

INTERMEDIATE EXAMINATION

(REVISED SYLLABUS - 2008)

GROUP - II

Paper-8 : COST AND MANAGEMENT ACCOUNTING

Objective questions :

A. State whether the following statements are 'True' or 'False':

- (i) In job costing, cost is computed at the end of the cost period.
- (ii) ABC analysis is made on the basis of unit prices of materials.
- (iii) Cost industry makes use of output costing.
- (iv) In variable costing, profit fluctuates with sale.
- (v) CVP analysis does not assume that efficiency and productivity remains unchanged.
- (vi) Bin cards show quantity and value of stores.
- (vii) A production order is an order received from a customer.
- (viii) Cenvat credit is allowed on the basis of Central Excise Gate Pass.
- (ix) Production budget is prepared before sales budget.
- (x) Variable cost varies with time.

B. Fill in the blanks correctly :

- (i) Idle time variance is always
- (ii) Contribution earned after reaching BEP is of the firm.
- (iii) The most powerful tool used to analyse and interpret the health of an enterprise is
- (iv) Two methods used for calculation of equivalent production are and
- (v) Flexible budget recognize the difference between and
- (vi) Margin of safety is
- (vii) Reorder level is multiplied by
- (viii) Efficiency is basically a ratio of and
- (ix) The primary responsibility for an unfavourable material yield variance is of
- (x) phase is usually the longest stage in the product life cycle.

C. Match the following :

Merit rating	Shows profitability and capacity utilisation
Angle of incidence	Basis for remunerating employees
Normal capacity	Direct materials
Primary packing material	Measures the divisional performance
Value engineering	Production order
Point rating	Design of the product
Material requisition	Splitting of semi-variable costs
Scatter diagram	Job evaluation
Performance of public enterprises	Long term average capacity based on sales
Residual income	Profitability rate

D. Choose the correct answer, working should form part of your answer.

- (i) The cost-volume-profit relationship of a company is described by the equation $y = \text{Rs. } 8,00,000 + 0.60x$, in which x represents sales revenue and y is the total cost at the sales volume represented by x . If the company desires to earn a profit of 20% on sales, the required sales will be.

- a. Rs. 40,00,000
- b. Rs. 35,50,000
- c. Rs. 24,00,000
- d. Rs. 20,00,000

- (ii) 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

- (iii) During the month of March 2009, 560 kg. of material was purchased at a total cost of Rs. 15,904. The stocks of material increased by 15 kg. It is the company's policy to value the stocks at standard purchase price. If the material price variance was Rs. 224 (A), the standard price per kg. of material is.

- a. Rs. 28.40
- b. Rs. 28.80
- c. Rs. 28.00
- d. Rs. 29.20

- (iv) in the reversal cost method, the manufacturing cost of the main product is reduced by

- a. The actual revenue received from the by-product
- b. The estimated market value of the by-product
- c. The estimated replacement costs of the by-product
- d. The standard cost of the by-product

- (v) If the work of specialized nature is performed by a sub-contractor, the cost of subcontracting is debited to

- a. Contract account
- b. Contractee's account
- c. Profit and loss account
- d. Process account

- (vi) the total cost incurred in the operation of a business undertaking other than the cost of manufacturing and production is known as
- Direct cost
 - Variable cost
 - Commercial cost
 - Conversion cost
- (vii) Consider the following data for a company during the month of June 2009
- | | |
|---|-------|
| Budgeted hours | 4,000 |
| Standard hours for actual production | 4,440 |
| Maximum possible hours in the budget period | 4,800 |
| Actual hours | 3,800 |
- The activity ratio of the company during the month is
- 111%
 - 120%
 - 95%
 - 117%
- (viii) Akash Ltd. is preparing its cash budget for the period. Sales are expected to be Rs. 1,00,000 in April 2009, Rs.2,00,000 in May 2009, Rs. 3,00,000 in June 2009 and Rs. 1,00,000 in July 2009. Half of all sales are cash sales, and the other half are on credit. Experience indicates that 70% of the credit sales will be collected in the month following the sale, 20% the month after that, and, 10% in the third month after the sale. The budgeted collection for the month of July 2009 is
- Rs. 1,30,000
 - Rs. 1,80,000
 - Rs. 2,60,000
 - Rs. 3,60,000
- (ix) Total unit costs are
- Independent of the cost system, used to generate them
 - Needed for determining product contribution
 - Irrelevant in marginal analysis
 - Relevant for cost-volume-profit analysis
- (x) Which of the following bases is not appropriate for apportionment of Transport department's cost ?
- Crane hours
 - Crane value
 - Truck Mileage
 - Truck value

Answer : A.

- (i) False
- (ii) False
- (iii) True
- (iv) True
- (v) False
- (vi) False
- (vii) False
- (viii) True
- (ix) True
- (x) False

Answer: B.

- (i) Adverse
- (ii) Profit
- (iii) Ratio analysis
- (iv) FIFO, average method.
- (v) Variable, fixed costs
- (vi) Sales minus B.E.Sales
- (vii) Maximum usage, maximum lead period
- (viii) Input, output
- (ix) Production
- (x) Maturity

Answer: C.

Merit rating	Basis for remunerating employees
Angle of incidence	Profitability rate
Normal capacity	Long term average capacity based on sales
Primary packing material	Direct materials
Value engineering	Design of the product
Point rating	Job evaluation
Material requisition	Production order
Scatter diagram	Splitting of semi-variable costs
Performance of public enterprises	Shows profitability and capacity utilisation
Residual income	Measures the divisional performance

Answer: D.

(i) a.

Variable cost = 60% , therefore, contribution to sales ratio = 40% (P/V ratio)

Company's target profit 20% in sales, therefore, revised contribution which covers only fixed cost = 40% - 20% = 20%.

Required sales = fixed cost / revised contribution = Rs. 8,00,000 / 20% = RS. 40,00,000

(ii) c.

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 x Rs. 24 = Rs. 45,120

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

(iii) c.

Actual cost Rs. 15,904

Less : adverse material price variance 224

Actual purchases at standard price Rs. 15,680

Standard price = $\frac{\text{Rs. 15,680}}{560 \text{ kg}}$ = Rs. 28 kg.

Material Price Variance

$$\begin{aligned}
 &= AQ (SP-AP) \\
 -224 &= 560 (SP-28.4) \\
 -224 &= 560 SP-15904 \\
 SP &= \frac{15904 - 224}{560} \\
 &= 28
 \end{aligned}$$

(iv) b.

(v) a.

(vi) c.

(vii) a.

Activity ratio = $\frac{\text{Standard hours for actual production}}{\text{Budgeted hours}} \times 100$

$$= \frac{4,440 \text{ hours}}{4,000 \text{ hours}} \times 100 = 111\%$$

(viii) b.

Collection from

July 2009 cash sales will be half of total sales or Rs. 50,000

From April Rs. 50,000 of credit sales, collection should be 10% or Rs. 5,000

From May Rs. 1,00,000 of credit sales, collections should be 20% or Rs. 20,000

From June Rs. 1,50,000 of credit sales, collection will be 70% or Rs. 1,05,000

Thus total collections will amount to Rs. 1,80,000

(ix) c.

(x) b.

Q1. (a) Outline the steps involved in installing a costing system in a manufacturing unit. What are the essentials of an effective costing system?

Answer 1. (a)

The main steps involved in installing a costing system in a manufacturing unit may be outlined as below :

- (i) The objectives of installing a costing system in a manufacturing concern and the expectations of the management from such a system should be identified first. The system will be a simple one in the case of a single objective but will be an elaborate one in the case of multiple objectives.
- (ii) It is important to ascertain the significant variables of the manufacturing unit which are amenable to control and affect the concern. For example, quite often the production costs control may be more important than control of its marketing cost. Under such a situation, the costing system should devote greater attention to control production costs.
- (iii) A thorough study to know about the nature of business, its technical aspects; products, methods and stages of production should also be made. Such a study will facilitate in selecting a proper method of costing for manufacturing unit.
- (iv) A study of the organisation structure, its size and layout etc., is also necessary. This is useful to management to determine the scope of responsibilities of various managers.
- (v) The costing system should be evolved in consultation with the staff and should be introduced only after meeting their objections and doubts, if any. The co-operation of staff is essential for the successful operation of the system.
- (vi) Details of records to be maintained by the costing system should be carefully worked out. The degree of accuracy of the data to be supplied by the system should be determined.
- (vii) The forms to be used by foreman, workers, etc., should be standardised. These forms be suitably designed and must ensure minimum clerical work at all stages.
- (viii) Necessary arrangements should be made for the flow of information/data to all concerned managers, at different levels, regularly and promptly.
- (ix) Reconciliation of costs and financial accounts be carried out regularly, if they are maintained separately.
- (x) The costing system to be installed should be easy to understand and simple to operate.

Essential of an effective costing system: The essential features that an effective costing system should possess are as follows:

- (a) Costing system should be tailor made, practical, simple and capable of meeting the requirements of a business concern.
- (b) The method of costing should be suitable to the industry.
- (c) Necessary co-operation and participation of executives from various departments of the concern is essential for developing good cost accounting system.
- (d) The cost of installing and operating the system should justify the results.
- (e) The system of costing should not sacrifice the utility by introducing meticulous and unnecessary details.

Q1. (b) A re-roller produced 400 metric tons of M.S. bars spending Rs. 36,00,000 towards materials and Rs. 6,20,000 towards rolling charges. Ten percent of the output was found to be defective, which had to be sold at 10% less than the price for good production. If the sales realization should give the firm an overall profit of 12.5% on cost, find the selling price per metric ton of both the categories of bars. The scrap arising during the rolling process fetched a realization of Rs. 60,000.

Answer 1. (b)

Computation of Selling Price :

	Rs.	Rs.
Cost of Materials	36,00,000	
Less: Scrap	60,000	35,40,000
Rolling charges		6,20,000
Total cost		41,60,000
Add Profit (12.5% on cost)		5,20,000
Sales value		46,80,000

$$\text{Output (effective)} = 360 \text{ MT} + \frac{9}{10} \times 40 \text{ MT} = 396 \text{ MT}$$

$$\begin{aligned} \text{Selling price per MT of good output} &= \text{Rs. } 46,80,000/396 \\ &= \text{Rs. } 11,818.18 \end{aligned}$$

$$\begin{aligned} \text{Selling price of defective per MT} &= 0.9 \times \text{Rs. } 11,818.18 \\ &= \text{Rs. } 10,636.36 \end{aligned}$$

Q2. (a) The cost structure of an article, the selling price of which is Rs. 45,000 is as follows :

Direct Materials	50%
Direct Labour	20%
Overheads	30%

An increase of 15% in the case of materials and of 25% in the cost of labour is anticipated. These increased costs in relation to the present selling price would cause a 25% decrease in the amount of profit per article.

Your are required

(a) To prepare a statement of profit per article at present, and

(b) The revised selling price to produce the same percentage of profit to sales as before.

Answer 2. (a)

Working Notes :

- Let 'x' be the total cost and 'y' be the profit for an article whose selling price is Rs. 45,000
Hence $x + y = \text{Rs. } 45,000$(A)

2. Statement Showing Present and anticipated cost per article :

Item	Present Cost Rs.	Increase		Anticipated cost Rs.
		%	Rs.	
(1)	(2)	(3)	(4)	(5) = (2) + (4)
Direct Material Cost	0.5x	15	0.075x	0.575x
Direct Labour	0.2x	25	0.050x	0.250x
Overheads	0.3x	—	—	0.300x
	1.0x		0.125x	1.125x

3. The increase in the cost of direct material and direct labour has reduced the profit by 25 per cent (as selling price remained unchanged). The increase in cost and reduction in profit can be represented by the following relation:

$$1.125x + 0.75y = \text{Rs. } 45,000 \dots\dots\dots (B)$$

4. On solving relations (A) and (B) as obtained under working notes 1 and 3 above we get :

$$x = \text{Rs. } 30,000$$

$$y = \text{Rs. } 15,000$$

(a) Present Statement of Profit Per Article

	Rs.	Rs.
Direct Material Cost	0.5x	15,000
Direct Labour Cost	0.2x	6,000
Overheads	0.3x	9,000
Total Cost		30,000
Profit		15,000
Selling Price		45,000

Note: Profit as a percentage of Cost Price = $(\text{Rs. } 15,000 / \text{Rs. } 30,000) \times 100$
= 50%

Profit as a percentage of Selling Price = $(\text{Rs. } 15,000 / \text{Rs. } 45,000) \times 100$
= 33-1/3%

(b) Statement of Revised Selling Price

	Rs.	Rs.
Direct Material Cost	0.575x	17,250
Direct Labour Cost	0.250x	7,500
Overheads	0.300x	9,000
Total Anticipated Cost		33,750
Profit (33-1/3% of selling price)		16,875
Selling Price		50,625
(Rs. 33,750 × 100)/66.66		

Q2. (b) Many businesses have an unnecessarily large amount of capital locked up in the raw materials and work-in-progress. Indicate methods of correcting this position.

Answer 2. (b)

The problem of unnecessary locking up of the funds in raw materials and work-in-progress can be solved by adopting the following methods :

1. *Budgeting materials requirements:* To control investment in raw materials it is necessary to know in advance about the materials requirement during a specific period, usually a year. The exact quantity of materials and the time when they would be required can be known by studying carefully production plans and production schedules. Based on this, materials requirement budget can be prepared. Such a budget will discourage the unnecessary investment in raw materials. This budget may also be used as a basis to assess the performance of executives with regard to investment in raw materials.
2. *ABC Analysis :* The technique of ABC analysis also helps in a big way in overcoming the problem of unnecessary locking up of the funds in raw materials. Under this method all the raw materials are generally classified into three categories A, B & C on the basis of their use value. The costliest items are placed under A Category. These items are controlled by top executives whereas B and C category of items may be controlled by middle level and lower level executives respectively. This classification helps in ensuring that unnecessary funds are not blocked in raw materials particularly in A category items because of their high value. In fact, ABC analysis is a method which clearly indicates the items of raw materials to be controlled by managers at different levels. These managers also ensure a proper decision with regard to investment in raw materials in respect of the items falling in their domain.
3. *Fixation of raw material levels:* To avoid unnecessary locking up of funds in raw materials, it is desirable to fix up various levels like re-order level, maximum level, minimum level, safety stock, economic order quantity etc. Such levels may be fixed up after taking into account the factors like rate of consumption, lead time, ordering cost, handling cost etc. This method of stock control, besides avoiding unnecessary locking up of capital in raw materials, reduces total inventory costs which include inventory carrying costs and ordering costs.
4. *Control over slow-moving and non-moving items:* Sometimes, due to high value of slow moving and non-moving raw materials, it appears that the concern has blocked huge sum of money unnecessarily in raw materials. To overcome this problem, it is necessary to dispose-off as early as possible the non-moving items or make arrangements for their exchange with the raw materials required by the concern. Besides this, no new requisition should be made for the purchase of slow moving items, till the existing stock is exhausted. Computation of inventory turnover ratio may help in identifying slow moving items.
5. *Variety reduction:* Huge investments are sometime made for the purchase of the same raw material under different brand names to cater to the needs of different user departments. Significant reduction in investment can be brought about by selecting a particular brand/ variety of raw material suitable for all the user departments. Under this method instead of purchasing a number of brands, say ten brands of the same material, the decision may be taken to purchase less number of brands, say one or two. Such a decision would minimise unnecessary locking up of funds in raw materials.
6. *Codification of materials:* It has been observed that the same material used by different departments is also named differently by them. Due to this, for the same material, the purchase department places different orders and the stores department stores it at different places. Even the accounts for these materials are maintained separately. Such a practice results in

the unnecessary locking up of funds. Here the excessive investment in raw materials can be reduced by resorting to the technique known as "Codification of materials". Under codification a code may be assigned to each material. The assigned code should be used henceforth for requisitioning the material from stores by different departments instead of its name.

7. *Control of work-in-progress*: The investment in work-in-progress depends upon the number and sequences of the processes and sub-assemblies and the length of the production cycle. A system of efficient production planning and scheduling would assist in maintaining an uninterrupted flow of work and reducing the length of the production cycle. It will ultimately avoid unnecessary locking up of the funds in WIP inventory.

Q3. (a) A job can be executed either through workman M or N. M takes 32 hours to complete the job while N finishes it in 30 hours. The standard time to finish the job is 40 hours.

The hourly wage rate is same for both the workers. In addition workman M is entitled to receive bonus according to Halsey plan (50%) sharing while N is paid bonus as per Rowan plan. The works overheads are absorbed on the job at Rs. 7.50 per labour hour worked. The factory cost of the job comes to Rs, 2,600 irrespective of the workman engaged.

Find out the hourly wage rate and cost of raw materials input. Also show cost against each element of cost included in factory cost.

