

# Revisionary Test Paper\_Intermediate\_Syllabus 2008\_June 2013

## Paper - 8 : COST AND MANAGEMENT ACCOUNTING

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

(i) The cost-volume-profit relationship of a company is described by the equation  $y = ₹ 8,00,000 + 0.60x$ , 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. ₹ 40,00,000
- b. ₹ 35,50,000
- c. ₹ 24,00,000
- d. ₹ 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	₹ 12
Selling price per unit	₹ 50
Fixed manufacturing overhead costs	₹ 3,60,000

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

- a. ₹ 1,46,120
- b. ₹ 1,23,560
- c. ₹ 55,880
- d. ₹ 73,340

(iii) The total cost incurred in the operation of a business undertaking other than the cost of manufacturing and production is known as

- a. Direct cost
- b. Variable cost
- c. Commercial cost
- d. Conversion cost

(iv) Consider the following data for a company during the month of June 2012

Budgeted hours	4,000
Standard hours for actual production	4,400
Maximum possible hours in the budget period	4,800
Actual hours	3,800

The activity ratio of the company during the month is

- a. 111%
- b. 120%
- c. 95%
- d. 117%

(v) Total unit costs are

- a. Independent of the cost system, used to generate them
- b. Needed for determining product contribution
- c. Irrelevant in marginal analysis
- d. Relevant for cost-volume-profit analysis

(vi) Which of the following bases is not appropriate for apportionment of Transport department's cost ?

- a. Crane hours
- b. Crane value

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- c. Truck Mileage
- d. Truck value

(vii) The cost of obsolete inventory acquired several years ago, to be considered in a keep vs. disposal decision is an example of :

- a. Uncontrollable cost
- b. Sunk cost
- c. Avoidable cost
- d. Opportunity cost

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

- a. 5,80,000
- b. 5,50,000
- c. 5,00,000
- d. 5,75,000

(ix) If the asset turnover and profit margin of a company are 1.85 and 0.35 respectively, the return on investment is

- a. 0.65
- b. 0.35
- c. 1.50
- d. 5.29

(x) A company is currently operating at 80% capacity level. The production under normal capacity level is 1,50,000 units. The variable cost per unit is ₹ 14 and the total fixed costs are ₹ 8,00,000. If the company wants to earn a profit of ₹ 4,00,000, then the price of the product per unit should be

- a. ₹ 37.50
- b. ₹ 38.25
- c. ₹ 24.00
- d. ₹ 35.00

**Answer 1.**

(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 = ₹ 8,00,000 / 20% = ₹ 40,00,000]

(ii) - c.

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

Profit under absorption costing = ₹ 1,01,000

Adjustment of fixed manufacturing overhead costs of increased inventory = 1,880 units x ₹ 24 = ₹ 45,120

Profit under marginal costing = ₹ 1,01,000 - ₹ 45,120 = ₹ 55,880]

(iii) - c.

(iv) - a.

Activity ratio =  $\frac{\text{Standard hours for actual production}}{\text{Budgeted hours}} \times 100$   
=  $\frac{4,440 \text{ hours}}{4,000 \text{ hours}} \times 100 = 111\%$

(v) - c.

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(vi) – b.

(vii)– b - Costs of obsolete inventory represent the sunk cost because the costs have already been incurred.

(viii) – a.

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

(ix) – a - Return on investment = Asset turnover x Profit margin =  $1.85 \times 0.35 = 0.65$

(x) – c.

Total fixed cost	-	₹ 8,00,000
Expected profit	-	₹ 4,00,000
Variable cost at 80% level (80% x 1,50,000 units x ₹ 14)	-	₹ 16,80,000
Total price	-	₹ 28,80,000
Per unit price at 80% level =	$(₹ 28,80,000 / 1,20,000 \text{ units}) = ₹ 24.00$ .	

Q. 2. Write short notes on :

- (i) Value Analysis
- (ii) Application of service costing
- (iii) Cost benefit analysis
- (iv) Cost Indifference Point
- (v) Incremental Pricing

Answer 2.

(i) **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;

- a) Identification of the problem;

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- b) 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
- c) Exploring and evaluating alternatives and developing them.

### (ii) Application of service costing

The service costing is applied in the following situations :

- a) Internal service departments – Service costing is applied to the operations concerned in an organization which provide services to production departments. For example, Canteen for the staff, Hospital for the staff, boiler house of supplying steam to production departments, Captive Power generation unit, operation of fleet of vehicles for transport of raw material to factory or distribution of finished goods to the market outlets, computer department services used by other departments etc.
- b) Service organizations – When services are offered to outside customers with a profit motive and it is the business of the organisation in offering services, like Transport organization, Hotel business, Power generation company etc., service costing is applied.

(iii) In order to create more wealth by reducing costs, it is absolutely essential to be able to differentiate between necessary and unnecessary costs. If you try to reduce the necessary costs, you almost certainly reduce the benefits created by the resources being consumed. This kind of cost reduction leads to lower than required quality, extended delivery periods, increased rejections from inadequate materials and so on. The only really effective way of increasing the wealth created by the company is to search out and eliminate all unnecessary costs. There are five steps involved in establishing the benefits created by resources consumed in the business.

#### Step 1 – Cost Analysis

This involves an analysis of all costs and activities. This can usually be done from any reasonably designed accounting system.

#### Step 2 – Contribution Analysis

Analyzing the value of what each activity contributes in terms of income or benefits is important in establishing the real wealth-creating activities of the business.

#### Step-3 – Benefit Analysis

Trying to decide on the benefits provided by the service and control activities is no easy matter. It is very much an attitude of mind, based on asking questions. It is vital to break down costs on the basis of the reasons why they are incurred, and then to assess the benefits.

#### Step 4 – Cost Reduction

Develop a cost-reduction programme by establishing those reasons for incurring cost which :

- a) Do not contribute to an activity's earning potential
- b) Do not contribute adequately to the activity's earning potential.
- c) Do not create benefits.
- d) Do not create adequate benefits for the level of cost.

#### Step 5 – Profit Improvement

Develop a profit improvement programme by determining those areas which can create additional income from existing and new resources, based on rationalization and reduced costs of existing activities.

(iv) Cost Indifference Point – A cost indifference point is the point at which total cost (Fixed cost and variable cost) of two alternatives under consideration is the same. A company may have two methods available for production and it may so happen that at lower levels of activity one method is suitable up to a particular point and beyond that another method is suitable. The

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question arises at what level of capacity choice shifts from one production method to another production method. This point is called cost indifference point and at this point total cost is identical for the two alternatives. Cost indifference point will occur at a point where :

Total cost of alternative A = Total cost of alternative B

Cost indifference points are useful in analyzing many types of alternative choice decisions such as choosing between alternative production methods, marketing plans or quality control programmes.

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

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

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

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

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

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

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

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

### Q. 3.a) Calculate

**Value of raw materials consumed;**

**Total cost of production**

**Cost of goods sold and**

**The amount of profit from the following particulars.**

<b>Opening Stock:</b>	<b>₹</b>
<b>Raw Materials</b>	<b>5,000</b>
<b>Finished goods</b>	<b>4,000</b>

**Closing Stock:**

<b>Raw materials</b>	<b>4,000</b>
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Finished goods	5,000
Raw materials purchased	50,000
Wages paid to laborers	20,000
Chargeable expenses	2,000
Rent, rates & taxes	5,000
Power	2,000
Factory heating and lighting	2,000
Factory insurance	1,000
Experimental expenses	500
Wastage of material	200
Office management salaries	4,000
Office printing and stationery	200
Salaries of sales men	2,000
Commission of travelling agents	1,000
Sales	1,00,000

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 3.

### a) Cost Sheet

Particulars	Amount (₹)	Amount (₹)
Opening stock of raw materials	5,000	
(+) Purchase of raw materials	50,000	
(-) Closing stock of raw materials	(4,000)	
<b>Materials Consumed</b>		51,000
Wages	20,000	
Chargeable expenses	2,000	22,000
<b>Prime Cost</b>		73,000
(+) Factory overheads		
Power	2,000	
Factory heating & lighting	2,000	
Factory Insurance	1,000	
Experimental expenses	500	
Wastage of material	200	5,700
<b>Factory Cost (or) Works Cost</b>		78,700
(+) Office overheads		
Rent, rates	5,000	
Office Salaries	4,000	



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Printing & Stationary	200	9,200
<b>Cost of Production</b>		87,900
(+) Opening stock of finished goods		4,000
(-) Closing stock of finished goods		(5,000)
<b>Cost of goods sold</b>		86,900
(+) Selling & distribution overheads		
Salary of salesmen	2,000	
Commission of travelling agent	1,000	3,000
<b>Cost of sales (or) Total sales</b>		89,900
(+) Profit		10,100
<b>Sales</b>		1,00,000

**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.

**Q. 4.a) In a factory two workmen A and B produce the same product using the same material. They are paid bonus according to Rowan System. The time allotted to the product is 40 hours. A takes 25 hours and B takes 30 hours to finish the product. The factory cost of the product for A is ₹ 193.75 and for B ₹205. The factory overhead rate is one rupee per man-hour. Find the normal rate of wages and the cost of materials used for the product.**

**b) Define Product costs. Describe three different purposes for computing product costs.**

**Answer 4.**

**a)** Let 'M' be the material cost and 'R' be the rate of wage per hour.

$$\begin{aligned} \text{A — Earnings} &= (25 \times R) + [(40-25) / 40] \times 25R \\ &= 25R + 9.375 R = 34.375 R \end{aligned}$$

$$\begin{aligned} \text{B — Earnings} &= (30 \times R) + [(40-30) / 40] \times 30R \\ &= 30R + 7.5 R = 37.5 R \end{aligned}$$

$$A = M + 34.375 R + 25 = 193.75$$

$$B = M + 37.5 R + 30 = 205.00$$

$$M + 34.375 R = 168.75 \quad \dots (i)$$

$$M + 37.500 R = 175.00 \quad \dots (ii)$$

Solving (i) & (ii) we get,

$$3.125 R = 6.25$$

$$R = 2$$

Normal rate of wage = ₹ 2 per hour

$$M + 37.5 R + 30 = 205$$

$$M + 75 + 30 = 205$$

$$M = 100$$

Material cost = ₹ 100

**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.

**Q. 5. a) A manufacturing unit produces two products X and Y. The following information is furnished:**

Particulars	Product X	Product Y
<b>Units produced ( Qty)</b>	<b>20,000</b>	<b>15,000</b>
<b>Units Sold (Qty)</b>	<b>15,000</b>	<b>12,000</b>



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Machine Hours utilised	10,000	5,000
Design charges	15,000	18,000
Software development charges	24,000	36,000

Royalty paid on sales ₹54,000 [ @ ₹2 per unit sold, for both the products]; Royalty paid on units produced ₹35,000 [ @ Re.1 per unit purchased, for both the products], Hire charges of equipment used in manufacturing process of Product X only ₹5,000, Compute the Direct Expenses.

b) In a manufacturing company where costing is done with a view to fix prices, state whether and, if so, to what extent the following items are includible in cost .

