15

CHAPTER

Budgets and Budgetary Control

Budgets & Budgetary Control	
Forecast	• It is an assessment of probable future events. • It denotes some degree of flexibility.
Meaning of Budget	• A Budget is a plan quantified in monetary terms, prepared and approved prior to a defined period of time, usually showing planned income to be generated and/or expenditure to be incurred during that period and the capital to be employed to attain a given objectives. • It may be expressed in relation to time, viz., short-term and long-term budget, in relation of function, viz., production cost budget, administration cost budget, research and development cost budget, and so on; in relation behavior, viz., fixed budget and flexible budget.
Characteristics of Budget	• It is a written document. • It is concerned for a definite future period • It is a detailed plan of all the economic activities of a business • It works as a standard and all departmental plans are implemented and evaluated on the basis of budget. • Usually, a budget is prepared in monetary units but budgets for some departments are also prepared in physical units like the budget of production department. • A budget is prepared for the attainment of pre-determined objectives • All the departments of a business unit co-operate for the preparation of a business budget • Every year a budget is prepared and throughout the year is implemented, corrected and controlled therefore, it is a continuous process. • Budget helps management in planning, co-ordination and control. Thus, budget is an effective instrument for management. It also helps to check and evaluate the performance of each department.
Budgeting	• It is the process of designing, implementing and operating of budget. • Its emphasis is the provision of resources to support plans which are being implemented.

Budgetary Control	• CIMA defines Budgetary Control as, "The establishment of departmental budgets relating to the responsibilities of executives to the requirements of a policy, and the continuous comparison of actual with budgeted results, either to secure by individual action the objectives of that policy or to provide a firm basis for its revision." • In other words, it is the system of controlling costs through preparation of budgets. • It is a system of achieving the firm's objectives with minimum possible cost.
Objectives of Budgetary Control	• **Planning –** A budget provides a detailed plan of action for a business over a definite period of time. Planning helps in anticipating many problems long before they may arise and solutions can be sought through careful study. • **Co-ordination –** Budgeting aids managers in co-coordinating their efforts so that objectives of the organization as a whole harmonizes with the objectives of its divisions. • **Communication –** The approved budget copies are distributed to all management personnel which provides not only adequate understanding and knowledge of the programmes and policies to be followed but also alerts about the restrictions to be adhered to. • **Motivation –** A budget is a useful device for motivating managers to perform in line with- the company objectives. • **Control** – Control, as applied to budgeting, is a systematized effort to keep the management informed of whether the planned performance is being achieved or not. For this purpose, a comparison is made between plans and actual performance. • **Performance evaluation –** A budget provides a useful means of informing managers how well they are performing in meeting targets they have previously helped to set.
Steps for Budgetary Control	• Determining the objectives to be achieved • Determining the activities that should be undertaken • Drawing up a plan or a scheme • Laying out a system of comparison • Ensuring that corrective action will be taken
Budgetary Control System	• **Feedback Control or Ex-Post Corrective Control** – In this case, actual results are compared with the budgeted figures and then variances are identified. Based on this correction actions are taken. • **Feedforward Control or Ex-Ante Preventive Control** – It is the opposite of feedback control. In this case, actual results are compared with budget on continuous basis.

Advantages of Budgetary Control	• **Helps in Planning –** Budgeting compels managers to think ahead—to anticipate and prepare for changing conditions. • **Efficiency –** Budgeting co-ordinates the activities of various departments and functions of the business. It increases production efficiency, eliminates waste and controls the costs. • **Revision of Plans –** It helps in identifying the current trends which in turn assist in preparing for future policies. • **Implementation of Standard –** It creates necessary conditions for the introduction of standard costing technique. • **Analysis of Variance –** It provides a yardstick against which actual results can be compared. It shows management where action is needed to remedy a situation. • **Effective Utilization of resources –** It ensures that working capital and all other resources are available for the efficient operation of the business. • **Cost Consciousness –** It creates cost consciousness and introduces an attitude of mind in which waste and efficiency cannot thrive.
Limitations of Budgetary Control	• **The budget plan is based on estimates –** Budgets are based on forecasts and forecasting cannot be an exact science. Absolute accuracy, therefore, is not possible in forecasting and budgeting. • **Danger of rigidity –** A budget programme must be dynamic and continuously deal with the changing business conditions. Budgets will lose much of their usefulness if they acquire rigidity and are not revised with the changing circumstances. • **Expensive technique –** The installation and operation of a budgetary control system is a costly affair as it requires the employment of specialized staff and involves other expenditure which small concerns may find difficult to incur. • **Budgeting is only a tool of management –** Budgeting cannot take the place of management but is only a tool of management. • **Opposition from staff –** Employees may not like to be evaluated and thus oppose introduction of budgetary control system
Preparation of Budgets	• Defining business or organizational objectives • Identification of the key budget factor • Appointment of controller or officer • Preparation of budget manual i.e. booklet specifying the objectives of an organization in relation to its strategy. • Budget Period i.e. period covered by a budget. • Standard of activity or output
Fixed or Static Budget	• It is a budget which is designed to remain unchanged irrespective of the volume of output or turnover attained. • It is rigid budget and is drawn on the assumption that there will be no change in the budgeted level of activity. • It does not provide a meaningful basis for comparison and control. • Fixed budgets are established only for short-term periods when the actual results are not anticipated to differ from the budget estimates.

Features of Fixed budget	• It is prepared for one fixed level of activity. • It does not change with the change in the level of activity • Expenses are not classified into fixed, variable and semi-variable.
Limitations of Fixed budget	• It is misleading. A poor performance may remain undetected and a good performance may go unrealized • It is not suitable for long period • It is also found unsuitable when the conditions of the business are changing constantly. • It is inadequate for control purpose. • It violates logic i.e. comparison should be made between two things with a like base. • Accurate estimates not possible.
Flexible Budget	• It is a budget which is designed to change appropriately with fluctuations in various variables such as output, number of employees etc. by recognizing the difference in behavior between fixed and variable costs.
Utility or importance of Flexible budget	• Comparison based on flexible budget is more realistic and meaningful • Costs can be ascertained easily for any level of activity with the help of flexible budget. • It is helpful in price fixation and sending quotations. • It is helpful in assessing the performance of departmental heads because their performance can be judged in relation to the level of activity attained by the organization. • A flexible budget is very useful for purpose of budgetary control because it corresponds with changes in level of activity.
Advantages of flexible budget	• **Easy calculation –** It helps in easy calculation of the sales, costs and profit of the business of various levels of production capacity. • **Easy adjustment of change –** In flexible budget, adjustments are very simple according to change in business conditions. • **Knowledge about the impact of cost –** The cost is classified into three categories, namely fixed, variable and semi-variable due to which it is very easy to know the real impact of cost factors on business profits. • **Comparable –** The actual cost of production may be easily compared with budgeted cost in business and industry and right decisions may be taken by the management will in time. • **Cost control –** The actual cost may be compared with budgeted cost and steps may be taken to minimize the variances. Hence, it helps the management in controlling cost. • **Determination of production level –** The management can easily select the level of production which shows the profit predetermined by the owners of the business.

Limitations of Flexible Budget

- The formulation of flexible budget is possible only when there is a proper accounting system maintained.
- Flexible budget also required the system of standard costing in business.
- The formulation of flexible budget depends upon availability of cost experts in the business.
- The formulation of flexible budget is possible only when the perfect knowledge about the factors of production and variable business circumstances is available.
- It is very expensive and labour oriented.

Distinguish between Fixed and Flexible Budget

Basis	Fixed Budget	Flexible Budget
1. Flexibility	It is inflexible and doesn't change with the actual volume of output.	It is flexible and changes according to the level of activity.
2. Conditions	It assumes that conditions would remain static.	It is prepared according to changing conditions.
3. Classification of costs	Costs are not classified according to their variability.	Costs are classified according to their variability.
4. Comparison	Comparison between actual and budgeted performance can't be done correctly if the volume of output differs.	Comparisons are more correct and realistic as the changed plan figures are placed against actual costs.
5. Cost control	It has a limited application and is ineffective as tool for cost control.	It has more applications and can be used as a tool for cost control.
6. Forecasting	It is difficult to forecast accurately the result in it.	It clearly shows the impact of various expenses on the operational aspect of business.
7. Ascertainment of costs	It is not possible to ascertain costs correctly in changing circumstances.	Costs can be easily ascertained at different levels of activity under this type of budget.
8. Budget	Only one budget at a fixed level of activity is prepared.	Under it, series of budgets are prepared at different level of activity.

