57,500 (3,15,000 kg. × 50%)	3	4,72,500
III	20	63,000 (3,15,000 kg. × 20%)	4	2,52,000
Total :		3,15,000		9,13,500

Priced Stores Ledger Card
(of the raw material using FIFO method)

	Quarters											
	I			II			III			IV		
	Kg.	Rate (₹)	Value (₹)	Kg.	Rate (₹)	Value (₹)	Kg.	Rate (₹)	Value (₹)	Kg.	Rate (₹)	Value (₹)
Opening balance	10,000	2	20,000	41,500	2	83,000	1,22,500	3	3,67,500	38,500	3	1,15,500
(A)										63,000	4	2,52,000
Purchases: (B)	94,500	2	1,89,000	1,57,500	3	4,72,500	63,000	4	2,52,000	—	—	—
Consumption: (C)	63,000	2	1,26,000	41,500	2	83,000	84,000	3	2,52,000	38,500	3	1,15,500
				35,000	3	1,05,000				58,000	4	2,32,000
Balance: (D)	41,500	2	83,000	1,22,500	3	3,67,500	38,500	3	1,15,500	5,000	4	20,000
(D) = (A) + (B) – (C)							63,000	4	2,52,000			

(iv)

ILLUSTRATION 5

A company is engaged in the manufacture of specialised sub-assemblies required for certain electronic equipment. The company envisages that in the forthcoming month, December, 20X9, the sales will take a pattern in the ratio of 3 : 4 : 2 respectively of sub-assemblies, ACB, MCB and DP.

The following is the schedule of components required for manufacture:

Component requirements					
Sub-assembly	Selling Price	Base board	IC08	IC12	IC26
ACB	520	1	8	4	2
MCB	500	1	2	10	6
DP	350	1	2	4	8
Purchase price (₹)		60	20	12	8

The direct labour time and variable overheads required for each of the sub-assemblies are:

	Labour hours		Variable overheads
	Grade A	Grade B	
ACB	8	16	36
MCB	6	12	24
DP	4	8	24
Direct wage rate per hour (₹)	5	4	—

The labourers work 8 hours a day for 25 days a month.

The opening stocks of sub-assemblies and components for December, 20X9 are as under:

Sub-assemblies		Components	
ACB	800	Base Board	1,600
MCB	1,200	IC08	1,200
DP	2,800	IC12	6,000
		IC26	4,000

Fixed overheads amount to ₹7,57,200 for the month and a monthly profit target of ₹ 12 lacs has been set.

The company is eager for a reduction of closing inventories for December, 20X9 of sub-assemblies and components by 10% of quantity as compared to the opening stock. PREPARE the following budgets for December 20X9:

- Sales budget in quantity and value.
- Production budget in quantity
- Component usage budget in quantity.
- Component purchase budget in quantity and value.
- Manpower budget showing the number of workers and the amount of wages payable.

SOLUTION

Working Note:

- Statement showing contribution:

<i>Sub- assemblies</i>	<i>ABC</i>	<i>MCB</i>	<i>DP</i>	<i>Total</i>
	(₹)	(₹)	(₹)	(₹)
Selling price per unit (p.u.) : (A)	520	500	350	
Marginal Cost p.u.				
Components				
- Base board	60	60	60	
- IC08	160	40	40	
- IC12	48	120	48	
- IC26	16	48	64	
Labour				
- Grade A	40	30	20	
- Grade B	64	48	32	
<i>Variable production overhead</i>	36	24	24	
Total marginal cost p.u. : (B)	424	370	288	
Contribution p.u. : (C) = (A) – (B)	96	130	62	
Sales ratio : (D)	3	4	2	
Contribution × Sales ratio: [(E) = (C) × (D)]	288	520	124	932

2. Desired Contribution for the forthcoming month December, 20X9

(₹)

Fixed overheads	7,57,200
Desired profit	<u>12,00,000</u>
Desired contribution	<u>19,57,200</u>

3. Sales mix required i.e. number of batches for the forthcoming month December, 20X9

Sales mix required = Desired contribution / contribution × Sales ratio

= ₹19,57,200 / 932 (Refer to Working notes 1 and 2)

= 2,100 batches

Budgets for December, 20X2

- (a) Sales budget in quantity and value

Sub-assemblies	ACB	MCB	DP	Total
Sales (quantity)	6,300	8,400	4,200	
(2,100 × 3:4:2)				
(Refer to working note 3)				
Selling price p.u. (₹)	520	500	350	
Sales value (₹)	32,76,000	42,00,000	14,70,000	89,46,000

- (b) Production budget in quantity

Sub-assemblies	ACB	MCB	DP
Sales	6,300	8,400	4,200
Add : Closing stock	720	1,080	2,520
(Opening stock less 10%)	—	—	—
Total quantity required	7,020	9,480	6,720
Less : Opening stock	<u>800</u>	<u>1,200</u>	<u>2,800</u>
Production	6,220	8,280	3,920

- (c) Component usage budget in quantity

Sub-assemblies	ACB	MCB	DP	Total
Production	6,220	8,280	3,920	—
Base board (1 each)	6,220	8,280	3,920	18,420

Component IC08 (8 : 2 : 2)	49,760	16,560	7,840	74,160
	(6,220 × 8)	(8,280 × 2)	(3,920 × 2)	
Component IC12 (4 : 10 : 4)	24,880	82,800	15,680	1,23,360
	(6,220 × 4)	(8,280 × 10)	(3,920 × 4)	
Component IC26 (2 : 6 : 8)	12,440	49,680	31,360	93,480
	(6,220 × 2)	(8,280 × 6)	(3,920 × 8)	

(d) Component Purchase budget in quantity and value

<i>Sub-assemblies</i>	<i>Base board</i>	<i>IC08</i>	<i>IC12</i>	<i>IC26</i>	<i>Total</i>
Usage in production	18,420	74,160	1,23,360	93,480	
Add :Closing stock	<u>1,440</u>	<u>1,080</u>	<u>5,400</u>	<u>3,600</u>	
(Opening stock less 10%)					
	19,860	75,240	1,28,760	97,080	
Less :Opening stock	<u>1,600</u>	<u>1,200</u>	<u>6,000</u>	<u>4,000</u>	
Purchase (Quantity)	18,260	74,040	1,22,760	93,080	
Purchase price (₹)	60	20	12	8	
Purchase value (₹)	<u>10,95,600</u>	<u>14,80,800</u>	<u>14,73,120</u>	<u>7,44,640</u>	<u>47,94,160</u>