- (i) Bonus and gratuity
- (ii) Depreciation on plant and machinery .

Answer 5.

**a) Computation of Direct Expenses**

	Particulars	Product X	Product Y
	Royalty paid on Sales	30,000	24,000
<b>Add</b>	Royalty paid on units produced	20,000	15,000
<b>Add</b>	Hire charges of equipment used in manufacturing process of Product X only	5,000	----
<b>Add</b>	Design Charges	15,000	18,000
<b>Add</b>	Software development charges related to production	24,000	36,000
	<b>Direct Expenses</b>	<b>94,000</b>	<b>93,000</b>

**Note:**

- (i) Royalty on production and royalty on sales are allocated on the basis of units produced and units sold respectively. These are directly identifiable and traceable to the number of units produced and units sold. Hence, this is not an apportionment.
- (ii) No adjustments are made related to units held, i.e. closing stock.

b) The Cost Accountant makes no decision on pricing. Pricing is the domain of top management and sometimes sales management. The cost accountant only helps management in providing cost data and also determines the financial effects of fixing prices or the change in prices on the profitability of the undertaking. Here the cost accountant is required to analyse whether, and if so the extent to which –bonus and gratuity; depreciation on plant and machinery – be included as elements of cost.

**i) Bonus and gratuity:** Bonus under the payment of Bonus Act is to be paid compulsorily to the workers although the amount of bonus may vary with amount of profit earned. A minimum bonus of 8.33% is, however, payable irrespective of profit or loss earned by the concern. The amount of bonus, therefore, may be included in a direct labour cost to the extent of the minimum bonus, as the same is payable even in a loss situation. Any amount paid as bonus in excess of the minimum may be considered as an

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appropriation of profit. However, bonus linked with productivity is definitely a part of the overhead cost.

So far as gratuity is concerned, it is indeed directly linked with the wages and is not by any means related to the profits. Accordingly, it should be treated as an element of cost:

- (ii) **Depreciation on plant and machinery:** Depreciation on fixed assets represents the consumption of the value of the concerned assets in the process of operations. This consumption, is therefore an indirect cost of the production and operations. Without this, true cost of production cannot be obtained. Hence, depreciation charged in the accounts is considered as includible as an element of cost.

Q. 6.a) A pipe company manufactures two products A and B during the first year of its operations. For purposes of product costing, an overhead rate of application of ₹1.70 per direct labour hour was used, based on budgetary factory overhead of ₹ 3,40,000 and budgeted direct labour hours of 2,00,000 as follows:

	Budgeted overhead	Budgeted Hours	Product A	Product B
Department 1	₹ 2,40,000	1,00,000	1 hour	4 hours
Department 2	₹ 1,00,000	1,00,000	4 hours	1 hour
	3,40,000	2,00,000	5 hours	5 hours

At the end of the year, there was no work on process. There were, however, 2,000 and 6,000 finished units, respectively of products A and B on hand. Assume that budgeted activity was attained.

- (i) What was the effect on the company's income of using a plant wise overhead rate instead of departmental overhead rates?
- (ii) Assume that material and labour costs per unit of product A were ₹ 10 and that the selling price was established by adding 40% to cover profit and selling and administrative expenses. What difference in selling price would result from the use of departmental against plant wise overhead rates?
- (iii) Explain why departmental overhead rates were generally preferable to plant wise rates.

b) The following are the costing records for the year 2012 of a manufacturer:

Production 10,000 units; Cost of Raw Materials ₹ 2,00,000; Labour Cost ₹ 1,20,000; Factory Overheads ₹ 80,000; Office Overheads ₹ 40,000; Selling Expenses ₹ 10,000, Rate of Profit 25% on the Selling Price.

The manufacturer decided to produce 15,000 units in 2013. It is estimated that the cost of raw materials will increase by 20%, the labour cost will increase by 10%, 50% of the overhead charges are fixed and the other 50% are variable. The selling expenses per unit will be reduced by 20%. The rate of profit will remain the same.

Prepare a Cost Statement for the year 2013 showing the total profit and selling price per unit.

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**Answer 6. a)**

**(i) Computation of effect on income of company by using Plant wise over head rate instead of departmental Overhead Rates:**

Particulars	A	B
Overheads using plant wise OH rate A = (1.7 x 5)      B = (1.7 x 5)	8.5	8.5
(-) Overhead using dept OH rate A = [(1x2.4) + (4x1)] = 6.4 B = [(4x2.4) + (1x1)] = 10.6	6.4	10.6
	2.1	(-) 2.1
No. of units of stock	2,000	6,000
Increase or decrease in value of stock	4,200	12,600

Closing stock of A will increase by ₹ 4200 and that of B will decrease by ₹ 12,600. As a result of this, company's profit was shown in excess by ₹ 8,400.

**(ii) Computation of selling price of Product A by using plant wise Overhead Rate:**

Particulars	Amount (₹)
Materials & Labour	10.00
Overheads	8.50
	18.50
(+) 40% towards Selling & Distribution OH's and profit	7.40
Selling Price	25.90

**Computation of Selling Price of Product 'A' by using Dept. OH rates:**

Particulars	Amount
Materials & Labour	10.00
Overheads	6.40
	16.40
(+) 40% towards Selling & Distribution OH's and profit	6.56
Selling Price	22.96

Difference in Selling Price = 25.90 – 22.96 = 2.94

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(iii) When there are departments, departments OH rate should be used for absorbing factory overheads and not by using plant wise/general/blanket/single overhead rate. The reason being in different departments, nature of working differs. In one department, machine play dominant role. In some other department, material play dominant role. Depending upon dominance of each factor, OH rate should be used for absorbing overheads.

Therefore, it is always advisable, preferable and appropriate to use departmental overhead rate instead of blanket overhead rate.

### b) Statement of Cost & Profit (Cost Sheet)

(Output 10,000 units)

Particulars	Cost per unit (in ₹)	Total Cost (in ₹)
Raw Materials	20	2,00,000
Labour	12	1,20,000
<b>PRIME COST</b>	<b>32</b>	<b>3,20,000</b>
Add: Factory Overhead	8	80,000
<b>WORKS COST</b>	<b>40</b>	<b>4,00,000</b>
Add: Office Overhead	4	40,000
<b>COST OF PRODUCTION</b>	<b>44</b>	<b>4,40,000</b>
Add: Selling Expenses	1	10,000
<b>COST OF SALES</b>	<b>45</b>	<b>4,50,000</b>
Add: Profit (25% on Selling Price or 33.33% on Cost of Sales)	15	1,50,000
<b>SELLING PRICE</b>	<b>60</b>	<b>6,00,000</b>

### Statement of Cost & Profit (Cost Sheet)

(Output 15,000 units)

Particulars	Cost per unit (in ₹)	Total Cost (in ₹)
Raw Materials (₹ 20 x 120% x 15,000)	24.00	3,60,000
Labour (₹ 12 x 110% x 15,000)	13.20	1,98,000
<b>PRIME COST</b>	<b>37.20</b>	<b>5,58,000</b>
Add: Factory Overhead (₹ 80,000 x 50% + ₹ 4 x 15,000)	6.67	1,00,000
<b>WORKS COST</b>	<b>43.87</b>	<b>6,58,000</b>

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Add: Office Overhead (₹ 40,000 x 50% + ₹ 2 x 15,000)	3.33	50,000
<b>COST OF PRODUCTION</b>	<b>47.20</b>	<b>7,08,000</b>
Add: Selling Expenses (₹ 1 x 80% x 15,000)	0.80	12,000
<b>COST OF SALES</b>	<b>48.00</b>	<b>7,20,000</b>
Add: Profit (25% on Selling Price or 33.33% on Cost of Sales)	16.00	2,40,000
<b>SELLING PRICE</b>	<b>64.00</b>	<b>9,60,000</b>

**Q. 7. XY Ltd. maintains its accounts on a non-integrated basis. Both the financial accountant and cost accountant have completed their accounts for the year ended 30.6.2011 and a memorandum account reconciling the profit figures has been prepared. During the year Production overheads has been absorbed in the cost accounts as a percentage of direct wages at a rate of 250%.**

**You are required to prepare a detailed statement showing how the profit as shown in the cost accounts was arrived at. Any difference not explainable from the available data should be treated as being due to the difference in "Administrative Expenses".**

**The financial accountant has prepared the following account.**

**Dr. Manufacturing Trading and P & L Account for The Year Ended 30.6.2011 Cr.**

Particulars	(₹)	(₹)	Particulars	(₹)	(₹)
To, Raw materials consumed:			By, Trading A/c		
Opening stock	51,296		Cost of goods manufactured		4,74,772
Purchases	1,99,334				
	2,50,630				
Less: Closing stock	47,382	2,03,248			
To, Direct wages		80,072			
To, Production Overhead A/c		1,90,680			
Work in Progress					
Opening Stock	24,496				
Less: Closing stock	23,724	772			
		4,74,772			4,74,772

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Finished Goods:			By, Sales		6,25,600
Opening stock	63,890				
Cost of goods manufactured	4,74,772				
	5,38,662				
Less: Closing stock	65,702	4,72,560			
Gross Profit c/d		1,52,640			
		6,25,600			6,25,600
To, Debenture Interest		2,000	By, Gross Profit b/d		1,52,640
To, Discount allowed		2,964	By, Discount received		1,790
To, Distribution expenses		16,926			
To, Sales Expenses		30,562			
To, Net Profit c/d		48,920			
		1,54,430			1,54,430

The Memorandum account reconciling the profit shown in the financial and cost accounts for the year ended 30th June, 2011 is as follows:

Particulars	(₹)	(₹)	Particulars	(₹)	(₹)
Profit shown in the Financial A/c		48,920	Profit as shown in the Cost A/c		1,00,300
Difference in stock valuation :			Difference in stock valuation:		
Opening stock:			Opening stock:		
Work -in- progress	350		Raw material	320	
Finished goods	652				
Closing stock:			Closing stock:		
Work-in-progress	296		Finished goods	682	1,002

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Raw Material	422				
		1,720			
Sales Expenses		30,562	Discount received		1,790
Distribution Expenses		16,926			
Debenture Interest		2,000			
Discount Allowed		2,964			
		1,03,092			1,03,092

Answer 7.