Answer 3. (a)

Working notes :

1. *Time saved and wages :*

Workmen	M	N
Standard time (hrs.)	40	40
Actual time taken (hrs.)	32	30
Time saved (hrs.)	08	10
Wages paid @ Rs. x per hr. (Rs.)	32x	30x

2. *Bonus Plan:*

	Halsey	Rowan
Time saved (hrs.)	8	10
Bonus (Rs.)	4x	7.5x
	$\left[\frac{8 \text{ hrs} \times \text{Rs. } x}{2} \right]$	$\left[\frac{10 \text{ hrs}}{40 \text{ hrs}} \times 30 \text{ hrs} \times \text{Rs. } x \right]$

3. *Total wages :*

Workman M: $32x + 4x = \text{Rs. } 36x$

Workman N: $30 \times 7.5x = \text{Rs. } 37.5x$

Statement of factory cost of the job

Workmen	M	N
	Rs.	Rs.
Material cost	y	y
Wages	36x	37.5x
(Refer to working note 3)		
Works overhead	240	225
Factory cost	2,600	2,600

The above relations can be written as follows:

$$36x + y + 240 = 2,600 \quad \dots (i)$$

$$37.5x + y + 225 = 2,600 \quad \dots (ii)$$

Subtracting (i) from (ii) we get

$$1.5x - 15 = 0$$

$$\text{or} \quad 1.5x = 15$$

$$\text{or} \quad x = \text{Rs. 10 per hour}$$

On substituting the value of x in (i) we get $y = \text{Rs. 2,000}$

Hence the wage rate per hour is Rs. 10 and the cost of raw material input is Rs. 2,000 on the job.

Q3. (b) What do you understand by the term 'pre-determined rate of recovery of overheads'? What are the bases that are usually advocated for such pre-determination? How do over-absorption and under-absorption of overheads arise and how are they disposed off in Cost Accounts?

Answer 3. (b)

The term 'pre-determined' rate of recovery of overheads' refers to a rate of overhead absorption. It is calculated by dividing the budgeted overhead expenses for the accounting period by the budgeted base for the period. This rate of overhead absorption is determined prior to the start of the activity; that is why it is called a 'pre-determined rate'. The use of the pre-determined rate of recovery of overheads enables prompt preparation of cost estimates and quotations and fixation of sales prices. For prompt billing on a provisional basis before completion of work, as for example in the case of cost plus contracts, pre-determined overhead rates are particularly useful.

Bases Available: The bases available for computing 'pre-determined rate of recovery of overheads' are given below:-

1. Rate per unit of output
2. Direct labour cost method
3. Direct labour hours method
4. Machine hour rate method
5. Direct material cost method
6. Prime cost method.

The choice of a suitable method for calculating 'pre-determined rate of recovery of overhead', depends upon several factors. Some important ones are- type of industry, nature of product and processes of manufacture, nature of overhead expenses, organisational set-up, policy of management etc.

Reason for over/under absorption of overheads: Over-absorption of overheads arises due to one or more of the following reasons.

- (i) Improper estimation of overhead.
- (ii) Error in estimating the level of production.
- (iii) Unanticipated changes in the methods or techniques of production.

- (iv) Under-utilisation of the available capacity.
- (v) Seasonal fluctuations in the overhead expenses from period to period.

Methods for absorbing under/over absorbed overheads: The over-absorption and under-absorption of overheads can be disposed off in cost accounting by using any one of the following methods:

- (i) Use of supplementary rates
 - (ii) Writing off to costing profit & loss Account
 - (iii) Carrying over to the next year's account
- (i) *Use of supplementary rates:* This method is used to adjust the difference between overheads absorbed and overhead actually incurred by computing supplementary overhead rates. Such rates may be either positive or negative. A positive rate is intended to add the unabsorbed overheads to the cost of production. The negative rate, however corrects the cost of production by deducting the amount of over-absorbed overheads. The effect of applying such a rate is to make the actual overhead get completely absorbed.
- (ii) *Writing off to costing profit & loss account:* When over or under-absorbed amount is quite negligible and it is not felt worthwhile to absorb it by using supplementary rates, then the said amount is transferred to costing profit & loss Account. In case under-absorption of overheads arises due to factors like idle capacity, defective planning etc., it may also be transferred to costing profit & loss Account.
- (iii) *Carrying over the next year's account:* Under this method the amount of over/under absorbed overhead is carried over to the next period. This method is not considered desirable as it allows costs of one period to affect costs of another period. Further, comparison between one period and another is rendered difficult. Therefore, this method is not proper and has only a limited application. However, this method may be used when the normal business cycle extends over more than one year, or in the case of a new project, the output is low in the initial years.

Q4. (a) A manufacturer of Ahmedabad purchased three Chemicals X, Y and Z from Mumbai. The invoice gave the following information :

	Rs.
Chemical X : 3,000 kg @ Rs. 4.20 per kg.	12,600
Chemical Y : 5,000 kg @ Rs. 3.80 per kg.	19,000
Chemical Z : 2,000 kg. @ Rs. 4.75 per kg.	9,500
Sales Tax	2,055
Railway Freight	<u>1,000</u>
Total Cost	44,155

A shortage of 200 kg in Chemical X, of 280 kg. in Chemical Y and of 100 kg. in Chemical Z was noticed due to breakages. At Ahmedabad, the manufacturer paid Octroi duty @ Re 0.10 per kg. He also paid Cartage Rs. 22 for Chemical X, Rs. 63.12 for Chemical Y and Rs. 31.80 for Chemical Z. Calculate the stock rate that you would suggest for pricing issue of chemicals assuming a provision of 5% towards further deterioration.

Answer 4. (a)**Statement showing the Issue Rate of Chemicals**

	Chemicals		
	X	Y	Z
	Rs.	Rs.	Rs.
Purchase Price	12,600	19,000	9,500
Add: Sales Tax @ 5% of purchase price (Refer to Working Note 2)	630	950	475
Add: Railway Freight in the ratio of 3:5:2 (Refer to Working Note 3)	300	500	200
Add: Octroi @ Re. 0.10 per kg. on the quantity of material received (Refer to Working Note 1)	280	472	190
Add: Cartage	<u>22</u>	<u>63.12</u>	<u>31.80</u>
Total Price	<u>13,832</u>	<u>20,985.12</u>	<u>10,396.80</u>

$$\text{Rate of issue per Kg} = \frac{\text{Total price}}{\text{Qty. available for issue}} = \frac{\text{Rs. 13,832}}{2,660 \text{ kg.}} \quad \frac{\text{Rs. 20,985.12}}{4,484 \text{ kg.}} \quad \frac{\text{Rs. 10,396.80}}{1,805 \text{ kg.}}$$

(Refer to Working Note 1) $= \text{Rs. 5.20} \quad = \text{Rs. 4.68} \quad = \text{Rs. 5.76}$

Working Notes:**1. Statement showing the quantity of chemicals available for issue**

	Chemicals		
	X	Y	Z
	Kg.	Kg.	Kg.
Quantity purchased	3,000	5,000	2,000
Less: Shortage (Assumed to be normal)	<u>200</u>	<u>280</u>	<u>100</u>
Quantity received at the store	2,800	4,720	1,900
Less: Provision for further deterioration 5%	<u>140</u>	<u>236</u>	<u>95</u>
Quantity available for issue	<u>2,660</u>	<u>4,484</u>	<u>1,805</u>

$$2. \text{Rate of sales Tax} = \frac{\text{Sales Tax}}{\text{Total Purchase price of Chemical}} \times 100 = \frac{\text{Rs. 2,055}}{\text{Rs. 41,100}} \times 100 = 5\%$$

3. *Railway Freight:* It has been charged on the basis of quantity purchased i.e. X: 3000 kg; Y: 5000 kg; Z: 2000 kg in the ratio of 3:5:2.

Q4. (b) It should be management's endeavor to increase inventory turnover but to reduce labour turnover. Expand and illustrate the idea contained in this statement.

Answer 4. (b)

Inventory turnover: It is a ratio of the value of materials consumed during a period to the average value of inventory held during the period. A high inventory turnover indicates fast movement of stock.

Labour turnover: It is defined as an index denoting change in the labour force for an organization during a specified period. Labour turnover in excess of normal rate is termed as high and below it as low turnover.

Effects of high inventory turnover and low labour turnover: High inventory turnover reduces the investment of funds in inventory and thus accounts for the effective use of the concern's financial resources. It also accounts for the increase of profitability of a business concern. As against high labour turnover the low labour turnover is preferred because high labour turnover causes-decrease in production targets; increase in the chances of break down of machines at the shopfloor level; increase in the number of accidents; loss of customers and their brand loyalty due to either non-supply of the finished goods or due to sub-standard production of finished goods; increase in the cost of selection, recruitment and training; increase in the material wastage and tools breakage.

All the above listed effects of high labour turnover accounts for the increase in the cost of production/process/service. This increase in the cost finally accounts for the reduction of concern's profitability. Thus, it is necessary to keep the labour turnover at a low level.

As such, it is correct that management should endeavour to increase inventory turnover and reduce labour turnover for optimum and best utilization of available resources and reduce the cost of production and thus increase the profitability of the organization.

Q5. (a) A company is making a study of the relative profitability of the two products – X and Y. In addition to direct costs, indirect selling and distribution costs to be allocated between the two products are as under :

	Rs.	
Insurance charges for inventory (finished)	78,000	
Storage costs	1,40,000	
Packing and forwarding charges	7,20,000	
Salesmen salaries	8,50,000	
Invoicing costs	4,50,000	
Other details are		
	Product X	Product Y
Selling price per unit (Rs.)	500	1,000
Cost per unit (exclusive of indirect selling and distribution costs) (Rs.)	300	600
Annual sales in units	10,000	8,000
Average inventory (units)	1,000	800
Number of invoices	2,500	2,000

One unit of product X requires a storage space twice as much as product Y. The cost to packing and forwarding one unit is the same for both the products. Salesmen are paid salary plus commission @ 5% on sales and equal amount of efforts are put forth on the sales of each of the product.

Required

- (i) Set-up a schedule showing the apportionment of the indirect selling and distribution costs between the two products.
- (ii) Prepare a statement showing the relative profitability of the two products.

Answer 5. (a)

- (i) Schedule showing the apportionment of the indirect selling and distribution costs between the two products :

Items	Basis of apportionment	Products		
		Total	X	Y
		Rs.	Rs.	Rs.
Insurance charges	Average inventory value (1000 × Rs. 500) : (800 × Rs. 1000)	78,000	30,000	48,000
Storage cost	Average Inventory storage space (1000 × 2) : (800 × 1)	1,40,000	1,00,000	40,000
Packing & Forwarding charges	Annual sales in units (10000) : (8000)	7,20,000	4,00,000	3,20,000
Salesmen salaries	Efforts of Salesmen (1:1)	8,50,000	4,25,000	4,25,000
Salesmen Commission	Annual sales value (5:8)	6,50,000	2,50,000	4,00,000
Invoicing Costs	No. of invoices (2500 : 2000)	<u>4,50,000</u>	<u>2,50,000</u>	<u>2,00,000</u>
		<u>28,88,000</u>	<u>14,55,000</u>	<u>14,33,000</u>

- (ii) Statement showing the relative profitability of the two products :

Products	X	Y
	Rs.	Rs.
Annual sales value	50,00,000	80,00,000
	(10,000 units × Rs. 500)	(8,000 units × Rs. 1000)
Less: Cost of sales	30,00,000	48,00,000
	(10,000 units × Rs. 300)	(8,000 units × Rs. 600)
Gross Profit	20,00,000	32,00,000
Less: Indirect selling and Distribution cost [Refer to (a)(i)]	14,55,000	14,33,000
Profit	<u>5,45,000</u>	<u>17,67,000</u>
Profitability as percentage of sales	10.9%	22.08%
	$\left(\frac{\text{Rs. 5,45,000}}{\text{Rs. 50,00,000}} \times 100 \right)$	$\left(\frac{\text{Rs. 17,67,000}}{\text{Rs. 80,00,000}} \times 100 \right)$

Q5. (b) Explain the advantages that would accrue in using the LIFO method of pricing for the valuation of raw material stock.

Answer 5. (b)

LIFO- Last-in-first-out: A method of pricing for the valuation of raw material stock. It is based on the assumption that the items of the last batch (lot) purchased are the first to be issued. Therefore, under this method, the price of the last batch (lot) of raw material is used for pricing raw material issues until it is exhausted. If, however, the quantity of raw material issued is more than the quantity of the latest lot, the price of the last but one lot and so on will be taken for pricing the raw material issues.

The advantages that would accrue from the use of LIFO method of pricing the valuation of raw materials, are as follows:-

- (i) The cost of materials used is nearer to the current market price. Thus the cost of goods produced depends upon the trend of the market price of materials. This enables the matching of cost of production with current sales revenues.
- (ii) Use of LIFO during the period of rising prices does not depict unnecessarily high profit in the income statement; compared to the first-in-first-out or average methods. The profit shown by the use of LIFO is relatively lower, because the cost of production takes into account the rising trend of material prices.
- (iii) When price of materials fall, the use of LIFO method accounts for raising the profits due to lower material cost. In spite of this finished product appears to be more competitive and at market prices.
- (iv) Over a period, the use of LIFO will iron out the fluctuations in profit.
- (v) During inflationary period, the use of LIFO will show the correct profit and thus avoid paying unduly high taxes to some extent.

Q5. (c) What do you mean by the term under/over absorption of production overhead? How is it treated in cost accounts?

Answer 5. (c)

Production Overheads are usually applied to production on the basis of predetermined rates. The pre-determined rates may be based on estimated costs. The amount of expenses actually incurred and the amount of overhead applied to production will seldom be the same. Some difference is inevitable.

If the actual expenses fall short of the amount applied to production, there is said to be an over absorption of production overheads. If the actual expense exceeds the amount applied to production, there is a case of under absorption.

Treatment of under/over absorption in Cost Accounts

Under/over absorbed overheads may be treated in Cost Accounts by adopting the following methods:

- (i) **Use of supplementary rate :** In case, the amount of under or over absorbed over-heads is large the cost of the jobs may be adjusted by means of a supplementary rate. The supplementary rate here is determined by dividing the amount of under or over absorbed overhead by the actual base. Under – absorption of overheads is set right by increasing the rate of overhead absorption to the extent of supplementary rate. Whereas in the case of

over- absorption of overheads, the rate of overhead absorption is reduced to the extent of supplementary rate.

- (ii) **Write off to Costing Profit and Loss Account:** When the amount of under-or -over absorbed overheads is small the simple method is to write it off to the Costing Profit and Loss Account.
- (iii) **Absorption in the accounts of subsequent years:** The amount of under or over absorbed overheads may be carried over as a deferred charge of deferred credit to the next accounting year. This may be done by transferring the amount either to a Suspense or Overhead Reserve Account.

Q6. (a) A company undertook a contract for construction of a large building complex. The construction work commenced on 1st April 2008 and the following data are available for the year ended 31st March 2009.

	Rs. '000
Contract Price	35,000
Work certified	20,000
Progress Payments Received	15,000
Materials Issued to Site	7,500
Planning & Estimating costs	1,000
Direct Wages Paid	4,000
Materials Returned From Site	250
Plant Hire Charges	1,750
Wage Related Costs	500
Site Office Costs	678
Head Office Expenses Apportioned	375
Direct Expenses Incurred	902
Work Not Certified	149

The contractors own a plant which originally cost Rs.20 lacs has been continuously in use in this contract throughout the year. The residual value of the plant after 5 years of life is expected to be Rs. 5 lacs. Straight line method of depreciation is in use.

As on 31st March, 2009 the direct wages due and payable amounted to Rs. 2,70,000 and the materials at site were estimated at Rs. 2,00,000.

Required:

- (i) Prepare the contract account for the year ended 31st March, 2009.
- (ii) Show the calculation of profit to be taken to the profit and loss account of the year.
- (iii) Show the relevant balance sheet entries

Answer 6. (a)

Dr.		Contract A/c for the year ended 31st March, 2009		Cr.	
	Rs. '000		Rs. '000		Rs. '000
To Materials issued	7,500	By Materials returned	250		
To Direct wages paid	4,000	By Materials at site	200		
To Direct wages accrued	270	By Work-in-progress c/d			
To Wage related costs	500	Work certified	20,000		
To Direct expenses incurred	902	Work uncertified	149		
To Plant hire charges	1,750				
To Planning and estimating cost	1,000				
To Site Office costs	678				
To Head Office expenses apportioned	375				
To Plant depreciation	300				
(Refer to Working Note 1)					
To Notional Profit	3,324				
	20,599				20,599
To Profit and Loss A/c	1,662	By Notional profit b/d	3,324		
[See Ans. (ii) below]					
To Work-in-progress c/d	1,662				
(Profit in reserve)					
	3,324				3,324
01.04.2009					
To Work in-progress b/d		By Work in-progress b/d	1,662		
Work certified	20,000	(Profit in reserve)			
Work uncertified	149				
To Materials at site	200				

(ii) Profit to be transferred to Profit and Loss Account (Fig. in Rs. '000)

Since the Contract is between 50% and 90% completion, therefore, two-third of the notional profit, reduced by the proportion of cash received to work certified is to be transferred to profit and loss account as shown below :

$$\begin{aligned}
 &= \frac{2}{3} \times \text{Notional Profit} \times \frac{\text{Cash Received}}{\text{Work Certified}} \\
 &= \frac{2}{3} \times \text{Rs. } 3,324 \times \frac{\text{Rs. } 15,000}{\text{Rs. } 20,000} = \text{Rs. } 1,662
 \end{aligned}$$

(iii) **Balance Sheet (extract) as on 31st March, 2009**

<i>Liabilities</i>	<i>Rs. '000</i>	<i>Assets</i>	<i>Rs. '000</i>
Profit and Loss A/c	1,662	Plant at site	1,700
Wages accrued	270	(Rs. 2,000 – Rs. 300)	
		Materials at site	200
		Work-in-progress	3,487
		(Refer to Working Note 2)	

Working notes :

	<i>Rs. '000</i>
1. Plant depreciation	
Original cost of Plant	2000
Less: Residual value	<u>500</u>
Cost of plant used	1,500
Life of plant : 5 years	
Annual Depreciation	300
(Rs. 1,500/5)	
2. Work in-Progress	
Less: Profit in reserve	20,149
Difference	<u>1,662</u>
Less: Cash received	<u>18,487</u>
Net WIP	<u>15,000</u>
	3,487

Q6. (b) Define Product costs. Describe three different purposes for computing product costs.**Answer 6. (b)****Definition of product costs :**

Product costs are inventoriable costs. These are the costs, which are assigned to the product. Under marginal costing variable manufacturing costs and under absorption costing, total manufacturing costs constitute product costs.