(e) Manpower budget showing the number of workers and the amount of wages payable

<i>Sub-Assemblies</i>	<i>Budgeted Production</i>	<i>Direct labour</i>				<i>Total</i>
		<i>Grade A</i>		<i>Grade B</i>		
		<i>Hours per Unit</i>	<i>Total Hours</i>	<i>Hours per Unit</i>	<i>Total Hours</i>	
ACB	6,220	8	49,760	16	99,520	
MCB	8,280	6	49,680	12	99,360	
DP	3,920	4	15,680	8	31,360	
(A) Total hours			1,15,120		2,30,240	
(B) Hours per man per month			200		200	
(C) Number of workers per month : (A/B)			576		1,152	
(D) Wage rate per month (₹)			<u>1,000</u>		<u>800</u>	
(E) Wages payable (₹) : (C × D)			5,76,000		9,21,600	14,97,600

(xv) Cash Budget:

- Cash budget represents the cash requirements of the business during the budget period. **It is the plan of receipts and payments of cash for the budget period**, analysed to show the monthly flow of cash drawn up in such a way that the balance can be forecasted at regular intervals.
- The cash budget is one of the most important elements of the budgeted balance sheet. Information from the various operating budgets, such as the sales budget, the direct materials purchases budget, and the selling and administrative expenses budget, affects the cash budget.
- In addition, the capital expenditures budget, dividend policies, and plans for equity or long-term debt financing also affect the cash budget.

15.7.3 Master Budget

- When all the necessary functional budgets have been prepared, the budget officer will prepare the master budget which may consist of budgeted profit and loss account and budgeted balance sheet. These are in fact the budget summaries.
- When the master budget is approved by the board of directors, it represents a standard for the achievement of which all the departments will work.
- On the basis of the various budgets (schedules) prepared earlier in this study, we prepare below budgeted income statement and budgeted balance sheet.

Example of budgeted income statement:

XYZ Company Budgeted Income Statement		
For the Year Ending March 31, 20....		
	(₹)	Amount (₹)
Sales		11,75,000
Less: Cost of goods sold		<u>7,75,000</u>
Gross margin		4,00,000
Less: Selling and distribution expenses	1,36,500	
Less: Administrative expenses	<u>46,000</u>	<u>1,82,500</u>

Profit before interest and taxes	2,17,500
Interest expenses (assumed)	<u>50,000</u>
Profit before tax	1,67,500
Income-tax (50% assumed)	<u>83,750</u>
Net profit	<u>83,750</u>

Example of budgeted balance sheet:

XYZ Company Budgeted Balance Sheet			
March 31, 20....			
	(₹)	(₹)	(₹)
Share capital	3,50,000		
Retained income	<u>1,29,000</u>		4,79,000
<i>Represented by:</i>			
Plant and machinery	3,40,000		
Less: Provision for depreciation	<u>60,000</u>		2,80,000
Raw materials	5,750		
Finished goods	77,500		
Debtors	1,10,000		
Cash	<u>37,750</u>	2,31,000	
Less: Creditors		<u>32,000</u>	<u>1,99,000</u>
			<u>4,79,000</u>

Note: Information not available in respect of share capital, opening balance of retained earnings, current assets and current liabilities, etc., has been assumed to complete the above balance sheet.

ILLUSTRATION 6

Float glass Manufacturing Company requires you to PREPARE the Master budget for the next year from the following information:

Sales:

Toughened Glass ₹ 6,00,000

Bent Glass ₹ 2,00,000

Direct material cost 60% of sales

Direct wages 20 workers @ ₹ 150 per month

Factory overheads:

Indirect labour –

Works manager	₹ 500 per month
Foreman	₹ 400 per month
Stores and spares	2.5% on sales
Depreciation on machinery	₹ 12,600
Light and power	₹ 3,000
Repairs and maintenance	₹ 8,000
Others sundries	10% on direct wages
Administration, selling and distribution expenses	₹ 36,000 per year

SOLUTION**Master Budget for the year ending**

			(₹)
Sales:			
Toughened Glass			6,00,000
Bent Glass			2,00,000
Total Sales			8,00,000
Less: Cost of production:			
Direct materials (60% of ₹8,00,000)		4,80,000	
Direct wages (20 workers × ₹150 × 12months)		36,000	
Prime Cost		5,16,000	
Fixed Factory Overhead:			
Works manager's salary (500 × 12)	6,000		
Foreman's salary (400 × 12)	4,800		
Depreciation	12,600		
Light and power (assumed fixed)	3,000	26,400	
Variable Factory Overhead:			
Stores and spares	20,000		
Repairs and maintenance	8,000		
Sundry expenses	3,600	31,600	
Works Cost			5,74,000
Gross Profit (Sales – Works cost)			2,26,000
Less: Adm., selling and distribution expenses			36,000
Net Profit			1,90,000

15.7.4 Classification on the basis of Period:

These types of Budgets are classified on the basis of time periods. These types of budgets reflect the planning period of the organization.

1. **Long term Budget:** - The Budgets are prepared to depict long term planning of the business. The period of long term Budgets varies between three to ten years. These budgets are useful for those industries where gestation period is long i.e., machinery, electricity etc.
2. **Short term Budget:** - These budgets are generally for one or two years and are in the form of monetary terms. The consumer's good industries like Sugar, Cotton, and textile use short term budgets.
3. **Current Budgets:** - The period of current budgets is generally of months and weeks. These budgets relate to the current activities of the business. According to CIMA London "Current budget is a budget which is created which is established for use over a short period of time and is related to current conditions".



15.8 ZERO – BASED BUDGETING (ZBB)

Zero-based Budgeting (ZBB) is an emergent form of budgeting which arises to overcome the limitations of incremental (traditional) budgeting system. Zero-based Budgeting (ZBB) is defined as '**a method of budgeting which requires each cost element to be specifically justified**, although the activities to which the budget relates are being undertaken for the first time, without approval, the budget allowance is zero'.

