INTERMEDIATE EXAMINATION

(REVISED SYLLABUS - 2008)

GROUP - II

Paper-8 : COST AND MANAGEMENT ACCOUNTING

Q. 1. (a) Match the statement in Column 1 with the most appropriate statement in Column 2 :

Column I	*Column II*
Value analysis	Performance analysis
Performance of public enterprise	Management by exception
Balance score card	Measures divisional performance
Residual income	Technique of cost reduction
Variance analysis	Shows profitability and capacity utilisation

Q. 1. (b) State whether the following statements are True (*T*) or False (*F*) :

(i) Profit planning and control is not a part of budgetary control mechanism.

(ii) Cost industry makes use of output costing.

(iii) Idle time variance is always adverse.

(iv) Ash produced in thermal power plant is an example of co-product.

(v) The stock turnover ratio indicates the slow moving stocks.

Q. 1. (c) In the following cases one out of four answers is correct. You are required to indicate the correct answer and give reasons for answer :

(i) The cost data pertaining to Product "X" of XL Ltd. are as follows :

Maximum capacity 30,000 units

Normal capacity 15,000 units

Increase in inventory 1,880 units

Variable cost per unit Rs. 12

Selling price per unit Rs. 50

Fixed manufacturing overhead costs Rs. 3,60,000

If the profit under Absorption costing method is Rs. 1,01,000, the profit under Marginal costing method would be

A. Rs. 1,46,120

B. Rs. 1,23,560

C. Rs. 55,880

D. Rs. 73,340

(ii) Which of the following does not influence the use of activity-based costing?

A. High proportion of overhead costs

B. Product complexity

C. Monopoly position

D. Volume diversity

(iii) Budgeted sales for the next year is 5,00,000 units. Desired ending finished goods inventory is 1,50,000 units and equivalent units in ending W-I-P inventory is 60,000 units. The opening finished goods inventory for the next year is 80,000 units, with 50,000 equivalent units in beginning W-I-P inventory. How many equivalent units should be produced

A. 5,80,000

B. 5,50,000

C. 5,00,000

D. 5,75,000

(iv) A company maintains a margin of safety of 25% on its current sales and earns a profit of Rs. 30 lakhs per annum. If the company has a profit volume (P/V) ratio of 40%, its current sales amount to —

A. Rs. 200 lakhs

B. Rs. 300 lakhs

C. Rs. 325 lakhs

D. None of the above

(v) In a process account, abnormal losses are valued

A. The same as good production

B. At their scrap value

C. At the cost of raw material

D. At good production cost less scrap value

Q. 1. (d) Fill in the blanks suitably :

(i) A cost which does not involve any cash outflow is called _____ or _____ .

(ii) Efficiency is basically a ratio of _____ and _____ .

(iii) Work study consists of _____ and _____ .

(iv) In absorption costing _____ cost is added to inventory.

(v) _____ Costing reduce the possibility of under pricing.

Answer 1. (a)

Column I	*Column II*
Value analysis	Technique of cost reduction
Performance of public enterprise	Shows profitability and capacity utilisation
Balance score card	Performance analysise
Residual income	Measures divisional performance
Variance analysis	Management by exception

Answer 1. (b)

(i) **False**.

(ii) **True.**

(iii) **True.**

(iv) **False.**

(v) **True.**

Answer 1. (c)

(i) C- Rs. 55,880

Fixed cost per unit = Rs. 3,60,000 / 15,000 units = Rs. 24

Profit under absorption costing = Rs. 1,01,000

Adjustment of fixed manufacturing overhead costs of increased inventory = 1,880 units × Rs. 24 = Rs. 45,120

Profit under marginal costing = Rs. 1,01,000 – Rs. 45,120 = Rs. 55,880

(ii) C – Monopoly position.

(iii) A - 5,80,000

Using production related budgets, units to produce equals budgeted sales + desired ending finished goods inventory + desired equivalent units in ending W-I-P inventory – beginning finished goods inventory – equivalent units in beginning W-I-P inventory. Therefore, in this case, units to produce is equal to 5,00,000 + 1,50,000 + 60,000 – 80,000 – 50,000 = 5,80,000.

(iv) B - Rs. 300 lakhs

Margin of safety = Profit/ P/V Ratio

= 30/0.40 = Rs. 75 lakhs

0.25 of sales = Rs. 75 lakhs

Hence, Sales = 75/0.25 = Rs. 300 lakhs

(v) A – The same as good production

Answer 1. (d)

(i) Notional cost, Imputed cost

(ii) Input, Output

(iii) Method study, time and motion study

(iv) Fixed

(v) Absorption

Q. 2. Write short notes on :

(i) Role of costs in pricing

(ii) Incremental Pricing

(iii) Two-part Transfer Pricing System

(iv) Role of Cost Accountant in Material Cost Control

(v) Opportunity cost

Answer 2. (i)

Cost data constitute the fundamental element in the price setting process. Higher costs including promotional expenses involved in connection with advertising or personal selling as well as taxation may necessitate an upward adjustment of price. If costs go up, price rise can be quite justified. However, their relevance to the pricing decision must neither be under –estimated nor exaggerated. No company should charge prices below full costs unless such a policy appears necessary or expedient in the short period. Costs are just one of the several factors to be considered in a pricing decision and for pricing purposes, costs are best regarded as floor below which a company will not normally price its products. Costs determine the profit consequences of the various pricing alternatives. Cost calculations may also help in determining whether the product whose price is determined by its demand is to be included in the product line or not.

Though in the long run, all costs have to be covered for managerial decisions. In the short run direct costs are more relevant. In a single product firm, all costs are direct costs with respect to the product. In multi product firm, for pricing decisions, relevant costs are those costs that are directly traceable to an individual product. In addition, it must contribute to the common costs and to the realization of profit.

Answer 2. (ii)

Incremental Pricing involves comparison of the impact of decisions on revenues and cost. If a pricing decision results in a greater increase in revenue than in costs, it is favourable. Profitability is identified as the primary consideration and then the decision is adjusted to bring it in consonance with the other decisions of the business.

Incremental pricing analyses all aspects of decision-making as listed below :

(a) **Relevant cost analysis** – This technique considers changes in costs rather than in Average Cost. Overhead allocations are irrelevant. Incremental revenue inflows and Cost outflows are included for decision-making.

(b) **Product-line relationship analysis** – This technique necessitates consideration being given to possible complementary relations in demand. Sale of one product may lead to the sale of a complementary product. This overall effect on profitability has to be evaluated.

(c) **Opportunity cost analysis** – Incremental revenue should cover Opportunity Cost and also generate surplus. A price, which results in an Incremental Revenue, which in turn merely covers the Incremental Costs, is not sufficient. If opportunity costs exceed Incremental Revenue, the decision is not sound.

(d) **Time factor analysis** – The decision should take into account the short-run and long-run effect. A high price may increase its immediate profits but may lead to loss of revenue in the long-run owing to competitors snatching the business.

(e) **CVP analysis** – In fixing prices, consideration should be given to Price-Volume relationship. The responsiveness of the market to the price should be such that the volume is increased to achieve full utilization of plant capacity.

(f) **Risk analysis** – Consideration should also be given to the evaluation of uncertainty and risk factor. The decision taken should be able to maximize the expected value, based on Probability Theory.

Answer 2. (iii)

This is one method of resolving Transfer-Pricing disputes between a Division and the company as a whole. Under this method, Transfer Price = Marginal Cost + Lump-sum fixed fee.

This method is most suited when there is no market for the intermediate product, and the Transferring Division has no capacity constraints. The transferring Division is provided with sufficient incentive for internal transfer, since Marginal Costs are fully recovered will reduce its losses by recovering Fixed Costs. The recipient division is also interested in the internal procurement since the Transfer Price will be

less than the Market Price or Cost of alternative option like outsourcing etc. Moreover, the lump-sum fixed fee constitutes a commitment of the recipient division to utilize a portion of the capacity of the Transferring Division, for an agreed compensation.

Answer 2. (iv)

The Cost Accountant may be involved in –

(a) **Scheduling** – Helping to prepare schedule for materials requirements by co-ordinating with production planning and purchase departments, and to provide estimate of material cost.

(b) **Cost assignment** – Tracing materials issued to cost units or jobs undertaken or to overheads (through requisition notes) so that the actual costs of output can be assessed (or estimated) and the profitability or individual products or jobs can be determined.

(c) **Variance analysis** – Reporting the costs of material losses by calculating Material Usage Variance and indicating the same to production management. Monitoring the cost of material purchases and the efficiency of the Purchasing Department by means of Material Price Variance.

(d) **EOQ** – Providing information about cost of ordering stocks and stock holding so as to enable stores management to determine the optimum order size for stocks, which will minimize store-keeping costs.

(e) **Substitution** – Providing information on whether it would be more profitable to alter the material specifications of individual products or to alter the material mix, by introducing cheaper substitute materials.

(f) **Accounting** – Reviewing the material accounting procedures to ensure that goods ordered are received, checked, invoiced and paid for properly.

Answer 2. (v)

Opportunity cost is the value of sacrifice made or benefit of opportunity foregone by selecting one alternative in preference to other alternatives. It is the prospective change in cost following the adoption of an alternative machine, process, raw materials, specification or operation. Opportunity cost is a relevant cost where alternatives are available. However, opportunity cost does not find any place in formal accounts and is computed only for comparison purposes. It is the cost of opportunity lost by diversion of an input factor from one use to another. it is the maximum contribution that is foregone by using limited resources for a particular purpose. It represents the measurable value of opportunity bypassed by rejecting an alternative use of resources. Opportunity cost is taken into consideration when alternatives are compared. When a number of alternatives are available, the highest of the opportunity cost will be considered for decision-making. For example, the opportunity cost of funds invested in a project is the interest that could have been earned by investing the funds in bank deposit or other risk free modes.

Q. 3. (a) Madhav has a small furniture factory and specializes in the manufacture of small tables of standard sizes of which he can make 30,000 a year, he made and sold 20,000 tables and his cost per table was Rs. 110, made up as under – (i) Materials Rs. 60; (ii) Labour Rs. 20 and (iii) Overhead (Fixed) recovered at 50% of Material cost Rs. 30.

Prices are fixed by adding a standard margin of 15% to the total cost arrived at as above. For the current year, due to a fall in the cost of materials, total cost was determined at Rs. 95 per table as under – (i) Materials Rs. 50; (ii) Labour Rs. 20 and (iii) Overhead (Fixed) recovered at 50% of Material cost Rs. 25.

Madhav maintained his standard margin at 10% of his total cost of sale. Sales were at the same level as in the previous year. You are required to –

(i) Determine profit and loss for the current year.

(ii) Compute the price that should have been charged in the current year to yield the same profit as in previous year.

(b) Metaliks Ltd. uses a small casting in one of its finished products. The castings are purchased from a foundry. Metaliks Ltd. purchases 72,000 castings per year at a cost of Rs. 1,000 per casting.

The castings are used evenly throughout the year in the production process on a 360-day-per-year basis. The company estimates that it costs Rs. 11,000 to place a single purchase order and about Rs. 500 to carry one casting in inventory for a year. The high carrying costs result from the need to keep the castings in carefully controlled temperature and humidity conditions, and from the high cost of insurance.

Delivery from the foundry generally takes 8 days, but it can take as much as 12 days. The days of delivery time and percentage of their occurrence are shown in the following tabulation :

Delivery time (days)	**:**	**8**	**9**	**10**	**11**	**12**
Percentage of occurrence	**:**	**75**	**10**	**5**	**5**	**5**

Required :

(i) Compute the economic order quantity.

(ii) Assume the company is willing to assume a 15% risk of being out of stock. What would be the safety stock? The re-order point?

(iii) Assume the company is willing to assume a 5% risk of being out of stock. What would be the safety stock? The re-order point?

(iv) Assume 5% stock–out risk. What would be the total cost of ordering and carrying inventory for one year?

(v) Refer to the original data. Assume that using process re-engineering the company reduces its cost of placing a purchase order to only Rs. 700. In addition, company estimates that when the waste and inefficiency caused inventories are considered, the true cost of carrying a unit in stock is Rs. 850 per year.

1. Compute the new EOQ.

2. How frequently would the company be placing an order, as compared to the old purchase policy?

Answer 3. (a)

Statement of Cost and Profit

Particulars	Last year (20,000 tables)		This year (20,000 tables)		Remarks
	Per table	Total	Per table	Total	
Materials	60.00	12,00,000	50.00	10,00,000	
Labour	20.00	4,00,000	20.00	4,00,000	
Prime cost	80.00	16,00,000	70.00	14,00,000	
Add : Overheads	30.00	6,00,000	30.00	6,00,000	Fixed OH is constant
Total cost	110.00	22,00,000	100.00	20,00,000	
Add : Profit	16.50	3,30,000	9.25	1,85,000	Balancing figure
Sales	126.50	25,30,000	109.25	21,85,000	SP = 95 + 15% =109.25

Note : It is assumed that Madhav would have determined the SP based on his cost estimate of Rs. 95.

Price to be charged for earning the same profit as in the previous year :

	Required profit	Rs. 3,30,000
Add :	Revised costs for the current year	Rs. 20,00,000
	Desired sales revenue	Rs. 23,00,000 (for 20,000 tables)
	Hence, selling price per table	Rs. 115.00

Answer 3. (b)

(i) Economic Order Quantity

Annual consumption of raw material = 72,000 castings

Ordering cost per order = Rs. 11,000

Carrying cost per casting p.a. = Rs. 500

Economic order quantity $= \sqrt{\frac{2 \times 72,000 \times 11,000}{500}}$ = 1,780 castings

(ii) Safety stock assuming 15% risk of being out of stock

Delivery time is usually 8 days, but may extend to 12 days. After observing the given percentage of occurrences, it may be noted that 15% risk of being out of stock, means that a stock of 9 days is kept in hand while placing the order (percentage of occurrences of 10th, 11th and 12th days is 5% + 5% + 5% = 15%).

Average consumption per day $= \frac{\text{Annual Consumption}}{360 \text{ days}} = \frac{72,000}{360 \text{ days}} = 200$

Safety stock = 1 day consumption (i.e. 9 days – 8 days) = 200 castings

Re-order point = Safety stock + Lead time consumption

= 1 day consumption + 8 days consumption

= (1 × 200) + (8 × 200) = 1,800 castings

(iii) Safety stock assuming 5% risk of being out of stock

5% risk of being out of stock means that a stock of 11 days is kept in hand while placing the order (the chance of delivery time being 12 days is 5%).

Safety stock = 3 days consumption (i.e. 11 days – 8 days) = 3 × 200 = 600 castings

Re-order point = Safety stock + Lead time consumption

= 3 days consumption + 8 days consumption

= (3 × 200) + (8 × 200) = 2,200 castings

(iv) Total cost of ordering and carrying inventory at 5% stock out risk

If EOQ is adopted and a safety stock of 600 castings is maintained, then the total cost of ordering and carrying inventory is computed below :

Total cost or ordering $= \frac{72,000}{1,780} \times$ Rs. 11,000 = Rs. 4,44,944

Total carrying cost = Carrying cost of avg. inventory + Carrying cost of safety stock

$= \left[\frac{1,780}{2} \times \text{Rs. } 500\right]$ + [600 × Rs. 500] = Rs. 7,45,000

(v) (1) New Economic Order Quantity

Annual consumption of raw material = 72,000 castings
Ordering cost per order = Rs. 700
Carrying cost per casting p.a. = Rs. 850

Economic order quantity = $\sqrt{\frac{2\times 72{,}000\times 700}{850}}$ = 344 castings

(2) Comparison of frequency of orders

	Old policy	New policy
Annual requirement of castings	72,000	72,000
Order size = EOQ	1,780	344
Number of orders	40	209
Frequency of orders [360 days ÷ no. of orders]	9	1.7

Q. 4. (a) Jagannath Ltd. manufactures two products X & Y. The company had budgeted Factory OH of Rs. 2,55,000 and budgeted Direct Labour Hr. of 150,000 hours. So, the OH recovery rate was pre-determined at Rs. 1.70 per DLH., and used by the Company for Product Costing purposes. The department-wise break-up of the OH and DLH were –

Particulars	*Department A*	*Department B*	*Total*
Budgeted OH	**Rs. 1,80,000**	**Rs. 75,000**	**Rs. 2,55,000**
Budgeted DLH	**75,000 hours**	**75,000 hours**	**1,50,000 hours**
Rate per DLH	**Rs. 2.40**	**Re. 1.00**	**Rs. 1.70 (plant-rate)**

You are further informed that –

- **Each unit of Product X requires 4 hours in Department A and 1 hour in Department B. Also, each unit of Product Y requires 1 hour in Department A and 4 hours in Department B.**
- **This was the first year of the Company's operation. There was no WIP at the end of the year. However, 1,500 and 4,500 units of Products X and Y were on hand at the end of the year.**
- **The budgeted activity was attained.**

Required :

(i) Determine the production and sales quantities for the above year.

(ii) Ascertain the effect of using a blanket rate, instead of Department-wise OH rates, on the Company's income.