Zero Base Budgeting (ZBB)

- ZBB is a method of budgeting where all activities are revaluated each time a budget is set. Discrete levels of each activities are valued and a combination chosen to match funds available.
- In simple words, ZBB is a method of budgeting which requires each cost element to be specifically justified, as though the activities to which the budget relates were being undertaken for the first time. Without approval, the budget allowance is zero.
- ZBB is simply an extension of the cost Benefit Analysis Method to the area of corporate planning and budgeting.
- ZBB in a way tries to locate those activities which are not essential.

Master Budget or Coordinating Budget	• The Master Budget is the summary Budget incorporating its component functional budgets." Hence, it is also known as 'Coordinating Budget'. • A master budget is prepared for the business as a whole, combining all the budgets for a period into this budget. • This budget includes the budgeted position of the Profit & Loss as well as the Balance Sheet. • This budget is prepared by the Budget Officer. After its preparation, it is submitted to the Budget Committee for its approval. • After approval from Budget Committee it is presented to the Board of Directors for approval. • After the Board of directors approves the summary budget, it is known as master budget.
Secondary/ Functional Budget	• Functional budget is a budget of income or expenditure appropriate to, or the responsibility of a particular function. • A functional budget is one which relates to the individual function in an organisation. • These are prepared by the departments of the business to which it relates.
Sales Budget	• The budget which shows the volume and value of sales of a business/ firm/company during the budget period is known as Sales Budget. • It is also known as 'Revenue Budget'. • This budget is prepared by the Sales Manager with the help of some top management staff and executives. • The purpose of sales budget is not an 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 objectives. The Sales Budget is, therefore, the foundation of Budgetary Control.
Production Budget	• This budget is prepared after the preparation of Sales Budget, to determine when and how many units of various products are to be produced to fulfill the requirement of Sales Budget. • Budgeted production is equal to projected sales plus closing inventory of finished goods minus opening stock of finished goods. • The Production budget is prepared by the Production Manager and is submitted to the Budget Committee for its approval. • It is a budget of total production that is further classified by product-wise and process-wise.

Plant Utilization Budget	• This budget sets out the plant and machinery requirements to meet the budgeted production during the budget period. • For preparation of plant utilization budget, the plant capacity is expressed in terms of convenient units such as working hours, weight or number of units, etc. • If the plant utilization is more than the plant capacity, the management may think of extra shift working, purchase of new machinery, overtime working, sub-contracting etc. • On the other hand, if the budgeted plant utilization is lesser than the plant capacity, management should consider the ways to increase in sales volume. • The preparation of Plant Budget is essential for the industries, where the cost of machines are very high and where major part of production process is covered by machines.
Direct Material Purchase Budget	• This budget indicates, either in terms of money or of quantity, the expected purchases of raw materials to be made during the budget period to fulfill the production budget. • The Material Budget provides basis for fixing optimum levels of inventory stocks, establishment of control over material usage and Purchase Cost Budget, Maximum and Minimum Stock, Stock Level, EOQ etc. • The purchase director or manager is directly responsible for the preparation and execution of Direct Material Purchase Budget. • There are two states of preparing material budget. First, quantities of different types of direct material are estimated. Secondly, price of each kind of direct material and component is found out to obtain cost of different types of materials and components consumed, in production.
Direct Labour Cost Budget	• Direct labour cost budget represents the hours and cost of total labour force (which may be distributed item-wise, plant-wise, department-wise) required during the budget period. • The labour requirement is first ascertained in terms of grades and trades of workers and their supply through the personnel department is assured. • The labour budget is prepared by the personnel department. The labour budget should be prepared both for direct and indirect labour. • The Direct Labour Budget will ensure that the plan will make the required number of various kinds of labour available at the right time. It is an estimate of labour power to achieve the desired targets of budgeted production.
Direct Expenses Budget	• Direct Expenses Budget signifies the expenses to be incurred on budgeted production during the budget period. • These expenses are directly related with production and change as per proportionate change in the output. • Direct Expenses Budget includes all direct expenses except material and labour related with production. • The amount incurred on these expenses is marginal only and because of this generally, it is not prepared except big companies.

Factory / Production / Manufacturing Overhead Budget	• Factory overheads budget represents the amount of total factory overheads (which may be distributed element-wise, variability-wise, period-wise plant-wise) to be incurred during the budget period. • Production Director or Manager is directly responsible for the preparation and execution of overall factory overheads budget. • Main considerations of preparing these budgets are past experience, present cost and effect of budgeted production on relative cost items during forthcoming budget period. • Manufacturing expenses refers to the aggregate of factory overheads, like, indirect material, indirect labour and other indirect expenses which can be divided into fixed and variable elements
Production Cost Budget	• Production cost budget express the cost of carrying out production plans and programmes set out in production budget. • It summarizes material cost, labour cost and factory overhead for production. • Hence, Production Cost Budget is a summary of Material Budget, Labour Budget, Factory Overheads Budget and Plant utilization Budget.
Office and Administrative Cost Budget	• The Administrative Cost Budget signifies the expenses which are to be incurred on the operating activities of office during the plan period. • It includes all the expenses that are incurred to run the administration whether expenses are of fixed or variable nature. • Administration director/Manager is directly responsible for the preparation and execution of overall Office & Administrative Cost Budget.
Selling & Distribution Overhead Budget	• Selling & Distribution cost budget represents the amount of total selling & distribution cost (which may be distributed element-wise, variability-wise, period-wise, area-wise) to be incurred during the budget period. • Sales Director/Manager is directly responsible for the preparation and execution of overall selling & distribution cost budget. • Fixed selling & distribution costs can be estimated on the basis of the past information and knowledge of any changes which may occur during the ensuing budget period. • Variable selling & distribution costs can be estimated after considering the scheduled sales and operating conditions in the budget period.
Capital Expenditure Budget	• The capital expenditure budget represents the expected expenditure on fixed assets involving huge capital outlay and long-term commitment during the budget period. • It may be long-term or short-term. But, it is usually prepared for a longer period, say, 5 to 10 years. If it is prepared for a longer period, it will have to be broken down into short periods. • Since there is a high degree of inflexibility, recovery of cost will take a long period of time because of the investment in fixed assets. That is why this budget should be coordinated with other budgets, viz., Cash Budget, Factory Overhead Budget, Balance Sheet Budget etc. • Proposal for capital expenditure may be initiated by any one from operating level to top level of management. The request is first appraised by the concerned departmental head, who if project appears to be sound, makes formal request for capital appropriation to top management.

Cash Budget	• Cash budget is based on cash forecasts or estimates which gives information as to what funds would be available at what times, and whether the funds so available would meet the requirement of the time. • Cash budget like any other budget is concerned with future events, events which can be approximated or "best guessed" taking into consideration past results, present strengths and future trends. • Cash Budgets provide a blueprint of the cash inflows and outflows that are expected to occur in the immediate future period. They assist the management in determining the surplus or shortage of funds and to take suitable action.
Performance Budgeting	• It is a technique under which Responsibility centers are established and the targets in terms of physical performance are set for each Responsibility Centre and then expenditures (i.e. inputs in financial terms) are linked with physical performance (i.e. output in physical terms) and performance is evaluated through Periodic Performance Reports. • The concept of performance budgeting is used extensively in the Government and Public Sector undertakings. • In comparison to other budget forms the objectives of performance budgeting is to provide a closer linkage between planning and action and to provide a more common basis for review, control and reporting. • The basic issues involved in the preparation of performance budgets are that of developing work programmes and performance expectations by assigning responsibilities necessary for the attainment of the goals and objectives of the enterprise.
Budget Ratio	• Efficiency Ratio = $\frac{\text{Standard hours}}{\text{Actual hours}} \times 100$ • Activity Ratio = $\frac{\text{Standard hours}}{\text{Budgeted hours}} \times 100$ • Calendar Ratio = $\frac{\text{Available Working days}}{\text{Budgeted working days}} \times 100$ • Standard Capacity Usage Ratio = $\frac{\text{Standard Budgeted hours}}{\text{Max. possible hours}} \times 100$ • Actual Capacity Usage Ratio = $\frac{\text{Actual hours worked}}{\text{Max. possible hours}} \times 100$ • Actual usage of budgeted capacity ratio = $\frac{\text{Actual hours}}{\text{Budgeted hours}} \times 100$

PRACTICAL QUESTIONS

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

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.

Ans. ₹4,440; ₹4,740; ₹5,040.