Purposes for computing product costs :

The three different purposes for computing product costs are as follows:

- (i) *Preparation of financial statements:* Here focus is on inventoriable costs.
- (ii) *Product pricing:* It is an important purpose for which product costs are used. For this purpose, the cost of the areas along with the value chain should be included to make the product available to the customer.
- (iii) *Contracting with government agencies:* For this purpose government agencies may not allow the contractors to recover research and development and marketing costs under cost plus contracts.

- Q7. (a)** In a manufacturing unit, raw material passes through four processes I, II, III & IV and the output of each process is the input of the subsequent process. The loss in the four processes I, II, III & IV are respectively 25%, 20%, 20% and 16-2/3% of the input. If the end product at the end of the process IV is 40,000 kg, what is the quantity of raw material required to be fed at the beginning of Process I and the cost of the same at Rs. 5 per kg.? Find out also the effect of increase or decrease in the material cost of the end product for variation of every rupee in the cost of the raw material.

Answer 7. (a)

Statement of Production (based on 100 kg. of input)				
Process No.	Input Kg.	Loss Percentage	Loss Kg.	Output Kg.
I	100	25	25	75
II	75	20	15	60
III	60	20	12	48
IV	48	16 ² / ₃	8	40

Quantity of Raw Material required for 40,000 kg. of output

As is apparent from the above table, 40 kg of output requires 100 kg. of raw material to be fed at the beginning of Process I.

Therefore 1 kg of output require 2.5 kg. of raw material to be fed at the beginning of the process I. Hence 40,000 kg. of output will require 1,00,000 kg. of raw material at the beginning of the Process I.

Cost of Raw Material required : 1,00,000 kg. × Rs. 5 = Rs. 5,00,000

Effect of increase or decrease in the material cost : For every increase or decrease of Re. 1, in the cost of raw material, the corresponding increase or decrease in the material cost of 1 kg. of the end product is Rs. 2.50. Therefore the material cost of the end product / finished product goes up or down by Rs. 2.50 per kg. as the cost of raw material goes up or down by Re. 1/- per kg.

- Q7. (b) (i) Discuss the implications of cost-plus contracts from the view points of :**

(a) the manufacturer

(b) the customer.

- (ii) What is the relevance of escalation clause provided in the contracts?

Answer 7. (b)

- (i) (a) **'Cost Plus Contract' and Manufacturer :** 'Cost Plus Contract' is a contract in which the value of the contract is ascertained by adding a fixed margin of profit to the total cost of the contract. The favourable implications of cost-plus-contracts from the view point of the manufacturer are the following :

- (1) The manufacturer is assured of a certain percentage of profit in advance.
- (2) The manufacturer is protected against any fluctuations in the market prices of the various cost elements involved in the production.

(3) It is of considerable benefit when the cost estimates are not firm or reliable for some reason or the other e.g., figures for the previous years may not be available.

(4) The possibility of incurring any loss is completely eliminated.

In spite of these advantages there is a fundamental drawback. In case of any time overrun or cost overrun, it will lead to a lower profit to him. Thus he cannot make profit as much as he would have from a fixed price contract.

(b) 'Cost Plus Contract' and the Customer: The favourable implications of 'Cost Plus Contract' from the view point of customer are given below :

(1) The customer feels satisfied because he believes that the contract price has not been fixed up arbitrarily.

(2) The price paid by the customer depends upon the actual cost.

(3) The customer is completely fortified in the situation of an uncertain market.

The main drawbacks from the customer's point of view are as follows :

(1) The price which the customer has to pay under the contract depends upon the cost of the contract and the same cannot be ascertained until the work is complete. He may feel that the price he has to pay would not be arbitrary, yet the amount he has to pay is bound to be uncertain.

(2) Due to complete security about profit margin there may not be any incentive for the manufacturer to reduce costs; in fact he will tend to increase the costs.

(ii) When a contract is likely to take long to complete or even to commence and the price is fixed, the contractor would like to protect his interest against a high rise in the prices of materials, wage rates etc. This he does through what is called an "escalation clause" which states the increase in the contract price for a given increase in the prices of inputs. For example, it may state that if the price of steel goes up by 10%, the contract price will increase by 1.5%. This implies that the base prices of inputs should be agreed upon and also that the date after which increase in prices will be taken into account will be fixed. The contractor is not compensated for price changes which could be avoided, for example, by completing the contract on time.

It is not necessary that the contractee must agree to the escalation clause; it is a matter of negotiation between the two parties.

Q8. (a) A transport company has a fleet of three trucks of 10 tonnes capacity each plying in different directions for transport of customer's goods. The trucks run loaded with goods and return empty. The distance travelled, number of trips made and the load carried per day by each truck are as under:

Truck No.	One way Distance Km	No. of trips per day	Load carried per trip / day tonnes
1	16	4	6
2	40	2	9
3	30	3	8

The analysis of maintenance cost and the total distance travelled during the last two years is as under :

Year	Total distance travelled	Maintenance Cost Rs.
1	1,60,200	46,050
2	1,56,700	45,175

The following are the details of expenses for the year under review :

Diesel	: Rs. 10 per litre. Each litre gives 4 km per litre of diesel on an average.
Driver's salary	: Rs. 2,000 per month
Licence and taxes	: Rs. 5,000 per annum per truck
Insurance	: Rs. 5,000 per annum for all the three vehicles.
Purchase Price per truck	: Rs. 3,00,000. Life 10 years. Scrap value at the end of life is Rs. 10,000.
Oil and sundries	: Rs. 25 per 100 km run.
General Overhead	: Rs. 11,084 per annum

The vehicles operate 24 days per month on an average.

Required :

- (i) Prepare an Annual Cost Statement covering the fleet of three vehicles.
- (ii) Calculate the cost per km. run.
- (iii) Determine the freight rate per tonne km. to yield a profit of 10% on freight

Answer 8. (a)

(i) Annual Cost Statement of three vehicles

	Rs.
Diesel	3,36,960
<i>(Refer to working note 1)</i>	
$(1,34,784 \text{ kms} / 4 \text{ km}) \times \text{Rs. } 10$	
Oil & sundries	33,696
$(1,34,784 \text{ kms} / 100 \text{ kms}) \times \text{Rs. } 25$	
Maintenance	39,696
<i>(Refer to working note 2)</i>	
$\{(1,34,784 \text{ kms} \times 0.25P) + \text{Rs. } 6,000\}$	
Drivers' salary	72,000
$(\text{Rs. } 2,000 \times 12 \text{ months}) \times 3 \text{ trucks}$	
Licence and taxes	15,000
Insurance	5,000
Depreciation	87,000
$(\text{Rs. } 2,90,000 / 10 \text{ years}) \times 3 \text{ trucks}$	
General overhead	<u>11,084</u>
Total annual cost	<u>6,00,436</u>

(ii) Cost per km. run

$$\begin{aligned} \text{Cost per kilometer run} &= \frac{\text{Total annual cost of vehicles}}{\text{Total kilometre travelled annually}} \\ &= \frac{\text{Rs. 6,000,436}}{1,34,784 \text{ Kms}} = \text{Rs. 4.4548} \end{aligned}$$

(Refer to working note 1)

(iii) Freight rate per tonne km (to yield a profit of 10% on freight)

$$\begin{aligned} \text{Cost per tonne km.} &= \frac{\text{Total annual cost of three vehicles}}{\text{Total effective tonnes kms. per annum}} \\ &= \frac{\text{Rs. 6,00,436}}{5,25,312 \text{ kms}} = \text{Rs. 1.143} \end{aligned}$$

(Refer to working note 1)

$$\text{Freight rate per tonne km.} = \text{Rs. 1.27}$$

$$\left(\frac{\text{Rs. 1.143}}{9} \right) \times 10$$

Working notes :**1. Total kilometre travelled and tonnes kilometre (load carried) by three trucks in one year**

Truck number	One way distance in kms	No. of trips	Total distance covered in km per day	Load carried per trip/day in tonnes	Total effective tonnes km
1	16	4	128	6	384
2	40	2	160	9	720
3	30	3	<u>180</u>	8	<u>720</u>
Total			468		1824

Total kilometre travelled by three trucks in one year 1,34,784
(468 kms × 24 days × 12 months)

Total effective tonnes kilometre of load carried by three trucks during one year 5,25,312
(1,824 tonnes km × 24 days × 12 months)

2. Fixed and variable component of maintenance cost:

$$\begin{aligned} \text{Variable maintenance cost per km} &= \frac{\text{Difference in maintenance cost}}{\text{Difference in distance travelled}} \\ &= \frac{\text{Rs. 46,050} - \text{Rs. 45,175}}{1,60,200 \text{ kms} - 1,56,700 \text{ kms}} \\ &= \text{Rs. 0.25} \\ \text{Fixed maintenance cost} &= \text{Total maintenance cost} - \text{Variable maintenance cost} \\ &= \text{Rs. 46,050} - 1,60,200 \text{ kms} \times 0.25 \\ &= \text{Rs. 6,000} \end{aligned}$$

Q8. (b) What do you understand by integrated accounting system? State its advantages and pre-requisites.

Answer 8. (b)

Integrated (or Integral) Accounts is the name given to a system whereby cost and financial accounts are kept in the same set of books. Obviously, then there will be no separate sets of books for Costing and Financial purposes. Integrated Accounts will have to afford full information required for Costing as well as for Financial Accounts. In other words, information and data should be recorded in such a way as to enable the firm to ascertain the Cost (together with the necessary analysis) of each product, job, process, operation or any other identifiable activity. For instance, purchases are analysed by nature of material and its end-use. Purchase accounts are eliminated and direct postings are made to Stores Control Account, Work-in-Progress Account, or Overhead Account. Payroll is straightway analysed into direct labour and overheads. It also ensures the ascertainment of marginal cost, variances, abnormal losses and gains – in fact, all information that management requires from a system of Costing for doing its work properly. The integrated accounts give full information in such a manner so that the profit and loss account and the balance sheet can be prepared according to the requirements of law and the management maintains full control over the liabilities and assets of its business.

The main advantages of Integrated Accounts are as follows:

- (1) Since there is one set of accounts, thus there is one figure of profit. Hence the question of reconciliation of costing profit and financial profit does not arise.
- (2) There is no duplication of recording of entries and efforts in the separate set of books.
- (3) Costing data are available from books of original entry and hence no delay is caused in obtaining information.
- (4) The operation of the system is facilitated with the use of mechanised accounting.
- (5) Centralisation of accounting function results in economy.

The essential pre-requisites for integrated accounts include the following steps.

1. The management's decision about the extent of integration of two sets of books. Some concerns find it useful to integrate upto the stage of primary cost or factory cost while others prefer full integration of the entire accounting records.
2. A suitable coding system must be made available so as to serve to accounting purposes of financial and cost accounts.
3. An agreed routine, with regard to the treatment of provision for accruals, prepaid expenses, and other adjustments necessary for preparation of interim accounts.
4. Perfect co-ordination should exist between the staff responsible for the financial and cost aspects of the accounts and an efficient processing of the accounting documents should be ensured.

Q9. The following information is available from the financial books of a company having a normal production capacity of 60,000 units for the year ended 31st March, 2009 :

- (i) Sales Rs. 10,00,000 (50,000 units).
- (ii) There was no opening and closing stock of finished units.
- (iii) Direct material and direct wages cost were Rs. 5,00,000 and Rs. 2,50,000 respectively.
- (iv) Actual factory expenses were Rs. 1,50,000 of which 60% are fixed.

- (v) Actual administrative expenses were Rs. 45,000 which are completely fixed.
 (vi) Actual selling and distribution expenses were Rs. 30,000 of which 40% are fixed.
 (vii) Interest and dividends received Rs. 15,000.

You are required to:

- (a) Find out profit as per financial books for the year ended 31st March, 2009;
 (b) Prepare the cost sheet and ascertain the profit as per cost accounts for the year ended 31st March, 2009 assuming that the indirect expenses are absorbed on the basis of normal production capacity; and
 (c) Prepare a statement reconciling profits shown by financial and cost books.

Answer 9.

Working Note:

Profit & Loss Account (for the year ended 31st March, 2009)

	Rs.		Rs.
To Direct Material	5,00,000	By Sales 50,000 units	10,00,000
To Direct Wages	2,50,000	By Interest and Dividends	15,000
To Actual factory expenses	1,50,000		
To Actual administrative expenses	45,000		
To Actual selling and distribution expenses	30,000		
To Profit	40,000		
	10,15,000		10,15,000

- (a) Profit as per financial books for the year ended 31st March, 2009 is Rs. 40,000 (Refer to working Note).

(b) Cost Sheet (for the year ended 31st March, 2009)

	Rs.
Direct Material	5,00,000
Direct Wages	2,50,000
Prime Cost	7,50,000
Factory expenses :	
Variable : Rs. 60,000	
Fixed : $\text{Rs. } 90,000 \times \frac{5}{6} = \text{Rs. } 75,000$	1,35,000
Works Cost :	8,85,000
Administrative expenses : $\text{Rs. } 45,000 \times \frac{5}{6}$	37,500
Cost of production	9,22,500
Selling & distribution expenses	
Variable : Rs. 18,000	
Fixed : $\text{Rs. } 12,000 \times \frac{5}{6} = \text{Rs. } 10,000$	28,000
Cost of Sales	9,50,500
Profit	49,500
Sales revenue	10,00,000

(c)

Statement of Reconciliation
(Reconciling profit shown by Financial and Cost Accounts)

	<i>Rs.</i>	<i>Rs.</i>
Profit as per Cost Accounts	49,500	–
<i>Add:</i> Income from interest and dividends	<u>15,000</u>	
		64,500
<i>Less:</i> Factory expenses undercharged in Cost Accounts (Rs. 1,50,000 – Rs. 1,35,000)	15,000	
Administrative expenses undercharged in Cost Accounts (Rs. 45,000 – Rs. 37,500)	7,500	
Selling & distribution expenses under-charged in Cost Accounts (Rs. 30,000 – Rs. 28,000)	<u>2,000</u>	24,500
Profit is per Financial Accounts		<u>40,000</u>

Q10. A Chemical Company carries on production operation in two processes. The material first pass through Process I, where Product 'X' is produced.

Following data are given for the month just ended :

Material input quantity	2,00,000 kgs.
Opening work-in-progress quantity (Material 100% and conversion 50% complete)	40,000 kgs.
Work completed quantity	1,60,000 kgs.
Closing work-in-progress quantity (Material 100% and conversion two-third complete)	30,000 kgs.
Material input cost	Rs. 75,000
Processing cost	Rs. 1,02,000
Opening work-in-progress cost	
Material cost	Rs. 20,000
Processing cost	Rs. 12,000

Normal process loss in quantity may be assumed to be 20% of material input. It has no realisable value.

Any quantity of Product 'X' can be sold for Rs. 1.60 per kg.

Alternatively, it can be transferred to Process II for further processing and then sold as Product 'XY' for Rs. 2 per kg. Further materials are added in Process II, which yield two kgs. of product 'XY' for every kg. of Product 'X' of Process I.

Of the 1,60,000 kgs. per month of work completed in Process I, 40,000 kgs are sold as Product 'X' and 1,20,000 kgs. are passed through Process II for sale as Product 'XY'. Process II has facilities to handle upto 1,60,000 kgs. of Product 'X' per month, if required.

The monthly costs incurred in Process II (other than the cost of Product 'X') are:

	1,20,000 kgs. of Product 'X' input	1,60,000 kgs. of Product 'X' input
	Rs.	Rs.
Materials Cost	1,32,000	1,76,000
Processing Costs	1,20,000	1,40,000

Required :

- Determine, using the weighted average cost method, the cost per kg. of Product 'X' in Process I and value of both work completed and closing work-in-progress for the month just ended.
- Is it worthwhile processing 1,20,000 kgs. of Product 'X' further?
- Calculate the minimum acceptable selling price per kg., if a potential buyer could be found for additional output of Product 'XY' that could be produced with the remaining Product 'X' quantity.