### Statement of Cost and Profit (Or) Cost Sheet

Particulars	Amount ₹	Amount ₹
Opening Stock of material	51,296	
(+) Difference	320	51,616
(+) Purchases		1,99,334
		2,50,950
(-) Closing stock of raw material	47,382	
(+) Difference	422	47,804
Material consumed		2,03,146
(+) Direct wages		80,072
Prime cost		2,83,218
(+) Factory OH's (250% of wages)		2,00,180
		4,83,398
(+) Opening stock of WIP	24,496	
(-) Difference	350	24,146
		5,07,544
(-) Closing stock of WIP	23,724	
(+) Difference	296	24,020
Works Cost		4,83,524
<b>(+) Administration overheads (53,058 – 9,500) (bal. figure)</b>		43,558
Cost of Production		5,27,082
(+) Opening stock of finished goods (63,890 – 652)		63,238



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		5,90,320
(-) Less: Cl. Stock of finished goods	65,702	
(-) Difference	682	65,020
Cost of goods sold		5,25,300
Selling expenses		--
Cost of sales (or) Total cost		5,25,300
Profit		1,00,300
Sales		6,25,600

**Q. 8. a)** In a factory following the Job Costing Method, an abstract from the work in process as at 30th September, was prepared as under.

Job No.	Materials	Direct Labour	Factory Overheads Applied (₹)
115	1,325	400 hrs 800	640
118	810	250 hrs. 500	400
120	765	300 hrs 475	380
	2,900	1,775	1,420

Materials used in October were as follows:

Material requisitions No.	Job no.	Cost (₹)
54	118	300
55	118	425
56	118	515
57	120	665
58	121	910
59	124	720
		3,535

A summary of Labour Hours deployed during October is as under:

JOB NO.	NUMBER OF HOURS	
	SHOP A	SHOP B
115	25	25

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118	90	30
120	75	10
121	65	-
124	20	10
	275	75
<b>Indirect Labour:</b>		
Waiting for material	20	10
Machine breakdown	10	5
Idle time	5	6
Overtime premium	6	5
	316	101

A shop credit slip was issued in October, that material issued under requisition No.54 was returned back to stores as being not suitable. A material transfer note issued in October indicated that material issued under requisition No.55 for Job 118 was directed to Job 124.

The hourly rate in shop A per labour hour is ₹3 while at shop B it is ₹ 2 per hour. The factory overhead is applied at the same rate as in September; Jobs 115, 118 and 120 were completed in October.

You are asked to compute the factory cost of the completed jobs. It is practice of the management to put a 10% on the factory cost to cover administration and selling overheads and invoice the job to the customer on a total cost plus 20% basis what would be the invoice price of these three jobs?

b) What is the difference between Contribution and Profit ?

Answer 8.

a) Calculation of selling price of the Job

Job No.	115	118	120
	₹	₹	₹
<b>Costs in September:</b>			
Material	1,325	810	765
Labour	800	500	475
Overheads	640	400	380

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Total (A)	2,765	1,710	1,620
<b>Costs in October:</b>			
Material	-	515	665
Labour			
(25 x 3)+(25 x 2)	125		
(90 x 3)+(30 x 2)		330	
(75 x 3)+(10 x 2)			245
Overheads (80%)	100	264	196
Total (B)	225	1,109	1,106
Total Factory Cost (A+B)	2,990	2,819	2,726
Add: Admn. Overheads @ 10%	299.0	281.9	272.6
	3,289.0	3,100.9	2,998.6
Profit 20%	651.80	620.18	599.72
Selling Price	3,946.80	3,721.08	3,598.32

### b) Difference between Contribution and Profit

Contribution	Profit
1. It includes fixed cost and profit.	1. It does not include Fixed cost.
2. Marginal Costing technique uses the concept of contribution.	2. Profit is the accounting concept to determine profit or loss of a business concern.
3. At break-even point, contribution equals to Fixed cost.	3. Only the sales in excess or break-even points results in profit.
4. Contribution concept is used in managerial decision making.	4. Profit is computed to determine the profitability of product and the concern.

**Q. 9. a) A company is manufacturing building bricks and fire bricks. Both the products require two processes. Brick forming and Heat treatment. The requirements for the two bricks are:**

	BUILDING BRICKS	FIRE BRICKS
Forming per 100 bricks	3 hrs.	2 hrs.
Heat treatment per 100 bricks	2hrs.	5 hrs.

**Total costs of the two departments in one month were:**

Forming	₹ 21,200
---------	----------

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Heat Treatment	₹48,800
Production during the month was:	
Building Bricks	1,30,000 Nos.
Fire Bricks	70,000 Nos.

Prepare statement of manufacturing costs for the two varieties of bricks.

b) Deluxe limited undertook a contract for ₹5,00,000 on 1st July, 2011. On 30th June 2012 when the accounts were closed, the following details about the contract were gathered:

Particulars	₹
Materials purchased	1,00,000
Wages paid	45,000
General expenses	10,000
Plant Purchased	50,000
Materials on hand 30-6-2012	25,000
Wages accrued 30-6-2012	5,000
Work certified	2,00,000
Cash received	1,50,000
Depreciation of Plant	5,000
Work uncertified	15,000

The above contract contained an escalator clauses which read as follows:

“In the event of prices of materials and rates of wages increase by more than 5% the contract price would be increased accordingly by 25% of the rise in the cost of materials and wages beyond 5% in each case”.

It was found that since the date of signing the agreement the prices of materials and wage rates increased by 25% the value of the work certify does not take into account the effect of the above clause.

Prepare the contract account. Working should form part of the answer.

Answer 9.

### a) Statement Showing Number of Hours

Particulars	Buil. Bricks	Fire Bricks	Total
Forming (1,30,000/100) x 3 (70,000/100) x 2	3,900	1,400	5,300
Heat treatment (1,30,000/100) x 2 (70,000/100) x 5	2,600	3,500	6,100
<b>Total</b>	<b>6,500</b>	<b>4,900</b>	<b>11,400</b>

Cost of forming per hour =  $21,200 / 5,300 = 4$

Cost of Heat treatment per hour =  $48,800 / 6,100 = 8$

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Statement showing computation of manufacturing cost per two varieties of bricks:

Particulars	Buil. Bricks ₹	Fire Bricks ₹	Total ₹
Forming (3,900 x 4), (1,400 x 4)	15,600	5,600	21,200
Heat treatment (2,600 x 8), (3,500 x 8)	20,800	28,000	48,800
Total	36,400	33,600	70,000

b) Cost of material & wages incurred = ₹ (1,00,000 + 45,000 + 5,000 – 25,000 )  
= ₹1,25,000

Cost of material & wages before increase in prices = ₹ (1,25,000 x 100/125 )  
= ₹1,00,000

Increase in contract price = ₹25/100 [1,25,000 – ₹ (1,00,000 x 105/100)]  
= ₹5,000

Dr.

**Contract Account**

Cr.

Particulars	Amount ₹	Particulars	Amount ₹
To, Material purchased A/c	1,00,000	By, Material on hand	25,000
To, Wages A/c	50,000	Work certified	2,05,000
To, General Expenses A/c	10,000	Work uncertified	<u>15,000</u>
To, Depreciation on plant	5,000		
To, P & L A/c	19,512		
To, Reserve c/d	60,488		
	2,45,000		2,45,000

Q. 10. a) An oil company gives the following cost data. You are required to prepare various process accounts. Purchases of 1,000 quintals of copra @ ₹ 500 per quintal.

Particulars	Crushing	Refining	Finishing
	₹	₹	₹
Cost of labour	6,600	3,000	3,000
Electric Power	1,000	500	400
Sundry Material	700	200	-
Repair to machinery and plant	500	400	400

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Steam	250	150	100
Other Factory Expenses	4950	2250	2250

₹ 9,450, to be charged at 75% of wages

Cost of Casks - ₹ 580, Normal loss in 1st process was 30% of input, actual output 690 quintals.

Process II: By product 90 quintals value ₹ 6,200

Process III: Normal loss 5% Actual output 580 quintals

Scrap of 1st process realised ₹ 10 per quintal.

b) SM Ltd., furnished you the following information relating to process B for the month of October, 2012.

- (i) Opening work-in-progress- NIL
- (ii) Units introduced - 10,000 units @ ₹3 per unit
- (iii) Expenses debited to the process; Direct materials ₹14,650; Labour ₹21,148; Overheads ₹ 42,000
- (iv) Finished output - 9,500 units
- (v) Closing work-in-progress 350 units; Degree of completion : Material 100%; Labour and overheads 50%
- (vi) Normal loss in process- one percent of input
- (vii) Degree of completion of abnormal loss: Material 100% ; Labour and Overheads 80%
- (viii) Units scrapped as normal loss were sold at ₹1 per unit
- (ix) All the units of abnormal loss were sold at ₹2.50 per unit.

Prepare:

- A. Statement of Equivalent Production
- B. Statement of Cost
- C. Process - B Account
- D. Abnormal Loss Account

Answer 10. a)

Dr.

**Crushing Process - Account**

Cr.