2. SK Ltd. manufactures a single product for which market demand exists for additional quantity. Present sales of ₹60,000 per month utilizes only 60% capacity of the plant. Marketing Manager assures that with the reduction of 10% in the price he would be in a position to increase the sale by about 25% to 30%. **[Similar Nov 2020]**

The following data are available:

(i)	Selling price	₹10 per unit
(ii)	Variable cost	₹3 per unit
(iii)	Semi-variable cost	₹6,000 fixed + 50 paise per unit
(iv)	Fixed cost	₹20,000 at present level estimated to be ₹25,000 at 80% output

You are required to prepare the following statements:

(1) The operating profit at 60%, 7s0% and 80% levels at current selling price, and

(2) The operating profits at proposed selling price at the above levels.

Ans. (1) ₹13,000; ₹19,500; ₹21,000; (2) ₹7,000; ₹12,500; ₹13,000.

3. From the following information relating to 2018 and conditions expected to prevail in 2019, prepare a budget for 2019.

2018 Actuals:	₹
Sales	1,00,000 (40,000 units)
Raw materials	53,000
Wages	11,000
Variable overheads	16,000
Fixed overheads	10,000
2019 Prospects:	
Sales	1,50,000 (60,000 units)
Raw material	5% price increase
Wages	10% increase in wage rate
	5% increase in productivity
Additional plant	One lathe ₹28,000
	one lathe drill ₹9,000

Rate of depreciation is 10%.

Ans. ₹11,539.

4. SK Pvt. Ltd. ended with the following Profit/Loss during the year 2018:

			All figures in lakhs of ₹
Sales			35.58
Less: Expenses	Raw materials	7.42	
	Stores	4.88	
	Expenses	20.40	
	Interest	2.00	
	Depreciation	2.00	36.70
Loss for the year			(1.12)

The company had been working at 60% of capacity during 2018. Of the expenses of ₹20.40 lakhs, 25% is variable. In 2019, production/sales volume at 80% of capacity is expected to be achieved. Fixed cost is however expected to increase by ₹1.20 lakhs. Draw the 2019 budget.

Ans. Profit = ₹3.74 lakhs.

5. The profitability statement of SK Ltd. has been summarized as follows:

	₹	₹
Sales		15,00,000
Direct materials	4,50,000	
Direct wages	3,00,000	
Variable overheads	1,20,000	
Fixed overheads	4,40,000	13,10,000
Profit	1,90,000	

The budgeted capacity of the company is ₹20,00,000 but the key factor is sales demand. It is proposed that in order to utilize the existing capacity the selling price of this only product manufactured by the company should be reduced by 5%.

You are required to prepare a forecast statement which should show the effect of the proposed reduction in selling price and include any changes in costs expected during the coming year. The following additional information is given:

(i) Sales forecast ₹19,00,000 (after reduction).
(ii) Direct material prices are expected to increase by 2%.
(iii) Direct wage rates are expected to increase by 5% per unit.
(iv) Variable overheads are expected to increase by 5% per unit.
(v) Fixed overheads will increase by ₹20,000

Ans. Profit - ₹2,40,000.

6. SK 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 the year. The cost details are as follows: **[SM]**

	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

	55% (₹)	65% (₹)	75% (₹)
Administrative overheads	1,60,000	1,60,000	1,60,000
	24,40,000	28,00,000	31,60,000

Profit is estimated @ 20% on sales.

The following increases in costs are expected during the year:

	In percentage
Direct material	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 next year at 85% level of capacity. Also ascertain profit and contribution.

Ans. Profit = ₹9,46,300; Contribution = ₹14,57,300.

7. Figures regarding sales, cost and profit at 50% capacity are given below:

	₹
Sales	20,00,000
Direct cost	8,00,000
Factory overheads	4,00,000
Office overheads	2,00,000
Selling overheads	3,00,000
Profit	3,00,000

Every 10% increase in sales beyond 50% capacity is possible only after reducing the price by 1% on the base level of 50% capacity. Direct material cost is 25% of the total direct cost at 50% capacity. With every 10% increase in capacity above this level, the price of direct material comes down by 2%. 50% of the factory overheads are fixed and the rest are fully variable. Office overheads are of step characters. Every 10% increase in output results in 2% increase in office overheads over 50% capacity. Selling overheads increase in proportion of sales value. Prepare a flexible budget at 80% capacity level.

Ans. ₹6,45,600.

8. SK Company expects to sell 84,000 units of finished goods over the next 3-months period. The company currently has 44,000 units of finished goods on hand and wishes to have an inventory of 48,000 units at the end of the 3-month period. To produce 1 unit of finished goods requires 4 units of raw materials. The company currently has 2,00,000 units of raw materials on hand and wishes to have an inventory of 2,20,000 units of raw materials on hand at the end of the 3-month period. How many units of raw materials must the SK Company purchase during the 3-month period?

Ans. 3,72,000 units.

9. From the following data, prepare a production budget for SK Ltd.:

Stocks for the budgeted period:

Product	As on 1st January	As on 30th June
A	8,000	10,000
B	9,000	8,000
C	12,000	14,000

Normal loss in production: A = 4%; B = 2% and C = 6%

Requirement to fulfill sales programme:

A. 60,000 units

B. 50,000 units

C. 80,000 units

Ans. 64,583 units; 50,000 units; 87,234 units.

10. SK Ltd. has prepared the following sales budget for the first five months of 2018:

Sales Budget	(Units)
January	10,800
February	15,600
March	12,200
April	10,400
May	9,800

Inventory of finished goods at the end of every month is to be equal to 25% of sales estimate for the next month. On 1st January 2018, there were 2,700 units of product on hand. There is no work in progress at the end of any month.

Every unit of product requires two types of materials in the following quantities:

Material A - 4 Kg Material B - 5 Kg

Materials equal to one half of the requirement of next month's production are to be in hand at the end of every month. This requirement was met on 1st January, 2018. Prepare,

(a) Production Budget (Quantitative) for 1st Quarter

(b) Raw material consumption budget (Quantitative) for 1st Quarter

(c) Material Purchase Budget (Quantitative) for 1st Quarter

Ans. (a) 12,000; 14,750; 11,750.

11. A single product company estimated its sales for the next year, quarter –wise as under: **[SM]**

Quarter	No. of units to be sold
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 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 proposed 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 % of 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 present the following for the next year, quarter-wise:

(a) Production budgets in units

(b) Raw material consumption budget in quantity

(c) Raw material purchase budget in quantity and value

(d) Priced stores ledger card of the raw material using first-in-first out method

12. A company is engaged in the manufacture of specialized sub-assemblies required for certain electronic equipment. The company envisages that in the forthcoming month, June 2019, the sales will take a pattern in the ratio of 3:4:2 respectively of sub-assemblies, ACB, MCB and DP. **[SM]**

The following is the schedule of components required for manufacture:

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

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

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

The laborer work 8 hours a day for 25 days a month. The opening stocks of sub-assemblies and components for June, 2019 are as under:

Sub-assemblies		Components	
ACB	800	Base Board	1,600
MCB	1,200	IC08	1,200
DP	2,800	IC12	6,000
		IC16	4,000

Fixed overheads amount to ₹7,57,200 for the month and a monthly profit target of ₹12 lakhs has been set. The company is eager for a reduction of closing inventories for June, 2019 of sub-assemblies and components by 10% of quantity as compared to the opening stock. Prepare the following budgets for June 2019:

(a) Sales budget in quantity and value

(b) Production budget in quantity

(c) Component usage budget in quantity

(d) Component purchase budget in quantity and value

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

Ans. (a) Total sales = ₹89,46,000; (b) 6,220; 8,280; 3,920; (c) 18,420; 74,160; 1,23,360; 93,480; (d) ₹47,94,160; (e) ₹14,97,600.

13. SK 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 kgs; Material-Y = 500 kgs.

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

Ans. Material purchase = ₹1,47,800; ₹2,75,616; Hours to be paid = 11,160; 32,250.

14. SR Ltd. is a manufacturer of Garments. For the first three months of financial year 2022-23 commencing on 1st April, 2022, production will be constrained by direct labour. It is estimated that only 12,000 hours of direct labour hours will be available in each month. **[May 2022]**

For market reasons, production of either of the two garments must be at least 25% of the production of the other. Estimated cost and revenue per garment are as follows:

	Shirt (₹)	Short (₹)
Sales price	60	44
Raw materials		
Fabric @12 per metre	24	12
Dyes and cotton	6	4
Direct labour @8 per hour	8	4
Fixed Overhead @4 per hour	4	2
Profit	18	22

From the month of July 2022 direct labour will no longer be a constraint. The company expects to be able to sell 15,000 shirts and 20,000 shorts in July 2022. There will be no opening stock at the beginning of July 2022.