Answer 10.

Process I
Statement of equivalent production

Inputs Particulars	Units Kg.	Output Particulars	Units Kg.	Equivalent output Material		Conversion	
				%	Unit kg.	%	Units kg.
Opening W.I.P.	40,000	Normal loss	40,000	—	—	—	—
New material introduced	2,00,000	Units introduced & completed	1,60,000	100%	1,60,000	100%	1,60,000
		Abnormal loss	10,000	100%	10,000	100%	10,000
		Closing WIP	30,000	100%	30,000	$\frac{2}{3}$ rd	20,000
	<u>2,40,000</u>		<u>2,40,000</u>		<u>2,00,000</u>		<u>1,90,000</u>

Process I
Statement of cost for each element

Elements of cost	Costs of opening WIP	Costs in process	Total cost	Equivalent units	Cost/Unit (Kg.)
	Rs.	Rs.	Rs.	Kg.	Rs.
Material	20,000	75,000	95,000	2,00,000	0.475
Conversion cost	<u>12,000</u>	<u>1,02,000</u>	<u>1,14,000</u>	1,90,000	<u>0.600</u>
	<u>32,000</u>	<u>1,77,000</u>	<u>2,09,000</u>		<u>1.075</u>

Statement of apportionment of cost

Units completed	Elements	Equivalent units	Cost/unit Rs.	Cost Rs.	Total cost Rs.
Work completed	Material	1,60,000	0.475	76,000	
	Conversion	1,60,000	0.600	<u>96,000</u>	1,72,000
Closing WIP	Material	30,000	0.475	14,250	
	Conversion	20,000	0.600	<u>12,000</u>	26,250

(ii) Statement showing comparative data to decide whether 1,20,000 kg. of product 'X' should be processed further into 'XY'.

Alternative I – To sell product 'X' after Process – I

	Rs.
Sales 1,20,000 × 1.60	1,92,000
Less: Cost from Process I 1,20,000 × 1.075	<u>1,29,000</u>
Gain -	<u>63,000</u>

Alternative II – Process further into 'XY'

Sales 2,40,000 × 2.00	4,80,000
Less: Cost from Process I 1,20,000 × 1.075 = Rs. 1,29,000	
Material in Process II = Rs. 1,32,000	
Processing cost in Process II = Rs. <u>1,20,000</u>	
	<u>3,81,000</u>
Gain	<u>99,000</u>

Hence company should process further

It will increase profit by 99,000 – 63,000 = Rs. 36,000

(iii) Calculation of minimum selling price/kg:

Cost of processing remaining 40,000 kg. further	Rs.
Material 1,76,000 - 1,32,000	44,000
Processing cost 1,40,000 – 1,20,000	20,000
Cost from process I relating to 40,000 kg. 'X' (40,000 × 1.075)	43,000
Benefit foregone if 40,000 kg. 'X' are further processed 40,000 (1.60 – 1.075)	<u>21,000</u>
Total cost	<u>1,28,000</u>

Additional quantity of product 'AX' (40,000 × 2) = 80,000 kg.

$$\therefore \text{Minimum selling price} = \left(\frac{1,28,000}{80,000} \right) = \text{Rs. } 1.60/\text{kg.}$$

Q11. (a) Compare Process Costing with Job Costing.

Answer 11. (a)

Job costing and process costing are the two methods of cost accounting. Job costing is applied where production is carried out under specific orders, depending upon customers requirement. Here each job is considered as a cost unit and to some extent the cost centre also.

Process costing is applied in cases where the identity of individual orders is lost in the general flow of production. Industries to which process costing is applied produce uniform products without reference to the specific requirements of customers.

The main points of comparison between job costing and process costing are as follows:

- (i) Job costing is applicable to goods produced/ manufactured to customers specifications. However, process costing is applicable to production consisting of succession of continuous operations or processes.
- (ii) Costs are accumulated by a job or work order irrespective of its time of completion under job costing. When a job is finished all costs associated with it are charged to it in full. Whereas under process costing costs are accumulated by processes for a particular period regardless of the number of units produced.
- (iii) Each job will be different from the other under job costing whereas in the case of process costing units of product are homogenous and indistinguishable, because goods are produced on a mass scale.
- (iv) Job is normally a single unit, the whole unit is taken as one for costing purposes. Even if job consists of number of parts, cost of job is calculated only after all the parts, are complete. As such there is no question of work-in-progress merely because some parts are not yet completed. In the case of process costing, the unit of production may remain incomplete at various stages of production. It is therefore necessary to compute at the end of the period not only the cost of the finished units but of work in progress also.
- (v) Job costing does not involve transfer of costs from one job to another. Where as in the case of process costing transfer of output from one process to another involves the transfer of its costs as well.
- (vi) Job costs are ascertained only after the completion of job and not at the end of a particular period. Whereas in the case of process costing costs are ascertained at the end of the accounting period and not when the process is complete, since production is a continuous flow constituting itself into cycle.
- (vii) Since each job may be different from other therefore they will not involve the use of identical material and labour, costs of jobs cannot be ascertained by averaging. In the case of process costing since units of production are uniform and are at the same stage of production therefore, costs are computed by averaging the total cost of each stage of production.
- (viii) Control becomes difficult in the case of job costing because each job is different from the other. Whereas control over production and costs is easier in the case of process costing since production is a standardised one.

Q11. (b) What are the reasons for disagreement of profits as per cost accounts and financial accounts? Discuss.

Answer 11. (b)

Reasons for disagreement of profits as per cost and financial accounts :

The various reasons for disagreement of profits shown by the two sets of books viz., cost and financial may be listed as below:

1. Items appearing only in financial accounts

The following items of income and expenditure are normally included in financial accounts and not in cost accounts. Their inclusion in cost accounts might lead to unwise managerial decisions. These items are:

(i) Income :

- (a) Profit on sale of assets
- (b) Interest received
- (c) Dividend received
- (d) Rent receivable
- (e) Share Transfer fees

(ii) Expenditure

- (b) Loss on sale of assets
- (c) Uninsured destruction of assets
- (d) Loss due to scrapping of plant and machinery
- (e) Preliminary expenses written off
- (f) Goodwill written off
- (g) Underwriting commission and debenture discount written off
- (h) Interest on mortgage and loans
- (i) Fines and penalties

(iii) Appropriation

- (a) Dividends
- (b) Reserves
- (c) Dividend equalization fund, Sinking fund etc.

2. Items appearing only in cost accounts

There are some items which are included in cost accounts but not in financial account.

These are :

- (a) Notional interest on capital;
- (b) Notional rent on premises owned.

3. Under or over-absorption of overhead

In cost accounts overheads are charged to production at pre-determined rates where in financial accounts actual amount of overhead is charged, the difference gives rise under-or over-absorption; causing a difference in profits.

4. Different bases of stock valuation

In financial books, stocks are valued at cost or market price, whichever is lower. In cost books, however, stock of materials may be valued on FIFO or LIFO basis and work-in-progress

may be valued at prime cost or works cost. Differences in store valuation may thus cause a difference between the two profits.

5. Depreciation

The amount of depreciation charge may be different in the two sets of books either because of the different methods of calculating depreciation or the rates adopted. In company accounts, for instance, the straight line method may be adopted whereas in financial accounts It may be the diminishing balance method.

Q11. (c) What do you understand by Operating Costs? Describe its essential features and state where it can be usefully implemented.

Answer 11. (c)

Operating Costs are the costs incurred by undertakings which do not manufacture any product but provide a service. Such undertakings for example are — Transport concerns, Gas agencies; Electricity Undertakings; Hospitals; Theatres etc. Because of the varied nature of activities carried out by the service undertakings, the cost system used is obviously different from that followed in manufacturing concerns.

The essential features of operating costs are as follows:

- (1) The operating costs can be classified under three categories. For example in the case of transport undertaking these three categories are as follows:
 - (a) *Operating and running charges*. It includes expenses of variable nature. For example expenses on petrol, diesel, lubricating oil, and grease etc.
 - (b) *Maintenance charges*. These expenses are of semi-variable nature and includes the cost of tyres and tubes, repairs and maintenance, spares and accessories, overhaul, etc.
 - (c) *Fixed or standing charges*. These includes garage rent, insurance, road licence, depreciation, interest on capital, salary of operating manager, etc.
- (2) The cost unit used is a double unit like passenger-mile; Kilowatt-hour, etc.

It can be implemented in all firms of transport, airlines, bus-service, etc., and by all firms of Distribution Undertakings.

Q12. Three joint products are produced by passing chemicals through two consecutive processes. Output from process 1 is transferred to process 2 from which the three joint products are produced and immediately sold. The data regarding the processes for April, 2009 is given below :

	Process 1	Process 2
Direct material 2,500 kilos at Rs. 4 per kilo	Rs. 10,000	—
Direct labour	Rs. 6,250	Rs. 6,900
Overheads	Rs. 4,500	Rs. 6,900
Normal Loss	10% of input	—
Scrap value of loss	Rs. 2 per kilo	—
Output	2,300 kilos	Joint products
		A – 900 Kilos
		B – 800 Kilos
		C – 600 Kilos

There were no opening or closing stocks in either process and the selling prices of the output from process 2 were:

Joint product A	Rs. 24 per kilo
Joint product B	Rs. 18 per kilo
Joint product C	Rs. 12 per kilo

Required:

- (a) Prepare an account for process 1 together with any Loss or Gain Accounts you consider necessary to record the month's activities.
- (b) Calculate the profit attributable to each of the joint products by apportioning the total costs from process 2
 - (i) According to weight of output;
 - (ii) By the market value of production.

Answer 12.

Working Notes:

(1) Joint Cost of three products under Process 2

	Rs.
By Transfer of output from process-I (10,000 + 6,250 + 4,500)	20,750
Direct Labour	6,900
Overhead	6,900
Total	<u>34,550</u>

(2) Apportionment of joint cost on the basis of weight of output

Joint Products	Output inKg.	Apportionment of joint cost on the basis of weight of output
A	900	$\frac{\text{Rs. } 34,550}{23} \times 9 = \text{Rs. } 13,520$
B	800	$\frac{\text{Rs. } 34,550}{23} \times 8 = \text{Rs. } 12,017$
C	600	$\frac{\text{Rs. } 34,550}{23} \times 6 = \text{Rs. } 9,013$

(3) Apportionment of Joint Cost on the basis of market value of production

Joint Products	Output In Kg.	S.P. (p.u.) Rs.	Sales Revenue Rs.	Apportionment of Joint Cost on the basis of market value of production
A	900	24	21,600	$\frac{\text{Rs. } 34,550}{6} \times 3 = \text{Rs. } 17,257.5$
B	800	18	14,400	$\frac{\text{Rs. } 34,550}{6} \times 2 = \text{Rs. } 11,517$
C	600	12	7,200	$\frac{\text{Rs. } 34,550}{6} \times 1 = \text{Rs. } 5,758$
			<u>43,200</u>	<u>34,550</u>

(a) Process 1 Account

	Kg.	Rate per kg. Rs.	Amount Rs.		Kg.	Rate per kg. Rs.	Amount Rs.
To Direct material	2,500	4	10,000	By Process 2	2,300	9	20,700
To Direct labour	—	—	6,250	(Refer to Note 1)			
To Overhead	—	—	4,500	By Normal Loss	250	2	500
To Abnormal gain	50	9	450	(10% of input)			
	<u>2,550</u>		<u>21,200</u>		<u>2,550</u>		<u>21,200</u>

Normal Loss Account

	Kg.	Rate per kg. Rs.	Amount Rs.		Kg.	Rate per kg. Rs.	Amount Rs.
To Process I	250	2	500	By Sales	200	2	400
	<u>250</u>		<u>500</u>	By Abnormal gain	50	2	100
					<u>250</u>		<u>500</u>

Abnormal Gain Account

	Kg.	Rate per kg. Rs.	Amount Rs.		Kg.	Rate per kg. Rs.	Amount Rs.
To Normal Loss A/c	50	2	100	By Process I	50	9	450
To Costing Profit	—		350		—		—
	<u>50</u>		<u>450</u>		<u>50</u>		<u>450</u>

Note: Normal output = 2,500 kg. – 250 kg. = 2,250 kg

Total Cost = Direct material cost + Direct labour cost + Overheads – Recovery from scrap sales
 = Rs.10,000 + Rs.6,250 + Rs.4,500 – Rs.500 = Rs.20,250

Normal cost (p.u.) = $\frac{\text{Rs. 20,250}}{2,250} = \text{Rs. 9}$

(b) Statement of Profit (attributable to each of the Joint Products according to weight of output and market value of production)

Joint products	Output	S.P. (p.u.)	Sales value	Joint cost apportionment according to		Profit (Loss)	Profit
				Weight of output		Market value of production	
Rs.	Kg.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1	2	3	$2 \times 3 = 4$	5	6	$4 - 5 = 7$	$4 - 6 = 8$
A	900	24	21,600	13,520*	17,275**	8,100	4,325
B	800	18	14,400	12,017	11,517	2,400	2,833
C	600	12	7,200	9,013	5,7508	(1,800)	1,442
	<u>2,300</u>		<u>43,200</u>	<u>34,550</u>	<u>34,550</u>	<u>8,650</u>	<u>8,650</u>

* Refer to working note 2

** Refer to working note 3

Q13. (a) XYZ Bank is examining the profitability of its Premier Account, a combined Savings and Cheque account. Depositors receive a 7% annual interest on their average deposit. XYZ Bank earns an interest rate spread of 3% (the difference between the rate at which it lends money and rate it pays to depositors) by lending money for home loan purpose at 10%.

The Premier Account allows depositors unlimited use of services such as deposits, withdrawals, cheque facility, and foreign currency drafts. Depositors with Premier Account balances of Rs. 50,000 or more receive unlimited free use of services. Depositors with minimum balance of less than Rs. 50,000 pay Rs. 1,000-a-month service fee for their Premier Account.

XYZ Bank recently conducted an activity-based costing study of its services. The use of these services in 2008-09 by three customers is as follows:

	Activity- Based Cost Per Transaction	Account Usage		
		Customer A	Customer B	Customer C
Deposits/withdrawal with teller	Rs. 125	40	50	5
Deposits/withdrawal with automatic teller machine (ATM)	Rs. 40	10	20	16
Deposits/withdrawal on pre-arranged monthly basis	Rs. 25	0	12	60
Bank Cheques written	Rs. 400	9	3	2
Foreign Currency drafts	Rs. 600	4	1	6
Inquiries about Account balance	Rs. 75	10	18	9
Average Premier Account balance for 2008-09		Rs. 55,000	Rs. 40,000	Rs. 12,50,000

Assume Customer A and C always maintains a balance above Rs. 50,000, whereas Customer B always has a balance below Rs. 50,000.

Required :

- (i) Compute the 2008-09 profitability of the customers A, B and C Premier Account at XYZ Bank.
- (ii) What evidence is there of cross-subsidisation among the three Premier Accounts? Why might XYZ Bank worry about this Cross-subsidisation, if the Premier Account product offering is profitable as a whole?
- (iii) What changes would you recommend for XYZ Bank's Premier Account?

Answer 13. (a)

(i) **Customer Profitability Analysis**
XYZ Bank – Premier Account

Activity	Activity based cost	Customers		
		A	B	C
	Rs.	Rs.	Rs.	Rs.
Deposits/withdrawal with teller	125	5,000 (40 × 125)	6,250 (50 × 125)	625 (5 × 125)
Deposits/withdrawal with ATM	40	400 (10 × 40)	800 (20 × 40)	640 (16 × 40)
Deposits/withdrawal on prearranged monthly basis	25	0 (0 × 25)	300 (12 × 25)	1,500 (60 × 25)
Bank cheques written	400	3,600 (9 × 400)	1,200 (3 × 400)	800 (2 × 400)
Foreign currency drafts	600	2,400 (4 × 600)	600 (1 × 600)	3,600 (6 × 600)
Inquiries about Account balance	75	750(10 × 75)	1,350(18 × 75)	675(9 × 75)
Customer cost (A)		12,150	10,500	7,840
Spread on Average balance maintained	3%	1,650 (3% × 55,000)	1,200 (3% × 40,000)	37,500 (3% × 12,50,000)
Service fee	Rs. 1,000 p.m.		12,000	
Customer benefit		1,650	13,200	37,500

Customers

	A	B	C
Customer Profitability (Benefits – Costs)	Rs. (10,500)	Rs. 2,700	Rs. 29,660

- (ii) Customer C is most profitable and is cross-subsidising the most demanding customer A. Customer B is paying for the services used, because of not being able to maintain minimum balance. No doubt, 'Premier Account' product offering is profitable as a whole, but the worry is of not finding customers like customer C who will maintain a balance higher than the stipulated minimum. It appears, the minimum balance stipulated is inadequate considering the services availed by depositors in 'Premium Account'.
- (iii) The changes suggested to XYZ Bank's 'Premier Account' are as follows:
- Increase the requirement of minimum balance from Rs. 50,000 to Rs. 1,00,000.
 - Charge for value added services like Foreign Currency Drafts.
 - Do not allow deposits/withdrawal below Rs. 10,000 at the teller. Only ATM machine withdrawal be allowed.
 - Inquiries about account balance to be entertained only through Phone Banking/ATM.