(iii) Assume that material and labour costs per unit of Product X and Y were Rs. 25 and Rs. 40 respectively and the selling price is fixed by adding 40% to cover profit and selling and administration OH. Calculate the difference in the selling price due to the use of plant-wise OH rate, instead of Department-wise OH rates?

(b) What is the accounting treatment for rectification costs of defective work?

Answer 4. (a)

(i) **Computation of production and sales quantities**

The products processing times are as under –

Product	X	Y	Time available
Department A	4 hours	1 hour	75,000 hours
Department B	1 hour	4 hours	75,000 hours

Let X and Y be the number of units (production quantities) of the two products. Converting these into equations, we have –

$4X + Y = 75,000$ &

$X + 4Y = 75,000$

Solving the above, we get X = 15,000; Y = 15,000

Hence, the Production and Sales Quantities are determined as under –

Product	Production quantity	Closing stock (given)	Balance sales quantity
X	15,000 units	1,500 units	13,500 units
Y	15,000 units	4,500 units	10,500 units

(ii) **Effect of using plant-wise rate on the Company's profit**

Product	Closing stock quantity	OH included using		Difference in OH
		Plant rate	Department rates	
X	1,500 units	1,500 × 5 hrs. x 1.70 = Rs. 12,750	A: 1,500 × 4 hrs. × 2.40 = Rs. 14,400 B: 1,500 x 1 hr. × 1.00 = Rs. 1,500	(-) Rs. 3,150
Y	4,500 units	4,500 × 5 hrs. × 1.70 = Rs. 38,250	A: 4,500 × 1 hr. × 2.40 = Rs. 10,800 B: 4,500 × 4 hrs. × 1.00 = Rs. 18,000	(+) Rs. 9,450
Total		Rs. 51,000	= Rs. 44,700	(+) Rs. 6,300

Due to the use of plant-wise overall rate, the company's income would be affected by Rs. 6,300

Note : Profit would be affected only to the extent of OH contained in closing finished goods and closing WIP, if any.

(iii) **Effect of using plant-wise rate on the products' selling prices**

Particulars	If plant-wise recovery rate is used		If department –wise rates are used	
	Product X	Product Y	Product X	Product Y
Matls. & Labour	Rs. 25.00	Rs. 40.00	Rs. 25.00	Rs. 40.00
Add: Prodn. OH	5 × 1.70 = Rs. 8.50	5 × 1.70 = Rs. 8.50	4 × 2.40 = Rs. 9.60 1 × 1.00 = Re. 1.00	1 × 2.40 = Rs. 2.40 4 × 1.00 = Rs. 4.00
Cost of production	Rs. 33.50	Rs. 48.50	Rs. 35.60	Rs. 46.40
Add : 40% of margin	Rs. 13.40	Rs. 19.40	Rs. 14.24	Rs. 18.56
Selling price	Rs. 46.90	Rs. 67.90	Rs. 49.84	Rs. 64.96
Effect of using plant-wise rates on product selling prices			Rs. 2.94 Underpriced	Rs. 2.94 Overpriced

Answer 4. (b)

The costs of rectification or re-work may be treated in the following ways –

1. When defectives are normal and inherent in the process :
   (i) **Charged to good products** – The loss is absorbed by good units. This method is used when 'seconds' have a normal value and defectives rectified into 'seconds' or 'first' are normal.
   (ii) **Charged to jobs** – When defectives are normal and are easily identifiable with specific jobs, the work costs are debited to the job.
   (iii) **Charged to General overheads** – When the defectives caused in one department are reflected only on further processing, the rework costs are charged to general overheads.
   (iv) **Charged to the department overheads** – If the department responsible for defectives can be identified then the rectification costs should be charged to that department.
2. **When defectives are abnormal :** if defectives are abnormal and are due to causes beyond the control of the firm, the rework cost should be charged to costing Profit and Loss Account.

Q. 5. (a) PRIDE Ltd. manufactures and markets luxury cars in a competitive market. The Company suffered strike by production labour that lasted for two weeks. During that period, no cars produced. PRIDE issued a statement to the press that the cost of the strike was Rs. 60 crores. This was estimated on the basis of lost production of 1,000 vehicles of an average price of Rs. 6 lakhs each. PRIDE's accountant feels that this figures, released in a hurry, overstates the cost of the strike and produces the following statement to support his views –

Cost of strike	*Rs. Lakhs*	*Benefits of strike*	*Rs. Lakhs*
Loss of revenue (1,000 cars x Rs. 6 lakhs)	6,000	Expenses avoided	
		Materials (Rs. 1 lakh per car)	1,000
		Production labour (Rs. 0.5 lakh per car)	500
		Depreciation of machinery	1,750
		Overhead (200% of production labour)	1,000
		Net cost of strike (balancing figure)	1,750
Total	6,000	Total	6,000

The following additional information is available :

(i) Depreciation of machines is based on the straight-line method of calculation. However, the plant manager estimates that the machines will fall in value by Rs. 250 lakhs per week regardless of the level of production. He feels that in addition its value will fall by Rs. 180 lakhs for every 100 cars that are produced.

(ii) Overheads are recorded at 200% on Production Labour. This includes fixed and variable items of overheads. The General Manager estimates that Variable OH will be Rs. 15 lakhs for every 100 cars produced.

(iii) During the period of the strike, the maintenance staff, whose wages are included in the fixed overhead expenses, carried out a major overhaul on some of the machines using material costing Rs. 15 lakhs. An outside contractor would perform this overhaul at a price (including materials) of Rs. 110 lakhs.

(iv) The Sales Manager feels that about 40% of the production lost could be made up and sold in the next month by the production labour working overtime. Labour is paid at the rate of time and half for overtime working.

You are requested to advise on the validity of both the statements and compute the true cost of the strike.

(b) ABC Ltd. manufactures four variables of a product namely A,B, C & D. If the company manufactures only one variety, the monthly production can be either 5,000 of A or 10,000 of B or 15,000 of C or 30,000 of D.

	A	*B*	*C*	*D*
Production in month	**675**	**1,800**	**4,050**	**9,450**
Direct materials (Rs.)	**3,000**	**6,000**	**9,000**	**18,000**
Direct labour (Rs.)	**1,500**	**3,000**	**4,500**	**9,000**
Direct labour hours	**50**	**100**	**150**	**300**
Machine hours	**30**	**15**	**10**	**5**

Required **: prepare a statement showing the allocation of factory overheads (which amounted to Rs. 1,08,000) using the basis of –**

(i) Direct material cost

(ii) Direct labour cost

(iii) Prime cost

(iv) Units produced

(v) Direct labour hours

(vi) Machine hours

Answer 5. (a)

Since 40% of production lost could be made up and sold in the next month, the net effect of strike is only on the permanent loss of market share i.e. balance 60%. The cost-benefit analysis is as under –

Cost of strike	**Rs. Lakhs**	**Benefits of strike**	**Rs. Lakhs**
Loss of revenue (600 cars × Rs. 6 lakhs)	3,600	Expenses avoided	
Overtime premium for 40% balance production (400 cars × 0.5 lakhs × 50%)	100	Materials (Rs. 1 lakh × 600 cars)	600
		Production labour (Rs. 0.5 lakh x 600 cars)	300
		Depreciation (180/100 × 600)	1,080
		Variable OH (15/100 x 600 cars)	90
		Maintenance expenses (110 – 15)	95
		Net cost of strike (balancing figure)	1,535
Total	3,700	Total	3,700

Answer 5. (b)

Statement showing the allocation of overheads

Basis	**Rate**	**A (Rs.)**	**B (Rs.)**	**C (Rs.)**	**D (Rs.)**
Direct materials cost	300%	9,000	18,000	27,000	54,000
Direct labour cost	600%	9,000	18,000	27,000	54,000
Prime cost	200%	9,000	18,000	27,000	54,000
Units produced					
Rs. 24, Rs. 12, Rs. 8 & Rs. 4		16,200	21,600	32,400	37,800
Direct labour hours	Rs. 180/ hr.	9,000	18,000	27,000	54,000
Machine hours	Rs. 1,800/ hr.	54,000	27,000	18,000	9,000

Working notes : Calculation of overheads rate using different basis :

(i) Direct material cost :

$$\text{Rate} = \frac{\text{Total Factory Overhead}}{\text{Total Material Cost}} \times 100 = \frac{\text{Rs. 1,08,000}}{\text{Rs. 36,000}} \times 100 = 300\%$$

(ii) Direct labour cost :

$$\text{Rate} = \frac{\text{Total Factory Overhead}}{\text{Total Labour Cost}} \times 100 = \frac{\text{Rs. 1,08,000}}{\text{Rs. 18,000}} \times 100 = 600\%$$

(iii) Prime cost :

$$\text{Rate} = \frac{\text{Total Factory Overhead}}{\text{Total Prime Cost}} \times 100 = \frac{\text{Rs. 1,08,000}}{\text{Rs. 54,000}} \times 100 = 200\%$$

(iv) Direct labour hours :

$$\text{Rate} = \frac{\text{Total Factory Overhead}}{\text{Total Direct Labour hours}} \times 100 = \frac{\text{Rs. 1,08,000}}{600} \times 100 = \text{Rs. 180 per hr.}$$

(v) Machine hours :

$$\text{Rate} = \frac{\text{Total Factory Overhead}}{\text{Total Machine hours}} \times 100 = \frac{\text{Rs. 1,08,000}}{60} \times 100 = \text{Rs. 1,800 per m/c. hr.}$$

(vi) Units produced :

Let us first find each unit of product in terms of D

5,000 units of A = 30,000 units of D

1 unit of A = 6 units of D

Like 10,000 units of B = 30,000 units of D

1 unit of B = 3 units of D and so on

Thus, overheads ratio will be 6 : 3 : 2 : 1

In term of D, the overhead expense rate will be

$$\frac{\text{Rs. 1,08,000}}{675\times6+1{,}800\times3+4{,}050\times2+9{,}450\times1} = \frac{\text{Rs. 1,08,000}}{27{,}000} = \text{Rs. 4}$$

Thus, rate for A will be Rs. 4 × 6 = Rs. 24

For B will be Rs. 4 × 3 = Rs. 12

For C will be Rs. 4 × 2 = Rs. 8

For D will be Rs. 4 × 1 = Rs. 4

Q. 6. (a) Vasudev Ltd. gives the following information :

From financial records :

	Rs.'000
(i) Sales for the year	**100,00**
(ii) Direct labour	**21,00**
(iii) Management expenses	**3,00**
(iv) Selling expenses	**5,00**

From inventory records :

	As on 31st March	As on 1st April
(i) Raw materials	**12,60**	**10,00**
(ii) Finished goods	**21,00**	**19,60**
(iii) W-I-P (50 % complete)	**16,00**	**12,00**

From analysis of past data :

(i) Direct labour would be 175% of works overheads.

(ii) Cost of Goods Sold (excluding Administration Overheads) would be Rs. 13,200, per unit

(iii) Selling expenses would be Rs. 1,000 per unit

You are required to :

(i) Compute the value of materials purchased during the year.

(ii) Determine the rate of profit earned on sales.

(iii) Discuss whether interest payment of Rs. 3,50,000 on working capital would affect the above rate of profit.

(b) A factory department has 180 workers who are paid an average of Rs. 17.50 per week (48 hours). Dearness Allowances per month (208 hours) of Rs. 130, Provident Fund deduction is at 8% on (Basic + DA), of which $1\frac{1}{6}$ % is for Family Pension Fund of half the number of workers and Employee's State Insurance being at Rs. 1.25 each. The employer contributing an equivalent amount. The company gives only the minimum bonus of $8\frac{1}{3}$ % and allows statutory leave of 2 weeks per year with pay. Show the weekly wage summary for the financial books and the department labour hour costs for job costing.

Answer 6. (a)

Cost sheet for the year ended 31st March

Particulars	Computation	Rs. '000
Opening stock of raw materials	(given)	10,00
Add : Purchases & carriage inwards	(balancing figure)	41,00
		51,00
Less : Closing stock of raw materials	(given)	12,60
Direct materials consumed		38,40
Add : Direct labour	(given)	21,00
PRIME COST		59,40
Add : Factory overheads	(21,00 ÷ 175%)	12,00
Add : Opening Stock of W-I-P	(given)	12,00

		83,40
Less : Closing stock of W-I-P	(given)	16,00
FACTORY COST / WORKS COST		67,40
Add : Administration overheads (Mgmt. Exp.)	(given)	3,00
COST OF PRODUCTION		70,40
Add : Opening stock of finished goods	(given)	19,60
COST OF GOODS AVAILABLE FOR SALE		90,00
Less : Closing stock of finished goods	(given)	21,00
COST OF GOODS SOLD	(See note iv below)	69,00
Add : Selling and Distribution overhead	(given)	5,00
COST OF SALES		74,00
Add : Profit/ Loss (Balancing figure)		26,00
SALES		100,00

Notes :

(i) The cost sheet is completed by Reverse Working. Purchases amount is the balancing figure.

(ii) Direct labour = 175% of factory overhead (given). Hence, if direct labour = 21,00,000, then Factory Overhead = 21,00,000 ÷ 175% = Rs. 12,00,000

(iii) Selling OH = Rs. 1,000 p.u. = Rs. 5,00,000 (in total). So, Units sold = Rs. 5,00,000 ÷ Rs. 1,000 = 500 units.

(iv) Cost of Goods Sold (excluding Administrative OH) = Rs. 13,200 p.u.

Cost of Goods Sold less AOH = 13,200 p.u. × 500 units = Rs. 66,00,000

Cost of Goods Sold – Rs. 3,00,000 = Rs. 66,00,000

Hence, Cost of Goods Sold = Rs. 69,00,000

(v) Rate of profit = 26,00 ÷ 100,00 = 26%

(vi) Interest on working capital shall not be considered as "Cost" since it may distort cost comparison. However, for decision-making purposes, interest is an essential element of cost and has to be included to determine relevant costs in a decision.

Answer 6. (b)

Weekly Wages Summary

Particulars		**Rs.**
Wages (@ Rs. 17.50 each for 180 workers)		3,150.00
Dearness allowance (48/208 x Rs. 130 x 180 workers)		5,400.00
Bonus ($8\frac{1}{3}$% of [Rs. 3,150 + Rs. 5,400])		712.50
Gross wages		9,262.50
Less : P.F. contribution (8% - $1\frac{1}{6}$ % of Rs. 8,550)	Rs. 584	
Family pension (1/2 of $1\frac{1}{6}$ % of Rs. 8,550)	Rs. 50	
E.S.I. contribution (@ Rs. 1.25 for 180 workers)	Rs. 225	859.00
Net wages		8,403.50

Computation of Departmental Labour Cost

Particulars	Rs.
Wages	3,150.00
Dearness allowance	5,400.00
Bonus	712.50
P.F. contribution & family pension (Rs. 584 + Rs. 50)	634.00
E.S.I. contribution	225.00
Leave Pay (Rs. 8,550 x 2/52)	328.85
Total labour cost	10,450.35
Weekly labour hours (48 hours x 180 workers)	8,640 hours
Labour cost per hour (Rs. 10,450.35/8,640)	Rs. 1.21

Q. 7. (a) Super Builder Constructions are engaged in building contracts. One of their contracts commenced 15 months ago remains unfinished. The following information relating to the contract has been prepared for the year just ended :

Particulars	Rs. '000
Contract price	**2,750**
Value of work certified at the end of the year	**2,420**
Cost of work not yet certified at the end of year	**44**
Opening balances :	
Cost of work completed	**330**
Materials on site (physical stock)	**11**
During the year :	
Materials delivered to site	**671**
Wages	**638**
Hire of plant	**121**
Other expenses	**99**
Closing balance : Materials on site (physical stock)	**22**

As soon as materials are delivered to the site, they are charged to the contract account. A record is also kept of materials as they are actually used on the contract. Periodically a stock check is made and any discrepancy between book stock and physical stock is transferred to a general "Contract Material Discrepancy" account. This is absorbed back to each contract, currently at the rate of 0.5% of materials booked. The stock check at the year-end revealed a stock shortage of Rs. 5,500.

In addition to Direct Charges listed above, general OH are charged to contracts at 5% of value of Work certified. General OH of Rs. 16,500 had been absorbed into the cost of work completed at the beginning of the year. It has been estimated that further costs to compete the contract will be Rs. 2,42,000. This estimate included the cost of materials on site at the end of the year just finished and also a provision for rectification.

Required :

(i) Determine the profitability of the above contract and recommend how much profit should be taken for the year just ended.

(ii) State how your recommendation in above would be affected if the Contract Price was Rs. 44 lakhs (rather than Rs. 27.50 lakhs) and if no estimate has been made of costs to completion. Assume retention money = 20%.

(b) Distinguish between job costing and process costing?