Sales volumes are expected to grow at 10% per month cumulatively thereafter throughout the year. Following additional information is available:

The company intends to carry stock of finished garments sufficient to meet 40% of the next month's sale from July 2022 onwards.

The estimated selling price will be same as above.

Required:

(i) Calculate the number of shirts and shorts to be produced per month in the first quarter of financial year 2022-23 to maximize company's profit.

(ii) Prepare the following budgets on a monthly basis for July, August and September 2022:

(*a*) Sales budget showing sales units and sales revenue for each product.

(*b*) Production budget (in units) for each product.

PRACTICE QUESTIONS

15. During the FY 2020-21, SK Limited has produced 60,000 units operating at 50% capacity level. The cost structure at the 50% level of activity is as under: **[SM]**

	(₹)
Direct material	300 per unit
Direct wages	100 per unit
Variable overheads	100 per unit
Direct Expenses	60 per unit
Factory expenses (25% fixed)	80 per unit
Selling and Distribution expenses (80% variable)	40 per unit
Office and administrative expenses (100 % fixed)	20 per unit

The company anticipates that in FY 2021-22, the variable costs will go up by 20% and fixed costs will go up by 15%. The selling price per unit will increase by 10% to ₹880. Required:

(i) Calculate the budgeted profit/loss for the FY 2021.

(ii) Prepare an expense budget on marginal cost basis for the FY 2021-22 for the company at 50% and 60% level of activity and find out the profits at respective levels.

Ans. (i) Profit = ₹60,00,000; (ii) ₹25,44,000; ₹37,15,200.

16. The Accountant of KPMR Ltd. has prepared the following budget for the coming year 2022 for its two products 'AYE' and 'ZYE': **[Dec 2021]**

Particulars	Product 'AYE'	Product 'ZYE'
Production and Sales (in Units)	4,000	3,000
	Amount (in ₹)	**Amount (in ₹)**
Selling price per unit	200	180
Direct material per unit	80	70
Direct labour per unit	40	35
Variable overhead per unit	20	25
Fixed overhead per unit	10	10

After reviewing the above budget, the management has called the marketing team for suggesting some measures for increasing the sales. The marketing team has suggested that by promoting the products on social media, the sales quantity of both the products can be increased by 5%. Also, the selling price per unit will go up by 10%. But this will result in increase in expenditure on variable overhead and fixed overhead by 20% and 5% respectively for both the products.

You are required to prepare flexible budget for both the products:

(i) Before promotion on social media

(ii) After promotion on social media

Ans. Profit – (i) ₹2,00,000; ₹1,20,000 (ii) ₹2,77,200; ₹1,66,950.

17. SK Ltd. 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. **[SM]**

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:

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

Ans. Not entitled for bonus.

18. The cost accountant of manufacturing company provides you the following details for year 2018: **[SM]**

	₹		₹
Direct materials	1,75,000	Other variable cost	80,000
Direct wages	1,00,000	Other fixed costs	80,000
Fixed factory overheads	1,00,000	Profit	1,15,000
Variable factory overheads	1,00,000	Sales	7,50,000

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 material per unit	₹0.50	₹0.75
Direct wages per unit	₹0.25	₹0.50

Variable factory overheads are 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 2019, 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 2019. Comment on the comparative results.

Ans. Profit increase by ₹10,000 after product C.

19. PJ Ltd. manufactures hockey sticks. It sells the products at ₹500 each and makes a profit of ₹125 on each stick. The Company is producing 5,000 stocks annually by using 50% of its machinery capacity. The cost of each stick is as under:

Direct material	₹150
Direct wages	₹50
Work Overheads	₹125 (50% fixed)
Selling Expenses	₹50 (25% variable)

The anticipation for the next year is that cost will go up as under:

Fixed charges	10%
Direct wages	20%
Direct material	5%

There will not be any change in selling price There is an additional order for 2,000 sticks in the next year. Calculate the lowest price that can be quoted so that the Company can earn the same profit as it earned in the current year?

Ans. ₹486.25.

20. XYZ Ltd. is engaged in the manufacturing of toys. It can produce 4,20,000 toys at its 70% capacity on per annum basis. Company is in the process of determining sales price for the financial year 2020-21. It has provided the following information: **[Jan 2021]**

Direct Material	₹60 per unit
Direct Labour	₹30 per unit
Indirect Overheads:	
Fixed	₹65,50,000 per annum
Variable	₹15 per unit
Semi-variable	₹5,00,000 per annum upto 60% capacity and ₹50,000 for every 5% increase in capacity or part thereof upto 80% capacity and thereafter ₹75,000 for every 10% increase in capacity or part thereof.

Company desires to earn a profit of ₹25,00,000 for the year. Company has planned that the factory will operate at 50% of capacity for the first six months of the year and at 75% of capacity for further three months and for the balance three months, factory will operate at full capacity.

You are required to:

(i) Determine the average selling price at which each of the toy should be sold to earn the desired profit.

(ii) Given the above scenario, advise whether company should accept an offer to sell each Toy at:

(a) ₹130 per Toy

(b) ₹129 per Toy

Ans. (i) ₹128.45.

21. Maharatna Ltd., a public sector undertaking (PSU), produces product A. The company is in process of preparing its revenue budget for the year 2022. The company has the following information which can be useful in preparing the budget: **[RTP May 2022]**

(i) It has anticipated 12% growth rate in sales volume from the year 2021 of 4,20,000 tonnes.

(ii) The sales price of ₹23,000 per tonne will be increases by 10% provided Wholesale Price Index (WPI) increases by 5%.

(iii) To produce one tonne of product A, 2.3 tonnes of raw material are required. The raw material cost is ₹4,500 per tonne. The price of raw material will also increase by 10% if WPI increases by 5%.

(iv) The projected increase in WPI for 2022 is 4%.

(v) A total of 6,000 employees works for the company. The company works 26 days in a month.

(vi) 85% of employees of the company are permanent and getting salary as per 5-year wage agreement. The earnings per manshift (means an employee cost for a shift of 8 hours) is ₹3,000 (excluding terminal benefits). The new wage agreement will be implemented from 1st July 2022 and it is expected that a 15% increase in pay will be given.

(vii) The casual employees are getting a daily wage of ₹850. The wages is liked to Consumer Price Index (CPI). The present CPI is 165.71 points and it is expected to be 173.59 points in 2022.

(viii) Power cost for the year 2021 is ₹42,00,000 for 7,00,000 units (1 unit = 1 Kwh). 60% of power is used for production purpose (directly related to production volume) and remaining are for employee quarters and administrative offices.

(ix) During the year 2021, the company has paid ₹60,00,000 for safety and maintenance works. The amount will increase in proportion to the volume of production.

(x) During the year 2021, the company has paid ₹1,20,000 for the purchase of diesel to be used in car hired for administrative purposes. The cost of diesel will increase by 15% in year 2022.

(xi) During the year 2021, the company has paid ₹6,00,000 for car hire charges (excluding fuel cost). In year 2022, the company has decided to reimburse the diesel cost to the car rental company. Doing this will attract 5% GST on Reverse Charge Mechanism (RCM) basis on which the company will not get GST input credit.

(xii) Depreciation on fixed assets for the year 2021 is ₹80,40,00,000 and it will be 15% lower in 2022.

Required to prepare revenue (Flexible) budget for the year 2022 and also the show the budgeted profit/loss for the year.

Ans. Loss ₹1273.043.

22. SK Ltd. is drawing a production plan for its two products Minimax (MM) and Heavyhigh (HH) for the year 2019-20. The company's policy is to old 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: **[SM]**

	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 2019-20 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.

Ans. Total 32,000 units; 25,000 units.

23. SK Glass Company requires you to present the budget for the next year from the following information: **[SM]**

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
Other Sundries	10% on direct wages
Administration, selling and distribution expenses	₹30,000 per year

Ans. Profit = ₹1,96,000.

24. A department of company SK attains sale of ₹6,00,000 at 80 per cent of its normal capacity and its expenses are given below: **[SM]**

Administration costs:	(₹)
Office salaries	90,000
General expenses	2 per cent of sales
Depreciation	7,500
Rates and taxes	8,750
Selling costs:	
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
Distribution costs:	
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 percent, 100 percent and 110 percent of normal capacity.

Ans. ₹2,49,500; ₹2,63,750; ₹2,78,000.