Q13. (b) How would you account for by-product in cost accounting:

- (i) When they are of small total value.
- (ii) When they are of considerable total value.
- (iii) When they require further processing.

Answer 13. (b)**Treatment of By-product in Cost Accounting:**

- (i) *When they are of small total value:* If the amount realised from the sale of by-product is small, it may be dealt in any one of the following two ways:
- (1) The sale value of the by-product may be credited to the Profit and Loss Account and no credit be given in the cost accounts. The credit to the Profit and Loss Account here is treated either as miscellaneous income or as additional sales revenue.
 - (2) The sale proceeds of the by-product may be treated as deductions from the total costs. The sale proceeds in fact should be deducted either from the production cost or from the cost of sales.
- (ii) *When they are of considerable total value:* In this case by-products may be regarded as joint products. To determine exact cost of by-products the costs incurred upto the point of separation, should be apportioned over by-products and joint products by using a logical basis. In this case, the joint costs may be divided over joint products and by-products by using physical unit method (at the point of split off) or ultimate selling price (if sold).
- (iii) *When they require further processing:* In this case, the net realisable value of the by-product at the split-off point may be arrived at by subtracting the further processing cost from the realisable value of by-products.

Q14. (a) The following figures relates to 2008 and 2009 :

	<u>2008</u>	<u>2009</u>
Total sales (adjusted for stocks)	3,00,000	4,27,500
Manufacturing cost (variable)	2,00,000	2,90,000
Fixed expenses	60,000	75,000

Prepare a statement indicating the reason along with their impact on profit for increased profit in 2009. During 2009, the selling price declined by 5%.

Answer 14. (a)

Total increase in profit = 62,500 – 40,000 = Rs. 22,500

This is accounted for as under :

1. Loss due to decrease in selling price = $\frac{4,27,500 \times 5}{95}$ = Rs. 22,500

2. Profit due to increase in sales volume :

Sales in 2009 at 2008 price = 4,27,500 + 22,500 = Rs. 4,50,000

Increase in sales volume = 4,50,000 – 3,00,000 = Rs. 1,50,000

Gross profit ratio in 2008 = $\frac{1,00,000}{3,00,000}$ = $\frac{1}{3}$

Profit due to increase in sales volume = 1,50,000 × 1/3 = Rs. 50,000

3. Profit due to saving in cost of production :

Increase in sales volume in 2009 = $\frac{1,50,000}{3,00,000} \times 100$ = 50%

	Rs.
Cost in 2008	2,00,000
Add : 50% increase	<u>1,00,000</u>
	3,00,000
Actual cost in 2009	<u>2,90,000</u>
Savings in cost of production	10,000

4. Loss due to increase overheads :

Fixed overheads in 2009	75,000
In 2008	<u>60,000</u>
Loss	15,000

Now the various factors responsible for the change in profit may be summarized as under :

(Rs.)		
Particulars	Decrease	Increase
1. Decline in selling price	22,500	—
2. Increase in gross profit due to increase in sales volume which in turn would have been possible because of factor (1)	—	50,000
3. Savings in manufacturing cost	—	10,000
4. Loss due to increase in overheads	15,000	—
	<u>37,500</u>	<u>60,000</u>
Net increase in profit	22,500	—
	<u>60,000</u>	<u>60,000</u>

Q14. (b) A Ltd. manufactures and markets a single product. The following information is available :

	(Rs. Per Unit)
Materials	8.00
Conversion cost (variable)	6.00
Dealer's margin	2.00
Selling price	20.00

Fixed cost : Rs. 2,50,000; Present sales : 80,000 units; Capacity utilisation : 60%

There is acute competition. Extra efforts are necessary to sell. Suggestions have been made for increasing sales : i) by reducing sales price by 5% and ii) by increasing dealer's margin by 25% over the existing rate. Which of the two suggestions would you recommend if the company desires to maintain the present profit ? Give reasons.

Answer 14. (b)

Calculation of present profit		Rs.
Selling price per unit	A	<u>20.00</u>
Material cost per unit		8.00
Conversion cost per unit		6.00
Dealer's margin per unit		<u>2.00</u>
Variable cost per unit	B	<u>16.00</u>
Contribution per unit	A – B	4.00
Total contribution	(Rs. 4 × 80,000 units)	3,20,000
Less : fixed cost		<u>2,50,000</u>
Profit		70,000

The present profit can be maintained by keeping total contribution at present level of Rs. 3,20,000

(i) Reducing sales price by 5%

New selling price per unit	= 20 – 1	= Rs. 19.00
New dealer's margin per unit	= 19 × 10/100	= Rs. 1.90
New variable cost per unit	= 8 + 6 + 1.90	= Rs. 15.90
New contribution per unit	= 19.00 – 15.90	= Rs. 3.10

Desired sales (units) to maintain the present level of profit :

$$= \frac{\text{Desired contribution}}{\text{New contribution per unit}} = \frac{3,20,000}{3.10} = 1,03,226 \text{ units}$$

(ii) Increasing dealer's margin by 25%

New dealer's margin per unit	= 2 + 25% of 2	= Rs. 2.50
New variable cost per unit	= 8 + 6 + 2.50	= Rs. 16.50
New contribution per unit	= 20.00 – 16.50	= Rs. 3.50

Desired sales (units) required to maintain the present level of profit

$$= \frac{\text{Desired contribution}}{\text{New contribution per unit}} = \frac{3,20,000}{3.50} = 91,429 \text{ units}$$

Analysis : From the analysis of the above it is observed that, Break-even Point is lower under Second Proposal and hence, second proposal is recommended.

Q15. (a) A company has two divisions. Division 'M' and Division 'N'. Division 'M' has a budget of selling 2,00,000 nos. of a particular component 'x' to fetch a return of 20% on the average assets employed. The following particulars of Division 'M' are also known :

Fixed overhead	Rs. 5 lakhs
Variable cost	Rs. 1 per unit
Average assets	
Sundry debtors	Rs. 2 lakhs
Inventories	Rs. 5 lakhs
Plant & equipments	Rs. 5 lakhs

However, there is constraints in Marketing and only 1,50,000 units of the component 'x' can be directly sold to the Market at the proposed price.

It has been gathered that the balance 50,000 units of component 'x' can be taken up by Division 'N'. Division 'M' wants a price of Rs. 4 per unit of 'x' but Division 'N' is prepared to pay Rs. 2 per unit of 'x'.

Division 'M' has another option in hand, which is to produce only 1,50,000 units of component 'x'. This will reduce the holding of assets by Rs. 2 lakhs and fixed overhead by Rs. 25,000.

You are required to advise the most profitable course of action for Division 'M'.

Answer 15. (a)

Working Notes :

1. Profit = 20% return on average assets employed

Average Assets	Rs. In lakhs
Sundry debtors	2
Inventories	5
Plant & Equipment	<u>5</u>
Total	12

Profit = Rs. 12,00,000 × 20/100 = Rs. 2,40,000

2. Budgeted sales revenue (2,00,000 units of component x)	Rs. In lakhs
Fixed costs	5.00
Variable cost (2,00,000 units @ Re.1)	2.00
Profit	<u>2.40</u>
Total sales	9.40

Selling price per unit of component x = Rs. 9,40,000 / 2,00,000 units = Rs. 4.70 per unit

Options in hand with Division M

Option I – Sell 1,50,000 units in market and transfer 50,000 units to Division N

Option II – Sell only 1,50,000 units in market

Statement of profitability of Division M under two options

	Rs.	
Particulars	Option – I	Option –II
Sales (1,50,000 units @ Rs. 4.70)	7,05,000	7,05,000
Transfer to Division N (50,000 units @ Rs.2)	1,00,000	—
Total sales revenue	8,05,000	7,05,000
Less : variable overhead	2,00,000	1,50,000
Contribution	6,05,000	5,55,000
Less : Fixed cost	5,00,000	4,75,000
Profit (a)	<u>1,05,000</u>	<u>80,000</u>
Capital employed (b)	12,00,000	10,00,000
Return on capital employed [a / (b)] × 100	8.75%	8%

Analysis : From the analysis of the above it is observed that under Option – I. division M's, Profit and ROCE is increased by Rs. 25,000 and 0.75% respectively. Hence Option –I is suggested for Division-M.

Q15. (b) Discuss the different stages in the Activity –based Costing.**Answer 15. (b)****Different stages in activity–based costing**

- (i) Identify the different activities within the organization
- (ii) Relate the overhead costs to the identified activities
- (iii) Support activities are then spread across the primary activities
- (iv) Determine the activity cost drivers
- (v) Calculate the activity cost driver rates
- (vi) Compute the overhead cost to be charged over the product by using cost driver rates.

Q16. (a) Two manufacturing companies which have the following operating details to merge :

	Company 1	Company 2
Capacity utilization %	90	60
Sales (Rs. Lakhs)	540	300
Variable costs (Rs. Lakhs)	396	225
Fixed costs (Rs. Lakhs)	80	50

Assuming that the proposal is implemented, calculate :

- (i) Break-even sales of the merged plant and the capacity utilization at that stage.
- (ii) Profitability of the merged plant at 80% capacity utilization.
- (iii) Sales turnover of the merged plant to earn a profit of Rs. 75 lakhs.
- (iv) When the merged plant is working at a capacity to earn a profit of Rs. 75 lakhs, what percentage increase in selling price is required to sustain an increase of 5% in fixed overheads.

Answer 16. (a) (i)

	Company 1	Company 2	Total
Capacity utilization	<u>100%</u>	<u>100%</u> (Rupees in lakhs)	(merged plant) <u>100%</u>
Sales	600	500	1,100
Variable costs	<u>440</u>	<u>375</u>	815
Contribution	160	125	285
Fixed cost	<u>80</u>	<u>50</u>	130
Profit	<u>80</u>	<u>75</u>	155
P/V ratio (merged plant)	$(285 / 1100) \times 100$		25.91%
BEP of the merged plant	(Fixed cost / P/V ratio)		Rs. 501.74
Capacity utilization at BEP	$(501.74 / 1100) \times 100$		45.61%

(ii) Profitability of the merged plant at 80% capacity

	Rs. In lakhs
Sales (1,100 × 80%)	880
Variable cost	<u>652</u>
Contribution	228
Fixed cost	<u>130</u>
Profit	<u>98</u>
Profit as a % of sales	11.14%

(iii) Sales required to earn a profit of Rs. 75 lakhs

Contribution required = Fixed cost + Desired profit = Rs. 130 lakhs + 75 lakhs
= Rs. 205 lakhs

P/V Ratio = 25.91%

Desired sales level = Desired contribution / P/V ratio
= Rs. 205 lakhs / 25.91%
= Rs. 791.20 lakhs

(iv) Percentage increase in S.P. to sustain 5% increase in Fixed overhead (with Rs. 75 lakhs profit)

Fixed overhead = Rs. 130 lakhs

5% increase = Rs. 6.5 lakhs

Sales = Rs. 791.20 lakhs

% increase in S.P. = $(6.5 / 791.20) \times 100$ = 0.8215%

Q16. (b) Frazer Ltd. Manufactures and sells a product, the selling price and raw material cost of which have remained unchanged during the past two years. The following are the relevant data :

Particulars	Year 1	Year2
Quantity sold (kg.)	100	150
Sales value (Rs.)	20,000	?
Raw material (Rs.)	10,000	?
Direct wages (Rs.)	3,000	?
Factory overheads (Rs.)	5,000	5,700
Profit	2,000	2,550

During the year 2, direct wage rates increased by 50%, but there was a saving of Rs. 300 in fixed factory overheads.

Required :

What quantity (in kg.) the company should have produced and sold in year 2 in order to maintain the same amount of net profit per kg. as it earned during year 1? (Workings to form part of the answer).

Answer 16. (b)**Statement showing the quantity (in kg.) to be produced and sold in year 2 :**

		Rs.
Selling price per kg. (Rs. 20,000/100)		200
Less : Variable cost per kg :		
Raw material	100	
Direct wages (30 × 150%)	45	
Variable factory overhead (note 1)	<u>20</u>	
		<u>165</u>
Contribution		35
Less : Profit		<u>20</u>
Balance contribution per kg. to meet the fixed cost		15
Fixed cost (Note 2)		2,700
Quantity to be produced and sold (Rs. 2,700/15)		180 kg.

Notes 1 : Variable factory overhead per kg.

Total factory overhead in year 2	5,700
Add : Saving in fixed overhead	<u>300</u>
	6,000
Less : Factory overhead in year 1	<u>5,000</u>
Increase in factory overhead	<u>1,000</u>
Increase in quantity	50 kg.
Variable factory overhead rate	20 kg.

2. Fixed factory overhead

	Year 1	Year 2
Total factory overhead	5,000	5,700
Less : Variable factory overhead	<u>2,000</u>	<u>3,000</u>
Fixed factory overhead	<u>3,000</u>	<u>2,700</u>

Q17. (a) A company produces a single product which is sold by it presently in the domestic market at Rs. 75 per unit. The present production and sale is 40,000 units per month representing 50% of the capacity available. The cost data of the product are as under :

Variable costs per unit Rs. 50

Fixed costs per month Rs. 10 lakhs

To improve the profitability, the management has three proposals on hand as under :

- (a) To accept an export supply order for 30,000 units per month at a reduced price of Rs. 60 per unit, incurring additional variable costs of Rs. 5 per unit towards export packing, duties etc.**

- (b) To increase the domestic market sales by selling to a domestic chain store 30,000 units at Rs. 55 per unit, retaining the existing sales at the existing price.
- (c) To reduce the selling price for the increased domestic sales as advised by the sales department as under :

Reduced selling price per unit by Rs.	Increase in sales expected (in units)
5	10,000
8	30,000
11	35,000

Prepare a table to present the results of the above proposals and give your comments and advice on the proposals.

Answer 17. (a)

It is given that the present production and sales is 40,000 units per month representing 50% of the capacity available. In other words another 40,000 units can be produced with the existing capacity without change in the present fixed cost of Rs. 10 lakhs. Therefore, fixed cost will not play any part in the decision making. Only incremental revenue and differential cost concepts will be used in this case.

Statement showing contribution per unit and total contribution earned from different proposals :

Details	Present levels	Proposal (a) Export order	Proposal (b) Domestic	Proposal (c) Price reduction		
S.P. per unit (Rs.)	75	60	55	70	67	64
V.C. per unit (Rs.)	50	55	50	50	50	50
Contribution per unit (Rs.)	25	5	5	20	17	14
Volume (units)	40,000	30,000* (additional)	30,000* (additional)	50,000 (total)	70,000 (total)	75,000 (total)
Contribution from additional production (Rs. Lakhs)	—	1.50	1.50	—	—	—
Contribution from present level/ at reduced price (Rs. Lakhs)	10.00	10.00	10.00	10.00	11.90	10.50
Total contribution (Rs.)	10.00	11.50	11.50	10.00	11.90	10.50

* This volume will be in addition to the existing 40,000 units. For calculation of total contribution both volumes (present level + additional) will be taken into account.

Comments and advice :

1. It is seen from the above table that the total contribution is maximum i.e. Rs. 11.90 lakhs from proposal (c) when the selling price is reduced by Rs. 8 (revised selling price Rs. 67 per unit)
2. There is no increase in the total contribution when the selling price is reduced by Rs. 5 at 50,000 units production level.

3. The total contribution is the same (i.e. Rs. 11.50 lakhs) from the following proposals :

Proposal (a)	—	Additional Export Order
Proposal (b)	—	Additional Domestic Sale

If proposal (b) is accepted, there may be a demand from the existing customers for a similar price reduction. It is quite doubtful to adopt differential pricing for two types of domestic customers.

4. The company will be able to get export incentives from the Government. Therefore, proposal (a) for export order should be accepted.

Q17. (b) The following data pertains to Process I for March 2009 of Alpha Limited :

Opening Work in Progress	1,500 units at	Rs. 15,000
Degree of completion		
Materials 100% ; Labour and Overheads $33\frac{1}{3}\%$		
Input of Materials	18,500 Units at	Rs. 52,000
Direct Labour		Rs. 14,000
Overheads		Rs. 28,000
Closing Work in Progress	5,000 units	
Degree of Completion		
Materials 90% ; Labour and Overheads 30%		
Normal Process Loss is 10% of total Input (opening work in progress units + units put in)		
Scrap value Rs. 2.00 per unit		
Units transferred to the next process 15,000 units.		

Your are required to :

- Compute equivalent units of production.**
- Compute cost per equivalent unit for each cost element i.e., materials, labour and overheads.**
- Compute the cost of finished output and closing work in progress.**
- Prepare the process and other Accounts.**

Assume: (i) FIFO Method is used by the Company.