Particulars	Units	₹	Particulars	Units	₹
To, Copra introduced	1000	5,00,000	By, Normal Loss A/c [30% x 1000] x ₹10	300	3,000
To, Wages A/c		6,600	By, Abnormal Loss A/c	10	7,300
To, Electric Row A/c		1,000	5,14,000-3,000 1,000-300 ×10		
To, Material A/c		700	By, Transfer to Refining Process-	690	5,03,700

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			A/c @ ₹ 730/-per unit		
To, Repair to Machinery and Plant A/c		500			
To, Steam A/c		250			
To, Factory Expenses A/c		4,950			
	1000	5,14,000		1000	5,14,000

**Dr. Refining Process- Account Cr.**

Particulars	Units	₹	Particulars	Units	₹
To, Transfer from Crushing Process A/c	690	5,03,700	By, Stock of By-products A/c	90	6,200
To, Labour Expenses A/c		3,000	By, Transfer to Finishing Process A/c @ ₹ 840 per unit	600	5,04,000
To, Power A/c		500			
To, Material A/c		200			
To, Machinery and Plant Repairs A/c		400			
To, Steam A/c		150			
To, Other Factory Expenses A/c		2,250			
	690	5,10,200		690	5,10,200

**Dr. Finishing Process- Account Cr.**

Particulars	Units	₹	Particulars	Units	₹
To, Transfer from Refining Process A/c	600	5,04,000	By, Normal Loss A/c	30	-
To, Labour A/c		3,000	By, Transfer to Finished Stock A/c	580	5,19,100
To, Power A/c		400			
To, Repairs A/c		400			
To, Steam A/c		100			
To, Factory Expenses A/c		2,250			
To, Abnormal Gain A/c	10	8,950			
	610	5,19,100		610	5,19,100



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### b) Statement of Equivalent Production

Input	Output	Units	Material		Labour		Overheads	
			%	Units	%	Units	%	Units
10000	Normal Loss	100	-	-	-	-	-	-
	Finished Units	9500	100	9500	100	9500	100	9500
	Closing Stock	350	100	350	50	175	50	175
	Abnormal Loss	50	100	50	80	40	80	40
10000		10000		9900		9715		9715

### Statement of Cost

Particulars	Cost ₹	Equivalent units	Cost per unit ₹
Material	44,550	9,900	4.5000
(30000+14650)-100			
Labour	21,148	9,715	2.1768
Overhead	42,000	9,715	4.3232

### Value of Closing Stock

Element	Units	Cost per unit	Total Cost
Material	350	4.5	1575.00
Labour	175	2.1768	380.94
Overhead	175	4.3232	756.56
			2712.50
			Say, ₹ 2713

### Value of Abnormal Loss

Element	Units	Cost per unit	Total Cost
Material	50	4.5	225.000
Labour	40	2.1768	87.072
Overhead	40	4.3232	172.928
			485

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Dr.		Process Account		Cr.	
Particulars	Units	₹	Particulars	Units	₹
To, Material Introduced	10000	30000	By, Normal Loss A/c	100	100
To, Material A/c		14650	By, Abnormal Loss A/c	50	485
To, Labour A/c		21148	By, Closing Stock A/c	350	2,713
To, Overheads A/c		42000	By, Transfer to Next Process @ ₹ 11 per unit	9500	1,04,500
	10000	107798		10000	1,07,798

Dr.		Abnormal Loss Account		Cr.	
Particulars	Units	₹	Particulars	Units	₹
To, Process A/c	50	485	By, Debtors / Cash	50	125
			By, costing P & L A/c	-	360
	50	485		50	485

Q. 11. a) Beauty soap, company manufactures four different brands of soaps namely Komal, Lovely, Makeup and Nice. The data on production and sale of these brands during 2012 is reproduced below.

Brand Name	Komal	Lovely	Makeup	Nice
Production & Sales (units)	3,00,000	5,00,000	70,000	40,000
Sale value ₹ Lakhs	15	31	2.8	1.2

All the above soaps are manufactured jointly up to a particular process. At split off point they are formed into cake-sand packed. The annual cost data were as under.

Direct Material Cost	₹ 30 lakhs
Value added	₹ 20 lakhs
(includes profit at 25% on total cost)	

Out of the above brands, Make up is sold in unpacked condition without further processing while other 3 brands further processed at an additional cost:

Komal	₹1,20,000	
Lovely	₹1,30,000	and
Nice	₹ 50,000	

You are required to:-

- (i) Work out the profit and cost of each brand of soap after allocating joint cost on the basis of Net Realisable value at split up point. (per unit cost not required).

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- (ii) Find out revised cost and profit on each brand if the company decides to sell all soaps at split up point at following prices; Komal ₹ 4.50; Lovely ₹6.00; Make up ₹ 4.00 and Nice ₹ 1.50 per unit.

Assume that for allocation of joint cost net Realisable value method is used.

- (iii) With the working results in (a) and (b) above advise Beauty Soap Company about the processing decision as to which soap to be sold at split of point and which to be processed further so as to maximise profit. Substantiate your decision with suitable costing to technique.

b) Manar lodging home is being run in a small hill station with 50 single rooms. The home offers concessional rates during six off- season months in a year. During this period, half of the full room rent is charged. The management's profit margin is targeted at 20% of the room rent. The following are the cost estimates and other details for the year ending on 31st March 2012. [Assume a month to be of 30 days].

- (i) Occupancy during the season is 80% while in the off- season it is 40% only.

- (ii) Expenses:

Staff salary [Excluding room attendants] ₹ 2,75,000

Repairs to building ₹ 1,30,500

Laundry and linen ₹ 40,000

Interior and tapestry ₹ 87,500

Sundry expenses ₹ 95,400

- (iii) Annual depreciation is to be provided for buildings @ 5% and on furniture and equipments @ 15% on straight-line basis.
- (iv) Room attendants are paid ₹ 5 per room day on the basis of occupancy of the rooms in a month.
- (v) Monthly lighting charges are ₹ 120 per room, except in four months in winter when it is ₹ 30 per room and this cost is on the basis of full occupancy for a month.
- (vi) Total investment in the home is ₹ 100 lakhs of which ₹ 80 lakhs relate to buildings and balance for furniture and equipments.

You are required to work out the room rent chargeable per day both during the season and the off-season months on the basis of the foregoing information.

Answer 11.a)

Computation of Joint Cost

Particulars	Amount (₹)
Direct material	30,00,000
(+) value added	20,00,000
Total Sales	50,00,000
(-) Profit @ 25% on cost (i.e. 20% on sales)	10,00,000
Total Cost	40,00,000
(-) Separate Cost (120 + 130 + 50)	3,00,000
Joint Cost	37,00,000

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### Statement Showing Computation of Profit After Further Processing:

	Particulars	K	L	M	N	Total
		₹	₹	₹	₹	₹
(I)	Sales after further processing	15,00,000	31,00,000	2,80,000	1,20,000	50,00,000
(II)	Separate cost	1,20,000	1,30,000	-	50,000	3,00,000
(III)	Sales before further processing NRV= (I-II)	13,80,000	29,70,000	2,80,000	70,000	47,00,000
(IV)	Joint Costs	10,86,383	23,38,085	2,20,426	55,106	37,00,000
(V)	Profit or Loss (III-IV)	2,93,617	6,31,915	59,574	14,894	10,00,000

### Statement Showing Computation of Profit Before Further Processing:

	Particulars	K	L	M	N	Total
		₹	₹	₹	₹	₹
(I)	Sales at split off	13,50,000	30,00,000	2,80,000	60,000	46,90,000
(II)	Joint Cost (as apportioned above)	10,86,383	23,38,085	2,20,426	55,106	37,00,000
(III)	Profit or Loss	2,63,617	6,61,915	59,574	4,894	9,90,000

### Statement Showing Computation of Incremental Profit By Further Processing

	Particulars	K	L	M	N	Total
		₹	₹	₹	₹	₹
(I)	Sales after further process	15,00,000	31,00,000	2,80,000	1,20,000	50,00,000
(II)	Sales before further process	13,50,000	30,00,000	2,80,000	60,000	46,90,000
(III)	Incremental sales (I-II)	1,50,000	1,00,000	-	60,000	3,10,000
(IV)	Separate costs	1,20,000	1,30,000	-	50,000	3,00,000
(V)	Incremental Profit (loss) (III-IV)	30,000	(30,000)	-	10,000	10,000

**Products K and N are to be further Process and whereas Products L and M need not to be further process**

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b)

(i) Computation of Estimated Cost for the year ending 31<sup>st</sup> March, 2012

Particulars	Amount ₹
Salary	2,75,000
Repairs	1,30,500
Laundry and linen	40,000
Interior decoration	87,500
Depreciation: 5% on ₹ 80 lakhs: ₹ 4,00,000 15% on ₹ 20 lakhs: ₹ 3,00,00	7,00,000
Sundry expenses	95,400
<b>Total costs</b>	<b>13,28,400</b>

(ii) Number of room days in a year:

Occupancy during season for 6 months @ 80%  $(50 \times 0.80 \times 6 \times 30) = 7,200$

Off-season occupancy for 6 months @ 40%  $(50 \times 0.40 \times 6 \times 30) = 3,600$

Total number of room days during a year = 10,800

(iii) Attendant's salary

For 10,800 room days @ ₹ 5 per day = ₹ 54,000

(iv) Light charges for 8 months @ ₹ 120 per month i.e.  $\frac{₹ 120}{30} = ₹ 4$  per room day.

Light charges for 4 months @ ₹ 30 per month, i.e.  $\frac{₹ 30}{30} = ₹ 1$  per room day

Total lighting charges:

During season @ ₹ 4 for 7200 days = ₹ 28,800

During off season 2 months @ ₹ 4 for 1200 days  $(\frac{2}{6} \times 3600) = ₹ 4,800$

During 4 months of winter @ Re. 1 for 2,400 days  $(\frac{4}{6} \times 3600) = ₹ 2,400$

**Note:** It is given in the example that during four months of winter, the lighting is ₹ 30 per room, which is  $\frac{1}{4}$ <sup>th</sup> of the lighting charges during the remaining period of the year. Hence the rate of room day which is ₹ 4 will also be  $\frac{1}{4}$ <sup>th</sup> for winter period and so it is taken as Re. 1 per room day.

### Statement of Total Estimated Cost

Particulars	Amount ₹
Expenses as shown in I above	13,28,000
Attendant's salary as shown in III above	54,000
Lighting charges as shown in IV above	36,000
<b>Total cost</b>	<b>14,18,400</b>

Computation of total Full Room Days

During season : 7,200

Off-season : 1,800 (Equivalent to 50% rate of 3,600 days)

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Total Full Room Days : 9,000

Computation of Room Rent

Cost per room day : ₹ 14,18,400 / 9,000	= ₹ 157.60
Add: Profit margin at 20% of rent or 25%	
Of cost	= ₹ <u>39.40</u>
Room Rent	= ₹ <u>197.00</u>

Therefore, during season, room rent of ₹ 197 is to be charged while in the off-season room rent of ₹ 98.50 is to be charged.

**Q. 12. The cost structure of an article the selling price of which is ₹ 45,000 is as follows:**

<b>Direct Materials</b>	<b>50%</b>
<b>Direct Labour</b>	<b>20%</b>
<b>Overheads</b>	<b>30%</b>

An increase of 15% in the cost 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 present profit per article.