25. Pentax Limited has prepared its expense budget for 20,000 units in its factory for the year 2013 as detailed below:

	₹per unit
Direct materials	50
Direct labour	20
Variable overhead	15
Direct expenses	6
Selling expenses (20% fixed)	15
Factory expenses (100% fixed)	7
Administration expenses (100% fixed)	4
Distribution expenses (85% variable)	12
Total	129

Prepare an expense budget for the production of 15,000 units and 18,000 units.

Ans. ₹20,14,000; ₹23,53,600.

26. PSV Ltd. manufactures and sells a single product and estimated the following related information for the period November, 2020 to March, 2021. **[July 2021]**

Particulars	November, 2020	December, 2020	January, 2021	February, 2021	March, 2021
Opening Stock of Finished goods (in Units)	7,500	3,000	9,000	8,000	6,000
Sales (in Units)	30,000	35,000	38,000	25,000	40,000
Selling Price per unit (in ₹)	10	12	15	15	20

Additional information:

Closing stock of finished goods at the end of march, 2021 is 10,000 units

Each unit of finished output requires 2kg of Raw Material 'A' and 3kg of Raw Material 'B'.

You are required to prepare the following budgets for the period November, 2020 to March 2021 on monthly basis:

(i) Sales budget (in ₹)

(ii) Production Budget (in units) and

(iii) Raw material budget for raw material 'A' and 'B' separately (in units)

27. SK ltd. produces and markets a very popular product called 'X'. The company is interest in presenting its budget for the second quarter of the year. The following information are made available for this purpose: **[SM]**

(i) It expects to sell 1,50,000 bags of 'X' during the second quarter at the selling price of ₹1,200 per bag.

(ii) Each bag of 'X' requires 2.5 mtr. Of raw-material 'Y' and 7.5 mtr. of raw-material 'Z'.

(iii) Stock levels are planned as follows:

Particulars	Beginning of Quarter	End of Quarter
Finished Bags of 'X' (Nos.)	45,000	33,000
Raw-material 'Y' (mtr.)	96,000	78,000
Raw-material 'Z' (mtr.)	1,71,000	1,41,000
Empty Bags (Nos.)	1,11,000	84,000

(iv) 'Y' cost ₹160 per mtr., 'Z' costs ₹30 per mtr. and 'Empty Bag' costs ₹110 each.

(v) It requires 9 minutes of direct labour to produce and fill one bag of 'X'. Labour cost is ₹70 per hour.

(vi) Variable manufacturing costs are ₹60 per bag. Fixed manufacturing costs ₹40,00,000 per quarter.

(vii) Variable selling and administration expenses are 5% of sales and fixed administration and selling expenses are ₹3,75,000 per quarter.

Required:

(i) Prepare a production budget for the said quarter in quantity.

(ii) Prepare a raw-material purchase budget for 'Y', 'Z' and 'Empty Bags' for the said quarter in quantity as well as in rupees.

(iii) Compute the budgeted variable cost to produce one bag of 'X'.

28. An electronic gadget manufacturer has prepared sales budget for the next few months. In this respect, following figures are available: **[Nov 2018]**

Month	Electronic gadgets' sales
January	5,000 units
February	6,000 units
March	7,000 units
April	7,500 units
May	8,000 units

To manufacture an electronic gadget, a standard cost of ₹1,500 is incurred and it is sold through

dealers at an uniform price of ₹2,000 per gadget to customers. Dealers are given a discount of 15% on selling price.

Apart from other materials, two units of batteries are required to manufacture a gadget. The company wants to hold stock of batteries at the end of each month to cover 30% of next month's production and to hold stock of manufactured gadgets to cover 25% of the next month's sale. 3,250 units of batteries and 1,200 units of manufactured gadgets were in stock on 1st January.

Required:

(i) Prepare production budget (in units) for the month of January, February, March and April

(ii) Prepare purchase budget for batteries (in units) for the month of January, February and March and calculate profit for the quarter ending on March.

29. AB manufacturing Company manufactures two products A and B. Both Products use a common Raw Material 'C'. The Raw Material 'C' is purchased at the rate of ₹45 per kg from the Market. The Company has made estimates for the year ended 31st March, 2018 (the budget period) as under: **[Nov 2018]**

	Product A	Product B
Sales in Units	36,000	16,700
Finished goods stock increase by year-end (in Units)	860	400
Post-production Rejection Rate (%)	3	5
Material 'C' per completed Unit, net of wastage	4 kg	5 kg
Material 'C' wastage in %	5	4

Additional information available is as under:

Usage of Raw Material 'C' is expected to be at a constant rate over the period.

Annual cost of holding one unit of Raw Material 'C' in Stock is 9% of the Material Cost.

The cost of placing an order is ₹250 per order.

You are required to:

(i) Prepare Functional Budgets for the year ended 31st March, 2018 under the following categories:

(*a*) Production Budget for Products A and B in Units

(*b*) Purchase Budget for Raw Material 'C' in kg and value.

(ii) Calculate the Economic Order Quantity (EOQ) in kg for Raw Material 'C'.

30. A Vehicle manufacturer has prepared sales budget for the next few months, and the following draft figures are available: **[RTP May 2020]**

Month	No. of vehicles
October	40,000
November	35,000
December	45,000
January	60,000
February	65,000

To manufacture a vehicle, a standard cost of ₹11,42,800 is incurred and sold through dealers at uniform selling price of ₹17,14,200 to customers. Dealers are paid 15% commission on selling price on sale of a vehicle.

Apart from other materials four units of Part-X are required to manufacture a vehicle. It is a policy

of the company to hold stocks of Part-X at the end of each month to cover 40% of next month's production. 48,000 units of Part-X are in stock as on 1st October. There are 9,500 nos. of completed vehicles are in stock as on 1st October and it is policy to have stocks at the end of each month to cover 20% of the next month's sales.

You are required to:

(a) Prepare Production budget (in nos.) for the month of October, November, December and January.

(b) Prepare a Purchase budget for Part-X (in units) for the months of October, November and December.

(c) Calculate the budgeted gross profit for the quarter October to December.

31. SK Ltd. manufactures two products X and Y and sells them through two divisions East and West. For the purpose of submission of sales budget to the budget committee the following information has been made available: **[SM, RTP Nov 2023]**

Budgeted sales for the current year were:

Product	East	West
X	400 at ₹9	600 at ₹9
Y	300 at ₹21	500 at ₹21

Actual sales for the current year were:

Product	East	West
X	500 at ₹9	700 at ₹9
Y	200 at ₹21	400 at ₹21

Adequate market studies reveal that product X is popular but under-priced. It is observed that if price of X is increased by ₹1, it will find a ready market. On the other hand, Y is a over-priced to customers and market could absorb more if sales price of Y be reduced by ₹1. The management has agreed to give effect to the above price changes.

From the information based on these price changes and reports from salesmen, the following estimates have been prepared by divisional managers:

Percentage increase in sales over budget:

Product	East	West
X	+10%	+5%
Y	+20%	+10%

With the help of an intensive advertisement campaign the following additional sales above the estimated sales of divisional managers are available:

Product	East	West
X	60	70
Y	40	50

You are required to prepare a budget for sales incorporating the above estimates and also show the budgeted and actual sales of the current year.

32. SK School has a total of 180 students consisting of 6 sections with 30 students per section. The school plans for a picnic around the city during the weekend to places such as the zoo, the amusement park, the planetarium etc. A private transport operator has come forward to lease out the buses for taking the students. Each bus will have a maximum capacity of 50 (excluding 2 seats reserved for the teachers accompanying the students). The school will employ two teachers for each bus, paying them an allowance of 500 per teacher. It will also lease out the required number of buses. The following are the other cost estimates: **[MTP May 2024]**

	Cost per student
Breakfast	₹50
Lunch	₹100
Tea	₹100
Entrance fee at zoo	₹20
Rent per bus	₹6500
Special permit fee per bus	₹500
Block entrance fee at the planetarium	₹2500
Prizes to students for games	₹500

No costs are incurred in respect of the accompanying teachers (except the allowance of 500 per teacher) You are required to prepare:

(a) A flexible budget estimating the total cost for the levels of 60, 90, 120, 150 and 180 students. Each item of cost is to be indicated separately.

(b) Compare the average cost per student at these levels.

(c) What will be your conclusions regarding the break-even level of students if the school proposes to collect 400 per student?