Answer 7. (a)

(i) Contract Account

Particulars	Rs.'000	Particulars	Rs.'000
To Work-in-progress b/d	330.00	By Work-in-progress a/c.	
To Materials b/d	11.00	- Work certified	2,420.00
To Materials issued	671.00	- Work uncertified	44.00
To Wages	638.00	By Contract Material Discrepancy A/c	
		– Shortage transfer	5.50
To Plant hire charges	121.00	By Balance c/d – Materials	22.00
To Other expenses	99.00		
To Contract Material Discrepancy A/c			
– absorbed at 0.5% of (11+671-22)	3.30		
To General OH (5% of 2,420 – 16.50)	104.50		
To Notional profit c/d			
– balancing figure	513.70		
	2,491.50		**2,491.50**
To Profit and Loss A/c – transfer	490.80	By Notional profit b/d	513.70
To Reserve c/d – balancing figure	22.90		
	513.70		**513.70**

Recognition of profit :	**Rs. '000**
Cost incurred till date = 2,491.50 – 513.70 – 5.50 – 22.00 =	1,950.30
Estimated total costs = Costs incurred till date + Further costs to be incurred	
= 1,950.30 + 242.00 =	2,192.30
Estimated total profit (ETP) = Contract Price – Estimated total costs = 2,750 – 2,192.30 =	557.70
Percentage of completion = Work certified ÷ Contract price = 2,420 ÷ 2,750 =	88%
Profit to be recognized = ETP x (Work certified ÷ Contract price) = 557.70 × (2,420 ÷ 2,750) =	490.80

(ii) If contract price were Rs. 44 lakhs, percentage of completion = Work certified ÷ Contract price = 55%

Therefore profit recognition will be based on notional profit (since it is given that no estimate of the costs of completion has been made).

Profit to be recognized = 2/3 × Notional profit × Cash received ÷ Work certified

= 2/3 × 513.70 × 1,936 ÷ 2,420 = Rs. 274 lakhs.

Answer 7. (b)

The main points which distinguishes job costing and process costing are as below :

Job Costing	Process Costing
(i) A Job is carried out or a product is produced by specific orders.	The process of producing the product has a continuous flow and the product produced is homogeneous.
(ii) Costs are determined for each job.	Costs are compiled on time basis i.e., for production of a given accounting period for each process or department.
(iii) Each job is separate and independent of other jobs.	Products lose their individual identity as they are manufactured in a continuous flow.
(iv) Each job or order has a number and costs are collected against the same job number.	The unit cost of process is an average cost for the period.
(v) Costs are computed when a job is completed. The cost of a job may be determined by adding all costs against the job.	Costs are calculated at the end of the cost period. The unit cost of a process may be computed by dividing the total cost for the period by the output of the process during that period.
(vi) As production is not continuous and each job may be different, so more managerial attention is required for effective control.	Process of production is usually standardized and is therefore, quite stable. Hence control here is comparatively easier.

Q. 8. (a) The data given related to "Opera House" a mini theatre for the year ending 31st March 2010 :

No. of employees		*Salaries*	*Expenses*	*Amount*
1	**Manager**	**Rs. 800 p.m.**	**Electricity and oil**	**11,655**
10	**Gate-keepers**	**Rs. 200 p.m. each**	**Carbon**	**7,235**
2	**Operators**	**Rs. 400 p.m. each**	**Misc. expenditure**	**5,425**
4	**Clerks**	**Rs. 250 p.m. each**	**Advertisement**	**34,710**
			Admn. Expenses	**18,000**
			Hire of point	**1,40,700**

The premises are valued at Rs. 6,00,000 and the estimated life is 15 years. Projectors and other equipments cost Rs. 3,20,000 on which 10% depreciation is to be charged.

Daily 3 shows are run throughout the year. The total capacity is 625 seats which is divided into three classes as follows :

Emerald circle	**250 seats**
Diamond	**250 seats**
Coral	**125 seats**

Ascertain cost per man-shows assuming that

(i) 20% of the seats remain vacant, and

(ii) Weightage to be given to the three classes in the ratio 1:2:3

Required : Determine the rates for each class if the management expects 30% return on gross proceeds. Ignore entertainment taxes.

(b) Explain with features of service organizations which may create problems for the application of Activity Based Costing.

Answer 8. (a)

Operating Cost Sheet	**Rs.**
Fixed costs :	
Salaries [800 × 12]	9,600
Gate-keepers [10 × 200 × 12]	24,000
Operators [2 × 400 × 12]	9,600
Clerks [4 × 250 × 12]	12,000
Administration expenses	18,000
Depreciation :	
Premises [Rs. 6,00,000/15]	40,000
Projections and equipment [3,20,000 × 10%]	32,000
Total fixed costs	1,45,200
Variable costs :	
Electricity and oil	11,655
Carbon	7,235
Miscellaneous expenses	5,425
Advertisements	34,710
Hire of point	1,40,700
Total variable cost	1,99,725
Total costs	3,44,925
Add : 30% return on gross proceeds [Or 3/7 of cost]	1,47,825
Gross proceeds	4,92,750
Total man-shows (refer WN)	9,85,500
Cost per man-show	Rs. 0.50

Rate for each class :

Emerald circle cost per man-show × weightage i.e. 0.50 × 1 = Re. 0.50
Diamond circle cost per man-show × weightage i.e. 0.50 × 2 = Rs. 1.00
Coral circle cost per man-show × weightage i.e. 0.5 × 3 = Rs. 1.50

***Working note* :**

Computation of man-shows with weightage (i.e. express alls eats in terms of public)

Emerald circle	=	250 × 1	=	250 seats
Diamond circle	=	250 × 2	=	500 seats
Coral circle	=	125 × 3	=	375 seats
				1,125 seats

No. of shows : 3		
Total weighted seats [1,125 × 3]	=	3,375 seats
Less : 20% vacant seats	=	675 seats
		2,700 seats
Man-shows per annum [2,700 × 365]	=	9,85,500

Answer 8. (b)

Service organizations predominantly have indirect costs and are hence ideal for implementation of ABC. However, the following features of service organizations create problems for application of ABC :

(i) **Production and consumption of many services are inseparable :** Hence, the specific costs of rendering each service cannot be ascertained with reasonable accuracy. Also, difficulties are faced in apportionment of common expenses incurred over various services.

(ii) **Most services are intangible :** This creates problems in the identification of the appropriate Cost Driver in respect of each activity/ service rendered. Sometimes, there may be two or more (equally dominant) Cost Drivers in respect of each activity.

(iii) **Service outputs vary from day to day :** Hence, the quantity of cost driver (cost allocation base) has to be carefully determined by recording, observing and averaging out the service outputs over a considerable period of time.

(iv) **Pricing strategies depend on customer :** The company may have different pricing strategies in respect of different customers, sometimes, which may not have any relationship with the cost incurred. Such ad-hoc pricing strategies, differential pricing strategies and price discrimination, may render the application of ABC system in fructuous. The data obtained from ABC system may not be used at all for pricing.

Other problems :

(v) Amount of work involved in setting up the ABC system and data collection;

(vi) Lack of resources;

(vii) Lack of understanding of causation effect of cost drivers;

(viii) Inadequate computer software.

Q. 9. (a) The following data are available pertaining to a product after passing through two process A and B :

Output transferred to Process C from Process B : 10,944 units for Rs. 59,116.

	Rs.
Sundry materials	**1,776**
Direct labour	**7,800**
Direct expenses	**1,938**

The wastage of Process C is sold at Re. 1 per unit. The overhead charges were 168% of direct labour. The final product was sold at Rs. 12 per unit matching a profit of 20% on sales. Find the percentage of wastage in Process C and prepare Process C account.

(b) Write a short note on unit costing method for ascertaining product cost.

Answer 9. (a)

Process C Account

Particulars	Units	Amount (Rs.)	Particulars	Units	Amount (Rs.)
To Process B	10,944	59,116	By Normal wastage	2,480	2,480
To Sundry materials		1,776	By Sales	8,464	1,01,568
To Direct labour		7,800			
To Direct expenses		1,938			
To Overheads		13,104			
To Profit		20,314			
	10,944	1,04,048		10,944	1,04,048

***Working Note* :**

Calculation of the percentage of wastage in Process C :

Cost per unit = Selling price – Profit = (Rs. 12 – 0.2 × 12) = Rs. 9.60

Suppose the number of wastage = X. Then the scrap value of units in wastage = Rs. 1.00 × X = Re. X.

Therefore,

Total cost = (10,944 – X) units × Rs. 9.60 = Rs. 1,05,062 – Rs. 9.6X

Total cost = Cost incurred – Sale value of scrap = Rs. 83,734 – Re. X

Thus,

1,05,062 – 9.6X = 83,734 – X

Or, 8.6X = 21,328

Or, X = 2,480

Scrap value is Rs. 1.00 per unit. Therefore,

No. of units scrapped = Rs. 2,480/1 = 2,480 units

Percentage of wastage in Process C = 2,480/10,944 × 100 = 22.7%

Answer 9. (b)

It is a form of process or operation costing. It is suitable where only one product or a few grades of the same product involving a single process or operation is produced. Under this system the expenditure is not analysed in as much detail as is necessary for job costing because the whole of the expenditure is normally incurred for only one type of product but where, however, articles produced vary in grades and sizes, it is necessary to analyse the appropriate charges for ascertaining the cost of articles. On dividing the total expenditure by the number of units produced, the cost per unit is ascertained. This system of costing is suitable for breweries, cement works etc.

In all these cases, unit cost of articles produced requires to be ascertained.

The cost sheets are prepared periodically and usually contain information on the under mentioned points :

(i) Cost of materials consumed with details.

(ii) Cost of labour with details.

(iii) Indirect expenses with details.

(iv) Office and administrative expenses in lumpsum.

(v) Abnormal losses and gains are separated and not mixed with costs.

Q. 10. (a) Following information for the month of August is extracted from the Cost records of Autoparts Ltd. which specializes in the manufacture of automobile spares. The parts are manufactured in Department A and assembled in Department B.

Particulars	*Total*	*Dept. A*	*Dept. B*
Direct labour hours worked	80,000	30,000	50,000
Machine hours worked	30,000	25,000	5,000
Machine horse power (H.P.)	400	353	47
Book value of machine (Rs.)	50,000	40,000	10,000
Floor space (sq. ft.)	20,000	10,000	10,000
Direct material	65,000	50,000	15,000
Direct labour	90,000	40,000	50,000
Factory rent	15,000	—	—
Supervision	6,000	2,500	3,500
Depreciation on machine	5,000	—	—
Power	4,000	—	—
Repairs to machine	2,000	1,600	400
Indirect labour	4,000	2,000	2,000

The prime cost of batch X-401 have been booked as under :

Particulars	*Total*	*Dept. A*	*Dept. B*
Materials	3,200	2,700	500
Labour	7,500	3,000	4,500

Direct labour hours on batch X-401 were 2,500 in Department A and 5,000 in Department B. Machine hours worked on this batch were 1,250 in Department A and 600 in Department B. Allocate overhead expenditure and calculate the cost of each unit in batch X-401 which consists of 1,000 units.

(b) What is meant by – (i) Value of work certified and (ii) Cost of work uncertified.

Answer 10. (a)

Statement showing allocation of overhead expenditure to Department A and B (Rs.)

Particulars	Basis of allocation	Total	Department	
			A	B
Machine costs				
Depreciation	(Plant value 4:1)	5,000	4,000	1,000
Power	(HP 353:47)	4,000	3,530	470
Repairs to machine	(Actual)	2,000	1,600	400
		11,000	9,130	1,870
Other overhead costs				
Factory rent	(Floor space 1:1)	15,000	7,500	7,500
Supervision	(Actual)	6,000	2,500	3,500
Indirect labour	(Actual)	4,000	2,000	2,000
		25,000	12,000	13,000

Machine hour rate Dept. A $= \frac{\text{Rs. } 9,130}{25,000 \text{ hours}}$ = Re. 0.3652; Dept. B = $\frac{\text{Rs. } 1,870}{5,000 \text{ hours}}$ = Re. 0.374

Labour hour rate Dept. A = $\frac{\text{Rs. } 12,000}{30,000 \text{ hours}}$ = Re. 0.40; Dept. B = $\frac{\text{Rs. } 13,000}{50,000 \text{ hours}}$ = Re. 0.26

Cost sheet of Batch X-401(Batch of 1,000)

Rs.

Particulars	**Total**	**Department**	
		A	**B**
Materials	3,200	2,700	500
Labour	7,500	3,000	4,500
Overheads [WN]	2,981	1,457	1,524
	13,681	7,157	6,524

Hence, cost per unit in the batch = $\frac{\text{Rs. } 13,681}{1,000 \text{ units}}$ = Rs. 13.68 per unit

Working note : Absorption of overhead costs to batch X-401

		Rs.
Dept. A – Machine cost	(1,250 hrs. × Re. 0.3652 per hr.)	457
Other overhead cost	(2,500 hrs. × Re. 0.40 per hr.)	1,000
	Total	1,457
Dept. B – Machine cost	(600 hrs. × Re. 0.374 per hr.)	224
Other overhead cost	(5,000 hrs. × Re. 0.26)	1,300
	Total	1,524

Answer 10. (b)

Value of work certified :

(i) As per the prevailing business practices in contract activity, the Contractor raises periodical bills on the contractee. Such bills are raised on the basis of Architect's or Surveyor's certificate stating the extent and value of work completed.

(ii) Hence, that portion of the work which has been completed by the contractor and certified by the Architect/Surveyor is called as work certified.

(iii) Value of work certified constitutes income on the contract and is credited to the contract account and debited to work in progress account (if the contract is in progress) or to contractee's account (if the contract is completed)

Cost of work uncertified :

(i) It represents the cost of work, which has been carried out by the Contractor but is not certified by the Architect/ Surveyor.

(ii) It constitutes the work completed from the date of the earlier certification till the end of the accounting year. The cost of work uncertified is also credited to contract account under the head "Work in Progress".

Cost of work uncertified = Total cost to date less cost of work certified less material in hand less plant at site (at WDV).

Q. 11. A Company operates separate cost accounting and financial accounting systems. The following is the list of Opening balances as on 1.04.2011 in the Cost Ledger.

	Debit Rs.	Credit Rs.
Stores Ledger Control Account	**53,375**	**—**
WIP Control Account	**1,04,595**	**—**
Finished Goods Control Account	**30,780**	**—**
General Ledger Adjustment Account	**—**	**1,88,750**

Transactions for the quarter ended 30.06.2011 are as under :

	Rs.
Materials purchased	**26,700**
Materials issued to production	**40,000**
Materials issued for factory repairs	**900**
Factory wages paid (including indirect wages Rs. 23,000)	**77,500**
Production overheads incurred	**95,200**
Production overheads under-absorbed and written-off	**3,200**
Sales	**2,56,000**

The Company's gross profit is 25% on Factory Cost. At the end of the quarter, WIP stocks increased by Rs. 7,500.

Prepare the relevant Control Accounts, Costing Profit and Loss Account and General Ledger Adjustment Account to record the above transactions for the quarter ended 30.06.2011.

Answer 11.

General Ledger Adjustment A/c

Dr. *Cr.*

Particulars	Rs.	Particulars	Rs.
To Sales	2,56,000	By Balance b/d	1,88,750
To Balance c/d	1,80,150	By Stores ledger control A/c	26,700
		By Wages control A/c	77,500
		By Overheads control A/c	95,200
		By Costing Profit & Loss A/c	48,000
	4,36,150		4,36,150

Stores Ledger Control A/c

Dr. *Cr.*

Particulars	Rs.	Particulars	Rs.
To Balance b/d	53,375	By WIP control A/c	40,000
To General ledger adjustment A/c	26,700	By Factory overhead control A/c	900
		By Balance c/d	39,175
	80,075		80,075

WIP Control A/c

Dr. *Cr.*

Particulars	Rs.	Particulars	Rs.
To Balance b/d	1,04,595	By Finished goods control A/c	2,02,900
To Stores ledger control A/c	40,000	By Balance c/d	1,12,095
To Wages control A/c	54,500		
To Factory, O/H control A/c	1,15,900		
	3,14,995		3,14,995

Finished goods control A/c

Dr. *Cr.*

Particulars	Rs.	Particulars	Rs.
To Balance b/d	30,780	By Cost of sales A/c (Refer to note)	2,04,800
To WIP control A/c	2,02,900	By Balance c/d	28,880
	2,33,680		2,33,680

Note :

Gross profit is 25% of Factory cost or 20% on sales.