You 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 12.**

**Present Statement of Profit per article**

Particulars		₹
Direct Materials	0.5x	15,000
Direct Labour	0.2x	6,000
Overheads	0.3x	9,000
<b>Total Cost</b>		<b>30,000</b>
Profit (50% on Cost)		15,000
<b>Selling Price</b>		<b>45,000</b>

**Statement of Revised Selling Price Per Article**

Particulars		₹
Direct Materials	0.575x	17,250

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Direct Labour	0.250x	7,500
Overheads	0.300x	9,000
Total Anticipated Cost		33,750
Profit (50% on Cost)		16,875
Selling Price		50,625

### Working Notes:

Suppose,  
 $x$  = Total Cost  
 $y$  = Profit per article  
Hence  $x + y = ₹ 45,000$

### Statement Showing The Present & Anticipated Cost Per Article

Items	Present Cost	Increase % ₹	Anticipated Cost
Direct Materials	0.5x	15.00	0.575x
Direct Labour	0.2x	25.00	0.250x
Overheads	0.3x		0.300x
	x		1.125x

$$1.125x + 0.75y = ₹ 45,000 - I$$

$$x + y = 45,000 - II$$

$$1.5x + y = 60,000 \text{ (Multiply both sides of first equation by } 4/3 \text{)-III}$$

$$\text{(Deducting (III) equation)} \quad 0.5x = 15,000$$

$$\text{From equation (II), we get } \therefore x = ₹ 30,000$$

$$\text{and } y = ₹ 15,000$$

**Q. 13. a) A market gardener is planning his production for next season and he asked you, as a cost consultant, to recommend the optimum mix of vegetable production for the coming year. He has given you the following data relating to the current year:**

	POTATOES	TOMATOES	PEAS	CARROTS
Area occupied in acres	25	20	30	25
Yield per acre in tons	10	8	9	12
Selling Price per ton ₹	1,000	1,250	1,500	1,350
<b>Variable Cost per acre:</b>				
Fertilizer	300	250	450	400
Seeds	150	200	300	250
Pesticides	250	150	200	250



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Direct Wages 4,000 4,500 5,000 5,700

Fixed Overhead per annum: ₹5,40,000

The land which is being used for the production of carrots and peas can be used for either crop but not for potatoes and tomatoes. The land being used for potatoes and tomatoes can be used for either crops but not carrots and peas. In order to provide an adequate market service, the gardener must produce each year at least 40 tons of each of potatoes and tomatoes and 36 tons of each peas and carrots. You are required to present a statement to show :

- (i) (1) The profit for the current year:  
 (2) The profit for the production mix you would recommend;
- (ii) Assuming that the land could be cultivated in such a way that any of the above crops could be produced and there was no market commitment. You are required to:
- (1) Advise the market gardener on which crop he should concentrate his production.  
 (2) Calculate the profit if he were to do so, and  
 (3) Calculate in rupees the breakeven - point of sales.

b) 'In decision-making only relevant costs should be considered'. Explain.

Answer 13.

a) Statement showing computation of contribution and determination of priority for profitability:

	Particulars		Potatoes	Tomatoes	Peas	Carrots
I.	Sales per acre	(₹)	10,000	10,000	13,500	16,200
II.	Variable cost	(₹)	4,700	5,100	5,950	6,600
III.	Contribution	(₹)	5,300	4,900	7,550	9,600
IV.	Priority		III	IV	II	I

(i)

(1) Statement showing computation of profit for current year:

Sr. No.	Particulars		Potatoes	Tomatoes	Peas	Carrots	Total
I.	No. of acres		25	20	30	25	100
II.	Contribution per acre	(₹)	5,300	4,900	7,550	9,600	
III.	Total contribution	(₹)	1,32,500	98,000	2,26,500	2,40,000	6,97,000
IV.	Fixed cost	(₹)					5,40,000
V.	Profit	(₹)					1,57,000

(2) Statement showing optimum mix under given conditions and computation of profit at that mix:

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Sr. No.	Particulars	Potatoes	Tomatoes	Peas	Carrots	Total
	Minimum production in tons	40	40	36	36	100
	Area required for this (acre)	4	5	4	3	16
	Remaining area (acre)	36	--	--	48	84
I.	No. of acres	40	5	4	51	
II.	Contribution per acre (₹)	5,300	4,900	7,550	9,600	
III.	Total contribution (₹)	2,12,000	24,500	30,200	4,89,600	7,56,300
IV.	Fixed cost (₹)					5,40,000
V.	Profit (₹)					2,16,300

(ii)

(1) If the land is suitable for growing any of the crops and there is no market commitment, the gardener is advised to concentrate his production on carrots.

(2) & (3):

Sr. No.	Particulars	₹
I.	Sales (16,200 x 100)	16,20,000
II.	Contribution (9,600 x 100)	9,60,000
III.	Fixed cost	5,40,000
IV.	Profit	4,20,000

$$\begin{aligned} \text{Break even sales} &= (5,40,000 \times 16,20,000) / 9,60,000 \\ &= ₹ 9,11,250 \end{aligned}$$

**b)** Relevant costing for decision making purposes is not only important to classify costs according to the way in which they behave, but also as to whether or not they are relevant to a particular decision. A relevant cost is a future cost which differs between alternatives. It can also be defined as any cost which affected by the decision at hand.

The main features of a relevant cost are as follows :

- (i) It must be a future cost i.e. one which is expected to be incurred and not a historic (sunk) cost which has already been incurred.
- (ii) It must be an incremental (additional) or avoidable cost.

In considering a range of alternative actions, costs which will be identical for all alternatives are irrelevant and can be ignored for the purpose of decision-making. Every decision deals with future. The function of the decision-maker is to select the courses of action for the future. A relevant cost is a future cash flow arising as a direct consequence of the decision

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under review. Only relevant costs should be considered in decision making, because it is assumed that in the long-run future profits will be maximized if the 'cash profits' of the company, i.e. the cash earned from sales minus the cash expenditures on making and selling the goods, are also maximized.

**Q. 14. An engineering company receives in enquiry for the manufacture of certain products, where costs estimated as follows per product. Direct materials ₹ 3.10; Direct labour (5 hours) ₹ 2.05; Direct expenses ₹ 0.05 Variable overheads 20 paise per hour.**

The manufacture of these products will necessitate the provision of special tooling costing approximately ₹ 4,500. The price per unit is ₹ 8.00. For an order to be considered profitable it is necessary for it to yield a target contribution at the rate of ₹ 0.30 per Labour Hour (after tooling cost).

Find out:

- The sales level at which contribution to profit commences.
- The sales at which the contribution exceeds the target.

Answer 14.

Statement Showing Computation of Contribution

Sr. No.	Particulars	Amount (₹)
I.	Selling price	8.00
II.	Variable cost	
	Direct material	3.10
	Direct Labour	2.05
	Direct expenses	0.05
	Variable OH (5 x 0.2)	1.00
III.	Total Variable Cost	6.20
	Contribution (i - iii)	1.80

Break even units =  $4,500 / 1.8 = 2,500$  units.

Break even sales =  $2,500 \times 8 = ₹ 20,000$

Target profit = ₹ 0.3 per hour i.e. ₹ 1.5 per unit ( $5 \times 0.3$ )

Let 'S' be the required units.

Desired profit =  $1.5 \times S = 1.5S$

Required units =  $4,500 + 1.5S / 1.8$

$\Rightarrow S = 4,500 + 1.5S / 1.8$

$\Rightarrow S = 15,000$  units

Required sales =  $15,000 \times 8 = ₹ 1,20,000$ .

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Q. 15. Given below is the basic data relating to New India Company for three years:

	Year1	Year 2	Year 3
<b>Production and Inventory data</b>			
Planned production (in units)	2,500	2,500	2,500
Finished goods inventory (in units), Jan 1	0	0	750
Actual production (in units)	2,500	2,500	2,500
Sales (in units)	2,500	1,750	3,250
Finished goods inventory (in units), Dec 31	0	750	0
<b>Revenue and cost data, all three-years</b>			
Sales price per unit			<u>₹ 48</u>
<b>Manufacturing costs per unit</b>			
Direct material			12
Direct labour			8
Variable manufacturing overhead			<u>4</u>
<b>Total variable cost per unit</b>			<u>24</u>
<b>Used only under absorption costing:</b>			
Fixed manufacturing overhead = Annual fixed OH / Annual Production = ₹ 30,000 / ₹ 2,500			<u>12</u>
<b>Total absorption cost per unit</b>			<u>₹ 36</u>
Variable selling and administrative cost per unit			
Fixed selling and administrative cost per year			<u>₹ 4</u> <u>₹ 5,000</u>

You are required to Prepare:

- Absorption Costing Income Statement
- Variable Costing Income Statement.
- Reconciliation of Income under Absorption and Variable Costing.
- Throughput Costing Income Statement and Comment how it is relatively more useful.

Draw your conclusion.

Answer 15.

- Absorption Costing Income Statement

New India Company  
Income Statement as per Absorption Costing

Particulars	₹ Year1	₹ Year 2	₹ Year 3
Sales revenue (at ₹ 48 per unit)	1,20,000	84,000	1,56,000
Less: Cost of goods sold (at absorption cost of ₹ 36 per unit)	90,000	63,000	1,17,000
Gross margin	30,000	21,000	39,000
Less: Selling and administrative expenses:			
Variable (at ₹ 4 per unit)	10,000	7,000	13,000
Fixed	5,000	5,000	5,000
Operating Income	15,000	9,000	21,000

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### (b) Variable Costing Income Statement

#### New India Company Income Statement as per Variable Costing

Particulars	Year1 (₹)	Year 2 (₹)	Year 3 (₹)
Sales revenue (at ₹ 48 per unit)	1,20,000	84,000	1,56,000
Less: Variable expenses:			
Variable manufacturing costs (at variable cost of ₹ 24 per unit)	60,000	42,000	78,000
Variable selling & admn. Costs (at ₹ 4 per unit)	10,000	7,000	13,000
Contribution margin	50,000	35,000	65,000
Less: Fixed expenses :			
Fixed manufacturing overhead	30,000	30,000	30,000
Fixed selling & admn. Expenses	5,000	5,000	5,000
Operating Income	15,000	0	30,000

### (c) Reconciliation of Income under Absorption and Variable Costing

#### New India Company Reconciliation of Income under Absorption and Variable Costing

Particulars	Year1 (₹)	Year 2 (₹)	Year 3 (₹)
Cost of goods sold under absorption costing	90,000	63,000	1,17,000
Variable manufacturing costs under variable costing	60,000	42,000	78,000
Difference	30,000	21,000	39,000
Fixed manufacturing overhead as a period expense under variable costing.	30,000	30,000	30,000
Balance	0	(9,000)	9,000
Operating Income under variable costing	15,000	0	30,000
Operating income under absorption costing	15,000	9,000	21,000
Difference in operating income	0	(9,000)	9,000

The following table shows, this difference in the amount of fixed overhead expenses explains the difference in reported income under absorption and variable costing:

Year	Change in Inventory (in units)	Fixed Overhead Rate	Difference in Fixed Overhead	Absorption Costing Income Minus Variable Costing Income

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			Expenses		
Year 1	0	x ₹ 12 =	= 0	=	0
Year 2	750 increase	x ₹ 12 =	= ₹ 9,000	=	₹9,000
Year 3	750 decrease	x ₹ 12 =	= (9,000)	=	(9,000)

### (d) Throughput Costing Income Statement

#### New India Company Income Statement as per Throughput Costing

Particulars	Year1 (₹)	Year 2 (₹)	Year 3 (₹)
Sales revenue (at ₹ 48 per unit)	1,20,000	84,000	1,56,000
Less: Cost of goods sold (at throughput cost: Direct – material cost) <sup>1</sup>	30,000	21,000	39,000
Throughput	90,000	63,000	1,17,000
Less: Operating costs:	20,000	20,000	20,000
Direct labour	10,000	10,000	10,000
Variable manufacturing overhead	30,000	30,000	30,000
Fixed manufacturing overhead	10,000	7,000	13,000
Variable Selling & Admn. Costs	5,000	5,000	5,000
Fixed selling & Admn. Costs	75,000	72,000	78,000
Total Operating costs			
Operating Income	15,000	(9,000)	39,000

#### Notes:

1. Standard direct-material cost per unit of ₹ 12 multiplied by sales volume in units.
2. Assume that management has committed to direct labour sufficient to produce the planned annual production volume of 2500 units; direct labour cost is used at a rate of ₹ 8 per unit produced.
3. Assumes management has committed to support resources sufficient to produce the planned annual production volume of ₹ 2500 units; variable overhead cost is used at a rate of ₹ 4 per unit produced. Fixed overhead is ₹ 30,000 per year.
4. Variable selling and administrative costs used amount to ₹ 1 per unit sold. Fixed selling and administrative costs are ₹ 5,000 per year.

**Q. 16. Trimake Limited makes three main products, using broadly the same production methods and equipment for each. A conventional product costing system is used at present, although an Activity Based Costing (ABC) system is being considered. Details of the three products, for typical period are:**

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	Labour Hours per unit	Machine Hours per unit	Material Per unit	Volumes Units
Product X	½	1 ½	₹ 20	750
Product Y	1 ½	1	₹12	1,250
Product Z	1	3	₹25	7,000

Direct labour costs ₹ 6 per hour and production overheads are absorbed on a machine hour basis. The rate for the period is ₹ 28 per machine hour.

You are required:

- (a) To calculate the cost per unit for each product using conventional methods.

Further analysis shows that the total of production overheads can be divided as follows

	%
Costs relating to set-ups	35
Costs relating to machinery	20
Costs relating to materials handling	15
Costs relating to inspection	<u>30</u>
Total production overhead	<u>100%</u>

The following activity volumes are associated with the product line for the period as a whole.

Total activities for the period

	Number of Set-ups	Number of movements of materials	Number of Inspections
Product X	75	12	150
Product Y	115	21	180
Product Z	480	87	670
	<u>670</u>	<u>120</u>	<u>1,000</u>

You are required:

- b) To calculate the cost per unit for each product using ABC principles;

Answer 16.

- (a) Computation of cost per unit using Conventional Methods:

	Total overheads	₹
X	= 750 x 1.5 x 28	= 31,500
Y	= 1250 x 1 x 28	= 35,000
Z	= 7000 x 3 x 28	= <u>5,88,000</u>
		<u>6,54,500</u>

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### Computation of Cost

Particulars	X	Y	Z
	₹	₹	₹
Materials	20	12	25
Labour	3	9	6
Overheads	42	28	84
Factory Cost	65	49	115

### (b) Under ABC Costing

	Setup Cost	Machine Cost	Machine Handling Cost	Inspection Expenses	Total
Costs (₹)	2,29,075	1,30,900	98,175	1,96,350	6,54,500
Cost Driver	No. of setups	Machine hours	No. of movement of materials	No. of Inspections	
Cost driver rates (₹)	341.90 (229075/670)	5.6 (130900/23375)	818.125 (98,175/120)	196.35 (196350/1000)	

### Cost per unit under ABC costing

Particulars	X		Y		Z	
	₹	₹	₹	₹	₹	₹
Materials		20.00		12.00		25.00
Labour		3.00		9.00		6.00
Overheads						
Setup Cost	34.19		31.45		23.44	
Machine cost	8.40		5.60		16.80	
Machine Handling Cost	13.09		13.74		10.17	
Inspection Cost	39.27	94.95	28.27	79.06	18.79	69.20
Total Cost		117.95		100.06		100.20



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Q. 17. Rana manufactures a product by a series of mixing of ingredients. The product is packed in company's made bottles and put into an attractive carton. One division of company manufactures the bottles while another division prepares the mix that does the packing.

The user division obtained the bottle from the bottle manufacturing division. The bottle manufacturing division has obtained the following quotations from an external source for supply of empty bottles.

Volume no of bottles	For 8,00,000 bottles	For 12,00,000 bottles
Total price offer (₹)	14,00,000	20,00,000

The estimated cost is:

Volume no of bottles	For 8,00,000 bottles	For 12,00,000 bottles
Total Cost (₹)	10,40,000	14,40,000

The sales value and the end cost in the mixing/packing division are:

Volume no of bottles	For 8,00,000 bottles	For 12,00,000 bottles
Total sales value (₹)	91,20,000	1,27,80,000
Total Cost ** (₹)	64,80,000	96,80,000

\*\* Excluding cost of bottles

There is a considerable discussion as to the proper transfer price from the bottle division to the marketing division.

The divisional managers salary is an incentive bonus based on profits of the centres.

You are required to show for the given two levels of activity the profitability of the two divisions and the total organisation based on appropriate transfer price determined on the basis of:

- i. Shared profit related to the cost
- ii. Market price

Answer 17.

Statement showing Computation of transfer price on the basis of profit shared on cost basis:

Particulars	Output (8,00,000)	Output (12,00,000)
	(₹)	(₹)
Sales	91,20,000	1,27,80,000
<b>Costs:</b>		
Product manufacturing division	64,80,000	96,80,000
Bottle manufacturing division	10,40,000	14,40,000
	75,20,000	1,11,20,000
Profit	16,00,000	16,60,000
Share of bottle manufacturing division	2,21,276	2,14,964

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Product manufacturing division	13,78,724	14,45,036
Transfer price	12,61,276	16,54,964
Transfer price per bottle	1.5777	1.379

### Profitability on the basis of market price:

Particulars	Output (8,00,000)		Output (12,00,000)	
	(₹)	(₹)	(₹)	(₹)
Bottle manufacturing division				
Sale value		14,00,000		20,00,000
(-)cost		10,40,000		14,40,000
Profit		3,60,000		5,60,000
Product manufacturing division				
Sale value		91,20,000		1,27,80,000
(-)cost of product	64,80,000		96,80,000	
Cost of bottle	14,00,000		20,00,000	
		78,80,000		1,16,80,000
Profit		12,40,000		11,00,000
Total profit		16,00,000		16,60,000
Transfer price		1.75		1.67

**Q. 18. A company manufactures two products, A and B and the budgeted data for the year are as follows:**

	Product A (₹)	Product B (₹)
<b>Sales price per unit</b>	<b>100</b>	<b>75</b>
<b>Direct material per unit</b>	<b>20</b>	<b>10</b>
<b>Direct wages per unit</b>	<b>5</b>	<b>4</b>
<b>Total works overhead</b>	<b>10,105</b>	<b>9,009</b>

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Total marketing overhead	1,200	1,100
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The sales manager forecasts the sales in units as follows:

	Product A (units)	Product B (units)
January	28	10
February	28	12
March	24	16
April	20	20
May	16	24
June	16	24
July to January (next year) Per month	18	20

It is assumed that (i) there will be no work in progress at the end of any month, and (ii) finished units equal to half the sales for the following month will be kept in stock.

Prepare (a) A Production Budget for each month and (b) A Summarized Profit and Loss Statement for the year.

Answer 18.

### (a) Production Budget (in number of units)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Product –A													
Sales	28	28	24	20	16	16	18	18	18	18	18	18	240
Add: Closing Stock	14	12	10	8	8	9	9	9	9	9	9	9	
	42	40	34	28	24	25	27	27	27	27	27	27	
Less: Opening Stock	14	14	12	10	8	8	9	9	9	9	9	9	
Production	28	26	22	18	16	17	18	18	18	18	18	18	235
Product- B													
Sales	10	12	16	20	24	24	20	20	20	20	20	20	226
Add: Closing Stock	6	8	10	12	12	10	10	10	10	10	10	10	

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	16	20	26	32	36	34	30	30	30	30	30	30
Less: Opening Stock	5	6	8	10	12	12	10	10	10	10	10	10
Production	11	14	18	22	24	22	20	20	20	20	20	231

### (b) Summarised Product Cost Budget

Output Particulars	Product A 235 units (₹)	Product B 231 units (₹)	Total (₹)
Direct Material : A @ ₹ 20 B @ ₹ 10	4,700	2310	7,010
Direct Labour : A @ ₹ 5 B @ ₹ 4	1,175	924	2,099
Works overheads	10,105	9009	19,114
Total production Cost	15,980	12243	28,223
Cost per unit	68 (15,980/235)	53 (12,243/231)	

### Summarised Profit and Loss Statement for the Year

Particulars	Product A (₹)	Product B (₹)	Total (₹)
Sales	24,000	16,950	40,950
Less:	16,320	11,978	
Production Cost of goods sold (240 x 68) (226 x 53)	1,200	1,100	
Marketing Overheads			
Total (ii) Cost (ii)	17,520	13,078	30,598
Profit (i - ii)	6,480	3,872	10,352

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Q. 19. The budget controller of a manufacturing organisation producing three products has compiled the following data for the annual budget for the year 2013.

	Price per kg	Products		
		A	B	C
<b>Raw materials:</b>			<b>Kg per unit</b>	
RM1	₹5.00	1	6	12
RM2	2.00	6	-	14
RM3	3.00	6	10	2
<b>Direct Labour</b>	<b>Rate per hour</b>		<b>Hours per unit</b>	
Dept1	₹2.00	9	4	4
Dept2	3.00	3	4	2
Dept3	4.00	2	5	4
<b>Factory Overheads:</b>				
Variable		4	8	6
<b>Sales value (₹ Lakhs)</b>		<b>346.50</b>	<b>275.40</b>	<b>263.25</b>
<b>Stock of finished goods on 1.1.2013 (units)</b>		<b>1,200</b>	<b>800</b>	<b>1,000</b>

Fixed factory overhead rate per direct labour hour

	₹
Dept1	5.00
Dept2	3.00
Dept3	6.00

The following policies have been laid down for the budgeted year 2013:

- (i) Fixed factory overheads will be absorbed on direct labour hour basis.
- (ii) Administration overheads are absorbed at the rate at 20% of factory cost.