Ans. (a) 29,800; 35,200; 48,600; 54,000; 67,400; (b) 496.67; 391.11; 405.00; 360.00; 374.44; (c) 123 and 159

33. The following extract is taken from the overhead budget of X:

Budgeted activity	50%	75%
Budgeted overhead (₹)	30,00,000	40,00,000

What would be the budgeted overhead for 60% level of activity:

(a) ₹ 32,00,0000 (b) ₹ 34,00,000 (c) ₹ 30,00,000 (d) ₹ 36,00,000

Ans. (b)

SOLUTION OF PRACTICE QUESTIONS

15.

(i) Calculation of Budgeted Profit for the year FY 2021-22

	60,000 Units	
	Per Unit	**Total**
Sales (A)	800.00	4,80,00,000
Variable Cost		

Direct material	300.00	1,80,00,000
Direct wages	100.00	60,00,000
Variable overheads	100.00	60,00,000
Direct expenses	60.00	36,00,000
Variable factory exp. (80.75%)	60.00	36,00,000
Variable selling exp. (40.80%)	32.00	19,20,000
Total Variable cost (B)	652	3,91,20,000
Fixed Cost		
Office and admin. Exp. (100%)	-	12,00,000
Fixed factory exp. (25%)	-	12,00,000
Fixed selling & dist. Exp. (20%)	-	4,80,000
Total Fixed cost (C)	-	28,80,000
Total cost (B+C = D)	-	4,20,00,000
Profit (A – D)	-	60,00,000

(ii) Expenses Budget for the year FY 2022-23 at 50% & 60% level

	60,000 units		72,000 units	
	Per Unit	Total	Per Unit	Total
Sales (A)	880	5,28,00,000	880	6,33,60,000
Variable Cost				
Direct material	360.00	2,16,00,000	360.00	2,59,20,000
Direct wages	120.00	72,00,000	120.00	86,40,000
Variable overheads	120.00	72,00,000	120.00	86,40,000
Direct expenses	72.00	43,20,000	72.00	51,84,000
Variable factory exp. (80×75%)	72.00	43,20,000	72.00	51,84,000
Variable selling exp. (40×80%)	38.40	23,04,000	38.40	27,64,800
Total Variable cost (B)	782.40	4,69,44,000	782.40	5,63,32,800
Fixed Cost				
Office and admin. Exp. (100%)	-	13,80,000	-	13,80,000
Fixed factory exp. (25%)	-	13,80,000	-	13,80,000
Fixed selling & dist. Exp. (20%)	-	5,52,000	-	5,52,000
Total Fixed cost (C)	-	33,12,000	-	33,12,000
Total cost (B + C = D)	-	5,02,56,000	-	5,96,44,800
Profit (A – D)	-	25,44,000	-	37,15,200

16. (i) Flexible Budget (Before promotion)

Particulars	Product AYE	Product ZYE	Total
Sales	4,000 × 200 = 8,00,000	3,000 × 180 = 5,40,000	13,40,000
Less: Direct Material	4,000 × 80 = 3,20,000	3,000 × 70 = 2,10,000	5,30,000
Less: Direct labour	4,000 × 40 = 1,60,000	3,000 × 35 = 1,05,000	2,65,000
Less: Variable OHs	4,000 × 20 = 80,000	3,000 × 25 = 75,000	1,55,000
Less: Fixed OHs	4,000 × 10 = 40,000	3,000 × 10 = 30,000	70,000
Profit	2,00,000	1,20,000	3,20,000

(ii) Flexible Budget (After promotion)

Particulars	Product AYE	Product ZYE	Total
Sales	4,200 × 220 = 9,24,000	3,150 × 198 = 6,23,700	15,47,700
Less: Direct Material	4,200 × 80 = 3,36,000	3,150 × 70 = 2,20,500	5,56,500
Less: Direct labour	4,200 × 40 = 1,68,000	3,150 × 35 = 1,10,250	2,78,250
Less: Variable OHs	4,200 × 24 = 1,00,800	3,150 × 30 = 94,500	1,95,300
Less: Fixed OHs	40,000 + 5% = 42,000	30,000 + 5% = 31,500	73,500
Profit	2,77,200	1,66,950	4,44,150

17. Flexible Budget (for the month of January)

Indirect manufacturing	Nature of cost	Expenses for a normal month	Planned expenses for January	Expenses as per flexible budget for the month of January	Actual expenses of the month of January	Difference for Increased or (Decreased)
	(1)	(₹) (2)	(₹) (3)	(₹) (4)	(₹) (5)	(₹) (6 = 5 – 4)
Salary of foreman	Fixed	1,000	1,000	1,000	1,000	Nil
Indirect labour	Variable	720	900	540	600	60
(Refer to working note 1)						
Indirect material	Variable	800	1,000	600	700	100
(Refer to working note 2)						
Repairs and maintenance	Semi-variable	600	650	550	600	50
(Refer to working note 3)						
Power	Semi-variable	800	875	725	740	15
(Refer to working note 4)						
Tools consumed	Variable	320	400	240	300	60

Indirect manufacturing	Nature of cost	Expenses for a normal month	Planned expenses for January	Expenses as per flexible budget for the month of January	Actual expenses of the month of January	Difference for Increased or (Decreased)
(Refer to working note 5)						
Rates and taxes	Fixed	150	150	150	150	Nil
Depreciation	Fixed	800	800	800	800	Nil
Insurance	Fixed	100	100	100	100	Nil
Total		5,290	5,875	4,705	4,990	285

Conclusion: The above statement of flexible budget clearly shows that the concern's expenses in the month of January have increased from ₹4,705 to ₹4,990. Under such circumstances the Foreman of the company is not at all entitled for any performance bonus in 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 formula may be used.

   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 & maintenance = 8,000 × 0.025 = ₹200

   Fixed repair & maintenance cost = ₹600 – 200 = ₹400

   For 6,000 units: Total cost of repair & maintenance = (6,000 × 0.025) + 400 = ₹550

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

   For 8,000 units: Total variable cost of power = 8,000 × 0.0375 = ₹300

   Fixed repair & maintenance cost = ₹800 – 300 = ₹500

   For 6,000 units: Total cost of repair & maintenance = (6,000 × 0.0375) + 500 = ₹725

5. Tools consumed cost for 6,000 units = $\frac{320}{8,000} \times 6,000$ = ₹240

18. Budget Showing current Position and Position for 2019

Particulars	Current Position			Position for 2019			
	A	B (A+B)	Total	A	B	C (A+B+C)	Total
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 materials	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 (var)	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. **Material cost**	2,50,000	2,05,000	4,55,000	1,87,500	10,25,000	2,30,000	5,20,000
C. **Contribution** (A-B)	1,50,000	1,45,000	2,95,000	1,12,5000	72,500	1,20,000	3,05,000
Fixed cost: Factory			1,00,000				1,00,000
Other			80,000				80,0000
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 2019 as compared to 2018 Therefore, introduction of product C is recommended.

19. Statement of calculation of selling price

Particulars	Amount (₹)
Direct Material [(150 + 5%) × 7,000]	11,02,500
Direct Wages [(50 + 20%) × 7,000]	4,20,000
Variable Works Overhead [125 × 50% × 7,000]	4,37,500
Fixed Works Overhead [125 × 50% × 5,000 × 110%]	3,43,750
Variable Selling Expenses [50 × 25% × 7,000]	87,500
Fixed Selling Expenses [50 × 75% × 5,000 × 110%]	2,06,250
Total Cost	25,97,500
Add: Desired Profit (125 × 7,000)	8,75,000
Total Sales Value	34,72,500
Less: Existing Sales from 5,000 units [5,000 × 500]	25,00,000
Sales value to be obtained from remaining 2,000 units (A)	9,72,500
Sale units (B)	2,000
Selling price per unit (A ÷ B)	486.25

20.