Hence cost of sales = Rs. 2,56,000 – 20% of Rs. 2,56,000 = Rs. 2,04,800

Factory overhead control A/c

Dr. *Cr.*

Particulars	Rs.	Particulars	Rs.
To Stores ledger control A/c	900	By Costing & profit loss A/c	3,200
To Wages control A/c	23,000	By WIP control A/c	1,15,900
To General ledger adjustment A/c	95,200		
	1,19,100		1,19,100

Cost of sales A/c

Dr. *Cr.*

Particulars	Rs.	Particulars	Rs.
To Finished goods control A/c	2,04,800	By Costing Profit & Loss A/c	2,04,800

Sales A/c

Dr. *Cr.*

Particulars	Rs.	Particulars	Rs.
To Costing Profit & Loss A/c	2,56,000	By GLA A/c	2,56,000

Wages control A/c

Dr. *Cr.*

Particulars	Rs.	Particulars	Rs.
To General ledger adjustment A/c	77,500	By Factory overhead control A/c	23,000
		By WIP control A/c	54,500
	77,500		77,500

Costing Profit & Loss A/c

Dr. *Cr.*

Particulars	Rs.	Particulars	Rs.
To Factory O H Control A/c	3,200	By Sales A/c	2,56,000
To Cost of sales A/c	2,04,800		
To General ledger adjustment A/c (Profit)	48,000		
	2,56,000		2,56,000

Trial Balance (as on 30.6.2011)

Particulars	*Dr.* Rs.	*Cr.* Rs.
Stores ledger control A/c	39,175	
WIP control A/c	1,12,095	
Finished goods control A/c	28,880	
To General ledger adjustment A/c		1,80,150
	1,80,150	1,80,150

Q. 12. (a) The financial books of a company reveal the following data for the year ended 31st March, 2011 :

Particulars	*Rs.*
Opening stock :	
Finished goods 875 units	**74,375**
Work-in-progress – 1.4.2010 to 31.3.2011	**32,000**
Raw materials consumed	**7,80,000**
Direct labour	**4,50,000**
Factory overheads	**3,00,000**
Goodwill	**1,00,000**
Administration overheads	**2,95,000**
Dividend paid	**85,000**
Bad debts	**12,000**
Selling and distribution overheads	**61,000**
Interest received	**45,000**
Rent received	**18,000**
Sales 14,500 units	**20,80,000**
Closing stock : Finished goods 375 units	**41,250**
Work-in-progress	**38,667**

The cost records provide as under :

(i) Factory overheads are absorbed at 60% of direct wages.

(ii) Administration overheads are recovered at 20% of factory cost.

(iii) Selling and distribution overheads are charged at Rs. 4 per unit sold.

(iv) Opening stock of finished goods is valued at Rs. 104 per unit.

(v) The company values work-in-progress at factory cost for both financial and cost profit reporting.

Required :

(i) Prepare statements for the year ended 31st March 2011 showing :

- **The profit as per financial records**
- **The profit as per costing records**

(ii) Present a statement reconciling the profit as per costing records with the profit as per financial records.

(b) Product A passes through three processes before it is completed and transferred to the finished stock. There are no opening finished stock and no opening W-I-P. The following data are available in respect of Process 1, 2 and 3.

Rs.

Details	*Process-1*	*Process – 2*	*Process - 3*
Direct material	**1,00,000**	**25,000**	**20,000**
Direct wages	**75,000**	**50,000**	**1,00,000**
Finished stock	**25,000**	**32,500**	**47,500**

The output of each process is transferred to the next process or to the finished stock, as the case may be, at 20% profit on the transfer price.

Sale of finished goods amounted to Rs. 5,50,000 and the stock is valued at Rs. 25,000. Prepare process accounts and finished stock account showing the profit element at each stage and also compute stock valuation for balance sheet purpose.

Answer 12. (a)

(i) **Profit and Loss Account of the Company**
(for the year ended March 31, 2011)

Dr. *Cr.*

Particulars	Rs.	Particulars	Rs.
To Opening stock of finished goods	74,375	By Sales	20,80,000
To Work-in-process	32,000	By Closing stock of finished goods	41,250
To Raw materials consumed	7,80,000	By Work-in-process	38,667
To Direct labour	4,50,000	By Rent received	18,000
To Factory overheads	3,00,000	By Interest received	45,000
To Goodwill	1,00,000		
To Administration overheads	2,95,000		
To Selling and distribution overheads	61,000		
To Dividend paid	85,000		
To Bad debts	12,000		
To Profit	33,542		
	22,22,917		22,22,917

Statement of Profit as per costing records
(for the year ended March 31, 2011)

Particulars	Rs.
Sales revenue (14,500 units)	20,80,000
Cost of sales :	
Opening stock (875 units × Rs. 104)	91,000
Add : Cost of production of 14,000 units	17,92,000
Less : Closing stock $\left(\frac{\text{Rs.}\,17,92,000 \times 375\,\text{units}}{14,000\,\text{units}}\right)$	48,000
Production cost of goods sold (14,500 units)	18,35,000
Selling and distribution overheads (14,500 units × Rs. 4)	58,000
	18,93,000
Pofit	1,87,000

(ii) **Reconciliation Statement**

Particulars	**Rs.**	**Rs.**
Profit as per Cost Accounts		1,87,000
Add : Administration OH over absorbed (Rs. 2,98,667 – Rs. 2,95,000)	3,667	
Opening stock overvalued (Rs. 91,000 – Rs. 74,375)	16,625	
Interest received	45,000	
Rent received	18,000	83,292
		2,70,292
Less : Factory OH under recovery (Rs. 3,00,000 – Rs. 2,70,000)	30,000	
Selling and distribution OH under recovery (Rs. 61,000 – Rs. 58,000)	3,000	
Closing stock overvalued (Rs. 48,000 – Rs. 41,250)	6,750	
Goodwill	1,00,000	
Dividend	85,000	
Bad debts	12,000	2,36,750
Profit as per financial accounts		33,542

Working notes :

1. No. of units produced = Sales + Cl. Stock – Opening stock = 14,500 + 375 – 875 = 14,000
2. Cost Sheet

Particulars	**Rs.**
Raw materials consumed	7,80,000
Direct labour	4,50,000
Prime cost	12,30,000
Factory overheads (60% of direct wages)	2,70,000
Factory cost	15,00,000
Add : Opening W-I-P	32,000
Less : Closing W-I-P	38,667
Factory cost of goods produced	14,93,333
Administration overheads (20% of factory cost)	2,98,667
Cost of production of 14,000 units	17,92,000

$$\text{Cost of production per unit} = \frac{\text{Total cost of production}}{\text{No. of units produced}} = \frac{\text{Rs. } 17,92,000}{14,000 \text{ units}} = \text{Rs. } 128$$

Answer 12. (b)

Process – 1 Account

Particulars	Total (Rs.)	Cost (Rs.)	Profit (Rs.)	Particulars	Total (Rs.)	Cost (Rs.)	Profit (Rs.)
Material	1,00,000	1,00,000	-	Stock c/d	25,000	25,000	-
Labour	75,000	75,000	-	Transfer to process-2 (balancing figure)	1,87,500	1,50,000	37,500
	1,75,000	1,75,000	-				
Profit	37,500	-	37,500				
	2,12,500	1,75,000	37,500		2,12,500	1,75,000	37,500
Balance b/d	25,000	25,000	-				

Note : Profit : 20% on transfer price or 25% on cost = 25% of Rs. 1,50,000 = Rs. 37,500

Process – 2 Account

Particulars	Total (Rs.)	Cost (Rs.)	Profit (Rs.)	Particulars	Total (Rs.)	Cost (Rs.)	Profit (Rs.)
Transfer from process-1	1,87,500	1,50,000	37,500	Stock c/d	32,500	27,857	4,643
Material	25,000	25,000	-	Transfer to process-2 (balancing figure)	2,87,500	1,97,143	90,357
Direct wages	50,000	50,000	-				
	2,62,500	2,25,000	37,500				
Profit	57,500	-	57,500				
	3,20,000	2,25,000	95,000		3,20,000	2,25,000	95,000
Balance c/d	32,500	27,857	4,643				

Note : 1. Profit : 20% on transfer price or 25% on cost.
= 25% on cost of units transferred to process-3

Total cost to the process	Rs. 2,62,500
Cost of end-inventory	Rs. (32,500)
Cost of units transferred to process-3	Rs. 2,30,000

Profit 25% of RS. 2,30,000 = Rs. 57,500

2. Proportionate profit earned by the preceding process and included in the end-stock
= (37,500/2,62,500) × Rs. 32,500 = Rs. 4,643.

Process – 3 Account

Particulars	Total (Rs.)	Cost (Rs.)	Profit (Rs.)	Particulars	Total (Rs.)	Cost (Rs.)	Profit (Rs.)
Transfer from process-2	2,87,500	1,97,143	90,357	Stock c/d	47,500	36,968	10,352
Material	20,000	20,000	-	Transfer to finished stock (balancing figure)	4,50,000	2,80,175	1,69,825
Direct wages	1,00,000	1,00,000	-				
	4,07,500	3,17,143	90,357				
Profit	90,000	-	90,000				
	4,97,500	3,17,143	1,80,357		4,97,500	3,17,143	1,80,357
Balance c/d	47,500	36,968	10,532				

Notes :

1. Profit = 20% on transfer price or 25% on cost = 25% of (Rs. 4,07,500 – Rs. 47,500) = Rs. 90,000
2. Proportionate profit earned by the preceding process and included in the end stock = (90,357/4,07,500) × Rs. 47,500 = Rs. 10,532.

Finished Stock

Particulars	Total (Rs.)	Cost (Rs.)	Profit (Rs.)	Particulars	Total (Rs.)	Cost (Rs.)	Profit (Rs.)
Transfer from process-3	4,50,000	2,80,175	1,69,825	Sales	5,50,000	2,64,609	2,58,391
Profit	1,25,000	-	1,25,000	Stock c/d	25,000	15,566	9,434
	5,75,000	2,80,175	2,94,825		5,75,000	2,80,175	2,94,825
Balance c/d	25,000	15,566	9,434				

Notes :

1. Profit = Sales - Cost of sales

Sales		Rs. 5,50,000
Cost of sales :		
Total transfer price	Rs. 4,50,000	
Closing stock	(25,000)	Rs. 4,25,000
Profit		Rs. 1,25,000

2. Proportionate profit earned by earlier processes and included in end stock :
   = (1,69,825/ 4,50,000) × Rs. 25,000 = Rs. 9,434

Profit :

1. Provision for inter-process profit not yet realized will be :

Process – 2	Rs. 4,643	
Process – 3	Rs. 10,532	
Finished stock	Rs. 9,434	Rs. 24,609

2. Gross profit for the year will be :

Process-1		Rs. 37,500
Process – 2	Rs. 57,500	
Provision	Rs. (4,643)	Rs. 52,857
Process – 3	Rs. 90,000	
Provision	Rs. (10,532)	Rs. 79,468
Finished goods	Rs. 1,25,000	
Provision	Rs. (9,434)	Rs. 1,15,566
		Rs. 2,85,391

It may be noted that the figure 'profit column' against sales on the credit side of the finished goods accounts shows the gross profit.

Stock-in-process – 1	Rs. 25,000
Stock-in-process – 2	Rs. 27,857
Stock-in-process – 3	Rs. 36,968
Finished stock	Rs. 15,566
	Rs. 1,05,391

Q. 13. (a) In a chemical manufacturing company, three products A, B and C emerge at a single split off stage in department P. Product A is further processed in department Q, product B in department R and product R and product C in department S. There is no loss in further Processing of any of the three products. The cost data for a month are as under :

Cost of raw materials introduced in department P	**Rs. 12,68,800**
Direct Wages Department	**Rs.**
P	**3,84,000**
Q	**96,000**
R	**64,000**
S	**36,000**

Factory overheads of Rs 4,64,000 are to be apportioned to the departments on direct wage basis.

During the month under reference, the company sold all three products after processing them further as under :

Products	**A**	**B**	**C**
Output sold kg.	**44,000**	**40,000**	**20,000**
Selling Price per kg. Rs.	**32**	**24**	**16**

There are no Opening or Closing Stocks If these products were sold at the split off stage, that is, without further processing, the selling prices would have been Rs. 20, Rs. 22 and Rs. 10 each per kg respectively for A, B and C.

Required:

(i) Prepare a statement showing the apportionment of joint costs to joint products:

(ii) Present a statement showing product-wise and total profit for the month under reference as per the company's current processing policy.

(iii) What processing decision should have been taken to improve the profitability of the company.

(iv) Calculate the product-wise and total profit arising from your recommendation in (iii) above.

(b) Distinguish between Indifference Point and Break-Even Point.

Answer 13. (a)

(i) **Statement showing the apportionment of joint costs to joint products**

	Products			
	A	**B**	**C**	**Total**
Output sold Kgs.: (I)	44,000	40,000	20,000	
Selling price per kg. at split off (Rs.) : (II)	20	22	10	
Sales value at split off (Rs.): (I) × (II)	8,80,000	8,80,000	2,00,000	19,60,000
Joint costs (costs incurred in department P (Rs.)	8,80,000	8,80,000	2,00,000	19,60,000
(*apportioned on the basis of sales value at the point of split off*) *i.e. (22:22:5)*				

(ii) **Statement showing product-wise and total profit for the month under reference (as per the company's current processing policy)**

	Products			
	A	**B**	**C**	**Total**
Output Kgs. : (a)	44,000	40,000	20,000	
Selling price per kg. after further processing (Rs.): (b)	32	24	16	
Sales value after further processing (Rs). :				
(c) = {(a) × (b)}	14,08,000	9,60,000	3,20,000	26,88,000
Joint costs (Rs.): (d)	8,80,000	8,80,000	2,00,000	19,60,000
(Refer to b (i) working notes & 2(i)				
Further processing costs (Rs.): (e)	1,72,800	1,15,200	64,800	3,52,800
(Refer to working note 2 (ii)				
Total costs (Rs.) : (f) = [(d) + (e)}	10,52,800	9,95,200	2,64,800	23,12,800
Profit/ (Loss) (Rs.) : [(c))– (f)}	3,55,200	(35,200)	55,200	3,75,200

Alternatively :

Incremental sales revenue (Rs.)	5,28,000	80,000	1,20,000
	(44,000 units × Rs. 12)	(40,000 units × Rs. 2)	(20,000 units × Rs. 6)
Less: Further processing costs (Rs.):	1,72,800	1,15,200	64,800
[Refer to working note 2 (ii)]			
Incremental net profit / (loss)	3,55,200	(35,200)	55,200

(ii) **Processing decision to improve the profitability of the company.**
44,000 units of product A and 20,000 units of product C should be further processed because the incremental sales revenue generated after further processing is more than the further processing costs incurred. 40,000 units of product B should be sold at the point of-split off because the incremental revenue generated after further processing is less than the further processing costs.

(iv) **The product wise and total profit arising from the recommendation in (iii) above is as follows :**

Product	**A**	**B**	**C**	**Total**
Profit (Rs.)	3,55,200	—	55,200	4,10,000

Working notes :

1. Statement of department-wise costs

	P Rs.	**Q Rs.**	**R Rs.**	**S Rs.**
Raw materials	12,68,800	–	–	–
Wages	3,84,000	96,000	64,000	36,000
Overheads (Apportioned on the basis of departmental direct wages i.e. 96:24:16:9)	3,07,200	76,800	51,200	28,800
Total Cost	19,60,000	1,72,800	1,15,200	64,800

2. Joint costs and further processing costs

(i) Costs incurred in the department P are joint costs of products A, B and C and are equal to Rs. 19,60,000.

(ii) Costs incurred in the departments Q, R and S are further processing costs of products A, B and C respectively. Further processing costs of products A, B and C thus are Rs. 1,72, 800; Rs. 1,15,200 and Rs. 64,800 respectively.

Answer 13. (b)

Particulars	**Indifference Point**	**Break-Even Point**
Definition	Indifference Point is the level of Sales at which Total costs and Profits of two options are equal.	BEP is the level of sales at which there is neither a Profit nor a Loss to the firm. At BEP, the total Contribution equals Fixed Cost.
Formula	Indifference Point (in Rs.) = $\frac{\text{Difference in Fixed Cost}}{\text{Difference in Var. Cost ratio or PV ratio}}$	Break Even Point (in Rs.) = $\frac{\text{Fixed Cost}}{\text{PV ratio}}$
Significance	It is the activity level at which Total Cost under two alternatives are equal.	It is the activity level at which the Total Revenue from a product mix is equal to its Total cost.
Purpose	Used to choose between two alternative options for achieving the same objective.	Used for profit planning.

Q. 14. (a) ABC Ltd. produces four products in its factory. The volume of production and sales achievement in considerably lower than normal and so there has been substantial under-recovery of overheads.

The sales and cost particulars are as under : Rs. In lakhs

Particulars	Products				Total
	A	B	C	D	
Sales	160	200	80	40	480
Costs : Direct materials	24	32	16	3	75
Direct wages	40	48	32	8	128
Factory overheads	48	64	40	8	160
Selling and Admin. Expenses (15% of sales)	24	30	12	6	72
	136	174	100	25	435
Profit/ (Loss)	24	26	(20)	15	45
Under-recovery of overheads					24
Profit before tax					21

40% of factory overheads is variable at normal volume and the selling and admin. Overheads are variable to the extent of 5% of sales.

20% of sales of Product C is done in conjunction with Product A in as much as the discontinuance of Product C will bring down the sales of Product A by 10%. Alternatively, the sales of Product C can be reduced to 20% of the present level to maintain the sales of Product A.

In view of the loss reported for Product C, the management has for consideration three proposals, viz :

(i) Discontinue Product C. In that event the company can save a sum of Rs. 8 lakhs per annum in fixed expenses.