- The cost of opening work in progress is fully transferred to the next process.**

Answer 17. (b)

(a) Statement of Equivalent Units of Production

INPUT		Particulars	OUTPUT	EQUIVALENT Material		PRODUCTION Labour & Overhead	
Particulars	Units		Units	%	Units	%	Units
Op. WIP	1,500	Work on Op. WIP	1,500	—	—	66 $\frac{2}{3}$	1,000
Introduced	18,500	Introduced and completed in the period	<u>13,500</u>	100	13,500	100	13,500
		Transferred to next process	15,000				
		Normal Loss	2,000	—	—	—	—
		Closing WIP	<u>5,000</u>	90	<u>4,500</u>	30	<u>1,500</u>
			22,000		18,000		16,000
		Less: Abnormal Gain	<u>2,000</u>	100	<u>2,000</u>	100	<u>2,000</u>
	<u>20,000</u>		<u>20,000</u>		<u>16,000</u>		<u>14,000</u>

(b) Statement of Cost per Equivalent Unit for Each Cost Element

		Cost	Equivalent Units	Cost per Equivalent Unit
	Rs.	Rs.		Rs.
Material	52,000			
Less: Scrap Value	<u>4,000</u>	48,000	16,000	3
Labour		14,000	14,000	1
Overheads		28,000	14,000	2

(c) Statement of Cost of Finished Output and Closing Work in Progress

Particulars	Elements	Equivalent Units	Cost per Units	Cost of Equivalent Units	Total
			Rs.	Rs.	Rs.
Opening WIP (1,500 units)		—	—	—	15,000
Opening WIP	Material	NIL	—	—	
Opening WIP	Labour	1,000	1	1,000	
Opening WIP	Overhead	1,000	2	<u>2,000</u>	<u>3,000</u>
Units introduced and completed during the period	Material	13,500	3	40,500	
	Labour	13,500	1	13,500	
	Overhead	13,500	2	<u>27,000</u>	<u>81,000</u>

Total Cost of 15,000 Units of finished output 99,000

Closing WIP	Material	4,500	3	13,500
(5,000 units)	Labour	1,500	1	1,500
	Overhead	1,500	2	<u>3,000</u>
Total cost of closing WIP (5,000 units)				18,000

(d) Process Account – I

	Units	Rs.		Units	Rs.
To Opening WIP	1,500	15,000	By Normal Loss	2,000	4,000
To Units introduced (Direct Material)	18,500	52,000	By Transfer to next process	15,000	99,000
To Direct Labour	—	14,000	By Closing WIP	5,000	18,000
To Overhead	—	28,000			
To Abnormal Gain (See working note)	2,000	12,000			
	<u>22,000</u>	<u>1,21,000</u>		<u>22,000</u>	<u>1,21,000</u>

Abnormal Gain Account

	Units	Rs.		Units	Rs.
To Process A/c I	2,000	4,000	By Process I	2,000	12,000
To Profit & Loss A/c	—	<u>8,000</u>			
		12,000			<u>12,000</u>

Working Note :

Total cost of Abnormal Gain:

(2,000 Units) @ Rs. 6/- p.u. = Rs. 12,000

Q18. In its budget for the period ahead 'M' Ltd. is considering two possible sales forecasts for the three products as follows :

Forecast	Product		
	X	Y	Z
I. Sales (Units)	22,000	40,000	6,000
Selling price per unit	Rs. 10	Rs. 6	Rs. 7.50
II. Sales (Units)	30,000	50,000	7,000
Selling price per unit	Rs. 9	Rs. 5.50	Rs. 7.50

Variable costs per unit are expected to be the same at the different levels of possible sales. The variable costs per unit are as follows :

Particulars	Product		
	X	Y	Z
Direct material	3.00	2.00	4.00
Direct labour	2.00	1.50	1.00
Variable overheads	1.00	0.50	1.00

Fixed overheads are expected to total Rs. 1,00,000. These are expected to be unaffected by the possible changes in activity which are being considered. Due to recent high labour turnover problems, direct labour will be restricted to a maximum of Rs. 1,30,000 in the period. It can be assumed that all labour is of the same grade and is freely transferable between products. Other resources are expected to be generally available.

You are required to :

Taking each of the possible sales forecasts in turn

- (i) Say what the principal budget factor is for each of the forecasts.
- (ii) For each forecast calculate the sales budget that you would recommend to maximize profits.
- (iii) What profit would you expect from each sales budget ?

Assume that the products will be sold according to the selling price estimated as per the forecast and no interchange of the forecast is allowed.

Answer 18.

(i) Determination of Principal Budget Factor :

Particulars	Products			Total
	X	Y	Z	
Forecast I				
Sales (units)	22,000	40,000	6,000	
Labour cost (Rs. Per unit)	2.00	1.50	1.00	
Total labour cost (Rs.)	44,000	60,000	6,000	1,10,000
Direct labour available (Rs.)				1,30,000
Forecast II				
Sales (units)	30,000	50,000	7,000	
Labour cost (Rs. Per unit)	2.00	1.50	1.00	
Total labour cost (Rs.)	60,000	75,000	7,000	1,42,000
Direct labour available (Rs.)				1,30,000

Sales is the principal budget factor in Forecast I, and labour is the principal budget factor in Forecast II.

Sales budget – Forecast I (Sales – principal budget factor)

Product	Sales (units)	Selling price p.u. Rs.	Amount Rs.
X	22,000	10.00	2,20,000
Y	40,000	6.00	2,40,000
Z	6,000	7.50	45,000
Total			5,05,000

Sales budget – Forecast II (Labour - principal budget factor)

Product	Sales (units)	Selling price p.u. Rs.	Amount Rs.
X	30,000	9.00	2,70,000
Y	42,000	5.50	2,31,000
Z	7,000	7.50	52,500
Total			5,53,500

Budgeted sales and profit – Forecast I

Particulars	Products			Total
	X	Y	Z	
Sales (units) (i)	22,000	40,000	6,000	
Selling price p.u.	10.00	6.00	7.50	
Variable cost p.u.	6.00	4.00	6.00	
Contribution p.u. (ii)	4.00	2.00	1.50	
Total contribution (i) x (ii)	88,000	80,000	9,000	1,77,000
Less : Fixed cost				1,00,000
Profit				77,000

Working notes : In case of Forecast II, since labour is the principal budget factor, in order to maximize profit, the product which gives highest contribution per rupee of direct labour should be given priority in production and sales.

Ranking of products based on contribution per rupee of direct labour:

Particulars	Products		
	X	Y	Z
Selling price (a)	9.00	5.50	7.50
Variable cost			
Direct material	3.00	2.00	4.00
Direct labour	2.00	1.50	1.00
Variable overheads	1.00	0.50	1.00
(b)	<u>6.00</u>	<u>4.00</u>	<u>6.00</u>
(i) Contribution (a) – (b)	<u>3.00</u>	<u>1.50</u>	<u>1.50</u>
(ii) Labour cost	2.00	1.50	1.00
Contribution per rupee of direct labour (i)/(ii)	1.50	1.00	1.50
Ranking	I	III	II

Manufacturing budget based on ranking

Product	Units	Labour cost per unit Rs.	Total labour cost Rs.
X	30,000	2.00	60,000
Z	7,000	1.00	7,000
Y	42,000#	1.50	63,000 *
		Total	1,30,000

* Balancing figure # Rs. 63,000/Rs. 1.50 = 42,000 units

Budgeted sales and profit – Forecast II

Particulars	Products			Total
	X	Y	Z	
Sales (units) (i)	30,000	42,000	7,000	
Selling price p.u.	9.00	5.50	7.50	
Less : Variable cost p.u.	6.00	4.00	6.00	
Contribution p.u. (ii)	3.00	1.50	1.50	
Total contribution (i) x (ii)	90,000	63,000	10,500	1,63,500
Less : Fixed cost				1,00,000
Profit				63,500

Q19. Define zero base budgeting and distinguish it from traditional budgeting. Enumerate the benefits to be achieved by a business organization in introducing zero base budgeting.

Answer 19.

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

Points of difference	Traditional budgeting	Zero Based Budgeting
Priority of activities	'Musts' and 'wants' not differentiated	Distinguishes '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

Benefits :

- In course of ZBB process, inefficient and obsolete operations are identified and removed.
- It adds psychological impetus to employees to avoid wasteful expenditure.
- It helps in close monitoring of cost behaviour patterns in order to decide the effect of alternative courses of action.
- It is a planning tool for management which helps in identification of wasteful and obsolescent items of expenditure.
- The documentation required enables a co-ordinated in-depth knowledge of an organisation's operations to be available to all management.
- The scarce resources will be allocated more efficiently to activities and departments of the organization according to priority of programmes. This system weeds out inefficiency and reduces the cost of production because every budget proposal is evaluated on the basis of cost benefit analysis.
- ZBB is not based on incremental approach, so it promotes operational efficiency because it requires manager to review and justify their activities or the funds requested.
- Since this system requires participation of all managers in preparation of budgets, responsibility of all levels of management in successful execution of budgetary system can be ensured.

Q20. New Bharat Industries is manufacturing several consumer durables which have good demand in the market. The firm has been established only very recently and currently it is in the stage of production. It has ambitious plans to expand production after earning a name in the market. However, the company is having problems to get adequate power supply. Moreover most of its labourers are casual workers and labour – absenteeism is also affecting production. In view of these unstable conditions the firm has adopted the practice of preparing quarterly flexible budgets.

For the quarter ending 31st December, 2009 flexible budgets for three possible levels of production were prepared as follows. The company wanted to achieve 90% capacity utilization as its products had good demand.

(Rs. In lakhs)

Flexible budgets			
	60%	80%	90%
Budgeted sales	50.00	66.00	75.00
Budgeted costs :			
Direct materials	12.00	16.00	18.00
Direct labour	15.00	20.00	22.50
Production overheads	11.80	14.00	15.10
Administration overheads	2.00	2.00	2.00
Selling overheads	7.80	9.80	10.20

Soon after the decision to attain 90% capacity utilization, available power was reduced by the State Electricity Board and the reduced supply was sufficient to meet 50% capacity production. The position has been immediately reviewed and the firm is considering the following possible options to meet the situation :

- (a) Stop production for the quarter. As regular employees are only few lay off compensation payable will be only Rs. 1.20 lakhs. Further, overheads can be reduced by as much as 60%.
- (b) Continue production at 50% level. Estimated sales income at this level will be Rs. 40 lakhs
- (c) A private agency in the area has offered surplus captive power available with it. With this additional supply production can be maintained at 90% level. However. The overall variable production overhead will increase by 40%.
- (d) Sub-contract the balance 40% which cannot be made by the firm to two small industrial units in the area, which have the necessary facilities, equally at a cost of RS. 15 lakhs each.

Evaluate each of the above options and recommend the best plan. Indicate the other important points, if any, to be considered.

Answer 20.

Working notes :

(Rs. In lakhs)

Particulars	At 50% capacity	At 90% capacity
1. Variable cost		
Direct materials	10.00	18.00
Direct labour	12.50	22.50
2. Fixed cost		
Admin. Overheads	2.00	2.00

3. Semi-variable costs

Segregation of semi-variable costs into variable and fixed components .

$$(i) \text{ Variable Component} = \frac{\text{Change in cost}}{\text{Change in capacity}}$$

$$\text{Production overheads} = \frac{\text{Rs. 15.10 lakhs} - \text{Rs. 11.80 lakhs}}{90\% - 60\%}$$

$$= 0.11 \text{ lakhs for each 1\% capacity}$$

Variable production overhead

$$\text{At 50\% capacity} = \text{Rs. 0.11 lakhs} \times 50 = \text{Rs. 5.50 lakhs}$$

$$\text{At 90\% capacity} = \text{Rs. 0.11 lakhs} \times 90 = \text{Rs. 9.90 lakhs}$$

$$\text{Fixed production overhead} = \text{Rs. 11.80 lakhs} - (\text{Rs. 0.11 lakhs} \times 60) = \text{Rs. 5.20 lakhs}$$

$$\text{Variable component of selling overheads} = \frac{\text{Rs. 10.20 lakhs} - \text{Rs. 7.80 lakhs}}{90\% - 60\%}$$

$$= \frac{\text{Rs. 2.40 lakhs}}{30\%}$$

$$= \text{Rs. 0.08 lakh for each 1\% capacity}$$

Variable selling overhead

$$\text{At 50\% capacity} = \text{Rs. 0.08 lakh} \times 50 = \text{Rs. 4 lakhs}$$

$$\text{At 90\% capacity} = \text{Rs. 0.08 lakhs} \times 90 = \text{Rs. 7.2 lakhs}$$

$$\text{Fixed selling overhead} = \text{Rs. 7.80 lakhs} - (\text{Rs. 0.08 lakh} \times 60) = \text{Rs. 3.00 lakhs}$$

Flexible Budget

		(Rs. Lakhs)	
Particulars		Capacity	
		50%	90%
Sales	(A)	40.00	75.00
Direct material		10.00	18.00
Direct labour		12.50	22.50
Variable overheads			
- Production		5.50	9.90
- Selling		4.00	7.20
Fixed overheads			
- Production		5.20	5.20
- Administration		2.00	2.00
- Selling		3.00	3.00
Total cost	(B)	42.20	67.80
Net profit / (loss)	(A) – (B)	(2.20)	7.20

(a) Loss to be incurred if stoppage of operations	(Rs. Lakhs)
Lay off compensation	1.20
Fixed overheads (Rs. 10.20 lakhs $\times$ 40/100)	<u>4.08</u>
Loss if operations are closed	5.28
(b) Loss if continue production at 50% level	
Loss would be Rs. 2.20 lakhs (Calculation given above)	
(c) Profitability if production is at 90% capacity	(Rs. Lakhs)
Profit (as calculated above)	7.20
Less : Additional cost due to purchase of Power from Private agency (Rs. 9.90 $\times$ 40/100)	<u>3.96</u>
Net profit	3.24
(d) Profitability of operation at 50% capacity and sub-contracting the balance 40%	(Rs. Lakhs)
Total cost - at 50% capacity	42.20
Sub-contract charges (Rs. 15.00 lakhs $\times$ 2) - for balance 40% capacity	30.00
Variable selling overhead (Rs. 7.20 lakhs – Rs. 4 lakhs) – for balance 40% capacity	<u>3.20</u>
Total cost	75.40
Loss (balancing figure)	<u>0.40</u>
Sales	75.00

Analysis : From analysis of above alternative C is most profitable with which the company can earn a profit of Rs. 3.24 lakhs. Hence, operation at 90% capacity with the purchase of power from private agency is the suggested mode of action.

Q21. A company has established the following relationship of costs with sales at 100% capacity utilization :

Factory cost	66.67 % of sales
Prime cost	75% of factory cost
Selling cost (75% is variable)	20% of sales

The factory overhead at different capacity levels are estimated as under :

Capacity utilization	Factory overheads (Rs.)
120%	2,50,000
100%	2,00,000
80%	1,80,000
60%	1,65,000

Presently the company operates at 60% capacity utilization and the sales value at this level is Rs. 7,20,000 per annum.

The management receives an offer at a sales value of Rs. 1,65,000 per annum from a Government department. This offer will occupy 40% of the company's capacity. The prime cost of this order is Rs. 1,00,000 and there will be an increase of selling costs of Rs. 8,000 only per annum on account of this order.

The sales department claims that the company's own sales will increase to 80% of capacity by the time the aforesaid Government department's order materializes.

Required :

- (i) Present statements to show the profitability of the company at 60% and 80% operating levels.
- (ii) Show the calculation of the profitability of the order of the Government department and advise whether it should be accepted or not.

Answer 21.

Present sales at 60% operating capacity = Rs. 7,20,000

Total sales at 100% capacity = $\frac{\text{Rs. 7,20,000}}{60} \times 100$ = Rs. 12,00,000

Costs at 100% capacity :

Factory cost (66.67% of sales) = Rs. 12,00,000 $\times$ 66.67/100 = Rs. 8,00,000

Prime cost (75% of Factory cost) = Rs. 8,00,000 $\times$ 75/100 = Rs. 6,00,000

Selling cost (20% of sales) = Rs. 12,00,000 $\times$ 20/100 = Rs. 2,40,000

Profitability Statement

	Rs.
Prime cost	6,00,000
Add : Factory overheads (balancing figure)	<u>2,00,000</u>
Factory cost	8,00,000
Add : Selling cost	
Variable (75%)	1,80,000
Fixed	<u>60,000</u>
	<u>2,40,000</u>
Total cost	10,40,000
Profit	<u>1,60,000</u>
Sales	12,00,000

Variable selling overhead at 100% capacity

At 100% capacity = Rs. 1,80,000

At 60% capacity = $\frac{\text{Rs. 1,80,000}}{100} \times 60$ = Rs. 1,08,000

At 80% capacity = $\frac{\text{Rs. 1,80,000}}{100} \times 80$ = Rs. 1,44,000

(i) Profitability Statement at 60% and 80% operating levels

Capacity level		60%	80%
Sales	(i)	7,20,000	9,60,000
Prime cost (50% of sales)		3,60,000	4,80,000
Factory overhead		1,65,000	1,80,000
Factory cost		5,25,000	6,60,000
Add: Selling cost			
Variable		1,08,000	1,44,000
Fixed		60,000	60,000
Total cost	(ii)	6,93,000	8,64,000
Profit	(i) - (ii)	27,000	96,000

Profitability statement of special order

		(Rs.)
Sales	(i)	1,65,000
Prime cost given		1,00,000
Factory overheads (Rs. 2,50,000 – Rs. 1,80,000)		70,000
Factory cost		1,70,000
Add : selling cost		8,000
Total cost	(ii)	1,78,000
Loss		13,000

Analysis : There is an incremental loss of Rs. 13,000 by accepting special order. Hence it is suggested to reject the special order.