(i) Statement of Cost

Particulars	Amount
Direct material (4,12,500 × 60)	2,47,50,000
Direct wages (4,12,500 × 30)	1,23,75,000
Prime Cost	**3,71,25,000**
Factory Overheads:	
Fixed expenses	65,50,000
Variable expenses (4,12,500 × 15)	61,87,500
Semi-variable expenses (w.n.-1)	6,25,000
Work Cost/ COP/ COGS/COS	**5,04,87,500**
Add: Required profit	25,00,000
Total Sales	**5,29,87,500**
Total Units	4,12,500
Selling price per unit	**128.45**

Working note – 1

For First 6 months = $5,00,000 \times \frac{6}{12}$ = 2,50,000

For next 3 months = $(5,00,000 + 50,000 + 50,000 + 50,000) \times \frac{3}{12}$ = 1,62,500

For balance 3 months = $(5,00,000 + 50,000 + 50,000 + 50,000 + 50,000 + 75,000 + 75,000) \times \frac{3}{12}$
= 2,12,500

Total Semi Variable expenses = 2,50,000 + 1,62,500 + 2,12,500 = ₹6,25,000

Working Note – 2

Maximum capacity p.a. = 4,20,000 ÷ 70% = 6,00,000 units

Units in first 6 months = 6,00,000 × 50% × (6/12) = 1,50,000 units

Units in next 3 months = 6,00,000 × 75% × (3/12) = 1,12,500 units

Units in balance 3 months = 6,00,000 × 100% × (3/12) = 1,50,000 units

Total units produced = 1,50,000 + 1,12,500 + 1,50,000 = 4,12,500 units

(ii)

	(a)	(b)
Selling price per unit	130	129
Less: Variable cost per unit	105	105
Contribution per unit	25	24

Unutilized plant capacity without changing cost = 4,20,000 – 4,12,500 = 7,500 units

Thus, if the company has order upto 7,500 units than it can accept the offer for goods either at 130 or 129 at both levels as contribution will increase which in turn increase the profit.

For order beyond 7,500 units, the acceptability of the offer will depend on other cost and the benefit involved beyond that level.

21.

Revenue Budget (Flexible Budget) of Maharatna Ltd. for the year 2022

	Particulars	PY 2021	CY 2022
A	Sales volume (Tonnes)	4,20,000	4,20,000 × 112% = 4,70,400
B	Selling price per tonne (₹)	23,000	23,000
		(₹in lakhs)	**(₹in lakhs)**
C	Sales Value (A × B)	96,600	1,08,192
D	Raw Material Cost:		
(i)	Quantity of raw material (2.3 × A)	9,66,000	10,81,920
(ii)	Price per tonne	4,500	4,500
(iii)	Total raw material cost (i × ii)	43,470	48,686.40
E	Wages & Salary Cost:		
(i)	Wages to casual employees	2,386.80	2,508.47
	(15% × 6,000 × 26 × 12 = 11,112)	(11,112 ×850)	(11,112 × 893.33)
(ii)	Salary to permanent employees	47,736	51,316.20
	(85% × 6,000 × 26 = 1,32,600)	(1,32,600 × 12 × 3,000)	(1,32,600 × 6 × 3,000) + (1,32,600 × 6 × 3,450)
(iii)	Total wages and salary (i + ii)	50,122.80	53,824.67
F	Power Cost:		
(i)	For production (units)	4,20,00	4,70,400
		(7,00,000 × 60%)	(4,20,000 × 112%)
(ii)	For employee & Office (units)	2,80,000	2,80,000
(iii)	Total power consumption (i + ii)	7,00,000	7,50,400
(iv)	Power rate per unit (₹) (42,00,000÷7,00,000)	6.00	6.00
(v)	Total power cost (iii × iv)	42	45.024
G	Safety and maintenance cost	60	67.20
			(60,00,000 × 112%)
H	Diesel Cost	1.20	-
I	Car Hire charge:		
(i)	Car hire charge	6	6
(ii)	Fuel reimbursement cost	-	1.2 × 115% = 1.38
(iii)	GST @ 5% on RCM basis [(i + ii)×5%]	-	0.369
(iv)	Total car hire charge cost	6	7.749
J	Depreciation	8,040	8040 × 85% = 6,834
K	Total cost (Sum D to J)	1,01,742	1,09,465.043
L	Profit/Loss (C – L)	(5,142)	(1,273.043)

22. **Production budget (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	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

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

23. **Budget**

Particulars	Amount (₹)
Sale of Toughened Glass	6,00,000
Sale of Bent Glass	2,00,000
Total Sales (A)	8,00,000
Direct material cost (60% × 8,00,000)	4,80,000
Direct wages (20 × 150 × 12)	36,000
Factory Overheads:	
Indirect labour – work manager (500 × 12)	6,000
Indirect labour – foreman (400 × 12)	4,800
Stores and spares (8,00,000 × 2.5%)	20,000
Depreciation on machinery	12,600
Light & power	3,000
Repair & Maintenance	8,000
Other sundries (36,000 × 10%)	3,600
Administration, selling and distribution expenses	30,000
Total Cost (B)	**6,04,000**
Profit (A – B)	**1,96,000**

24. **Flexible Budget**

Particulars	Amount at 90%	Amount at 100%	Amount at 110%
Administration Cost			
Office salaries	90,000	90,000	90,000
General expenses	13,500	15,000	16,500
Depreciation	7,500	7,500	7,500
Rates & Taxes	8,750	8,750	8,750
Total administration cost (A)	**1,19,750**	**1,21,250**	**1,22,750**
Selling cost			
Salaries	54,000	60,000	66,000
Travelling expenses	13,500	15,000	16,500
Sales office	6,750	7,500	8,250
General expenses	6,750	7,500	8,250
Total Selling cost (B)	**81,000**	**90,000**	**99,000**
Distribution cost			
Wages	15,000	15,000	15,000
Rent	6,750	7,500	8,250
Other expenses	27,000	30,000	33,000
Total Distribution cost (C)	**48,750**	**52,500**	**56,250**
Total Cost (A + B + C)	**2,49,500**	**2,63,750**	**2,78,000**

25. **Expenses Budget**

Particulars	15,000 units	18,000 units
Direct material	15,000 × 50 = 7,50,000	18,000 × 50 = 9,00,000
Direct labour	15,000 × 20 = 3,00,000	18,000 × 20 = 3,60,000
Variable overheads	15,000 × 15 = 2,25,000	18,000 × 15 = 2,70,000
Direct expenses	15,000 × 6 = 90,000	18,000 × 6 = 1,08,000
Selling expenses – variable	15,000 × 15 × 80% = 1,80,000	18,000 × 15 × 80% = 2,16,000
Selling expenses – fixed	20,000 × 15 × 20% = 60,000	20,000 × 15 × 20% = 60,000
Factory expenses – fixed	20,000 × 7 = 1,40,000	20,000 × 7 = 1,40,000
Administration expenses – fixed	20,000 × 4 = 80,000	20,000 × 4 = 80,000
Distribution expenses – variable	15,000 × 12 × 85% = 1,53,000	18,000 × 12 × 85% = 1,83,600
Distribution expenses – fixed	20,000 × 12 × 15% = 36,000	20,000 × 12 × 15% = 36,000
Total	**20,14,000**	**23,53,600**

26. (i) Sales Budget

Particulars	November, 2020	December, 2020	January, 2021	February, 2021	March, 2021
Sales (in Units)	30,000	35,000	38,000	25,000	40,000
Selling Price per unit (in ₹)	10	12	15	15	20
Sales Value	3,00,000	4,20,000	5,70,000	3,75,000	8,00,000

(ii) Production Budget

Particulars	November, 2020	December, 2020	January, 2021	February, 2021	March, 2021
Sales Units	30,000	35,000	38,000	25,000	40,000
Add: Closing Stock Units	3,000	9,000	8,000	6,000	10,000
Less: Opening Stock Units	(7,500)	(3,000)	(9,000)	(8,000)	(6,000)
Production Units	25,500	41,000	37,000	23,000	44,000

(iii) Raw Material 'A' Budget

Particulars	November, 2020	December, 2020	January, 2021	February, 2021	March, 2021
Production Units	25,500	41,000	37,000	23,000	44,000
Raw material consumption per unit	2	2	2	2	2
Raw Material Consumption	51,000	82,000	74,000	46,000	88,000

Raw Material 'B' Budget

Particulars	November, 2020	December, 2020	January, 2021	February, 2021	March, 2021
Production Units	25,500	41,000	37,000	23,000	44,000
Raw material consumption per unit	3	3	3	3	3
Raw Material Consumption	76,500	1,23,000	1,11,000	69,000	1,32,000

27. (i) Production budget of 'X' for the Second Quarter

Particulars	Bags (Nos.)
Budgeted Sales	1,50,000
Add: Desired closing stock	33,000
Less: Opening stock	(45,000)
Required production	1,38,000

(ii) Raw material purchase budget in quantity as well as in ₹for 1,38,000 bags of 'X'

Particulars	'Y' (Mtr.)	'Z' (Mtr.)	Empty Bags Nos.
Production requirement per bag of 'X'	2.5	7.5	1.0
Requirement for production	1,38,000 × 2.5 = 3,45,000	1,38,000 × 7.5 = 10,35,000	1,38,000 × 1 = 1,38,000
Add: Desired closing stock	78,000	1,41,000	84,000
Less: Opening stock	(96,000)	(1,71,000)	(1,11,000)
Quantity to be purchased	3,27,000	10,05,000	1,11,000
Cost per tr./bag	₹160	₹30	₹110
Cost of purchase (₹)	5,23,20,000	3,01,50,000	1,22,10,000