(ii) Maintain the sales of Product C to the extent of 20% of the present sales as service to Product A. In that event the reduction of fixed expenses will be Rs. 3 lakhs.

(iii) Discontinue Product C totally and increase the sales of Product D for which demand is available to the extent of Rs. 40 lakhs. This can be done without any change in fixed expenses.

Show the financial implications of the aforesaid three proposals as compared with the annual operating results generating a profit before tax of Rs. 21 lakhs. Suggest a course of action to be followed by the management.

(b) Fixed Costs are irrelevant for decision-making. What are the exceptions?

Answer 14. (a)

Comparative Profitability Statement

Rs. In lakhs

	Products									
	A		**B**		**C**		**D**		**Total**	
Sales		160		200		80		40		480
Less : Variable costs										
Direct Matl.	24		32		16		3		75	
Direct wages	40		48		32		8		128	
V. Factory OH	22.08*		29.44		18.40		3.68		73.60	
V. Sale + Admn. OH	8	94.08	10	119.24	4	70.40	2	16.68	24	300.60
Contribution		65.92		80.56		9.60		23.32		179.40
Less : Fixed costs										
Factory OH	33.12		44.16		27.60		5.52		110.40	
Sales + Admn. OH	16	49.12	20	64.16	8	35.60	4	9.52	48	158.40
Profit / Loss		16.80		16.40		(26.00)		13.80		21.00

* Calculation of factory Overhead :

	Rs. In lakhs
Charged to products	160
Add : Under-recovery of overheads	24
Total factory overhead	184

Under recovery accounts for only 15%. Now the apportionment will be on the basis of variable 40% and fixed 60%, as :

Rs. In lakhs

	A	**B**	**C**	**D**	**Total**
Factory overhead	48.00	64.00	40.00	8.00	160.00
Add : 15% for under-recovery	7.20	9.60	6.00	1.20	24.00
	55.20	73.60	46.00	9.20	184.00
Variable 40%	22.08	29.44	18.40	3.68	73.60
Fixed 60%	33.12	44.16	27.60	5.52	110.40

Alternative Proposals :

(i) If product C is eliminated :

If product C is discontinued, no doubt there will be a saving in fixed cost of Rs. 8 lakhs but, at the same time, sale of Product A will go down by 10%. Thus the result will be :

Contribution from :	Rs. In lakhs
A (Rs. 65.92 lakhs less 10%)	59.328
B	80.560
D	23.320
Total	163.208
Less : Fixed cost (Rs. 158.40 – Rs. 8 lakhs)	150.400
Profit	12.808

(ii) If Product C is sold only to the extent of 20% :

Contribution from :	Rs. In lakhs
A	65.920
B	80.560
C (only 20% of 9.60)	1.920
D	23.320
Total	171.720
Less : Fixed cost (Rs. 158.40 – Rs. 3 lakhs)	155.400
Profit	16.320

(iii) If Product C is totally discontinued and the Product D increased at Rs. 80 lakhs;

Contribution from :	Rs. In lakhs
A (Rs. 65.92 lakhs less 10%)	59.328
B	80.560
D (23.32 × 2)	46.640
Total	186.528
Less : Fixed cost (Rs. 158.40 – Rs. 8 lakhs)	150.400
Profit	36.128

Recommendation :

Out of the three proposals, proposal (iii) (i.e., to eliminate Product C) may be accepted since it produces the highest profit. Other two proposals do not produce successful consideration. As such, they should be avoided.

Answer 14. (b)

Fixed costs are unrelated to output and are generally irrelevant for decision-making purpose. However, in the following circumstances, Fixed Costs become relevant for decision-making-

(i) When fixed costs are specifically incurred for any contract.

(ii) When fixed costs are incremental in nature.

(iii) When the fixed portion of semi-variable cost increases due to change in level of activity consequent to acceptance of a contract.

(iv) When fixed costs are avoidable or discretionary.

(v) When fixed costs are such that one cost is incurred in lieu of another (the difference in costs will be relevant for decision-making).

Q. 15. (a) Genious Ltd. manufactures two parts 'A' and "B" for Computer Industry.

A : Annual production and sales of 1,00,000 units of a selling price of Rs. 100.05 per unit.

B : Annual production and sales of 50,000 units at a selling price of Rs. 150 per unit.

Direct and Indirect costs incurred on these two parts are as follows :

Rs. in thousands

Particulars	*A*	*B*	*Total*
Direct material cost (variable)	4,200	3,000	7,200
Labour cost (variable)	1,500	1,000	2,500
Direct machining cost (see note)	700	550	1,250
Indirect cost :			
Machine set up cost			462
Testing cost			2,375
Engineering cost			2,250
			16,037

Note : Direct machining costs represent the cost of machine capacity dedicated to the production of each product. These costs are fixed and are not expected to vary over the long-run horizon.

Additional information is as follows :

Particulars	*A*	*B*
Production batch size	1,000 units	500 units
Set up time per batch	30 hours	36 hours
Testing time per unit	5 hours	9 hours
Engineering cost incurred on each product	8.40 lakhs	14.10 lakhs

A foreign competitor has introduced product very similar to 'A'. To maintain the company's share and profit, Genious Ltd. has to reduce the price to Rs. 86.52. The Company calls for a meeting and comes up with a proposal to change design of Product 'A'. The expected effect of new design is as follows :

(i) Direct material cost is expected to decrease by Rs. 5 per unit

(ii) Labour cost is expected to decrease by Rs. 2 per unit

(iii) Machine time is expected to decrease by 15 minutes; previously it took 3 hrs. to produce 1 unit of 'A'. The machine will be dedicated to the production of new design.

(iv) Set up time will be 28 hrs. for each set up.

(v) Time required for testing each unit will be reduced by 1 hr.

(vi) Engineering cost and batch size will be unchanged

Required :

(i) Company management identifies that cost driver for Machine set-up cost is 'set up hrs. used in batch setting' and for testing costs is 'testing time'. Engineering costs are assigned to products by special study. Calculate full cost per unit for 'A' and 'B' using Activity Based Costing.

(ii) What is the mark-up on full cost per unit of A?

(iii) What is the Target cost per unit for new design to maintain the same mark up percentage on full cost per unit as it had earlier? Assume cost per unit of cost drivers for the new design remains unchanged.

(iv) Will the new design achieve the cost reduction target?

(v) List four possible management actions that the Genious Ltd. should take regarding new design.

(b) What is differential costing?

Answer 15. (a)

(i) Computation of full cost per unit using Activity Based Costing :

Particulars	Basis	A	B
Direct material	Direct	42,00,000	30,00,000
Direct labour	Direct	15,00,000	10,00,000
Direct machine cost	Direct	7,00,000	5,50,000
Machine set up cost	3,000 hrs. @ Rs. 70	2,10,000	
	3,600 hrs. @ Rs. 70		2,52,000
Testing cost	5,00,000 hrs. @ Rs. 2.50	12,50,000	
	4,50,000 hrs. @ Rs. 2.50		11,25,000
Engineering cost	Allocated	8,40,000	14,10,000
Total cost (Rs.)		87,00,000	73,37,000
Cost per unit (Rs.)		87.00	146.74

(ii) Mark up in full cost basis for Product A :

Particulars	Per unit (Rs.)
Selling price	100.05
Less : Full cost	87.00
Mark up	13.05
Percentage of mark up on full cost = $\frac{13.05}{87.00} \times 10$	15%

(iii) Target cost of Product A after new design is implemented

Particulars	Rs.
Target price (given)	86.25
Mark-up [86.25 × 15/115]	11.25
Target cost per unit (Rs.)	75.00

(iv) Statement of cost for new design of A :

Particulars	Basis	Cost per unit	Total cost
Direct material	Decreased by Rs. 5 p.u.	37.00	37,00,000
Direct labour	Decreased by Rs. 2 p.u.	13.00	13,00,000
Direct machine cost	No change as machine is dedicated	7.00	7,00,000
Machine set up cost	100 set up × 28 hrs. × Rs. 70	1.96	1,96,000
Testing cost	1,00,000 units × Rs. 2.5 × 4 hours	10.00	10,00,000
Engineering cost	No change	8.40	8,40,000
Total cost (Rs.)		77.36	77,36,000

The target cost is Rs. 75 p.u. and estimated cost of new design is Rs. 77.36 p.u.. The new design does not achieve the target cost set by Genious Ltd. Hence the target mark up shall not be achieved.

(v) Possible management action :

1. Value engineering and value analysis to reduce the direct material cost.
2. Time and motion study in order to redefine the direct labour time and related costs.
3. Exploring possibility of cost reduction in direct machining cost by using appropriate techniques.
4. Identification of non-value added activities and eliminating them in order to reduce overheads.
5. The expected selling price based on estimated cost of Rs. 77.36 p.u. is (Rs. 77.36 + 15%) Rs. 88.96. Introduce sensitivity analysis after implementation of new design to study the sales quantity changes in the price range of Rs. 86.25 to Rs. 88.96.

Working notes :

Particulars	A	B
Production / sales quantity (units)	1,00,000	50,000
Batch size (units)	1,000	500
No. of batches	100	100
Set up time per batch (hrs.)	30	36
Total set up hrs. (hrs.)	3,000	3,600
Machine set up cost (Rs.)	4,62,000	4,62,000
Cost driver per machine set up hr. [4,62,000/6,600]	Rs. 70	Rs. 70
Testing time per unit	5 hrs.	9 hrs.
Total testing time (hrs.)	5,00,000	4,50,000

$$\text{Cost driver per testing hour} = \frac{\text{Total Testing Cost}}{\text{Total Testing Time}} = \frac{\text{Rs. } 23,75,000}{5,00,000 + 4,50,000} = \text{Rs. } 2.50 \text{ per hr.}$$

Answer 15. (b)

Differential costing is a technique of decision-making in which differential costs of various alternatives are compared with the differential revenues for the purposes of choosing between competing alternatives. So long as the incremental revenues exceed incremental costs, the decision should be in favour of the

proposal. It is the net increase or decrease in total cost which results from any variation in level of operations. It includes both fixed and variable costs. It is termed as incremental cost when the cost increases and as decremental cost when the cost decreases.

Differential cost differs from the Marginal Cost in the sense that Marginal Cost includes the material, labour, direct expenses and variable overheads whereas Differential Cost includes both fixed and variable costs.

Some of the areas in which differential cost techniques is used are – whether to process further or not, whether to accept an additional order at lower than existing price.

Q. 16. (a) Jupiter Ltd. assembles bicycles. This year's expected production is 10,000 units. Jupiter makes the chains for its bicycles. Its accountant reports the following costs for making 10,000 bicycles chains –

Particulars	*Costs per unit (Rs.)*	*Total for 10,000 units (Rs.)*
Direct materials	**4.00**	**40,000**
Direct manufacturing labour	**2.00**	**20,000**
Power and utilities (variable)	**1.50**	**15,000**
Inspection, set-up and materials handling		**2,000**
Machine rent		**3,000**
Allocated fixed costs of plant administration, insurance etc.		**30,000**
Total Costs		**1,10,000**

Jupiter received an offer from an outside vendor for the supply of any number of chains at Rs. 8.20 per chain. The following additional information is available on Jupiter's operations –

(i) Inspection, set-up and materials handling costs vary with the number of batches in which the chains are produced. Jupiter currently produces the chains in batches of 1,000 units. It estimates that 10 batches are required for meeting the expected production requirements.

(ii) Jupiter pays the rent for the machine used to make the chains. If it chooses to outsource the chains, machine rent can be avoided.

Required :

(i) Should Jupiter accept the vendor's offer for 10,000 units? What is the net gain/ (loss)? What is the maximum price payable to the vendor?

(ii) Suppose the chains were purchased outside, the facilities where the chains are currently made will be used to upgrade the bicycles by adding mud flaps and reflectors. As a result, the selling price of the bicycles can be increased marginally by Rs. 20. The variable costs of the upgrade would be Rs. 18 and additional tooling costs of Rs. 16,000 would be incurred. Should Jupiter make or buy the chains, at the anticipated production level of 10,000 units ? What is the maximum price payable to the vendor in this situation?

(iii) Jupiter's Sales Manager is concerned that the estimate of 10,000 units may be high and believes that only 6,200 units can be sold. Production will be cut back, freeing up work facilities and space. This space can be used to add the mud flaps and reflectors whether Jupiter outsources the chains or makes them in-house. At this lower output, Jupiter will produce the chains in 8 batches of 775 units each. Should Jupiter purchase the chains from the outside vendor? Show your calculations.

(b) What will be the basis of transfer pricing, if unit variable cost and unit selling price are not constant?

Answer 16. (a)

(i) Computation of Relevant costs of own production

Particulars	Nature and computation	Rs.
Direct materials	Variable and relevant – Rs. 4 × 10,000 units	40,000
Direct manufacturing labour	Variable and relevant – Rs. 2 × 10,000 units	20,000
Power and utilities	Variable and relevant – Rs. 1.50 × 10,000 units	15,000
Inspection, set-up etc.	Batch related production costs – specific – given	2,000
Machine rent	Specifically incurred – relevant	3,000
Fixed costs	Allocated and irrelevant	Nil
	Total relevant costs for own production	**80,000**

- Average cost per unit for own production = Rs. 80,000 ÷ 10,000 units = Rs. 8 per unit
- Since cost of buy is Rs. 8.20 per unit, there is an incremental cost of Rs. 8.20 – Rs. 8.00 = Re. 0.20 per unit or Rs. 2,000 in total, in case of purchase. Hence, the company should not accept the vendor's offer.
- Maximum price payable = Relevant Cost = Rs. 8.00 per unit.

(ii) Alternative use of facilities :

- Additional benefit from upgradation = 10,000 units × (Rs. 20 – Rs. 18) = Rs. 20,000
  Less : Fixed costs incurred specifically = Rs. 16,000
  Net additional benefit = Rs. 4,000
- Since this benefit will be foregone due to own production of chains, the relevant cost of own production will then be Rs. 80,000 (as already computed) + Rs. 4,000 (opportunity cost) = Rs. 84,000
- Average relevant cost per unit for own production = Rs. 84,000 ÷ 10,000 units = Rs. 8.40 per unit
- Since cost of buy is Rs. 8.20 per unit, there is a saving of Rs.8.40 – Rs. 8.20 = Re. 0.20 per unit or Rs. 2,000
- Maximum price payable = Relevant cost = Rs. 8.40 per unit

(iii) Revision in Production Estimates – Computation of Relevant Costs of own production :

Particulars	Nature and computation	Rs.
Direct materials	Variable and relevant – Rs. 4 × 6,200 units	24,800
Direct manufacturing labour	Variable and relevant – Rs. 2 × 6,200 units	12,400
Power and utilities	Variable and relevant – Rs. 1.50 × 6,200 units	9,300
Inspection, set-up etc.	Batch related costs – (Rs. 2,000 ÷ 10 batches) × 8 batches	1,600
Machine rent	Specifically incurred – relevant	3,000
Fixed costs	Allocated and irrelevant	Nil
	Total relevant costs for own production	**51,100**

- Average cost per unit for own production = Rs. 51,100 ÷ 6,200 units = Rs. 8.24 per unit
- Since cost of buy is Rs. 8.20 per unit, there is a saving of Rs. 8.24 – Rs. 8.20 = Re. 0.04 per unit or Rs. 248 in total, in case of purchase. Hence, the company should purchase the chains from the Vendor.
- Maximum price payable = Relevant Cost = Rs. 8.24 per unit.

Answer 16. (b)

If variable cost per unit and Selling price per unit are not constant, the Transfer Prices should be determined in the following manner –

(i) **Optimum level for company :** There would be an optimum level of output for a firm as a whole. This is so because there is a certain level of output beyond which its net revenue will not rise. The ideal Transfer Price under these circumstances will be that which will motivate these managers to produce at this level of output.

(ii) **Decision from company viewpoint :** In certain cases, some departments of the firm might have to produce its output at a level less than its full capacity. In such cases, a Transfer Price may be imposed centrally, considering overall company profitability and sub-ordination of divisional to organizational interest.