Q22. Frolin Chemicals Ltd. produces FDN. The standard ingredients of 1 kg. of FDN are :

0.65 kg. of ingredient F	@ Rs. 4.00 per kg.
0.30 kg. of ingredient D	@ Rs. 6.00 per kg.
0.20 kg. of ingredient N	@ Rs. 2.50 per kg.
1.15 kg.	

Production of 4,000 kg. of FDN was budgeted for April. The production of FDN is entirely automated and production costs attributed to FDN production comprise only direct materials and overheads. The FDN production operation works on a JIT basis and no ingredient or FDN inventories are held. Overheads were budgeted for April for the FDN production operation as follows :

<u>Activity</u>	<u>Total amount</u>
Receipt of deliveries from suppliers (standard delivery qty. is 460 kg.)	Rs. 4,000
Despatch of goods to customers (standard dispatch qty. is 100 kg.)	Rs. 8,000
	Rs. 12,000

In April, 4,200 kg. of FDN were produced and cost details were as follows :

- **Materials used :**
2,840 kg. of F, 1,210 kg. of D and 860 kg of N
Total cost Rs. Rs. 20,380
 - **Actual overhead costs :**
2 Supplier deliveries (cost Rs. 4,800) were made, and 38 customer dispatches (cost Rs. 7,800) were processed.
- (a) Prepare a variance analysis for FDN production costs in April: split the material cost variance into price, mixture and yield components; separate the overhead cost variance into expenditure, capacity and efficiency components using consumption of ingredient F as the overhead absorption base.

Answer 22.

Standard costs of material per kg. of output $(0.65 \text{ kg.} \times \text{Rs. } 4) + (0.3 \text{ kg} \times \text{Rs. } 6) + (0.2 \text{ kg} \times \text{Rs. } 2.50)$
= Rs. 4.90

Standard overhead rate = Rs. 12,000/ Budgeted standard qty. of ingredient F $(4,000 \times 0.65)$
= Rs. 4.6154 per kg. of ingredient F

Standard overhead rate per kg of output of FDN = Rs. 0.65 kg $\times$ Rs. 4.6154 = Rs. 3

Rs.

Standard cost of actual output :

Materials $(4,200 \times \text{Rs. } 4.90)$	20,580
Overheads $(4,200 \times \text{Rs. } 3)$	12,600
	<u>33,180</u>

Actual cost of output :

Materials	20,380
Overheads $(\text{Rs. } 7,800 + \text{Rs. } 4,800)$	12,600
	<u>32,980</u>

Variance calculations :

Materials price variance = $(\text{Standard price} - \text{Actual price}) \times \text{Actual quantity}$
= $(\text{Standard price} \times \text{Actual quantity}) - \text{Actual cost}$
= $(\text{Rs. } 4 \times 2,840) + (\text{Rs. } 6 \times 1,210) + (\text{Rs. } 2.50 \times 860) - \text{Rs. } 20,380$
= Rs. 20,770 – Rs. 20,380
= Rs. 390 F

$$\begin{aligned}
 \text{Material yield variance} &= (\text{Actual yield} - \text{Standard yield}) \times \text{Standard materials cost per unit of output} \\
 &= (4,200 - 4,910 \text{ (materials used)} / 1.15) \times \text{Rs. 4.90} \\
 &= 341 \text{ A}
 \end{aligned}$$

$$\text{Material mix variance} = (\text{Actual quantity in actual mix at standard prices}) - (\text{Actual quantity in standard mix at standard prices})$$

$$\begin{aligned}
 \text{F} & (4,910 \times 0.65/1.15 = 2,775 - 2,840) \times \text{Rs. 4} && 260 \text{ A} \\
 \text{D} & (4,910 \times 0.30/1.15 = 1,281 - 1,210) \times \text{Rs. 6} && 426 \text{ F} \\
 \text{N} & (4,910 \times 0.20/1.15 = 854 - 860) \times \text{Rs. 2.50} && 15 \text{ A} && 151 \text{ F}
 \end{aligned}$$

$$\begin{aligned}
 \text{Overhead efficiency variance} &= (\text{Standard quantity of ingredient F} - \text{Actual quantity}) \\
 &\quad \times \text{Standard overhead rate per kg. of ingredient F} \\
 &= [(4,200 \times 0.65) - 2,840] \times \text{Rs. 4.6154} \\
 &= 508 \text{ A}
 \end{aligned}$$

$$\begin{aligned}
 \text{Overhead capacity variance} &= (\text{Budgeted input of ingredient F} - \text{Actual input}) \times \\
 &\quad \text{standard overhead rate per kg of ingredient F} \\
 &= [(4,000 \times 0.65) - 2,840] \times \text{Rs. 4.6154} \\
 &= 1,108 \text{ F}
 \end{aligned}$$

$$\begin{aligned}
 \text{Overhead expenditure variance} &= \text{Budgeted cost} - \text{Actual cost} \\
 &= \text{Rs. 12,000} - \text{Rs. 12,600} \\
 &= 600 \text{ A}
 \end{aligned}$$

Reconciliation of standard cost and actual cost of output :

	Rs.	Rs.
Standard cost of actual production		33,180
Material variances :		
Material price variance	390 F	
Material yield variance	341 A	
Materials mix variance	<u>151 F</u>	
		200 F
Overhead variances :		
Overhead efficiency variance	508 A	
Overhead capacity variance	1,108 F	
Overhead expenditure variance	<u>600 A</u>	
Actual cost		<u>32,980</u>

Q23. ABC Ltd. Uses flexible budgets and standard costing for its single product PCM 30 produced at its factory at Solan. The following details relates to a particular months "Actual" & also provide brief details of 'Standards' established.

Standard quantity required for producing 1 unit of PCM 30	3 kgs.
Standard cost of the raw material	Rs. 4.40 per kgs.
Cost of actual material purchased and used in the relevant month	Rs. 4.20 per kg.
Standard labour time required to produce 1 unit of PCM 30	30 minutes
Standard wage rate	Rs. 5 per hour
Actual wage rate	Rs. 5.40 per hour

Sufficient direct labour time, equivalent for producing 28,000 units of PCM 30 was utilized, although the actual production in the relevant month was only 25,000 units. Actual quantity of raw materials used is 80,000 kgs.

The company has a normal operating capacity of 15,000 hours per month and flexible overhead budgets are :

Hours of operation	12,500	14,000	15,000
Variable production overhead	Rs. 1,50,000	Rs. 1,68,000	Rs. 1,80,000
Fixed production overhead	2,70,000	2,70,000	2,70,000
Total	4,20,000	4,38,000	4,50,000

Actual fixed overheads incurred did not deviate from the budgeted amounts however, the variable overheads incurred amounted to Rs. 1,60,000 in the concerned month.

You are required to :

(a) Calculate the appropriate variances for material, labour & overhead;

Answer 23.

Standard variable O.H. rate = Rs. 1,80,000 / 15,000 = Rs. 12 per hour

Standard fixed O.H. rate = Rs. 2,70,000 / 15,000 = Rs. 18 per hour

Material variances (Actual production : 25,000 units)

Std. Qty. of raw matl. Per unit of FG	Std. price of raw matl. Per kg.	Std. qty. of raw matl. On actual production	Actual qty. of raw matl. On actual production	Actual price paid for raw matl.	Usage variance (Rs.)	Price variance (Rs.)
(a)	(b)	(c)	(d)	(e)	(c-d)xb	(b-e) × d
3 kg.	Rs. 4.40	75,000 kgs.	80,000 kgs.	Rs. 4.20	(22,000)	16,000

Labour variance

Std. time Per unit of FG	Std. rate per hour	Std. time on actual production	Actual time On actual production	Actual rate per hour	Efficiency variance (Rs.)	Rate variance (Rs.)
(a)	(b)	(c)	(d)	(e)	(c-d) × b	(b-e) × d
30 min	Rs. 5	12,500 hrs.	14,000 hrs.	Rs. 5.4	(7,500)	(5,600)

Variable overhead variances

Actual variable overhead = (Rs. 4,30,000 – Rs. 2,70,000) = Rs. 1,60,000 (a)

Actual hours worked at standard V.O.H. rate = (28,000 × 0.5 hr × Rs. 12)
= Rs. 1,68,000 (b)

Standard variable O.H. for actual production = (25,000 units × 0.5 hr × Rs. 12)
= Rs. 1,50,000 (c)

Variable O.H. expenditure variance = (a) – (b)
= Rs. 1,60,000 – Rs. 1,68,000
= Rs. 8,000 F

Variable O.H. efficiency variance = (b) – (c)
= RS. 1,68,000 – Rs. 1,50,000
= Rs. 18,000 A

Fixed overhead variances

Actual fixed overhead incurred = Rs. 2,70,000

Budgeted fixed overhead = Rs. 2,70,000

Expenditure variance = nil

Budgeted production = 30,000 units

Actual production = 25,000 units

Unutilized capacity = 5,000 units or 2,500 hrs.

Production volume variance = (Rs. 45,000) (2,500 × 18)

Q24. B Ltd. started trading on 1st November 2008, manufacturing and selling one product. The standard cost per unit was :

Direct material : Standard price Rs. 10 per kilogram

Standard quantity 20 kilogram per unit

Direct labour : Standard rate of pay Rs. 5.50 per hour

Standard time allowance 12 hours per unit

Production overhead costs, all classified as fixed, were budgeted at Rs. 9,00,000 per annum. The standard time for producing one unit is 12 machine hours and normal capacity is 60,000 machine hours per annum. Production overhead is absorbed on machine hours.

For the year ended 31st October 2009, the costs incurred and other relevant information is given below :

Direct material used	- 1,00,000 kilogram's at a cost of Rs. 10,50,000
Direct wages paid	- Rs. 3,10,000 for 62,000 hours
Production overhead	- Rs. 9,26,000
Machine capacity used	- 60,000 hours
Actual output	- 4,800 units

Assuming no stocks of work-in-progress or finished goods at year end.

You are required to :

- Show the standard product cost for one unit
- Calculate variances for material (usage and price), labour (rate and efficiency) and overhead.

Answer 24.

(a) Computation of standard cost per unit

	Rs.
Direct material	200
Direct labour	66
Production overhead	<u>180</u>
Standard cost per unit	446

(b) Computation of material cost variance (Actual production : 4,800 units)

Std. Qty. of raw matl. Per unit of FG	Std. price of raw matl. Per kg.	Std. qty. of raw matl. On actual production	Actual qty. of raw matl. On actual production	Actual price paid for raw matl. Per kg.	Usage variance (Rs.)	Price variance (Rs.)
(a)	(b)	(c)	(d)	(e)	(c-d)xb	(b-e) x d
20 kg.	Rs. 10	96,000 kgs.	1,00,000 kgs.	Rs. 10.50	(40,000)	(50,000)

Computation of labour rate and efficiency variance (Actual production : 4,800 units)

Std. time Per unit of FG	Std. rate per hour	Std. time on actual production	Actual time On actual production	Actual rate per hour	Efficiency variance (Rs.)	Rate variance (Rs.)
(a)	(b)	(c)	(d)	(e)	(c-d) x b	(b-e) x d
12 hrs.	Rs. 5.50	57,600 hrs.	62,000 hrs.	Rs. 5.00	(24,200)	31,000

Computation of overhead variance (Actual production : 4,800 units)

Capacity	Actual production	Std. total fixed overheads	Actual total fixed overheads	Std. fixed overhead per unit	Production volume variance	Overhead expenditure variances
(a)	(b)	(c)	(d)	(e)	(b-a) × e	(c-d)
5000 units	4,800 units	Rs. 9,00,000	Rs. 9,26,000	180	(36,000)	(26,000)

Q25. ABC Ltd. Produces jams and other products. The production pattern for all the products is similar, first the fruits are cooked at a low temperature and then subsequently blended with glucose syrup. Citric acid and pectin are added henceforth to help setting.

There is huge competition in the market because of which margins are tight. The firm operates a system of standard costing for each batch of jam.

The standard cost data for a batch of jam are :

Fruit extract	400 kg. @ Rs. 0.16 per kg.
Glucose syrup	700 kg @ Rs. 0.10 per kg.
Pectin	99 kg. @ Rs. 0.332 per kg.
Citric acid	1 kg. @ Rs. 2.00 per kg.
Labour	18 hrs. @ Rs. 3.25 per hour

Standard processing loss 3%

As a consequence of unfavourable weather in the relevant year for the concerned crop., normal prices in the trade were Rs. 0.19 per kg. for fruit extract although good buying could achieve some savings. The actual price of syrup had also gone up by 20% from the standards established. This was because of increase in customs duty for sugar.

The actual results for the batch were :

Fruit extract	428 kg. @ Rs. 0.18 per kg.
Glucose syrup	742 kg. @ Rs. 0.12 per kg.
Pectin	125 kg. @ Rs. 0.328 per kg.
Citric acid	1 kg. @ Rs. 0.95 per kg.
Labour	20 hours @ Rs. 3.00 per hour

Actual output was 1,164 kg. of Jam.

(a) Calculate the ingredients planning variances that are deemed uncontrollable;

(b) Calculate the ingredients operating variances that are deemed controllable;

Calculate the total variances for the batch.

Answer 25.**Statement showing original, revised and actual data**

	Original standard	Revised standard	Actual
Fruit extract	$400 \times \text{Rs. } 0.16 = \text{Rs. } 64$	$400 \times \text{Rs. } 0.19 = \text{Rs. } 76$	$428 \times \text{Rs. } 0.18 = \text{Rs. } 77.04$
Glucose syrup	$700 \times \text{Rs. } 0.10 = \text{Rs. } 70$	$700 \times \text{Rs. } 0.12 = \text{Rs. } 84$	$742 \times \text{Rs. } 0.12 = \text{Rs. } 89.04$
Pectin	$99 \times \text{Rs. } 0.332 = \text{Rs. } 32.868$	$99 \times \text{Rs. } 0.332 = \text{Rs. } 32.868$	$125 \times \text{Rs. } 0.328 = \text{Rs. } 41$
Citric acid	$1 \times \text{Rs. } 2.00 = \frac{\text{Rs. } 2.00}{168.868}$	$1 \times \text{Rs. } 2 = \frac{\text{Rs. } 2.00}{194.868}$	$1 \times \text{Rs. } 0.95 = \frac{\text{Rs. } 0.95}{208.03}$
Labour	$18 \times \text{Rs. } 3.25 = \frac{\text{Rs. } 58.50}{227.368}$	$18 \times \text{Rs. } 3.25 = \frac{\text{Rs. } 58.50}{253.368}$	$20 \times \text{Rs. } 3.00 = \frac{\text{Rs. } 60.00}{268.03}$

Original Input = $(400 + 700 + 99 + 1) = 1200$

Less – 3% process loss = 36

Original output = 1,164

Actual Input = $(428 + 742 + 125 + 1) = 1296$

Less – Process loss = 132 (bal. fig.)