(iii) Computation of Budgeted Variable Cost of Production of 1 Bag of 'X'

Particulars	₹
Raw Material	
Y = 2.5 mtr. × ₹160	400.00
Z = 7.5 mtr. × ₹30	225.00
Empty bag	110.00
Direct Labour (₹70 × 9 minutes/60 minutes)	10.50
Variable manufacturing overheads	60.00
Variable cost of production per bag	805.50

28. (i) Production Budget

Particulars	January	February	March	April
Budgeted Sales	5,000	6,000	7,000	7,500
Add: Closing Stock	1,500	1,750	1,875	2,000
Less: Opening Stock	(1,200)	(1,500)	(1,750)	(1,875)
Production	**5,300**	**6,250**	**7,125**	**7,625**

Working Notes:

(1) Closing stock of January = 25% × 6,000 = 1,500
Closing stock of February = 25% × 7,000 = 1,750
Closing stock of March = 25% ×7,500 = 1,875
Closing stock of April = 25% × 8,000 = 2,000

(2) Opening stock of February, March and April are taken as equal to closing stock of respective previous month.

(ii) Material Purchase Budget

Particulars	Material A		
	January	February	March
Raw material consumption ₹2 per gadget	10,600	12,500	14,250
Add: Closing Stock	3,750	4,275	4,575
Less: Opening Stock	(3,250)	(3,750)	(4,275)
Raw Material Purchase	**11,100**	**13,025**	**14,550**

Working Notes:

(1) Closing stock of material of January = 30% × 12,500 = 3,750
Closing stock of material of February = 30% × 14,250 = 4,275

(2) Raw Material consumption of Material for Month of April = 7,625 × 2 = 15,250
Closing stock of material of March of Material = 30% × 15,250 = 4,575

(3) Opening stock for material for month of February and March are taken as equal to closing stock of respective previous month.

Statement Showing Profit

Particulars	January	February	March	Total
Sales (A)	5,000	6,000	7,000	18,000
Selling price per unit	₹2,000	₹2,000	₹2,000	₹2,000
Less: Discount @15% of selling price	₹300	₹300	₹300	₹300
Less: Standard cost of manufacturing	₹1,500	₹1,500	₹1,500	₹1,500
Profit (B)	₹200	₹200	₹200	₹200
Total Profit (A × B)	₹10,00,000	₹12,00,000	₹14,00,000	₹36,00,000

29. (i) Production Budget (in units) for the year ended 31st March 2018

Particulars	Product A	Product B
Budgeted sales (units)	36,000	16,700
Add: Increase in closing stock	860	400
No. of good units to be produced	36,860	17,100
Post production rejection rate	3%	5%
Post production good units rate	100% – 3% = 97%	100% – 5% = 95%
No. of units to be produced	36,860 ÷ 97% = 38,000	17,100 ÷ 95% = 18,000

(ii) Purchase budget (in kgs and value) for Material C

Particulars	Product A	Product B
No. of units to be produced	38,000	18,000

Usage of Material C per unit of production	4 kg	5 kg
Material needed for production	1,52,000 kg	90,000 kg
Wastage % of Material C	5%	4%
Good usage % of Material C	100% - 5% = 95%	100% - 4% = 96%
Material to be purchased (in kg)	1,52,000÷95% = 1,60,000	90,000÷96% = 93,750
Rate per kg of Material C	₹45	₹45
Total Purchase cost	1,60,000×45 = 72,00,000	93,750×45 = 42,18,750

Total purchase cost = 72,00,000 + 42,18,750 = ₹1,14,18,750

(iii) A = 1,60,000 + 93,750 = 2,53,750 kg

O = ₹250

C = ₹45 × 9% = ₹4.05

$$EOQ = \sqrt{\frac{2 \times A \times O}{C}} = \sqrt{\frac{2 \times 2,53,750 \times 250}{4.05}} = 5,597 \text{ kg}$$

30. (a) Preparation of Production Budget (in units)

	October	November	December	January
Demand for the month (Nos.)	40,000	35,000	45,000	60,000
Add: 20% of next month's demand	7,000	9,000	12,000	13,000
Less: Opening Stock	(9,500)	(7,000)	(9,000)	(12,000)
Vehicles to be produced	37,500	37,000	48,000	61,000

(b) Preparation of Purchase budget for Part-X

	October	November	December
Production for the month (Nos.)	37,500	37,000	48,000
Add: 40% of next month's production	14,800 (40% of 37,000)	19,200 (40% of 48,000)	24,400 (40% of 61,000)
	52,300	56,200	72,400
No. of units required for production	2,09,200 (52,300 × 4 units)	2,24,800 (56,200 × 4 units)	2,89,600 (72,400 × 4 units)
Less: Opening Stock	(48,000)	(59,200) (14,800 × 4 units)	(76,800) (19,200 × 4 units)
No. of units to be purchased	1,61,200	1,65,600	2,12,800

(c) Budgeted Gross Profit for the Quarter October to December

	October	November	December	Total
Sales in nos.	40,000	35,000	45,000	1,20,000

Net Selling Price per unit*	₹14,57,070	₹14,57,070	₹14,57,070	
Sales Revenue (₹in lakh)	5,82,828	5,09,974.50	6,55,681.50	17,48,484
Less: Cost of Sales (₹in lakh) (Sales unit × Cost per unit)	4,57,120	3,99,980	5,14,260	13,71,360
Gross Profit (₹in lakh)	1,25,708	1,09,994.50	1,41,421.50	3,77,124

* Net Selling price unit = ₹17,14,200 – 15% commission on ₹17,14,200 = ₹14,57,050

31.

Division	Product	Budget for future period			Budget for Current period			Actual sales for current period		
		Qty.	Price	Value	Qty.	Price	Value	Qty.	Price	Value
			₹	₹		₹	₹		₹	₹
East	X	500	10	5,000	400	9	3,600	500	9	4,500
	Y	400	20	8,000	300	21	6,300	200	21	4,200
Total		900		13,000	700		9,900	700		8,700
West	X	700	10	7,000	600	9	5,400	700	9	6,300
	Y	600	20	12,000	500	21	10,500	400	21	8,400
Total		1,300		19,000	1,100		15,900	1,100		14,700
East & West	X	1,200	10	12,000	1,000	9	9,000	1,200	9	10,800
	Y	1,000	20	20,000	800	21	16,800	600	21	12,600
Total		2,200		32,000	1,800		25,800	1,800		23,400

32. (a) & (b) Statement of Cost

Particulars	60 students	90 students	120 students	150 students	180 students
Breakfast	3,000	4,500	6,00	7,500	9,000
Lunch	6,000	9,000	12,000	15,000	18,000
Tea	600	900	1,200	1,500	1,800
Entrance fee at zoo	1,200	1,800	2,400	3,000	3,600
Total Variable cost (A)	10,800	16,200	21,600	27,000	32,400
Rent	13,000	13,000	19,500	19,500	26,000
Permit fee	1,000	1,000	1,500	1,500	2,000
Teacher allowance	2,000	2,000	3,000	3,000	4,000
Total semi-variable cost (B)	16,000	16,000	24,000	24,000	32,000
Block entrance fee	2,500	2,500	2,500	2,500	2,500
Prizes	500	500	500	500	500

Particulars	60 students	90 students	120 students	150 students	180 students
Total Fixed cost (C)	3,000	3,000	3,000	3,000	3,000
Total Cost (A + B C)	29,800	35,200	48,600	54,000	67,400
Number of Students	60	90	120	150	180
Average cost per student	496.67	391.11	405.00	360.00	374.44

(c) Statement of Break-even point

Particulars	51 to 100 students	101 to 150 students	151 to 200 students
Fixed & Semi-variable cost (A)	19,000	27,000	35,000
Contribution per student (B)	400 – 100 = 220	400 – 100 = 220	400 – 100 = 220
Break-even point (AB)	86	123	159

Since 86 is not within range, therefore, Break-even points are 123 & 159 .

33. Variable overhead for each % of level of activity = $\frac{40,00,000 - 30,00,000}{75 - 50}$ = 40,000

Fixed cost = 30,00,000 – (40,000 × 50) = ₹10,00,000
Total overhead at 60% level = 10,00,000 + (40,000 × 60) = ₹34,00,000

❑❑❑