ZBB is an activity based budgeting system where budgets are prepared for each activities rather than functional department. Justification in the form of cost benefits for the activity is required to be given. The activities are then evaluated and prioritized by the management on the basis of factors like synchronisation with organisational objectives, availability of funds, regulatory requirement etc.

ZBB is suitable for both corporate and non-corporate entities. In case of non-corporate entities like Government department, local bodies, not for profit organisations, where these entities need to justify the benefits of expenditures on social programmes like mid-day meal, installation of street lights, provision of drinking water etc.

In case of corporate entities, ZBB is best suited for discretionary costs like research and development cost, training programmes, advertisement etc.

15.8.1 Stages in Zero-based budgeting:

ZBB involves the following stages:

- (i) Identification and description of Decision packages
- (ii) Evaluation of Decision packages
- (iii) Ranking (Prioritisation) of the Decision packages
- (iv) Allocation of resources

(i) **Identification and description of Decision packages:** Decision packages are the programmes or activities for which decision is required to be taken. The programmes or activities are described for technical specifications, financial impact in the form of cost benefit analysis and other issues like environmental, regulatory, social etc.

(ii) **Evaluation of Decision packages:** Once Decision packages are identified and described, it is evaluated against factors like synchronisation with organisational objectives, availability of funds, regulatory requirement etc.

(iii) **Ranking (Prioritisation) of the Decision packages:** After evaluation of the decision packages, it is ranked on the basis priority of the activities. Because of this prioritization feature **ZBB is also known as Priority-based Budgeting.**

(iv) **Allocation of resources:** After ranking of the decision packages, resources are allocated for decision packages. Budgets are prepared like it is done first time without taking reference to previous budgets.

15.8.2 Advantages of Zero-based budgeting:

The advantages of zero-based budgeting are as follows:

- It **provides a systematic approach for the evaluation of different activities** and rank them in order of preference for the allocation of scarce resources.
- It **ensures that the various functions undertaken by the organization are critical** for the achievement of its objectives and are being performed in the best possible way.
- It **provides an opportunity to the management to allocate resources** for various activities only after having a thorough cost-benefit-analysis. The chances of arbitrary cuts and enhancement are thus avoided.
- The **areas of wasteful expenditure can be easily identified and eliminated.**

- Departmental budgets are closely linked with corporation objectives.
- **The technique can also be used for the introduction and implementation of the system of 'management by objective.'** Thus, it cannot only be used for fulfillment of the objectives of traditional budgeting but it can also be used for a variety of other purposes.

Zero based budgeting is superior to traditional budgeting: Zero based budgeting is superior to traditional budgeting in the following manner:

- It provides a systematic approach for evaluation of different activities.
- It ensures that the function undertaken are critical for the achievement of the objectives.
- It provides an opportunity for management to allocate resources to various activities after a thorough – cost benefit analysis.
- It helps in the identification of wasteful expenditure and then their elimination. It facilitates the close linkage of departmental budgets with corporate objectives
- It helps in the introduction of a system of Management by Objectives.

15.8.3 Difference between Traditional Budgeting and Zero- based budgeting:

Following are the points of difference between traditional budgeting and zero-based budgeting:

- Traditional budgeting is accounting oriented. Main stress happens to be on previous level of expenditure. Zero-based budgeting makes a decision oriented approach. It is very rational in nature and requires all programmes, old and new, to compete for scarce resources.
- In traditional budgeting, first reference is made to past level of spending and then demand for inflation and new programmes. In zero- based budgeting, management focuses attention to only on decision packages, which enjoy priority to others.
- In tradition budgeting, some managers deliberately inflate their budget request so that after the cuts they still get what they want. In zero-based budgeting, a rationale analysis of budget proposals is attempted. The managers, who unnecessarily try to inflate the budget request, are likely to be caught and exposed. Management accords its approval only to a carefully devised result-oriented package.

- Traditional budgeting is not as clear and as responsive as zero- base-budgeting is.
- In traditional budgeting, it is for top management to decide why a particular amount should be spent on a particular decision unit. In Zero-based budgeting, this responsibility is shifted from top management to the manager of decision unit.
- Traditional budgeting makes a routine approach. Zero-based budgeting makes a very straightforward approach and immediately spotlights the decision packages enjoying priority over others.

15.8.4 Limitations of Zero- based Budgeting:

- The work involves in the creation of decision-making and their subsequent ranking has to be made on the basis of new data. This process is very tedious to management.
- The activity selected for the purpose of ZBB are on the basis of the traditional functional departments. So the consideration scheme may not be implemented properly.



15.9 PERFORMANCE BUDGETING (PB)

Performance Budgeting provide a meaningful relationship between estimated inputs and expected outputs as an integral part of the budgeting system. **‘A performance budget is one which presents the purposes and objectives for which funds are required,** the costs of the programmes proposed for achieving those objectives, and quantitative data measuring the accomplishments and work performed under each programme. Thus PB is a technique of presenting budgets for costs and revenues in terms of functions. Programmes and activities are correlating the physical and financial aspect of the individual items comprising the budget.

15.9.1 Traditional budgeting vs. Performance budgeting

- The traditional budgeting gives more emphasis on the financial aspect than the physical aspects or performance. PB aims at establishing a relationship between the inputs and the outputs.
- Traditional budgets are generally prepared with the main basis towards the objects or items of expenditure i.e. it highlights the items of expenditure, namely, salaries, stores and materials, rates, rents and taxes and so on. In the PB emphasis is more on the functions of the organisation, the programmes

to discharge these function and the activities which will be involved in undertaking these programmes.

15.9.2 Steps in Performance Budgeting:

According to the Administrative Reforms Commission (ARC) the following steps are the basic ones in PB:

- Establishing a meaningful functional programme and activity classification of government operations;
- Bring the system of accounting and financial management in accord with this classification
- Evolving suitable norms, yardsticks, work units of performance and units costs, wherever possible under each programme and activity for their reporting and evaluation.