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- (iii) Selling and distribution overheads (one-third variable) are recovered at the rate of 25% of the cost of production including administration overheads.
- (iv) The mark up on the cost of sales for profit is:  
Product 'A' 10%, Product 'B' 20%, Product 'C' 30%.
- (v) Inventories of finished goods will be reduced by 25% on 31-12-2013.
- (vi) The finished goods inventories are valued on marginal cost basis. The marginal cost of the opening stocks on 1.1.2013 were:
- (vii) Product 'A' ₹80, Product 'B' ₹120 and Product 'C' ₹140

You are required to compute:

- (a) The number of units of each product estimated to be sold in the budget year.
- (b) The number of unit of each product proposed to be produced in the budget year .
- (c) The contribution to sales ratio envisaged for each of the products
- (d) Valuation of opening and closing stock of finished goods on marginal cost basis.

**Answer 19.**

**Computation of Selling Price for the Product**

Particulars	A	B	C
<b>(i) Material:</b>			
RM 1	5.00	30.00	60.00
RM 2	12.00	0.00	28.00
RM 3	18.00	30.00	6.00
	35.00	60.00	94.00
<b>(ii) Labour</b>			
Dept-1	18.00	8.00	8.00
Dept-2	9.00	12.00	6.00
Dept-3	8.00	20.00	16.00
	35.00	40.00	30.00
PRIME COST (i +ii)	70.00	100.00	124.00
<b>(iii) Factory Overheads:</b>			
Variable	4.00	8.00	6.00

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Fixed:			
Dept-1	45.00	20.00	20.00
Dept-2	9.00	12.00	6.00
Dept-3	12.00	30.00	24.00
	70.00	70.00	56.00
<b>FACTORY COST (i+ii+iii)</b>	<b>140.00</b>	<b>170.00</b>	<b>180.00</b>
(iv) Administration Overheads	28.00	34.00	36.00
(v) Cost of Production	168.00	204.00	216.00
(vi) Selling and distribution overheads	42.00	51.00	54.00
(vii) Total Cost	210.00	255.00	270.00
(viii) Profit	21.00	51.00	81.00
(ix) Selling Price	231.00	306.00	351.00
(x) Expected Number of Units to be sold	= 1,50,000	= 90,000	= 75,000
<b>(a)</b>	<b>1,50,000</b>	<b>90,000</b>	<b>75,000</b>

### (b) Production Budget

Particulars	A	B	C
Sales	1,50,000	90,000	75,000
Add: Closing Stock	900	600	750
	1,50,900	1,90,600	75,750
Less: Opening Stock	1,200	800	1,000
Production	1,49,700	89,800	74,750

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### (c) Computation of Contribution to Sales Ratio

Particulars	A	B	C
(i) Selling price	231	306	351
(ii) Variable cost	88 [74+(42/3)]	125 [108+17]	148 [130+18]
(iii) Contribution [I – II]	143	181	203
(iv) P/V Ratio	61.90%	59.15%	57.83%

### (d) statement showing valuation of stocks

Particulars	A	B	C
Opening Stock (units)	1200	800	1000
Variable cost	80	120	140
Value	96,000	96,000	1,40,000
Closing Stock (units)	900	600	750
Variable cost	88	125	148
Value	72,900	75,000	1,11,000

**Q. 20. Manufacturers Ltd. produce three products from three basic raw materials in three departments. The company operates a budgetary control system and values its stock of finished goods on a total cost basis. From the following data, you are required to produce for the month of July 2013 the following budgets.**

- (a) Production
- (b) Material usage
- (c) Purchases
- (d) P & L A/c for each product and in total.

	Budget data for July 2013		
	Product		
	A	B	C
	₹	₹	₹



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Sales	15,00,000	10,80,000	16,80,000
Stock of finished products at July 1, 2013 in units	3,000	2,000	2,500
		Department	
	I	II	III
Product overhead (₹)	2,39,000	2,01,300	3,91,200
Direct labour hours	47,800	67,100	65,200
Direct material:	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>
Stock July 1, 2013 in units	24,500	20,500	17,500

The company is introduced a new system of inventory control which should reduce stocks. The forecast is that stocks as at 31st July 2013 will be reduced as follows:

Raw materials by 10% and finished products by 20%.

Fixed production overhead is absorbed on a direct labour hour basis. It is expected that there will be no work-in-progress as the beginning or end of the month.

Administration costs are absorbed by the products at a rate of 20% of production cost and selling and distribution cost is absorbed by products at a rate of 40% of production cost.

Profit is budgeted as a percentage of total cost as follows:

Product A 25%, Product B 12½% and product C 16 %

Standard data per unit of Product

	Price per unit	A	B	C
Direct Material	₹	Units	Units	Units
M <sub>1</sub>	2.00	5	-	12
M <sub>2</sub>	4.00	-	10	9
M <sub>3</sub>	1.00	5	5	-
	Rate per Hour			
Direct Wages	₹	Hours	Hours	Hours
Department I	2.50	4	2	2
Department II	2.00	6	2	3

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Department III	1.50	2	4	6
Other variable costs		₹ 10	20	15

**Answer 20.**

### Statement of Cost and Profit per Unit

Particulars	A (₹)	B (₹)	C (₹)
(i) Material:		₹	₹
M <sub>1</sub>	10	-	24
M <sub>2</sub>	-	40	36
M <sub>3</sub>	5	5	-
	15	45	60
(ii) Labour:			
Dept-I	10	5	5
Dept-II	12	4	6
Dept-III	3	6	9
	25	15	20
(iii) Other Variable cost	10	20	15
(iv) Production overheads:			
Dept-I	20	10	10
Dept-II	18	6	9
Dept-III	12	24	36
(v) TOTAL PRODUCTION COST (i+ii+iii+iv)	100	120	150
(vi) Administration overheads	20	24	30
(vii) Selling & Distribution Overheads	40	48	60
(viii) Total Cost (v+vi+vii)	160	192	240
(ix) PROFIT PER UNIT	40	24	40

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	[25% x 160]	[12 ½ % x 192]	[16 2/3 % x 240]
(x) SELLING PRICE PER UNIT	200	216	280
(xi) Number of units sold	7500	5000	6000
(xii) Total Profit [ix × xi] (₹)	3,00,000	1,20,000	24,0,000

### (a) Production Budget

Particulars	A	B	C
Sales	7500	5000	6000
Add: Closing stock	2400	1600	2000
	9900	6600	8000
Less: Opening stock	3000	2000	2500
<b>PRODUCTION</b>	<b>6900</b>	<b>4600</b>	<b>5500</b>

### (b) & (c) Material Usage And Purchase Budget

Particulars	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>
Material required for:			
Product A	34500	-	34500
Product B	-	46000	23000
Product C	66000	49500	-
	100500	95500	57500
Add: Closing stock	22050	18450	15750
	122550	113950	73250
Less: Opening stock	24500	20500	17500
<b>PURCHASES</b>	<b>98050</b>	<b>93450</b>	<b>55750</b>

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Q. 21. A brass foundry making castings which are transferred to the machine shop of the company at standard price uses a standard costing system. Basing standards in regard to material stocks which are kept at standard price are as follows

Standard Mixture:	70% Copper and 30% Zinc
Standard Price:	Copper ₹ 2,400 per ton and Zinc ₹ 650 per ton
Standard loss in melt:	5% of input

Figures in respect of a costing period are as follows:

Commencing stocks:	Copper 100 tons
	Zinc 60 tons
Finished stock:	Copper 110 tons
	Zinc 50 tons
Purchases:	Copper 300 tons cost ₹7,32,500
	Zinc 100 tons cost ₹62,500
Metal melted 400 tons	
Casting produced 375 tons	
Present figures showing: Material price, Mixture and Yield Variance	

Answer 21.

### Computation of Actual Quantity (AQ)

Particulars	Copper		Zinc	
	Quantity (tons)	Value (₹)	Quantity (tons)	Value (₹)
Opening Stock	100	2,40,000	60	39,000
<b>Add:</b> Purchases	300	7,32,500	100	62,500
	400	9,72,500	160	1,01,500
<b>Less:</b> Closing stock	110	2,64,000	50	32,500
AQ	290	7,08,500	110	69,000

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### Analysis of Given Data

Material	Standard Data			Actual Data		
	Quantity (tons)	Price (₹)	Value (₹)	Quantity (tons)	Price (₹)	Value (₹)
Copper	280	2,400	6,72,000	290		7,08,500
Zinc	120	650	78,000	110		69,000
	400		7,50,000	400		7,77,500
<b>Less: Loss @ 5%</b>	20		-	25		-
	380		7,50,000	375		7,77,500

### Computation of Required Values

Material	SQSP (1)	RSQSP (2)	AQSP (3)	AQAP (4)
Copper	276.31 x 2,400 = 6,63,157.87	6,72,000	290 x 2,400 = 6,96,000	7,08,500
Zinc	118.42 x 650 = 76,973.68	78,000	110 x 650 = 71,500	69,000
<b>Total</b>	<b>7,40,132</b>	<b>7,50,000</b>	<b>7,67,500</b>	<b>7,77,500</b>

### Computation of SQ

SQ = x AQ for that material

For Copper = x 375 = 276.31 units.

For Zinc = x 375 = 118.42 units.

Where (1) SQSP = Standard Cost of Standard Material = ₹ 7,40,132

(2) RSQSP = Revised Standard Cost of Material = ₹ 7,50,000

(3) AQSP = standard Cost of Actual Material = ₹ 7,67,500

(4) AQAP = Actual Cost of Material = ₹ 7,77,500.