Q. 17. (a) Compact Ltd. drew up its budget for the year, segregating costs into fixed and variable costs. The direct material cost has been determined at Rs. 80 per unit of product manufactured; direct labour, Rs. 50 per unit' variable overhead, Rs. 20 per unit and fixed overhead, Rs. 60,00,000. Administration and selling expenses will have a fixed component of Rs. 20,00,000 and a variable component of Rs. 30 per unit sold. A selling price of Rs. 500 per unit, a sales volume of 30,000 units was expected and the budget for the period was drawn up as below :

Budgeted Income statement (Absorption costing)

Particulars	*Rs.*	*Rs.*
Sales (30,000 units at Rs. 500)		**1,50,00,000**
Cost of goods sold :		
Opening stock	**-**	
Direct materials	**24,00,000**	
Direct labour	**15,00,000**	
Variable overhead	**6,00,000**	
Fixed overhead	**60,00,000**	
Closing stock	**-**	**1,05,00,000**
Gross profit		**45,00,000**
Fixed selling and administration OH	**20,00,000**	
Variable selling and administration OH	**9,00,000**	**29,00,000**
Net profit		**16,00,000**

The actual production for the year was 30,000 units, as budgeted. But only 20,000 units could be sold at Rs. 500 per unit. Another 3,000 units were sold to a foreign distributor at Rs. 300 per unit. The actual results for the year are presented below :

Actual Income Statement (Absorption Costing)

Particulars	*Rs.*	*Rs.*
Sales (20,000 units at Rs. 500 + 3,000 units at Rs. 300)		**1,09,00,000**
Cost of goods sold :		
Opening stock	**-**	
Direct materials	**24,00,000**	
Direct labour	**15,00,000**	
Variable overhead	**6,00,000**	
Fixed overhead	**60,00,000**	
Cost of goods available	**1,05,00,000**	
Less : Closing stock	**24,50,000***	**80,50,000**
Gross profit		**28,50,000**
Fixed selling and administration OH	**20,00,000**	
Variable selling and administration OH	**6,90,000**	**26,90,000**
Net profit		**1,60,000**

***Closing stock consists of 7,000 units at Rs. 350 each = Rs. 24,50,000**

Cost of goods manufactured ÷ Units manufactured = 105,00,000 ÷ 30,000 = Rs. 350

The Managing Director of Compact Ltd. was critical of the sale of 3,000 units to the foreign distributor at below cost. With a manufacturing cost of Rs. 350 per unit and variable selling cost of Rs. 30 per unit he felt that on the 3,000 units the company lost Rs. 2,40,000. Had it not been for this, he felt that the profit should have been Rs. 4,00,000 as against Rs. 1,60,000 reported. He was very much at what he considered to be the blunder of this special sale.

You have to explain to him the correct financial position.

(i) Prepare the absorption cost income statement assuming the company sold only 20,000 units at Rs. 500 and had not done the sale to the foreign distributor.

(ii) Prepare a direct cost income statement based on actual sales and reconcile it to the actual absorption cost income statement.

(iii) Prepare a direct cost income statement assuming sale of only 20,000 units at Rs. 500 and reconcile this with the comparative absorption cost income statement.

(iv) Is Compact Ltd. better or worse off for having made the foreign sale.

(b) What are the rules for determining the relevant cost of materials, for a specific contract?

Answer 17. (a)

Absorption Cost – Income Statement

(Assuming company sold only 20,000 units with no sale to foreign distributor)

Particulars	**Rs.**	**Rs.**
Sales (20,000 units at Rs. 500)		1,00,00,000
Cost of goods sold :		
Opening stock	—	
Direct materials	24,00,000	

Direct labour	15,00,000	
Variable overhead	6,00,000	
Fixed overhead	60,00,000	
Cost of goods produced	1,05,00,000	
Less : Closing stock (10,000 units x 350)	35,00,000	70,00,000
Gross profit		30,00,000
Fixed selling and administration OH	20,00,000	
Variable selling and administration OH	6,00,000	26,00,000
Net profit		4,00,000

The working supports the statement of Managing Director that profit under absorption cost basis will be higher, if foreign sale is not undertaken.

(ii) **Direct Cost Income Statement :**

Particulars	**Rs.**	**Rs.**
Sales (20,000 units at Rs. 500 + 3,000 units at Rs. 300)		1,09,00,000
Variable Cost of goods sold :		
Direct materials	24,00,000	
Direct labour	15,00,000	
Variable overhead	6,00,000	
Cost of goods produced	45,00,000	
Less : Closing stock (7,000 units × 150*)	10,50,000	34,50,000
		74,50,000
Variable selling and administration OH (23,000 × Rs. 30)		6,90,000
Contribution		67,60,000
Less : Fixed Cost :		
Production OH	60,00,000	
Selling & Admn. OH	20,00,000	80,00,000
Net loss		12,40,000
Reconciliation :		
Net profit as per Absorption Costing		1,60,000
Less : Fixed cost relating to closing stock charged to P&L A/c. for this year : 7,000 × (Rs. 350 – Rs. 150)		14,00,000
Net loss		12,40,000

*Rs. 45,00,000 ÷ 30,000 = Rs. 150 per unit

(iii) **Direct Cost Income Statement**

(Assuming that there is sale of only 20,000 units)

Particulars	**Rs.**	**Rs.**
Sales (20,000 units at Rs. 500)		1,00,00,000
Less : Variable Cost of goods sold :		
Direct materials	24,00,000	
Direct labour	15,00,000	
Variable overhead	6,00,000	
Variable Cost of goods produced	45,00,000	
Less : Closing stock*	15,00,000	30,00,000
		70,00,000
Less : Variable selling and administration OH (20,000 × Rs. 30)		6,00,000
		64,00,000
Less : Fixed Cost :		
Production OH	60,00,000	
Selling & Admn. OH	20,00,000	80,00,000
Net loss		16,00,000
Reconciliation :		
Net profit as per Absorption Costing		4,00,000
Less : Fixed OH relating to closing stock i.e. 10,000 × (Rs. 350 – Rs. 150)		20,00,000
Net loss as per Direct Costing		16,00,000

*10,000 units × (45,00,000 ÷ 30,000 units)

(iv) Absorption Costing Income Statement leads to the conclusion that sale to foreign distributor was not a good deal. Based on Direct Cost Income Statement it becomes clear that sale to foreign distributor brings down the loss to Rs. 12,40,000 from Rs. 16,00,000 when there was no sale. Direct Costing Statement gives a better reflection of company's financial position.

Answer 17. (b)

Situation	**Relevant Cost**
1. Material already available or ordered	
(i) Regularly used	Current replacement cost is relevant as incremental cost
(ii) Rarely used	Net realizable value is relevant as Opportunity cost
2. Materials to be purchased	Purchase price being out-of-pocket cost is relevant

Q. 18. (a) Fastners Ltd. is having production shops reckoned as cost centres. Each shop charges other shops for material supplied and services rendered.

The shops are motivated through goal congruence, autonomy and management efforts. Fastners Ltd. is having a welding shop and painting shop. The welding shop welds annually 75,000 purchased items with other 1,50,000 shop-made parts into 12,000 assemblies. The assemblies are having total cost of Rs. 9.50 each and are sold in market at Rs. 12 per assembly. Out of the total production, 80% is diverted to painting shop at the same price ruling in the market. Welding shop incurs a fixed cost of Rs. 25,000 per annum. The painting shop is having fixed costs of Rs. 30,000 and its cost of painting including transfer price from welding shop comes to Rs. 20 per unit. This shop sells all units transferred to it by welding shop at Rs. 25 per assembly.

You are required to :

(i) Find out profit of individual cost centre and overall profitability of the concern

(ii) Recommended course of action if painting shop wishes to purchase its full requirement (at market price which is Rs. 10 per assembly) either from open market or from welding shop at market price of Rs. 10 per assembly.

Give reasons for your recommendations.

(b) Discuss the role of cost in Product Mix Decisions.

Answer 18. (a)

Fastner Ltd.

Present profitability of individual shops and overall profitability

Particulars	Welding shop			Painting shop		
	Qty. (units)	Rate (Rs.)	Value (Rs.)	Qty. (units)	Rate (Rs.)	Value (Rs.)
Sale in open market	2,400	12.00	28,800	9,600	25.00	2,40,000
Transfer to paint shop	9,600	12.00	1,15,200			
Total sales	12,000		1,44,000	9,600		2,40,000
Less : Variable cost (12,000 × 9.50)			1,14,000			1,92,000
Contribution (9,600 × 20)			30,000			48,000
Less : Fixed cost			25,000			30,000
Profit			5,000			18,000

Overall profit for the company (5,000 + 18,000) = Rs. 23,000.

When painting shop purchases all its requirement from open market at a price of Rs. 10 per unit :

Particulars	Welding shop			Painting shop		
	Qty. (units)	Rate (Rs.)	Value (Rs.)	Qty. (units)	Rate (Rs.)	Value (Rs.)
Sales	2,400	12.00	28,800	9,600	25.00	2,40,000
Less : Variable cost	2,400	9.50	22,800	9,600	18.00*	1,72,800
Contribution			6,000			67,200
Less : Fixed cost			25,000			30,000
Profit/ (Loss)			(19,000)			37,200

Overall profit for the company = Rs. (37,200 – 19,000) = Rs. 18,200

***** It is given in the question that cost of painting including transfer price from welding shop is Rs. 20 per unit. The transfer price from welding shop is Rs. 12 per unit. Therefore, the variable cost of Rs. 8 (Rs. 20 – 12) is incurred by painting shop exclusively. The painting shop will be purchasing its requirement from open market at Rs. 10 per unit. Therefore, the variable cost per unit in painting shop will be Rs. 18 (Rs. 10 + 8). This point should be noted carefully.

When all the requirement of painting shops is met by transfer from welding shop at a transfer price of Rs. 10 per unit.

Particulars	Welding shop			Painting shop		
	Qty. (units)	Rate (Rs.)	Value (Rs.)	Qty. (units)	Rate (Rs.)	Value (Rs.)
Sales in the open market	2,400	12.00	28,800	9,600	25.00	2,40,000
Transfer to paint shop	9,600	10.00	96,000			
Total sales	12,000		1,24,800	9,600		2,40,000
Less : Variable cost		9.50	1,14,000		18	1,72,800
Contribution			10,800			67,200
Less : Fixed cost			25,000			30,000
Profit/ (Loss)			(14,200)			37,200

Overall profit of the company = Rs. (37,200 – 14,200) = Rs. 23,000

For the purpose of comparison, the results of the three alternatives are summarized below :

Particulars	Welding shop	Painting shop	Overall profit
Profit under present situation	5,000	18,000	23,000
Profit /(loss) under option (i)	(19,000)	37,200	18,200
Profit /(Loss) under option (ii)	(14,200)	37,200	23,000

The discussion is confined to either option (i) or (ii)

Alternative (ii) should be accepted due to the following reasons :

(i) It gives a maximum overall profit of Rs. 23,000

(ii) Each shop is treated as a separate cost centre and not a profit centre.

(iii) The policy of overall goal congruence of the company is followed.

Answer 18. (b)

The role of cost in Product Mix Decision are as follows :

(i) In product mix decision based on available resources and facilities, the end results should always aim at profit maximization. For this purpose, costs, to be relevant, should meet the following criteria –

1. The costs should be expected as Future Costs.
2. The costs differ among the alternative courses of action i.e. Differential cost.

(ii) Variable costs are relevant costs in product mix decisions and consequently Contribution (PV Ratio) plays a major role in profit maximization.

(iii) In addition to relevancy of costs, the other factors that should be considered in deciding the product mix are –

1. Available Production Capacity and Limiting Factors, if any.
2. Contribution per unit of the Limiting Factor.
3. Market Demand for the products.
4. Opportunity Costs, if any.

Q. 19. (a) ABC Ltd. provides you the following information :

(i) Sales, Purchases etc. **Amt. in Rs.**

Particulars	*April*	*May*	*June*	*July*	*Aug*	*Sept.*
Cash sales	**8,000**	**12,000**	**16,000**	**20,000**	**24,000**	**28,000**
Collection from debtors	**16,000**	**32,000**	**48,000**	**64,000**	**80,000**	**96,000**
Cash purchases	**8,000**	**12,000**	**16,000**	**20,000**	**24,000**	**28,000**
Payment to creditors	**12,000**	**24,000**	**36,000**	**48,000**	**60,000**	**72,000**
Payment of expenses	**12,000**	**5,000**	**7,800**	**2,950**	**27,000**	**20,000**

(ii) The opening cash balance of Rs. 10,000 is the minimum cash balance to be maintained.

(iii) Any short fall in the minimum cash balance is to be met by Bank borrowings in the multiple of Rs. 5,000 @ 12% p.a. or by sale of marketable securities in the multiple of Rs. 10,000. Bank interest on monthly basis is payable on the first date of the subsequent month. Bank interest is payable for a minimum period of a month.

(iv) Any surplus cash is to be used to repay the borrowings in the multiple of Rs. 5,000 or to purchase the marketable securities in the multiple of Rs. 10,000 (ignore interest on securities received and paid).

Required : Prepare the Cash Budget for April to September.

(b) Define zero base budgeting and distinguish it from traditional budgeting.

Answer 19. (a)

Cash Budget for April to September **Amt. in Rs.**

Particulars	April	May	June	July	Aug	Sept.
A. Total Cash available :						
Opening cash balance	10,000	12,000	14,900	14,000	12,000	15,000
Cash sales	8,000	12,000	16,000	20,000	24,000	28,000
Collection from debtors	16,000	32,000	48,000	64,000	80,000	96,000
	34,000	56,000	78,900	98,000	1,16,000	1,39,000
B. Total Cash Payments :						
Cash purchases	8,000	12,000	16,000	20,000	24,000	28,000
Payment to creditors	12,000	24,000	36,000	48,000	60,000	72,000
Payment of expenses	12,000	5,000	7,800	2,950	27,000	20,000
	32,000	41,000	59,800	70,950	1,11,000	1,20,000

C. Surplus (Deficit) [A – B]	2,000	15,000	19,100	27,050	5,000	19,000
Financing and investment :						
D. Borrowings	10,000	-	-	-	-	-
E. Sales of securities	-	-	-	-	10,000	-
F. *Less* : Repayment of borrowings	-	-	5,000	5,000	-	-
G. *Less* : Interest on borrowings	-	100	100	50	-	-
H. *Less* : Purchase of securities	-	-	-	10,000	-	-
I. Closing cash balance [C +D +E – F – G –H]	12,000	14,900	14,000	12,000	15,000	19,000

Answer 19. (b)

Zero Based Budgeting – ZBB is a method of budgeting whereby all activities are re-evaluated each time a budget is formulated. It is an approach to budget review and evaluation that requires a manager to justify the resources requested for all activities and projects, including ongoing activities and projects, in rank order. Each functional budget starts with the assumption that the function does not exist and it is at zero cost. Increments of costs are compared with increments of benefit, culminating in the planned maximum benefit for a given budgeted cost.

Difference between Zero Base Budget and Traditional Budgeting :

Points of difference	**Traditional budgeting**	**Zero Based Budgeting**
Frequency	Annual	Every 3-5 years
Starting point	Last year's budget	Zero
Basis	Last year + %	Careful analysis of decision packages
Budgeted amount	Usually single amount	Depends upon analysis of benefits from incremental spending
Priority of activities	'Musts' and 'wants' not differentiated	Distinguished 'musts' and 'wants' and rank priorities
Alternatives	Often ignored	Considered
People involved	Boss and subordinate	Cross-functional team
Awareness necessary	Knowledge of own function	Comprehensive understanding of how the whole business works
Preparation	Can be minimal	Substantial
Appropriateness	General activities	Most effective in Support type activities

Q. 20. (a) A Ltd. produces and sells a single product. Sales budget for the calendar year 2011 by quarter is as under :

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

The year 2011 is expected to open with an inventory of 4,000 units of finished product and closed with an inventory of 6,500 units.

Production is customarily scheduled to provide for two-thirds of the current quarter's sales demand plus one-third of the following quarter's demand. Thus, production anticipates sales volume by about one month.

The standard cost details for one unit of the product is as follows :

Direct materials 10 lbs @ 50 paise per lb.

Direct labour 1 hr. 30 mins. @ Rs. 4 per hour

Variable overheads 1 hr. 30 mins. @ Re. 1 per hr.

Fixed overheads 1 hr. 30 mins. @ Rs. 2 per hr. based on a budgeted production volume of 90,000 direct labour hrs. for the year.

(i) Prepare a production budget for 2011, by quarters, showing the number of units to be produced and the total costs of direct material, direct labour, variable overheads and fixed overheads.

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

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

(b) How flexible budget can help in management decision making?

Answer 20. (a)

(i)

Quarter	Budgeted Production (units)	Budgeted Costs			
		Direct materials	Direct labour	Variable overheads	Fixed overheads
I	13,000	65,000	78,000	19,500	45,000
II	15,500	77,500	93,000	23,250	45,000
III	17,000	85,000	1,02,000	25,500	45,000
IV	18,500	92,500	1,11,000	27,750	45,000
	64,000	3,20,000	3,84,000	96,000	1,80,000

Notes :

(a) Budgeted Production :

I :	2/3 × 12,000	=	8,000
	1/3 × 15,000	=	5,000
			13,000
II:	2/3 × 15,000	=	10,000
	1/3 × 16,500	=	5,500
			15,500
III :	2/3 × 16,500	=	11,000
	1/3 × 18,000	=	6,000
			17,000
IV:	2/3 × 18,000	=	12,000
	Closing inventory	=	6,500
			18,500

(b) Fixed overhead for the year :

90,000 hrs. @ Rs. 2 = Rs. 1,80,000. This is divided equally for the four quarters, i.e., Rs. 1,80,000 ÷ 4 = Rs. 45,000 per quarter.