The Report of the ARC use the following terms in an integrated sequence:



The term 'function' is used in the sense of 'objective'. For achieving objectives 'programmes' will have to be evolved. In respect of time horizon, it is essentially a replacement of traditional annual fiscal budgeting by a more output-oriented, but still an annual, exercise.

For an enterprise that wants to adopt PB, it is thus imperative that:

- the objectives of the enterprise are spelt out in concrete terms.
- the objectives are then translated into specific functions, programmes, activities and tasks for different levels of management within the realities of fiscal; constraints;
- realistic and acceptable norms, yardsticks or standards and performance indicators should be evolved and expressed in quantifiable physical units.
- a style of management based upon decentralised responsibility structure should be adopted, and
- an accounting and reporting system should be developed to facilities monitoring, analysis and review of actual performance in relation to budgets.

Performance Reporting at various levels of management:

Report: A major part of the management accountant's job consists of preparing

reports to provide information for purposes of control and planning:

The important consideration in drawing up of reports and determining their scope are the following:

Significance : Are the facts in the reports reliable? Does it either called for action or demonstrate the effect of action? It is material enough.

Timeliness : How late can the information be and still be of use? What is the earliest moment at which it could be used if it were available? How frequently is it required.

Accuracy : How small should be an inaccuracy which does not alter the significance of the information?

Appropriateness : Is the recipient the right person to take any action that is needed? Is there any other information which is required to support the information to anyone else jointly interested?

Discrimination : Will anything be lost by omitting the item? Will any of the items gain from the omission? Is the responsibility for suppressing the item acceptable?

Presentation : Is the report clear and unbiased? Is the form of it is suitable to the subject? Is the form of it suitable to the recipient?

The following are certain types of reports which are to be prepared and submitted to management regularly at predetermined time interval:

1. Top Management: (Including Board of Directors and financial managers)

- (i) Balance Sheet
- (ii) Profit & Loss Statement
- (iii) Position of stocks
- (iv) Disposition of funds or working capital;
- (v) Capital expenditure & forward commitments together with progress of projects in hands;
- (vi) Cash-flow statements;
- (vii) Sales, production, and other appropriate statistics.

2. Sales Management:

- (i) Actual sales compared with budgeted sales to measure performance by:
 - Products,
 - Territories
 - Individual salesmen, and
 - Customers.
- (ii) Standard profit and loss by product:
 - For fixing selling prices, and
 - To Concentrate on sales of most profitable products.
- (iii) Selling expenses in relation to budget and sales value analyzed by:
 - Products,
 - Territories
 - Individual salesmen, and
 - Customers.
- (iv) Bad debts and accounts which are slow and difficult in collection.
- (v) Status reports on new or doubtful customers.

3. Production Management:

- (i) To Buyer: Price variations on purchases analysed by commodities.
- (ii) To Foreman:
 - Operational efficiency for individual operators duly summarized as departmental average;
 - Labour utilization report and causes of lost time and controllable time;
 - Indirect shop expenses against the standard allowed; and
 - Scrap report.
- (iii) To Works Managers:
 - Departmental operating statement;

- General works operating statements (Expenses relating to all works expenses not directly allocable or controllable by departments);
- Plant utilization report;
- Department Scrap report; and
- Material usage report.

4. Special Reports:

These reports may be prepared at the request of general management or at the initiative of the management accountants. The necessity for them may, in some cases, arise on account of the need for more detailed information on matters of interest first revealed; by the routine, reports. These reports may range over a very wide area. Some of the matters in respect of which such reports may be required can be:

- (i) Taxation legislation and its effect on profits.
- (ii) Estimates of the earning capacity of a new project.
- (iii) Break-even analysis
- (iv) Replacement of capital equipment.
- (v) Special pricing analysis
- (vi) Make or buy certain components
- (vii) Statement of surplus available for payment of bonus under the labour appellate tribunal formula.

15.10 BUDGET RATIO

These ratios provide information about the performance level, i.e., the extent of deviation of actual performance from the budgeted performance and whether the actual performance is favourable or unfavorable. If the ratio is 100% or more, the performance is considered as favourable and if ratio is less than 100% the performance is considered as unfavourable.

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

Capacity Usage Ratio: This relationship between the budgeted number of working hours and the maximum possible number of working hours in a budget period.

Standard Capacity Employed Ratio: This ratio indicates the extent to which facilities were actually utilized during the budget period.

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

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

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

Budget Ratios:

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

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

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

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

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

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

ILLUSTRATION 7

Following data is available for DKG and Co:

Standard working hours	8 hours per day of 5 days per week
Maximum capacity	50 employees
Actual working	40 employees
Actual hours expected to be worked per four week	6,400 hours

Std. hours expected to be earned per four weeks 8,000 hours

Actual hours worked in the four- week period 6,000 hours

Standard hours earned in the four- week period 7,000 hours.

The related period is of 4 weeks. In this period there was a one special day holiday due to national event. CALCULATE the following ratios:

(1) Efficiency Ratio, (2) Activity Ratio, (3) Calendar Ratio, (4) Standard Capacity Usage Ratio, (5) Actual Capacity Usage Ratio. (6) Actual Usage of Budgeted Capacity Ratio.

SOLUTION

Maximum Capacity in a budget period

$$= 50 \text{ Employees} \times 8 \text{ Hrs.} \times 5 \text{ Days} \times 4 \text{ Weeks} = 8,000 \text{ Hrs.}$$

Budgeted Hours

$$40 \text{ Employees} \times 8 \text{ Hrs.} \times 5 \text{ Days} \times 4 \text{ Weeks} = 6,400 \text{ Hrs.}$$

Actual Hrs. = 6,000 Hrs. (given)

Standard Hrs. for Actual Output = 7,000 Hrs.