Actual output = 1,164

(a) Planning variance = original cost – revised cost

Fruit extract = $64 - 76 = \text{Rs. } 12 \text{ A}$

Glucose syrup = $70 - 84 = \text{Rs. } 14 \text{ A}$

Total = $227.368 - 253.368 = \text{Rs. } 26 \text{ A}$

(b) Ingredient operating variance : Revised - Actual

= $\text{Rs. } 194.868 - \text{Rs. } 208.03 = \text{Rs. } 13.162 \text{ A}$

For calculation of variances

Actual cost of actual material (a) = $\text{Rs. } 208.03$

Standard cost of material used (b) = $428 \times 0.19 = 81.32$

$742 \times 0.12 = 89.04$

$125 \times 0.332 = 41.50$

$1 \times 2.00 = \underline{2.00}$

213.86

Standard cost of material if it had been used in standard proportion (c)

$$\begin{aligned}
 (400 / 1,200) \times 1,296 \times 0.19 &= 82.08 \\
 (700 / 1200) \times 1,296 \times 0.12 &= 90.72 \\
 (99 / 1200) \times 1,296 \times 0.332 &= 35.497 \\
 (1 / 1,200) \times 1,296 \times 2 &= 2.16 \\
 &\text{Rs. 210.457}
 \end{aligned}$$

$$\text{Standard material cost of output (d)} = \left(\frac{194.868}{1,164} \right) \times 1,164 = 194.868$$

1. Material price variance = (a) – (b) = Rs. 208.03 – Rs. 213.86 = Rs. 5.83 F
 2. Material usage variance = (b) – (d) = Rs. 213.86 – Rs. 194.868 = Rs. 18.992 A
 3. Labour cost variance = Actual cost – Standard cost
= Rs. 60.00 – Rs. 58.50 = Rs. 1.50 A
- (c) 1. Mixture variance = (b) – (c) = Rs. 213.86 – Rs. 210.457 = Rs. 3.403 A
2. Yield variance = (c) – (d) = Rs. 210.457 – Rs. 194.868 = Rs. 15.589
- (d) Total variance = Original standard cost – Actual cost
= Rs. 227.368 – Rs. 268.03 = Rs. 40.662 A

Q26. Difference between :

a. Standard cost and Estimated cost

b. Standard costing and Budgetary control

Answer 26. (a) Standard cost and Estimated cost

Standard cost	Estimated cost
It is a predetermined cost on a scientific basis taking into consideration all the factors relating to costs e.g., raw material consumption rate, labour efficiency, machine efficiency etc.	It is predetermined cost based on past performance adjusted to the anticipated changes. No minute appraisal of each individual component cost.
It is ascertained and applied when standard costing system, is in operation.	It can be used in any business situation or decision making which does not require accurate cost. It is used in budgetary control system, and historical costing system.
Its emphasis for analysis is on what should be the cost.	Its emphasis is on the level of costs not to be exceeded.
It is used for analysis of variances and cost control purpose.	It is used in decision making and selection of alternative with maximum profitability. It is also used in price fixation and tendering.
It is determined for each element of cost in the process of business generally on unit basis i.e. Std. hour, Std. unit etc.	It is determined generally for the period.
It is used as a regular system of accounts from which variances are found out.	The use of estimated cost as a statistical data only.

Answer 26. (b) Standard costing and Budgetary control

Standard costing	Budgetary control
It is a system of accounting where predetermined costs are used for analysis of variances and control of the entire organization.	It is a planning exercise made by the management in setting budgets for the forthcoming period and analysis of actuals with the budgeted figures and corrective action is initiated if any deviations are identified.
Standard costs are scientifically predetermined in respect materials, labour, overheads. It is based on engineering and technical data. Standard costs are fixed for each unit i.e. Std. hour, Std. unit, Std. labour mix, material mix etc.	Budgets are based on past performance adjusted to the anticipated changes in the future. It is written plan covering projected activities of a firm for a definite time period. It is financial measure of target and achievement.
Standard may be expressed both in quantitative and monetary measures.	Budgets are mainly expressed in monetary terms.
It is concerned with ascertainment and control of costs.	It is concerned with the overall profitability and financial position of the concern.
Any variance – adverse or favourable, is investigated.	It puts emphasis more on excess over the budget.
Its emphasis is on what should be the cost.	Its emphasis is on the level of costs not to be exceeded.
It is determined for each element of cost.	It is determined for a specified period.
It is related with the control of costs and it is more intensive in scope.	It is concerned with the operation of business as a whole and it is more extensive.
It is introduced primarily to ascertain the efficiency and effectiveness of cost performance.	It is introduced to state in figures as approved plan of action relating to a particular period.
Standards are usually limited to manufacturing activities only.	Budgets are set for all departments in an organization.
Standard costs are used in tactical decisions like, price fixation, computation of product cost, valuation of inventory etc.	It emphasis on policy determination, achievement of goals, co-ordination of different of goals, co-ordination of different departments and activities, delegation of authority and responsibility etc.

Q27. (a) Write short notes on Value Analysis.**Answer 27. (a)**

Value Analysis : It is one of the important tools of modern management in the area of cost reduction. It is also known by other names such as value engineering, value control and product research. Value analysis is the process of systematic analysis and evaluation of various techniques and functions with a view to improve organisational performance. It aims at reducing and controlling

the cost of a product from the point of view of its value by analysing the value currently received. It investigates into the economic attributes of value analysis, believes in a planned action to improve performance and thereby, generates higher value in a product and ultimately causes reduction in its cost.

The meaning of the term value may vary from person to person, time to time and place to place. However, in the context of cost reduction and control it refers to the 'use value'.

The reduction in the costs of a product and thus increasing the profitability of a concern is the main advantage of value analysis.

The benefits of value analysis are being derived in many industries, e.g., engineering, building construction and the oil industry. It is being applied to components of a product, finished product and also to be methods of packaging.

The various steps involved in value analysis are;

- (i) Identification of the problem; Ascertaining needs & wants of customers.
- (ii) Collecting information about the function, design, material, labour, overhead costs, etc., of the product and finding out the availability of the competitive products in the market; and
- (iii) Exploring and evaluating alternatives and developing them.

Q27. (b) What is meant by 'Inter-firm comparison'? Describe the requisites to be considered while installing a system of inter-firm comparison.

Answer 27.(b)

It is the technique of evaluating the performance efficiency, costs and profits of firms in an industry. It consists of voluntary exchange of information/data concerning costs, prices, profits, productivity and overall efficiency among firms engaged in similar type of operations for the purpose of bringing improvement in efficiency and indicating the weaknesses. Such a comparison will be possible where uniform costing is in operation.

An inter-firm comparison indicates the efficiency of production and selling, adequacy of profits, weak spots in the organisation, etc, and thus demands from the firm's management an immediate suitable action. Inter-firm comparison may enable the management to challenge the standards which it has set for itself and to improve upon them in the light of the current information gathered from more efficient units. Such a comparison may be pharmaceuticals, cycle manufacturing, etc.

Requisites of Inter-firm comparison scheme:

The following requisites should be considered while installing a system of inter-firm comparison:

1. Centre for Inter-firm Comparison:

For collection and analysing data received from member units for doing a comparative study and for dissemination of the results of study a Central body is necessary. The functions of such a body may be:

- (a) Collection of data and information from its members:
- (b) Dissemination of results to its members:
- (c) Undertaking research and development for common and individual benefit of its members;
- (d) Organising training programmes and publishing magazines.

2. Membership:

Another requirement for the success of inter-firm comparison is that firms of different sizes should become members of the Centre entrusted with the task of carrying out inter-firm comparison.

3. Nature of information to be collected

Although there is no limit to information, yet the following information, useful to the management is in general collected by the center for inter firm comparison.

- a. Information regarding costs and cost structures.
- b. Raw material consumption
- c. Stock of raw material, wastage of materials etc.
- d. Labour efficiency and labour utilisation.
- e. Machine utilisation and machine efficiency.
- f. Capital employed and return on capital
- g. Liquidity of the organisation.
- h. Reserve and appropriation of profit.
- i. Creditors and debtors.
- j. Methods of production and technical aspects.

4. Method of Collection and presentation of information:

The centre collects information at fixed intervals in a prescribed form from its members. Sometimes a questionnaire is sent to each member, the replies of the questionnaire received by the Centre constitute the information/data. The information is generally collected at the end of the year as it is mostly related with final accounts and Balance Sheet. The information supplied by firms is generally in the form of ratios and not in absolute figures. The information collected as above is stored and presented to its members in the form of a report. Such reports are not made available to non-members.

Q28. (a) A firm of printers is contemplating joining the uniform costing system being operated by its Trade Association but the Managing Director is doubtful about the advantages of becoming involved in the scheme.

Prepare a report to the Managing Director describing the advantages that the firm is likely to gain.

Answer 28. (a)

Dated

From : Cost Accountant

Re : Report on the advantages accruing from becoming a member of uniform costing system operated by the Trade Association

I heard that you are contemplating of joining uniform costing system operated by Trade Association. I also support this idea of joining such a system because of multiple benefits which would accrue from it. Such a step would strengthen not only the capability of decision making of our executives but may also enable them to achieve other cost accounting objectives. The main advantages of joining uniform costing system group are as follows:

1. Saved from the exercise of developing and introducing an individual costing system.
2. A costing system devised by mutual consultation and after considering the difficulties and circumstances prevailing in different firms may be readily adopted and successfully implemented.
3. A comparison of cost figures of various firms of the system will facilitate the firms to identify their weak and strong points besides controlling costs.
4. Standing of the firms in the industry would be known by making a comparison of its cost data with others.
5. Research and development benefits of bigger firms may be made available to smaller firms.
6. It helps Trade Associations in negotiating with the Government for any assistance or concession in the matters of taxation, export subsidies, duties and price determination etc.
7. Unhealthy competition is avoided among the firms in the same industry in framing pricing policies and submitting tenders.
8. Prices fixed on the basis of uniform costing are representative of the whole industry.
9. Facilitates the reduction of labour turnover, as a uniform wage system is the precondition of a uniform costing system.
10. It provides a basis for the comparative assessment of the performance of two firms in the same industry but in different sectors.
11. It will facilitate the development/introduction of information system.
12. Optimum achievement of efficiency may be attempted by utilising the experience of other concerns in the system.

Q28. (b) "Skimming pricing is a policy where the prices are kept high during the early period of a product's existence." Discuss briefly the reasons for following such a policy.

Answer 28. (b)

It is a policy where the prices are kept high during the early period of a product's existence. This can be synchronized with high promotional expenditure and in the latter years the prices can be gradually reduced. The reasons for following such a policy are as follows :

- (i) The demand is likely to be inelastic in the earlier stages till the product is established in the market.
- (ii) The gradual reduction in price in the latter years will tend to increase the sales.
- (iii) This method is preferred in the beginning because in the initial periods when the demand for the product is not known the price covers the initial cost of production.
- (iv) High initial capital outlays needed for manufacture, results in high cost of production. In addition to this, the producer has to incur huge promotional activities resulting in increased costs. High initial prices will be able to finance the cost of production particularly when uncertainties block the usual sources of capital.

Q28. (c) Explain the role of benchmarking in continuous improvement in an organization.

Answer 28. (c)

Benchmarking is a technique which is being adopted as a mechanism for achieving continuous improvement. It is a continuous process of measuring a company's products, services or activities

against the other best performing organizations either internal or external to the company. The objective is to ascertain how the processes and activities can be improved. The latest developments, best practices and model examples can be incorporated within various operations of the business of the company. It represents an ideal way of achieving high competitive standards.

Q29. (a) Discuss briefly the meaning of cost plus pricing and elaborate up on the various advantages and disadvantages of this approach.

Answer 29. (a)

Cost plus pricing refers to a pricing technique in which selling prices of a product are determined based on its estimated cost plus a fixed profit margin. For purposes of cost plus pricing, 'Cost' means full cost at current level of production/ operation and wage levels since these are regarded as most appropriate for price determination purposes.

The following are the various advantages and disadvantages of cost plus pricing method.

Advantages :

- The use of cost plus pricing technique ensures a guaranteed contribution to a firm – This contribution is suffice to recover all the fixed costs and provides positive profits.
- Since the use of cost plus pricing assures that the price is more than the cost of a product, there are lesser risks and uncertainties involved in the adoption of this method.
- This pricing method is most suited for the long run since there are no permanent opportunity costs involved. The prices are based on the normal long run costs. This ensures that the seasonal fluctuations are taken care of.
- The mark up considered in cost plus pricing is normally the cost of capital of the firm. The cost of capital is arrived at by considering the market forces being exerted in the business environment. Hence it can be said that cost plus pricing technique takes into account various market forces while arriving at the desired selling price.
- Prices when fixed on a cost plus basis provide stability in the long run. This facilitates planning.
- The use of cost plus pricing does not take into account the buyers needs and willingness variable. This makes the formulae simple and easy to use.

Disadvantages :

- The concept of cost plus pricing does not take into account the buyers needs and willingness to pay.
- Cost plus pricing assumes that costs have been estimated and allocated with accuracy. This may not be true in cases of multi product firms.
- In specific circumstances, incremental costs play an important role for decision making purposes. The concept of cost plus may not be of any help in such situations. It may lead a firm towards ignoring opportunity costs which may result in a wrong price fixation.

Cost plus pricing gives undue importance to the concept of capacity utilization. During times of short product life cycles and frequent innovation, the absorption of fixed overheads on the basis of capacity may be erroneous and detrimental for an organization.

Q29. (b) ABC Ltd. has been approached by a customer who would like a special job to be done for him, and who is willing to pay Rs. 22,000 for it. The job would require the following materials.

Material	Total units required	Units already in stock	Book value of units in stock	Realizable value Rs./unit	Replacement cost Rs./unit
A	1,000	0	—	—	6
B	1,000	600	2	2.50	5
C	1,000	700	3	2.50	4
D	200	200	4	6.00	9

Material B is used regularly by ABC Ltd. And if units of B are required for this job, they would need to be replaced to meet other production demand.

Material C and D are in stock as the result of previous over-buying and they have a restricted use. No other use could be found for material C, but the units of material D could be used in another job as substitute for 300 units of material E, which currently costs Rs. 5 per unit (of which the company has no units in stock at the moment).

Calculate the relevant costs of material for deciding whether or not to accept the order.

Answer 29. (b)

Material A is not yet owned. It would have to be bought in full at the replacement cost of Rs. 6 per unit.

Material B is used regularly by the company. There are existing stocks (600 units) but if these are used on the contract under review a further 600 units would be bought to replace them. Relevant costs are therefore 1,000 units at the replacement cost of Rs. 5 per unit.

1,000 units of material C are needed and 700 are already in stock. If used for the contract, a further 300 units must be bought at Rs. 4 each. The existing stock of 700 will not be replaced. If they are used for the contract, they could not be sold at Rs. 2.50 each. The realizable value of these 700 units is an opportunity cost of sales revenue foregone.

The required units of material D are already in stock and will not be replaced. There is an opportunity cost of using D in the contract because there are alternative opportunities either to sell the existing stocks for Rs. 6 per unit (Rs. 1,200 in total) or avoid other purchase (of material E), which would cost $300 \times \text{Rs. } 5 = \text{Rs. } 1,500$. Since substitution for E is more beneficial Rs. 1,500 is the opportunity cost.

	Rs.
Material A ($1,000 \times \text{Rs. } 6$)	6,000
Material B ($1,000 \times \text{Rs. } 5$)	5,000
Material C ($300 \times \text{Rs. } 4$) plus ($700 \times \text{Rs. } 2.50$)	2,950
Material D	1,500
Total	15,450

Q30. (a) Distinguish between Cost reduction and Cost control.**Answer 30. (a)**

The points of distinction between Cost reduction and Cost control are as follows:

1.	It aims at achieving a reduction in unit cost of goods manufactured or services rendered without impairing their suitability for the use intended.	It aims at achieving the pre-determined cost targets and ends when the targets are achieved.
2.	It does not recognise any condition as permanent and believe that by waste reduction, expense reduction and increased production cost reduction objective can be achieved.	It entails target setting, ascertaining the actual performance and comparing it with the targets, investigating the variances and taking remedial measures.
3.	It assumes existence of concealed potential savings and challenges the norm.	It does not challenges norms or standards established for the purpose.
4.	It is a corrective function.	It is a preventive function.

Q30. (b) State the areas of activity for which accounting records are to be maintained under Cost Accounting Record Rules.**Answer 30. (b)**

Areas of activity for which accounting records are to be maintained under Cost Accounting Record Rules

Costing Accounting Record Rules : The Government of India had issued Cost Accounting Record Rules, in respect of number of products industries (as listed under section 209(1) (d) of Companies Act). Before the imposition of Statutory Cost Audit it was expected from all such concerns to observe these rules. Such an audit is imposed in respect of those products, industries which are consumer oriented and earners of high profit margin. According to these rules, all companies engaged in activities of production or manufacturing, etc. (for which cost accounts records have been prescribed) should maintain accounting records relating to the utilisation of materials, labour and other items of cost. Such books of account should facilitate the calculation and disclosure of cost of production and cost of sales of the products at a periodical intervals. Each books of account and the proforma prescribed by the rules should be completed within the prescribed time limit after the end of the relevant financial year of the company. Following records are to be maintained under Cost Accounting (Record) Rules generally applicable to various industries in India.

1. Records for raw materials, components. stores & spare parts.
2. Records for labour.
3. Records for overheads.
4. Records for utilities / services.
5. Records for fixed assets.
6. Records for packing

7. Records for research mid development expenses.
8. Records for conversion cost.
9. Records for by-products.
10. Records for work-in-progress and finished goods.
11. Records for cost of production and marketing.
12. Reconciliation of cost records with financial books.
13. Computation of variances.
14. Physical verification.
15. Statistical data.

Q30. (c) What is Just in Time (JIT) purchases? What are the advantages of such purchases?

Answer 30. (c)

Just in time (JIT) purchases means the purchase of goods or materials such that delivery immediately precedes their use.

Advantages of JIT purchases:

Main advantages of JIT purchases are as follows:

1. The suppliers of goods or materials cooperates with the company and supply requisite quantity of goods or materials for which order is placed before the start of production.
2. JIT purchases results in cost savings for example, the costs of stock out, inventory carrying, materials handling and breakage are reduced.
3. Due to frequent purchases of raw materials, its issue price is likely to be very close to the replacement price. Consequently the method of pricing to be followed for valuing material issues becomes less important for companies using JIT purchasing.
4. JIT purchasing are now attempting to extend daily deliveries to as many areas as possible so that the goods spend less time in warehouses or on store shelves before they are exhausted.