(ii)

	Rs.	Rs.
Budgeted Selling Price per unit		17.00
Less : Budgeted Variable costs :		
Direct material	5.00	
Direct labour	6.00	
Variable overheads	1.50	12.50
Unit contribution		4.50
Total budgeted contribution (61,500 units @ Rs. 4.50)		2,76,750
Less : Fixed costs		1,80,000
Budgeted profit for the year		96,750

(iii) Break-even point $= \frac{\text{Fixed Cost}}{\text{Unit Contribution}} = \frac{\text{Rs. 1,80,000}}{\text{Rs. 4.50}} = 40{,}000$ units.

Quarter	Sales demand	Cum. Sales Demand
I	12,000	12,000
II	15,000	27,000
III	16,500	43,500
IV	18,000	61,500

Thus, A Ltd. will break-even in the later part of Quarter III.

Answer 20. (b)

Flexible budget is a budget which, by recognising the difference in behaviour between fixed and variable costs in relation to fluctuations in out, turnover, or other variable factors, etc. It is designed to change in relation to the level of activity actually attained.

A flexible budget is one that takes account of a range of possible volumes. It is sometimes referred to as a multi-volume budget. The range of possible outputs may be known as the relevant range. Flexing a budget takes place when the original budget is deliberately amended to take account of change in activity levels.

Flexible budget enable an organization to predict its performance and income levels at a given range of sales levels and activity levels. It can be seen the impact of changes in sales and production levels on revenue, expenses and ultimately income. It enables more accurate assessment of managerial and organizational performance. So, Flexible budget is an important aid to management to decision making.

Q. 21. (a) Z Ltd. provides you the following information :

Balance Sheet as at 31.3.2010

Liabilities	Rs.	Assets		Rs.
Share capital	4,00,000	Plant & Machinery		
Retained earnings	32,000	Original cost	4,00,000	
Creditors	10,000	Less : Depreciation	1,00,000	3,00,000
Bills payable	6,000	Stock of raw material		38,000
Provision for taxation	20,000	Stock of finished goods		80,000
		Debtors		20,000
		Bills receivables		10,000
		Cash		20,000
	4,68,000			4,68,000

Additional information :	Rs.
Purchase of machinery during 2010-2011	40,000
Outstanding debtors	46,000
Outstanding creditors	11,000
Credit sales	4,40,000
Credit purchases	1,40,000
Closing stock of raw material	52,000
Closing stock of finished goods	66,900
Direct labour consumed & paid	70,000
Factory overheads (including depreciation for Rs. 20,000)	95,000
Selling, distribution & admn. Expenses	60,300
Income tax is levied @ 50% and paid in the following year	
Re bill receivables :	
To be drawn	4,000
To be endorsed to trade creditors	1,000
To be collected	10,000
Re bill payables :	
To be accepted	5,000
To be discharged	7,000
Budgeted profit for 2010-2011	75,600
Income-tax is to be provided @ 50%	

Required :

Prepare cash budget and budgeted balance sheet.

(b) What is difference between Forecast and Budget?

Answer 21. (a)

The Cash Budget

For the year ending 31st March 2011

Particulars		Rs.	Rs.
Opening cash balance			20,000
Add :	Receipts from debtors (as per schedule I)	4,10,000	
	Collection on account of B/R	10,000	4,20,000
Less :	Payments :		
	Payment for material purchases (creditors + B/P)	1,40,000	
	Direct labour consumed & paid	70,000	
	Cash factory overheads (Rs. 95,000 – Rs. 20,000)	75,000	
	Selling distribution & admn. Expenses	60,300	
	Payment of taxes (of last year)	20,000	
	Machinery purchases	40,000	4,05,300
Closing cash balance			34,700

The budgeted balance sheet

As at 31st March 2011

Liabilities	Rs.	Assets		Rs.
Share capital	4,00,000	Plant & machinery		
Retained earnings	69,800	Original cost	4,40,000	
Creditors	11,000	Less : Depreciation	1,20,000	3,20,000
Bills payable	4,000	Stock of raw materials		52,000
Provision for taxation	37,800	Stock of finished goods		66,900
[50% of Rs. 75,600]		Debtors		46,000
		Bills receivables		3,000
		Cash		34,700
	5,22,600			5,22,600

Working notes :

Schedule –I – Receipts from Debtors	Rs.
Opening debtors	20,000
Add : Credit sales	4,40,000
Less : Bills Drawn	4,000
Closing debtors	46,000
Collection from debtors	4,10,000

Schedule –II – Closing Balance of Bills Receivables	**Rs.**
Opening balance	10,000
Add : Drawn during the year	4,000
Less : Endorsed to creditors	1,000
Collected	10,000
Closing balance	3,000

Schedule –III – Payment to creditors	**Rs.**
Opening creditors	10,000
Add : Credit purchases	1,40,000
Less : Closing creditors	11,000
Bills accepted	5,000
B/R endorsed	1,000
Payment to creditors	1,33,000

Schedule –IV – Closing Balance of Bills Payable	**Rs.**
Opening balance	6,000
Add : Accepted during the year	5,000
Less : Discharged during the year	7,000
Closing balance	4,000

Answer 21. (b)

Difference between Forecast and Budget

Forecast	**Budget**
1. Forecast is merely an estimate of what is likely to happen. It is a statement of probable events which are likely to happen under anticipated conditions during a specified period of time.	1. Budget shows the policy and programme to be followed in a period under planned conditions.
2. Forecasts, being statements of future events, do not connote any sense of control.	2. A budget is a tool of control since it represents actions which can be shaped according to will so that it can be suited to the conditions which may or may not happen.
3. Forecasting is a preliminary step for budgeting. It ends with the forecast of likely events.	3. It begins when forecasting ends. Forecasts are converted into budget.
4. Forecasts are wider in scope and it can be made in those spheres, also where budgets cannot interfere.	4. Budgets have limited scope. It can be made of phenomenon capable of being expressed quantitatively.

Q. 22. ABC Ltd. manufactures two products using one type of material and one grade of labour. Shown below is an extract form the company's working papers of the next period's budget.

Particulars	*Product A*	*Product B*
Budgeted sales (units)	**3,600**	**4,800**
Budgeted material consumption per product (kg)	**5**	**3**
Budgeted material cost Rs. 12 per kg.		
Standard hours allowed per product	**5**	**4**
Budgeted wage rate Rs. 8 per hr.		

Overtime premium is 50% and is payable, if a worker works for more than 40 hrs. a week. There are 90 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 downtime budgeted at 20% of the productive hrs. worked. There are twelve 5 day weeks in the budget 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 – 1,020 units; Product B – 2,400 units; Raw material 4,300 kgs. The target closing stock expressed in terms of anticipated activity during the budget period are : Product A – 15 days sales; Product B – 20 days sales; Raw material 10 days consumption.

***Required* : Calculate the Material Purchases Budget and the Wages Budget for the direct workers, showing the quantities and values, for the next period.**

Answer 22.

Material Purchase Budget (in quantities and value)

Particulars	**Product A**	**Product B**	**Total**
Budgeted production (units)	3,480	4,000	
Material consumption (kg.)	17,400	12,000	29,400
	(3,480 units × 5 kgs.)	(4,000 units × 3 kg.)	
Add : Closing balance of material (kg)			4,900
Less : anticipated opening balance of material (kg)			4,300
Total quantity of material (kg) to be purchased			30,000
Total value of material to be purchased (Rs.) (30,000 kg × Rs. 12)			3,60,000

Direct Workers Wages Budget
(Showing hours required and wages paid)

Standard hours for Product A (3,480 units × 5 hrs.)	17,400
Standard hour for Product B (4,000 units × 4 hours)	16,000
Total standard hours	33,400
Standard hours at 80% efficiency ratio (33,400 × 100/80)	41,750
Add : Non productive downtime (20% × 41,750 hours)	8,350
Total labour hours required	50,100
Less : Normal labour hours (90 workers × 60 days × 8 hours)	43,200
Overtime hours available	6,900
Wages for normal hours (Rs.) (43,200 hours × Rs. 8)	3,45,600
Overtime wages (Rs.) (6,900 × Rs. 12)	82,800
Total wages	4,28,400

Working notes :

(i) Closing stock of Products A and B

Budgeted period of sales (in days) = 12 weeks x 5 days = 60 days

Closing stock of Product A (units) (15 days sales) $= \frac{3{,}600 \text{ units} \times 15 \text{ days}}{60 \text{ days}} =$ 900 units

Closing stock of Product B (Units) (20 days sales) $= \frac{4{,}800 \text{ units} \times 20 \text{ days}}{60 \text{ days}} =$ 1,600 units

(ii) Production Budget (units)

Particulars	Product A	Product B
Sales (units) (60 days)	3,600	4,800
Add : Closing stock balance	900	1,600
Less : Anticipated opening balance	1,020	2,400
Total number of units to be produced	3,480	4,000

(iii) Closing balance of material for 10 days of its consumption $= \frac{\text{Total material consumption}}{60 \text{ days}} \times 10 \text{ days}$

$= \frac{29{,}400 \text{ kgs.}}{60 \text{ days}} \times$ 10 days = 4,900 kgs.

Q. 23. In a manufacturing process, the following standards apply :

Standard price : Raw material A @ Re. 1 per kg.

Standard price : Raw material B @ Rs. 5 per kg.

Standard mix : 75% A; 25% B

Standard yield (weight of product as a percentage of weight of raw materials) : 90%

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

Used : 8,800 kgs. A, Costing Rs. 9,300

3,200 kgs. B, Costing Rs. 15,700

Output : 11,340 kgs. Of products

The budgeted output for the period was 14,400 kgs.

Prepare a material cost operating statement, showing how the material cost variance is built up of activity and yield percentage.

Answer 23.

Material Cost Operating Statement

	Analysis (Rs.)	Variance (Rs.)	Total (Rs.)
Actual cost of material (Rs. 9,300 + Rs. 15,700)	25,000		25,000
Price variance	200	(200)	-
Standard cost of material (8,800 + 16,000)	24,800		
Mix variance	800	(800)	-
Standard cost of input	24,000		
Yield variance	1,200	1,200	200
Standard cost of output	25,200		25,200

Workings :

Percentage of activity is (90% of 12,000 kgs.) $\frac{10,800}{14,400} \times 100 = 75\%$

Therefore, Yield percentage $= \frac{11,340}{10,800} \times 100 = 105\%$

Materials	Standard cost		Actual cost	
	Kgs.	Rs.	Kgs.	Rs.
A	9,000	9,000	8,800	9,300
B	3,000	15,000	3,200	15,700
	12,000	24,000	12,000	25,000
Loss	1,200	—	660	—
	10,800	24,000	11,340	25,000

Therefore, material cost variance = Rs. 25,200 – Rs. 25,000 = Rs. 200 (F)

Standard cost $= \frac{11,340 \times 24,000}{10,800} =$ Rs. 25,200

Analysis of variance

(i) Material price variance = (Standard Price – Actual Price) × Actual Quantity

A = (Re. 1 – Rs. 1.057) i.e. $\left(\frac{9,300}{8,800}\right)$ × 8,800 = Rs. 500 (A)

B = (Rs. 5.00 – 4.91) i.e. $\left(\frac{15,700}{3,200}\right)$ × 3,200 = Rs. 300 (A)

Therefore, Total = Rs. 500 (A) – Rs. 300 (F) = Rs. 200 (A)

(ii) Mix variance = (Standard mix of actual quantity – Actual mix of actual input) × Standard Price

A = (9,000 – 8,800) × Re. 1 = Rs. 200 (F)

B = (3,000 – 3,200) × Rs. 5 = Rs. 1,000 (A)

Rs. 800 (A)

(iii) Yield variance = $\frac{\text{Standard Cost}}{\text{Unit of output}}$ × (Standard loss – Actual loss)

= $\frac{24,000}{10,800}$ × (1,200 – 660) = Rs. 1,200 (F)

Check		
	Price variance	Rs. 200 (A)
	Mix variance	Rs. 800 (A)
	Yield variance	Rs. 1,200 (F)
	Total mat. Cost variance	Rs. 200 (F)

Q. 24. Modern Toys Ltd. has budgeted the following sales for January, 2011.

Toy A 900 units @ Rs. 50 per unit
Toy B 650 units @ Rs. 100 per unit
Toy C 1,200 units @ Rs. 75 per unit

As against this, the actual sales were :

Toy A 1,000 units @ Rs. 55 per unit
Toy B 700 units @ Rs. 95 per unit
Toy C 1,100 units @ Rs. 78 per unit.

The cost per unit of A, B and C were Rs. 45, Rs. 85 and Rs. 65 respectively.
Compute the different variances to explain the difference between the budgeted and actual profit.

Answer 24.

For finding out sales variances, the following figures are necessary :

1. Budgeted profit
2. Actual profit
3. Standard profit, and
4. Revised standard profit.

	Toy A	Toy B	Toy C
Budgeted selling price	50	100	75
Budgeted cost	45	85	65
Profit per unit	5	15	10
% profit	10	15	13 1/3
Actual selling price	55	95	78
Budgeted cost	45	85	65
Actual profit per unit	10	10	13

Standard and revised standard profits can be found out by applying the budgeted profit percentage on standard and revised standard sales. Hence, it is necessary to ascertain these two first :

Toy	Budgeted sales			
	Units	Price (Rs.)	Value (Rs.)	Ratio
A	900	50	45,000	22.50
B	650	100	65,000	32.50
C	1,200	75	90,000	45.00
Total	2,750		2,00,000	100.00

Toy	Standard sales			Revised standard sales		
	Actual quantity	Standard price	Value	Standard sales (Total)	Budgeted ratio	Revised standard sales
A	1,000	50	50,000	2,02,500	22.50	45,562
B	700	100	70,000		32.50	65,813
C	1,100	75	82,500		45.00	91,125
	2,800		2,02,500			2,02,500

Statement of Comparative Profits

Toy	Budget (Rs.)	Actual (Rs.)	Standard (Rs.)	Revised Standard (Rs.)
A	4,500	10,000	5,000	4,556
B	9,750	7,000	10,500	9,872
C	12,000	14,300	11,000	12,150
	26,250	31,300	26,500	26,578

Calculations (Toy A) :

Budgeted profit : Budgeted quantity × Budgeted profit p.u.
900 (50 – 45) = Rs. 4,500

Actual profit : Actual quantity × Actual profit per unit
1,000 × Rs. 10 = Rs. 10,000

Standard profit : Actual quantity × Budgeted profit p.u.
1,000 (50 – 45) = Rs. 5,000

Revised standard profit : Revised Standard Sales × Budgeted Profit Percentage

$$45{,}562 \times \left(\frac{4{,}500}{45{,}000}\right) = \text{Rs. } 4{,}556.$$

Similar calculations are made for Toy B and Toy C.

Calculation of variances :

Total profit variance due to sales : Actual profit – Budgeted profit

Toy	Actual profit (Rs.)	Budgeted profit (Rs.)	Variance (Rs.)
A	10,000	4,500	5,500 (F)
B	7,000	9,750	2,750 (A)
C	14,300	12,000	2,300 (F)
Total	31,300	26,250	5,050 (F)

Profit variance due to selling price : Actual profit – Standard profit

Toy	Actual profit (Rs.)	Standard profit (Rs.)	Variance (Rs.)
A	10,000	5,000	5,000 (F)
B	7,000	10,500	3,500 (A)
C	14,300	11,000	3,300 (F)
Total	31,300	26,500	4,800 (F)

Profit variance due to sales volume : Standard profit – Budgeted profit

Toy	Standard profit (Rs.)	Budgeted profit (Rs.)	Variance (Rs.)
A	5,000	4,500	500 (F)
B	10,500	9,750	750 (F)
C	11,000	12,000	1,000 (A)
Total	26,500	26,250	250 (F)

Profit variance due to Sales Volume can be further analysed as follows :

Profit variance due to quantity : (Revised Standard Profit – Budgeted Profit)

Toy	Revised Standard profit (Rs.)	Budgeted profit (Rs.)	Variance (Rs.)
A	4,556	4,500	56 (F)
B	9,872	9,750	122 (F)
C	12,150	12,000	150 (F)
Total	26,578	26,250	328 (F)

Profit variance due to sales mix : (Standard Profit – Revised Standard Profit)

Toy	Standard profit (Rs.)	Revised Standard profit (Rs.)	Variance (Rs.)
A	5,000	4,556	444 (F)
B	10,500	9,872	628 (F)
C	11,000	12,150	1,150 (A)
Total	26,500	26,578	78 (A)

Profit and Loss Statement

Particulars	Toy A	Toy B	Toy C	Total
Budgeted sales	45,000	65,000	90,000	2,00,000
Less : Budgeted Cost of sales	40,500	55,250	78,000	1,73,750
Budgeted profit	4,500	9,750	12,000	26,250
Variances :				
Sales quantity	56	122	150	328
Sales mix	444	628	(-) 1,150	(-) 78
	500	750	(-) 1,000	250
Standard profit on sales	5,000	10,500	11,000	26,500
Sales price variance	5,000	(-) 3,500	3,300	4,800
Actual profit on sales	10,000	7,000	14,300	31,300

Note : (-) indicates unfavourable or adverse variance.