Budget No. of Days = 20 Days = 20 Days (4 Weeks x 5 Days)

Actual No. of Days = 20 – 1 = 19 Days

$$1. \quad \text{Efficiency Ratio} = \frac{\text{Standard Hrs}}{\text{Actual Hrs}} \times 100 = \frac{7,000 \text{ hours}}{6,000 \text{ hours}} \times 100 = 116.67\%$$

$$2. \quad \text{Activity Ratio} = \frac{\text{Standard Hrs}}{\text{Budgeted Hrs}} \times 100 = \frac{7,000 \text{ hours}}{6,400 \text{ hours}} \times 100 = 109.375\%$$

$$3. \quad \text{Calendar Ratio} = \frac{\text{Available working days}}{\text{Budgeted working days}} \times 100 = \frac{19 \text{ days}}{20 \text{ days}} \times 100 = 95\%$$

$$4. \quad \text{Standard Capacity Usage Ratio} = \frac{\text{Budgeted Hours}}{\text{Max. possible hours in the budgeted period}} \times 100$$

$$= \frac{6,400 \text{ hours}}{8,000 \text{ hours}} \times 100 = 80\%$$

$$5. \quad \text{Actual Capacity Usage Ratio} = \frac{\text{Actual Hours worked}}{\text{Max. possible working hours in a period}} \times 100$$

$$= \frac{6,000 \text{ hours}}{8,000 \text{ hours}} \times 100 = 75\%$$

$$6. \quad \text{Actual Usage of Budgeted Capacity Ratio} = \frac{\text{Actual working Hours}}{\text{Budgeted Hours}} \times 100$$

$$= \frac{6,000 \text{ hours}}{6,400 \text{ hours}} \times 100 = 93.75\%$$

SUMMARY

- ◆ **Budget:** It is statement of an estimated performance to be achieved in given time, expressed in currency value or quantity or both.
- ◆ **Budget Centre:** A section of an organization for which separate budget can be prepared and control exercised.
- ◆ **Budgetary Control:** Guiding and regulating activities with a view to attaining predetermined objectives, effectively and efficiently.
- ◆ **Budget Manual:** The Budget manual is a schedule, document or booklet which shows, in written forms the budgeting organisation and procedures.
- ◆ **Budget Period:** The period of time for which a budget is prepared and used. It may be a year, quarter or a month.
- ◆ **Classification of Budgets:**
 - Nature based - Fixed and Flexible
 - Content based - Monetary and Physical
 - Functional based - Purchase, Sale, Production Cost, Administrative, Selling & Distribution, Research & Development, Plant Capital Expenditure, Cash, Plant Utilization.
- ◆ **Fixed Budget:** a fixed budget, is a budget designed to remain unchanged irrespective of the level of activity actually attained
- ◆ **Flexible Budget:** a flexible budget is defined as a budget which, by recognizing the difference between fixed, semi-variable and variable costs is designed to change in relation to the level of activity attained.
- ◆ **Zero-based Budgeting (ZBB):** Zero- based Budgeting (ZBB) is defined as 'a method of budgeting which requires each cost element to be specifically

justified, although the activities to which the budget relates are being undertaken for the first time, without approval, the budget allowance is zero

- ◆ **Performance Budgeting (PB):** A performance budget is one which presents the purposes and objectives for which funds are required, the costs of the programmes proposed for achieving those objectives, and quantities data measuring the accomplishments and work performed under each programme. Thus PB is a technique of presenting budgets for costs and revenues in terms of functions.
- ◆ **Budget Ratios:** These ratios provide information about the performance level, i.e., the extent of deviation of actual performance from the budgeted performance and whether the actual performance is favourable or unfavorable.

TEST YOUR KNOWLEDGE

MCQs based Questions

1. If a company wishes to establish a factory overhead budget system in which estimated costs can be derived directly from estimates of activity levels, it should prepare a
 - (a) Master budget
 - (b) Cash budget
 - (c) Flexible budget
 - (d) Fixed budget
2. The classification of fixed and variable cost is useful for the preparation of
 - (a) Master budget
 - (b) Flexible budget
 - (c) Cash budget
 - (d) Capital budget
3. Budget manual is a document
 - (a) Which contains different type of budgets to be formulated only.
 - (b) Which contains the details about standard cost of the products to be made.

- (c) Setting out the budget organization and procedures for preparing a budget including fixation of responsibilities, formats and records required for the purpose of preparing a budget and for exercising budgetary control system.
- (d) None of the above
4. The budget control organization is usually headed by a top executive who is known as '-'.
(a) General manager
(b) Budget director/budget controller
(c) Accountant of the organization
(d) None of the above
5. "A favourable budget variance is always an indication of efficient performance". Do you agree, give reason?
(a) A favourable variance indicates, saving on the part of the organization hence it indicates efficient performance of the organization.
(b) Under all situations, a favourable variance of an organization speaks about its efficient performance.
(c) A favourable variance does not necessarily indicate efficient performance, because such a variance might have been arrived at by not carrying out the expenses mentioned in the budget.
(d) None of the above.
6. A budget report is prepared on the principle of exception and thus-
(a) Only unfavourable variances should be shown
(b) Only favourable variance should be shown
(c) Both favourable and unfavourable variances should be shown
(d) None of the above
7. Purchases budget and materials budget are same
(a) Purchases budget is a budget which includes only the details of all materials purchased
(b) Purchases budget is a wider concept and thus includes not only purchases of materials but also other item's as well

- (c) Purchases budget is different from materials budget; it includes purchases of other items only
- (d) None of the above
8. Efficiency ratio is
- (a) The extent of actual working days avoided during the budget period
- (b) Activity ratio/ capacity ratio
- (c) Whether the actual activity is more or less than budgeted activity
- (d) None of the above
9. Activity Ratio depicts
- (a) Whether actual capacity utilized exceeds or falls short of the budgeted capacity
- (b) Whether the actual hours used for actual production were more or less than the standard hours
- (c) Whether actual activity was more or less than the budgeted capacity
- (d) None of the above
10. Which of the following is usually a short-term budget.
- (a) Capital expenditure budget
- (b) Research and development budget
- (c) Cash budget
- (d) Sales budget

Theoretical Questions

1. EXPLAIN briefly the concept of 'flexible budget'.
2. DISCUSS the components of budgetary control system.
3. LIST the eight functional budgets prepared by a business.
4. DISTINGUISH between Fixed and flexible budget.
5. EXPLAIN the Essentials of budget.
6. STATE the considerations on which capital expenditure budget is prepared.
7. DESCRIBE the steps involved in the budgetary control technique.
8. DESCRIBE the salient features of budget manual.

Practical Questions

1. ABC Ltd. is currently operating at 75% of its capacity. In the past two years, the levels of operations were 55% and 65% respectively. Presently, the production is 75,000 units. The company is planning for 85% capacity level during 20X3-20X4. The cost details are as follows:

	55%	65%	75%
	(₹)	(₹)	(₹)
Direct Materials	11,00,000	13,00,000	15,00,000
Direct Labour	5,50,000	6,50,000	7,50,000
Factory Overheads	3,10,000	3,30,000	3,50,000
Selling Overheads	3,20,000	3,60,000	4,00,000
Administrative Overheads	1,60,000	1,60,000	1,60,000
	<u>24,40,000</u>	<u>28,00,000</u>	<u>31,60,000</u>

Profit is estimated @ 20% on sales.

The following increases in costs are expected during the year:

In percentage

Direct Materials	8
Direct Labour	5
Variable Factory Overheads	5
Variable Selling Overheads	8
Fixed Factory Overheads	10
Fixed Selling Overheads	15
Administrative Overheads	10

PREPARE flexible budget for the period 20X3-20X4 at 85% level of capacity. Also ascertain profit and contribution.

2. The accountant of manufacturing company provides you the following details for year 20X9:

	(₹)		(₹)
Direct materials	1,75,000	Other variable costs	80,000
Direct Wages	1,00,000	Other fixed costs	80,000

Fixed factory overheads	1,00,000	Profit	1,15,000
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Variable factory overheads	1,00,000	Sales	7,50,000
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During the year, the company manufactured two products A and B and the output and costs were:

	A	B
Output (units)	2,00,000	1,00,000
Selling price per unit	₹ 2.00	₹ 3.50
Direct materials per unit	₹ 0.50	₹ 0.75
Direct wages per unit	₹ 0.25	₹ 0.50

Variable factory overhead is absorbed as a percentage of direct wages. Other variable costs have been computed as: Product A ₹0.25 per unit; and B ₹0.30 per unit.

During 20X0, it is expected that the demand for product A will fall by 25 % and for B by 50%. It is decided to manufacture a further product C, the cost for which are estimated as follows:

	Product C
Output (units)	2,00,000
Selling price per unit	₹ 1.75
Direct materials per unit	₹ 0.40
Direct wages per unit	₹ 0.25

It is anticipated that the other variable costs per unit will be the same as for product A.

PREPARE a budget to present to the management, showing the current position and the position for 20X0 . Comment on the comparative results.

3. TQM Ltd. has furnished the following information for the month ending 30th June, 20X9:

	Master Budget	Actual	Variance
Units produced and sold	80,000	72,000	
Sales (₹)	3,20,000	2,80,000	40,000 (A)
Direct material (₹)	80,000	73,600	6,400 (F)
Direct wages (₹)	1,20,000	1,04,800	15,200 (F)

Variable overheads (₹)	40,000	37,600	2,400 (F)
Fixed overhead (₹)	40,000	39,200	800 (F)
Total Cost	2,80,000	2,55,200	

The Standard costs of the products are as follows:

	Per unit (₹)
Direct materials (1 kg. at the rate of ₹1 per kg.)	1.00
Direct wages (1 hour at the rate of ₹ 1.50)	1.50
Variable overheads (1 hour at the rate of ₹ 0.50)	0.50

Actual results for the month showed that 78,400 kg. of material were used and 70,400 labour hours were recorded.

Required:

- (i) PREPARE Flexible budget for the month and compare with actual results.
 - (ii) CALCULATE Material, Labour, Sales Price, Variable Overhead and Fixed Overhead Expenditure variances and Sales Volume (Profit) variance.
4. Jigyasa Ltd. is drawing a production plan for its two products Minimax (MM) and Heavyhigh (HH) for the year 20X9-X0. The company's policy is to hold closing stock of finished goods at 25% of the anticipated volume of sales of the succeeding month. The following are the estimated data for two products:

	Minimax (MM)	Heavyhigh (HH)
Budgeted Production units	1,80,000	1,20,000
	(₹)	(₹)
Direct material cost per unit	220	280
Direct labour cost per unit	130	120
Manufacturing overhead	4,00,000	5,00,000

The estimated units to be sold in the first four months of the year 20X9-X0 are as under

	April	May	June	July
Minimax	8,000	10,000	12,000	16,000
Heavyhigh	6,000	8,000	9,000	14,000

PREPARE production budget for the first quarter in monthwise.

5. Concorde Ltd. manufactures two products using two types of materials and one grade of labour. Shown below is an extract from the company's working papers for the next month's budget:

	Product-A	Product-B
Budgeted sales (in units)	2,400	3,600
Budgeted material consumption per unit (in kg):		
Material-X	5	3
Material-Y	4	6
Standard labour hours allowed per unit of product	3	5

Material-X and Material-Y cost ₹ 4 and ₹ 6 per kg and labours are paid ₹ 25 per hour. Overtime premium is 50% and is payable, if a worker works for more than 40 hours a week. There are 180 direct workers.

The target productivity ratio (or efficiency ratio) for the productive hours worked by the direct workers in actually manufacturing the products is 80%. In addition the non-productive down-time is budgeted at 20% of the productive hours worked.

There are four 5-days weeks in the budgeted period and it is anticipated that sales and production will occur evenly throughout the whole period.

It is anticipated that stock at the beginning of the period will be:

Product-A	400 units
Product-B	200 units
Material-X	1,000 kg.
Material-Y	500 kg.

The anticipated closing stocks for budget period are as below:

Product-A	4 days sales
Product-B	5 days sales
Material-X	10 days consumption
Material-Y	6 days consumption

Required:

CALCULATE the Material Purchase Budget and the Wages Budget for the direct workers, showing the quantities and values, for the next month.