Q. 25. Suman Ltd. manufactures a product and provides you the following information :

Budgeted data -

Direct materials	**-**	**Rs. 4,00,000**
Direct labour	**-**	**Rs. 4,00,000**
Variable overheads	**-**	**Rs. 80,000**
Fixed overheads	**-**	**Rs. 2,00,000**
Sales (10,000 units)	**-**	**Rs. 13,50,000**

No opening and closing stock.

	Favourable (Rs.)	Adverse (Rs.)
Material price variance		**66,000**
Material usage variance		**10,000**
Labour rate variance		**6,800**
Labour efficiency variance		**12,000**
Idle time variance		**8,000**
Variable overhead efficiency variance		**2,400**
Variable overhead expenditure variance	**6,400**	
Fixed overhead efficiency variance		**6,000**
Fixed overhead capacity variance		**34,000**
Fixed overhead expenditure variance	**16,000**	
Sales price variance	**40,000**	
Sales margin volume variance		**54,000**

Required **:**

(a) Prepare a Standard Cost sheet

(b) Prepare a statement showing total Standard Cost for Actual Output

(c) Prepare Actual Cost sheet

(d) Reconcile the Actual Profit with the Standard Profit.

Answer 25.

Statement showing Standard Cost Sheet, Total Standard Cost for Actual Output and Actual Cost Sheet

Particulars A	Original budget for 10,000 units B	Standard Cost per unit C=B/10,000	Standard Cost for 8,000 units D = C × 8,000	Variance E	Actual for 8,000 units F = D ± E
Direct material	4,00,000	40	3,20,000	(-) 76,000	3,96,000
Direct labour	4,00,000	40	3,20,000	(-) 26,800	3,46,800
Variable overhead	80,000	8	64,000	4,000	60,000
Fixed overhead	2,00,000	20	1,60,000	(-) 24,000	1,84,000
Total cost	10,80,000	108	8,64,000	(-) 1,22,800	9,86,800
Net profit	2,70,000	27	2,16,000	(-) 82,800	1,33,200
Sales	13,50,000	135	10,80,000	40,000	11,20,000

Statement Reconciling the Actual Profit with the standard Profit

			Rs.
Budgeted profit (10,000 @ Rs. 27)			2,70,000
Less : Adverse sales margin volume variance [Rs. 27.5 (8,000 – 10,000)]			(-) 54,000
Standard profit			2,16,000
Add : Sales price variance [8,000 (Rs. 135 – Rs. 140)]			40,000
Profit before adjustment of cost variances			2,56,000
Adjustment of cost variances :			
	Favourable (Rs.)	**Adverse (Rs.)**	
Material price variance		66,000	
Material usage variance		10,000	
Labour rate variance		6,800	
Labour efficiency variance		12,000	
Idle time variance		8,000	
Variable overhead efficiency variance		2,400	
Variable overhead expenditure variance	6,400		
Fixed overhead efficiency variance		6,000	
Fixed overhead capacity variance		34,000	
Fixed overhead expenditure variance	16,000		
	22,400	1,45,200	(-) 1,22,800
Actual profit			1,33,200

Working note : Calculation of Actual Output

Sales margin volume variance = Budgeted margin per unit x (Budgeted Qty. – Actual Qty.)

Rs. 54,000 = 27 × (10,000 – Actual Qty.)

$$\text{Actual Qty.} = 10{,}000 - \frac{\text{Rs. } 54{,}000}{27}$$

Actual Qty. = 10,000 – 2,000 = 8,000 units.

Q. 26. (a) ABC Ltd. is manufacturing and selling two products Black and White at selling price of Rs. 3 and Rs. 4 respectively. The following sales strategy has been outlined for the year.

1. **Sales planned for year will be Rs. 7.20 lakhs in the case of Black and Rs. 3.50 lakhs in the case of White.**
2. **To meet competition, the selling price of Black will be reduced by 20% and that of White by 12½%.**
3. **Break-even is planned at 60% of the total sales of each product.**
4. **Profit for the year to be achieved is planned as Rs. 69,120 in the case of Black and Rs. 17,500 in the case of White. This would be possible by launching a cost reduction programme and reducing the present annual fixed expenses of Rs. 1,35,000 allocated as Rs. 1,08,000 to Black and Rs. 27,000 to White.**

Required **:**

(i) Calculate the total number of units of Black and White to be sold during the year and number of units to be sold of Black and White to break-even.

(ii) Calculate the reduction in fixed expenses product-wise that is envisaged by the Cost Reduction Programme.

(b) What is the meaning of Performance Budgeting?

Answer 26. (a)

Calculation of no. of units to be sold and BEP (Units)

Particulars	**Black**	**White**
Sales (Rs.)	7,20,000	3,50,000
Selling price / unit (revised)	2.4 (80% of 3)	3.5 (87.5% of 4)
Sales units	3,00,000	1,00,000
BEP (%)	60%	60%
BEP (units)	1,80,000	60,000

Calculation of Reduction in Fixed Expenses Product-wise

Particulars	**Black**	**White**
Margin of safety (MS) [Sales units × (100 – BEP%) × Selling Price]	2,88,000 (3,00,000 × 40% × 2.4)	1,40,000 (1,00,000 × 40% × 3.5)
Profit (given)	69,120	17,500
Previous fixed cost (given)	1,08,000	27,000
New P/V ratio [(Profit/ MS) × 100]	24%	12.5%
Break-even sales [Sales units × BEP% × Selling price]	4,32,000 (3,00,000 × 60% × 2.4)	2,10,000 (1,00,000 × 60% × 3.5)
Revised fixed cost (BES × P/V ratio)	1,03,680	26,250
Reduction in fixed cost	4,320	750

Answer 26. (b)

It is the process of analyzing, identifying, simplifying and crystalising specific performance objectives, of a job to be achieved over a period, within the framework of Firm's Overall objectives, the purposes and objectives of the job.

Features and advantages :

(i) Performance budgeting lays immediate stress on the achievement of specific goals over a period of times.

(ii) It aims at a continuous growth of the Firm so that it continues to meet the dynamic needs of its growing clientele and customers.

(iii) It enables the Firm to be sensitive and adaptive, preventing it from developing rigidities which may retard the process of growth.

(iv) It requires the preparation of periodic performance reports, which compare budget and actual performance to find our existing variance.

Q. 27. Cable Network Ltd (CNL), a large cable television operator, had 7,50,000 subscribers last year, CNL employs 5 customer help-desk representatives to respond to customer questions and problems. During last year, each customer help-desk representatives worked 8 hrs. per day for 250 days at a fixed annual salary of Rs. 2,40,000. CNL received 45,000 telephone calls from its customers during last year. Each call took an average of 10 minutes.

Required **:**

(i) Do you think customer help-desk costs at CNL are Engineered Costs or Discretionary Costs ? Explain.

(ii) Where possible, calculate the cost of unused Customer Help-Desk capacity last year under each of the following assumptions – (a) Customer help-desk costs are engineered costs, and (b) Customer Help-desk costs are discretionary costs. If you could not calculate the amount and cost of unused capacity, indicate why not.

(iii) Assume that CNL had 9,00,000 subscribers this year and that same percentage of telephone calls received to total subscribers for last year continued into this year also. Customer help-desk capacity this year was the same as it was in last year. Where possible, calculate the cost of unused customer help-desk capacity this year under each of the following two assumptions - (a) Customer help-desk costs are engineered costs, and (b) Customer Help-desk costs are discretionary costs. If you could not calculate the amount and cost of unused capacity, indicate why not.

Answer 27.

(i) Nature of Customer Help-desk costs : There is a cause-and-effect relationship between output (number of subscribers/ customers) and the inputs (Customers help-desk representatives) needs to serve customers and the related costs. If more customers/ subscribers join in, there will be increase in the expected number of calls. This requires the recruitment of more help-desk representatives. Thus, customer help-desk costs are indirect, engineered costs only.

(ii) Cost of unused capacity last year

(a) When customer help-desk costs are considered as engineered costs

Customer help-desk capacity available (5 persons × 8 hrs × 250 days)	10,000 hrs
Customer help-desk capacity utilized last year (45,000 calls × 10/60 hours)	7,500 hrs
Hence, unused customer help-desk capacity	2,500 hrs
Customer help-desk capacity costs (5 persons × Rs. 2,40,000) ÷ 10,000 hrs	Rs. 120 per hr.
Cost of unused customer help-desk capacity (Rs. 120 per hr. × 2,500 hrs.)	Rs. 3,00,000

(b) When customer help-desk costs are assumed as discretionary costs, the cost of unused capacity cannot be determined since the relationship between inputs required and outputs desired, cannot be established.

(iii) Cost of unused capacity this year

(a) When customer help-desk costs are considered as Engineered Costs

No. of calls received this year = (45,000 ÷7,50,000) × 9,00,000	54,000 calls
Customer help-desk capacity available (5 persons × 8 hrs. × 250 days)	10,000 hrs
Customer help-desk capacity utilized this year (54,000 calls × 10/60 hrs)	9,000 hrs
Hence, unused customer help-desk capacity	1,000 hrs
Customer help-desk capacity costs (5 persons × Rs. 2,40,000) ÷ 10,000 hrs	Rs. 120 per hr.
Cost of unused customer help-desk capacity (Rs. 120 per hr. × 1,000 hrs.)	Rs. 1,20,000

(b) When customer help-desk costs are assumed as discretionary costs, the cost of unused capacity cannot be determined since the relationship between inputs required and outputs desired, cannot be established.

Q. 28. (a) What are the limitations of value chain analysis?

(b) What are the components of cost to be reported in a Cost of Quality Report?

Answer 28. (a)

Value Chain Analysis is criticized on the following grounds –

(i) **Non-availability of data** – Internal data on costs, revenues and assets used for Value Chain Analysis are derived from financial information of a single period. For long-term strategic decision-making, changes in cost structures, market prices and capital investments etc. may not be readily available.

(ii) **Identification of stages** – Identifying stages in an industry's Value Chain is limited by the ability to locate at least one Firm that participates in a specific stage. Breaking a value stage into two or more stages when an outside Firm does not compare in these stages in strictly judgmental.

(iii) **Ascertainment of costs, revenue and assets** – Finding the costs, revenues and assets for each Value Chain activity poses/ gives rise to serious difficulties. There is no scientific approach and much depends upon trial and error and experimentation methods.

(iv) **Identification of cost drivers** – Isolating cost drivers for each value-creating activity, identifying Value Chain Linkages across activities, and computing supplier and customer profit margins present serious challenges.

(v) **Resistance from employees** – Value Chain Analysis is not easily understandable to all employees and hence may face resistance from employees as well as managers.

(vi) **Science vs. Art** – Value Chain Analysis is not an exact science. It is more 'art' than preparing precise accounting reports. Certain judgments and factors of analysis are purely subjective and differ from person to person.

Answer 28. (b)

(i) **Prevention Costs** – These are incurred in preventing the production of products that do not conform to specification. They include the costs of preventive maintenance, quality planning and training and the extra costs of acquiring higher quality raw materials.

(ii) **Appraisal costs** – These are incurred to ensure that materials and products meet quality conformance standards. They include the costs of inspecting purchased parts, work in process and finished goods, quality audits and field test.

(iii) **Internal failure costs** – These are associated with materials and products that fail to meet quality standards. They include costs incurred before the product is dispatched to the customer, such as the costs of scrap, repair, downtime and work stoppages caused by defects.

(iv) **External failure cost** – These are incurred when inferior products are delivered to customers. They include the costs of handling customer complaints, warranty replacement, repairs of returned products and the costs arising from a damaged company reputation.

Prevention and Appraisal Costs are called Costs of Quality Compliance while Internal and External Failure Costs are called Costs of Non-Compliance.

Q. 29. (a) Bharati Enterprises has decided to adopt JIT policy for materials. The following effects of JIT policy are identified :

(i) To implement JIT, the company has to modify its production and material receipt facilities at a capital cost of Rs. 6,00,000. The new facilities will require a cash operating cost of Rs. 48,000 per annum.

(ii) Raw material stockholding will be reduced from Rs. 28,00,000 to Rs. 8,00,000.

(iii) The company can earn 15% on its long-term investments.

(iv) The company can avoid rental expenditure on storage facilities amounting to Rs. 30,000 per annum. Property taxes and insurance amounting to Rs. 12,000 will be saved due to JIT programme.

(v) Presently there are 7 workers in the Stores Department at a salary of Rs. 3,000 each per month. After implementing JIT scheme, only 2 workers will be required in this Department. Of the balance 5 workers, 3 will be transferred to other departments, while 2 workers' employment will be terminated.

(vi) Due to receipt of smaller lots of raw materials, there will be some disruption of production. The costs of stock-out will be Rs. 3,40,000 in the first year only. This stock-out costs can be brought down from the second year onwards.

Determine the financial impact of the JIT policy. Is it advisable for the company to implement JIT system?

(b) What are the advantages of Target Costing?

Answer 29. (a)

Cost – Benefit Analysis of JIT policy

Costs	Rs.	Benefits	Rs.
Interest on capital for modifying production facilities (Rs. 6,00,000 × 15%)	90,000	Interest on investment on released funds (Rs. 28,00,000 – Rs. 8,00,000) × 15%	3,00,000
Operating costs of new production facilities	48,000	Savings in salary of 2 workers terminated (Rs. 3,000 × 12 months × 2)	72,000
Stock-out costs (first year only)	3,40,000	Savings in rental expenditure	30,000
		Saving in Property taxes & insurance	12,000
		Net loss due to JIT policy (first year)	64,000
Total	4,78,000	Total	4,78,000

Conclusion : In the first year, JIT policy results in a loss of Rs. 64,000. However, from 2nd year onwards, stock-out costs of Rs. 3,40,000 will not be incurred. Hence, net benefit will be Rs. 2,76,000 per annum from the 2nd year onwards. Hence, the JIT policy may be implemented.

Answer 29. (b)

The advantages of Target Costing are :

(i) **Innovation** – It reinforces top-to-bottom commitment to process and product innovation, and is aimed at identifying issues to be resolved.

(ii) **Competitive advantage** – It enables a Firm to achieve competitive advantage over other firms in the industry. The Firm which achieves cost reduction targets realistically stands to gain in the long run.

(iii) **Market driven management** – It helps to create a Company's competitive future with market-driven management for designing and manufacturing products that meet the price required for market success.

(iv) **Real cost reduction** – It uses management control system to support and reinforce manufacturing strategies, and to identify market opportunities that can be converted into real savings to achieve the best value rather than simply the lowest cost.

Q. 30. (a) List some specific circumstances under which a Cost Audit can be ordered?

(b) List some difficulties in implementation of Benchmarking.

(c) What do you mean by philosophy of Continuous Process Improvement? What are its challenges?

Answer 30. (a)

In addition to general reasons for cost audit, the following circumstances may also require a Cost Audit :

(i) **Price fixation** – The need for fixation of retention price in the case of materials of national importance like steel, cement, etc., may create a necessity for cost audit. Also to check excessive profiteering, cost audit may be useful in knowing the true cost of production.

(ii) **Cost variation within the industry** – Where the cost of production varies significantly from unit to unit in the same industry, cost audit may be necessary to find the reasons for such differences.

(iii) **Inefficient management** – Where a factory is run inefficiency and uneconomically, institution of cost audit may be necessary. It may be useful for the Government before taking up any action.

(iv) **Tax assessment** – Where a duty or tax is levied on products based on the cost of production, the levying authorities may require a cost audit to determine the correct cost of production.

(v) **Trade disputes** – Cost audit is useful in settling trade disputes regarding claim for higher wages, bonus etc.

Answer 30. (b)

Difficulties in implementation of benchmarking are as follows :

(i) **Time consuming** – Benchmarking is time consuming and at times difficult. It has significant requirement of staff time and Company resources. Companies may waste time in benchmarking non-critical functions.

(ii) **Lack of management support** – Benchmarking implementation requires the direct involvement of all managers. The drive to be best in the industry or world cannot be delegated.

(iii) **Resistance from employees** – It is likely that there may be resistance from employees.

(iv) **Copy –paste attitude** – The key element in benchmarking is the adaptation of a best practice to tailor it to a Company's needs and culture. Without that step, a Company merely adopts another Company's process. This approach condemns benchmarking to fail leading to a failure of benchmarking goals.

Answer 30. (c)

In a Process industry, production of a product moves from one process to the next till it is completed. Each Production Department performs some part of the total operation on the product and transfers its completed production to the next process Department, where it becomes the input for further processing. The completed production of the last Department is transferred to the Finished Goods stock.

The Philosophy of Continuous Process Improvement believes in encouraging every member of the Firm to continuously strive to efficiently serve their customers, who may either be external or internal.

The objective of Continuous Process Improvement is to sustain the improvement momentum in the Firm over time and to align improvement activities in support of strategic objectives.

The challenge is in promoting activities that continuously modify processes, procedures, task, content and process interfaces to achieve complete customer satisfaction as well as to reduce costs and to increase product quality.