ANSWERS/ SOLUTIONS

Answers to the MCQs based Questions

1. (c) 2. (b) 3. (c) 4. (b) 5. (c) 6. (c)
7. (b) 8. (b) 9. (c) 10. (c)

Answers to the Theoretical Questions

1. Please refer paragraph 15.7.1
2. Please refer paragraph 15.5.7
3. Please refer paragraph 15.7.2
4. Please refer paragraph 15.7.1
5. Please refer paragraph 15.2
6. Please refer paragraph 15.7.2
7. Please refer paragraph 15.5
8. Please refer paragraph 15.6

Answers to the Practical Questions

1. **ABC Ltd.**

Budget for 85% capacity level for the period 20X3-X4

Budgeted production (units)		85,000
	Per Unit (₹)	Amount (₹)
Direct Material (note 1)	21.60	18,36,000
Direct Labour (note 2)	10.50	8,92,500
Variable factory overhead (note 3)	2.10	1,78,500
Variable selling overhead (note 4)	4.32	3,67,200
Variable cost	38.52	32,74,200
Fixed factory overhead (note 3)		2,20,000
Fixed selling overhead (note 4)		1,15,000
Administrative overhead		1,76,000
Fixed cost		5,11,000
Total cost		37,85,200

Add: Profit 20% on sales or 25% on total cost	9,46,300
Sales	47,31,500
Contribution (Sales – Variable cost)	14,57,300

Working Notes:

1. Direct Materials :

75% Capacity	₹ 15,00,000	65% Capacity	₹ 13,00,000
65% Capacity	₹ 13,00,000	55% Capacity	₹ 11,00,000
10% change in capacity	<u>2,00,000</u>	10% change in capacity	<u>2,00,000</u>

For 10% increase in capacity, i.e., for increase by 10,000 units, the total direct material cost regularly changes by ₹ 2,00,000

Direct material cost (variable) = ₹ 2,00,000 ÷ 10,000 = ₹ 20

After 8% increase in price, direct material cost per unit = ₹ 20 × 1.08 = ₹ 21.60

Direct material cost for 85,000 budgeted units = 85,000 × ₹ 21.60 = ₹ 18,36,000

2. Direct Labour :

75% Capacity	₹ 7,50,000	65% Capacity	₹ 6,50,000
65% Capacity	₹ 6,50,000	55% Capacity	₹ 5,50,000
10% change in capacity	<u>1,00,000</u>	10% change in capacity	<u>1,00,000</u>

For 10% increase in capacity, direct labour cost regularly changes by ₹ 1,00,000.

Direct labour cost per unit = ₹ 1,00,000 ÷ 10,000 = ₹ 10

After 5% increase in price, direct labour cost per unit = ₹ 10 × 1.05 = ₹ 10.50

Direct labour for 85,000 units = 85,000 units × ₹ 10.50 = ₹ 8,92,500.

3. Factory overheads are semi-variable overheads:

75% Capacity	₹ 3,50,000	65% Capacity	₹ 3,30,000
65% Capacity	₹ 3,30,000	55% Capacity	₹ 3,10,000
10% change in capacity	<u>20,000</u>	10% change in capacity	<u>20,000</u>

Variable factory overhead = ₹ 20,000 ÷ 10,000 = ₹ 2

Variable factory overhead for 75,000 units = 75,000 × ₹ 2 = ₹ 1,50,000

Fixed factory overhead = ₹ 3,50,000 – ₹ 1,50,000 = ₹ 2,00,000.

Variable factory overhead after 5% increase = ₹ 2 × 1.05 = ₹ 2.10

Fixed factory overhead after 10% increase = ₹ 2,00,000 × 1.10 = ₹ 2,20,000.

4. Selling overhead is semi-variable overhead :

75% Capacity	₹ 4,00,000	65% Capacity	₹ 3,60,000
65% Capacity	₹ 3,60,000	55% Capacity	₹ 3,20,000
10% change in capacity	<u>40,000</u>	10% change in capacity	<u>40,000</u>

Variable selling overhead = ₹ 40,000 ÷ 10,000 units = ₹ 4

Variable selling overhead for 75,000 units = 75,000 × ₹ 4 = ₹ 3,00,000.

Fixed selling overhead = ₹ 4,00,000 – ₹ 3,00,000 = ₹ 1,00,000

Variable selling overhead after 8% increase = ₹ 4 × 1.08 = ₹ 4.32

Fixed selling overhead after 15% increase = ₹ 1,00,000 × 1.15 = ₹ 1,15,000

5. Administrative overhead is fixed :

After 10% increase = ₹ 1,60,000 × 1.10 = ₹ 1,76,000

2. Budget Showing Current Position and Position for 20X0

	Position for 20X9			Position for 20X0			
	A	B	Total (A+B)	A	B	C	Total (A+B+C)
Sales (units)	2,00,000	1,00,000	–	1,50,000	50,000	2,00,000	–
	(₹)	(₹)	(₹)	(₹)	(₹)	(₹)	(₹)
(A) Sales	4,00,000	3,50,000	7,50,000	3,00,000	1,75,000	3,50,000	8,25,000
Direct Material	1,00,000	75,000	1,75,000	75,000	37,500	80,000	1,92,500
Direct wages	50,000	50,000	1,00,000	37,500	25,000	50,000	1,12,500
Factory overhead (variable)	50,000	50,000	1,00,000	37,500	25,000	50,000	1,12,500
Other variable costs	50,000	30,000	80,000	37,500	15,000	50,000	1,02,500

(B) Marginal Cost	2,50,000	2,05,000	4,55,000	1,87,500	1,02,500	2,30,000	5,20,000
(C) Contribution (A-B)	1,50,000	1,45,000	2,95,000	1,12,500	72,500	1,20,000	3,05,000
Fixed costs – Factory			1,00,000				1,00,000
– Others			80,000				80,000
(D) Total fixed cost			1,80,000				1,80,000
Profit (C – D)			1,15,000				1,25,000

Comments: Introduction of Product C is likely to increase profit by ₹ 10,000 (i.e. from ₹ 1,15,000 to ₹ 1,25,000) in 20X0 as compared to 20X9. Therefore, introduction of product C is recommended.

3. (i) Statement showing Flexible Budget and its comparison with actual

		Master Budget 80,000 units	Flexible Budget (at standard cost)		Actual for 72,000 units	Variance
			Per unit	72,000 units		
A.	Sales	3,20,000	4.00	2,88,000	2,80,000	8,000 (A)
B.	Direct material	80,000	1.00	72,000	73,600	1,600 (A)
C.	Direct wages	1,20,000	1.50	1,08,000	1,04,800	3,200 (F)
D.	Variable overhead	40,000	0.50	36,000	37,600	1,600 (A)
E.	Total variable cost	2,40,000	3.00	2,16,000	2,16,000	–
F.	Contribution	80,000	1.00	72,000	64,000	–
G.	Fixed overhead	40,000	0.50	40,000	39,200	800 (F)
H.	Net profit	40,000	0.50	32,000	24,800	7,200 (A)

(ii) Variances:

- ◆ Sales Price Variance = Actual Quantity (Standard Rate – Actual Rate)
= 72,000 units (₹ 4.00 – ₹ 3.89) = ₹ 8,000 (A)
- ◆ Direct Material Cost Variance = Standard Cost for Actual output – Actual cost
= ₹ 72,000 – ₹ 73,600 = ₹ 1,600 (A)
- ◆ Direct Material Price Variance = Actual Quantity (Standard rate – Actual Rate)
= 78,400 units $\left(₹1.00 - \frac{₹73,600}{78,400 \text{ units}} \right)$
= ₹ 4,800 (F)
- ◆ Direct Material Usage Variance = Standard Rate (Std. Qty. – Actual Quantity)
= ₹1 (72,000 units – 78,400 units)
= ₹ 6,400 (A)
- ◆ Direct Labour Cost Variance = Standard Cost for actual output – Actual cost
= ₹1,08,000 – ₹1,04,800 = ₹3,200 (F)
- ◆ Direct Labour Rate Variance = Actual Hour (Std Rate – Actual Rate)
= 70,400 hours $\left(₹1.5 - \frac{₹1,04,800}{70,400 \text{ hours}} \right)$
= ₹ 800 (F)
- ◆ Direct Labour Efficiency = Standard Rate (Standard Hour – Actual Hour)
= ₹1.5 (72,000 – 70,400) = ₹ 2,400 (F)
- ◆ Variable Overhead = Recovered variable overhead – Actual variable overhead
= (72,000 units × ₹ 0.50) – ₹ 37,600
= ₹ 1,600 (A)

- ◆ Fixed Overhead Expenditure = Budgeted fixed overhead – Actual fixed overhead
= ₹ 40,000 – ₹ 39,200 = ₹ 800 (F)
- ◆ Sales Volume (Profit) Variance = Std. Profit (Budgeted Quantity – Actual Quantity)
= ₹ 0.50 (80,000 – 72,000) = ₹ 4,000(A)

4. Production Budget of Product Minimax and Heavyhigh (in units)

	April		May		June		Total	
	MM	HH	MM	HH	MM	HH	MM	HH
Sales	8,000	6,000	10,000	8,000	12,000	9,000	30,000	23,000
Add: Closing Stock (25% of next month's sale)	2,500	2,000	3,000	2,250	4,000	3,500	9,500	7,750
Less: Opening Stock	2,000*	1,500*	2,500	2,000	3,000	2,250	7,500	5,750
Production units	8,500	6,500	10,500	8,250	13,000	10,250	32,000	25,000

* Opening stock of April is the closing stock of March, which is as per company's policy 25% of next month's sale.

Production Cost Budget

Element of cost	Rate (₹)		Amount (₹)	
	MM (32,000 units)	HH (25,000 units)	MM	HH
Direct Material	220	280	70,40,000	70,00,000
Direct Labour	130	120	41,60,000	30,00,000
Manufacturing Overhead				
(4,00,000 ÷ 1,80,000 × 32,000)			71,111	
(5,00,000 ÷ 1,20,000 × 25,000)				1,04,167
			1,12,71,111	1,01,04,167

5. Number of days in budget period = 4 weeks × 5 days = 20 days

Number of units to be produced

	Product-A (units)	Product-B (units)
Budgeted Sales	2,400	3,600
Add: Closing stock		
$\left(\frac{2,400\text{units}}{20\text{days}} \times 4\text{days}\right)$ $\left(\frac{3,600\text{units}}{20\text{days}} \times 5\text{days}\right)$	480	900
Less: Opening stock	400	200
	2,480	4,300

(i) Material Purchase Budget

	Material-X (Kg.)	Material-Y (Kg.)
Material required:		
Product-A	12,400 (2,480 units × 5 kg.)	9,920 (2,480 units × 4 kg.)
Product-B	12,900 (4,300 units × 3 kg.)	25,800 (4,300 units × 6 kg.)
	25,300	35,720
Add: Closing stock		
$\left(\frac{25,300\text{kgs.}}{20\text{days}} \times 10\text{days}\right)$	12,650	10,716
$\left(\frac{35,720\text{kgs.}}{20\text{days}} \times 6\text{days}\right)$		
Less: Opening stock	1,000	500
Quantity to be purchased	36,950	45,936
Rate per kg. of Material	₹ 4	₹ 6
Total Cost	₹ 1,47,800	₹ 2,75,616

(ii) Wages Budget

	Product-A (Hours)	Product-B (Hours)
Units to be produced	2,480 units	4,300 units
Standard hours allowed per	3	5

unit		
Total Standard Hours allowed	7,440	21,500
Productive hours required for production	$\frac{7,440 \text{ hours}}{80\%} = 9,300$	$\frac{21,500 \text{ hours}}{80\%} = 26,875$
Add: Non-Productive down time	1,860 hours. (20% of 9,300 hours)	5,375 hours. (20% of 26,875 hours)
Hours to be paid	11,160	32,250

Total Hours to be paid

$$= 43,410 \text{ hours } (11,160 + 32,250)$$

Hours to be paid at normal rate

$$= 4 \text{ weeks} \times 40 \text{ hours} \times 180 \text{ workers} \\ = 28,800 \text{ hours}$$

Hours to be paid at premium rate

$$= 43,410 \text{ hours} - 28,800 \text{ hours} = 14,610 \text{ hours}$$

Total wages to be paid

$$= 28,800 \text{ hours} \times ₹ 25 + 14,610 \text{ hours} \times ₹ 37.5 \\ = ₹ 7,20,000 + ₹ 5,47,875 = ₹ 12,67,875$$