### Computation of Required Variances:

a. Material Yield Variance = (1) – (2) = ₹9,868 (A) [₹(7,40,132 – 7,50,000)]

b. Material Mix Variance = (2) – (3) = ₹17,500 (A) [₹(7,50,000 – 7,67,500)]

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- c. Material Usage Variance = (1) – (3) = ₹27,368 (A) [₹(7,40,132 – 7,67,500)]  
d. Material Price Variance = (3) – (4) = ₹10,000 (A) [₹(7,67,500 – 7,77,500)]  
e. Material Cost Variance = (1) – (4) = ₹37,368 (A) [₹(7,40,132 – 7,77,500)]

**Q. 22. The standard set for material consumption was 100kg. @ ₹ 2.25 per kg.**

**In a cost period:**

**Opening stock was 100 kg. @ ₹ 2.25 per kg.**

**Purchases made 500 kg. @ ₹ 2.15 per kg.**

**Consumption 110 kg.**

**Calculate: a) Usage b) Price variance**

**1) When variance is calculated at point of purchase**

**2) When variance is calculated at point of issue on FIFO basis**

**3) When variance is calculated at point of issue on LIFO basis**

**Solution:**

**a) Computation of Material Usage Variance**

$$\begin{aligned}\text{Material Usage Variance} &= \text{SQSP} - \text{AQSP} \\ &= \text{SP} (\text{SQ} - \text{AQ}) \\ &= 2.25(100-110) \\ &= 22.50 \text{ (A)}\end{aligned}$$

**b) Computation of Price variance:**

**1) When Variance is calculated at the point of purchase:**

$$\begin{aligned}\text{Price variance} &= \text{AQSP} - \text{AQAP} \\ &= (110 \times 2.25) - (110 \times 2.15) \\ &= 11 \text{ (F)}\end{aligned}$$

**2) When variance is calculated at the point of issue on FIFO basis**

$$\begin{aligned}\text{Price variance} &= \text{AQSP} - \text{AQAP} \\ &= (110 \times 2.25) - ([100 \times 2.25] + [10 \times 2.15]) \\ &= 1 \text{ (F)}\end{aligned}$$

**3) When variance is calculated at the point of issue on LIFO basis**

$$\begin{aligned}\text{Price variance} &= \text{AQSP} - \text{AQAP} \\ &= (110 \times 2.25) - (110 \times 2.15) \\ &= 247.50 - 236.50 \\ &= 11 \text{ (F)}\end{aligned}$$

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Q. 23. Calculate variances from the following:

STANDARD				ACTUAL			
INPUT	MATERIAL	(₹)/KG	TOTAL	INPUT	MATERIAL	(₹)/KG	TOTAL
400	A	@ 50	20,000	420	A	@ 45	18,900
200	B	@20	4,000	240	B	@ 25	6,000
100	C	@15	1,500	90	C	@15	1,350
700			25,500	750			26,250
LABOUR HOURS				LABOUR HOURS			
	100 @ ₹2 per hour	200			120 @ ₹2.50 per hour	300	
	200 woman @ ₹ 1.50	300	500		240 woman @ ₹ 1.60	384	684
25	Normal Loss			75	Actual Loss		
675			26000	675			26,934

Answer 23.

Calculation of Material Variances:

	(1)	(2)	(3)	(4)
	SQSP (₹)	RSQSP (₹)	AQSP (₹)	AQAP (₹)
A		428.57 x 50	420 x 50	
B		214.29 x 20	240 x 20	
C		107.14 x 15	90 x 15	
A	20,000	21,429	21,000	18,900
B	4,000	4,289	4,800	6,000
C	1,500	1,607	1,350	1,350
	₹ 25,500	₹ 27,325	₹ 27,150	₹ 26,250

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RSQ for

$$A = 400/700 \times 750 = 428.67 \text{ units}$$

$$B = 200/700 \times 750 = 214.29 \text{ units}$$

$$C = 100/700 \times 750 = 107.14 \text{ units}$$

1. SQSP = Standard Cost of Standard Material = ₹ 25,500
2. RSQSP= Revised Standard Cost of Material = ₹ 27,325
3. AQSP= Standard Cost of Actual Material = ₹ 27,150
4. AQAP= Actual Cost of Material = ₹ 26,250
- a. Material Yield Variance (1-2) = ₹ 1,825 (A)
- b. Material Mix Variance (2-3) = ₹ 175 (F)
- c. Material Usage Variance (1-3) = ₹ 1,650 (A)
- d. Material Price Variance (3-4) = ₹ 900 (F)
- e. Material Cost Variance (1-4) = ₹ 750 (A)

### Calculation of Labour Variances:

	(1)	(2)	(3)	(4)
	<b>SRSH (₹)</b>	<b>SRRSH (₹)</b>	<b>SRAH (₹)</b>	<b>ARAH (₹)</b>
Men		2 x 107.14	2 x 120	
Women		1.50 x 214.28	1.50 x 240	
Men	200	214.28	240	300
Women	300	321.42	360	384
	₹ 500	₹ 536	₹ 600	₹ 684

RSH for

$$\text{Men} = 100/700 \times 750 = 107.14 \text{ units.}$$

$$\text{Women} = 200/700 \times 750 = 214.28 \text{ units.}$$

1. SRSH = Standard Cost of Standard Labour = ₹ 500
2. SRRSH = Revised Standard Cost of Labour = ₹ 536
3. SRAH = Standard Cost of Actual Labour = ₹ 600
4. ARAH = Actual Cost of Labour = ₹ 684
- a. Labour Yield Variance (1-2) = ₹ 36 (A)
- b. Labour Mix Variance (2-3) = ₹ 64 (A)



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- c. Labour Efficiency Variance (1-3) = ₹ 100 (A)  
 d. Labour Rate Variance (3-4) = ₹ 84 (A)  
 e. Labour Cost Variance (1-4) = ₹ 184 (A)

**Q. 24.** ABC Ltd adopts a Standard Costing System. The standard output for a period is 20,000 units and the standard cost and profit per unit is as under:

Particulars	₹
Direct Material (3 units @ ₹1.50)	4.50
Direct Labour (3 hrs. @ ₹1.00 )	3.00
Direct Expenses	0.50
Factory Overheads : Variable	0.25
Fixed	0.30
Administration Overheads	0.30
<b>Total Cost</b>	<b>8.85</b>
<b>Profit</b>	<b>1.15</b>
<b>Selling Price (Fixed by Government)</b>	<b>10.00</b>

The actual production and sales for a period was 14,400 units. There has been no price revision by the Government during the period.

The following are the variances worked out at the end of the period:

		Favourable (₹)	Adverse (₹)
Direct Material			
	Price		4,250
	Usage	1,050	
Direct labour			
	Rate		4,000
	Efficiency	3,200	

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<b>Factory Overheads</b>			
	<b>Variable – Expenditure</b>	<b>400</b>	
	<b>Fixed – Expenditure</b>	<b>400</b>	
	<b>Fixed – Volume</b>		<b>1,680</b>
<b>Administration Overheads</b>			
	<b>Expenditure</b>		<b>400</b>
	<b>Volume</b>		<b>1,680</b>

You are required to:

Ascertain the details of actual costs and prepare a Profit and Loss Statement for the period showing the actual Profit/Loss. Show working clearly.

Reconcile the Actual Profit with Standard Profit.

Answer 24.

### Statement showing the Actual Profit and Loss Statement

Particulars	Amount	Amount
	₹	₹
Standard Material Cost (14,400 x 4.50)	64,800	
Add: Price Variance	4,250	
Less: Usage Variance	(1,050)	68,000
Standard Labour Cost (14,400 x 3)	43,200	
Add: Rate Variance	4,000	
Less: Efficiency Variance	(3,200)	44,000
Direct Expenses (14,400 x 0.50)		7,200
Prime Cost		1,19,200
Factory Overhead:		
Variable (14,400 x 0.25)	3,600	

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Less: Expenditure Variance	(400)	3,200
Fixed (14,400 x 0.30)	4,320	
Add: Volume Variance	1,680	
Less: Expenditure Variance	(400)	5,600
Administration Overhead (14,400 x 0.3)	4,320	
Add: Volume Variance	1,680	
Add: Exp. Variance	400	6,400
Total Cost		1,34,400
Profit (B/F)		9,600
Sales		1,44,000

### Statement showing Reconciliation of Standard Profit with Actual Profit

Particulars	₹	₹
Standard Profit (14,400 x 1.15)		16,560
Add: Material Usage Variance	1,050	
Labour efficiency Variance	3,200	
Variable Overhead Expenditure Variance	400	
Fixed Overhead Expenditure Variance	400	5,050
		21,610
Less: Material Price Variance	4,250	
Labour Rate Variance	4,000	
Fixed Overhead Volume Variance	1,680	
Administration Expenditure Variance	400	
Administration Volume Variance	1,680	12,010
Actual Profit		9,600

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Q. 25. You have been appointed as Management Accountant of S.M. Ltd. Given below is the Company's operating profit and loss Statement for the month of April, 2012.

Particulars	Standard and Variances	Actual
	₹	₹
<b>Budgeted Sales:</b>	90,000	
<b>Variances due to :</b>		
(i) Volume of Orders	5,000	
(ii) Selling prices	2,000	97,000
<b>Budgeted Profit</b>	19,000	
<b>Profit Variance due to :</b>		
(i) Sales Volume	1,200	
(ii) Selling Price	2,000	22,200
<b>Production Cost Variances:</b>		
<b>Materials:</b>		
Price	750	
Usage	(300)	450
<b>Labour:</b>		
Rate	(1,250)	
Efficiency	(500)	(1,750)
<b>Overheads Expenditure: Fixed</b>	500	
Variable	(1,250)	
Efficiency	1,000	
Capacity	500	750
<b>Operating Profit</b>		21,650

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The Costing Department provides you with the following information about sales and costs for the month of May, 2012.

Product	Standard Cost per unit (₹)	Budgeted Sales		Actual Sales	
		Number of Units	Sales Value (₹)	Number of Units	Sales Value (₹)
A	31	1,250	50,000	1,400	54,000
B	25	1,000	30,000	950	27,500
C	15	750	15,000	900	17,500

<b>Materials:</b>	₹
Standard Cost of materials actually used	26,150
Standard Cost of materials allowed	26,650
Actual Cost of materials used	27,150
<b>Labour:</b>	
Standard Labour Cost per hour	₹ 0.90
Actual Clocked Hours	22,000
Actual Labour Cost	₹ 21,300
Budgeted Hours	(hours) 20,000
Standard Hours produced	(hours) 22,500

**Overheads:**

Budgeted rates of overheads recovery per direct labour hour:

Variable ₹ 1.00 Fixed ₹ 0.50

Actual Overhead Costs.

Variable ₹ 21,500 Fixed ₹ 12,000

Prepare an Operating Profit and Loss Statement for May, 2012 in the same form as for April, 2012.

Answer 25.

	AQAP (1) (₹)	AQSP (2) (₹)	SQSP (3) (₹)
A	54,000	56,000	50,000
B	27,500	28,500	30,000

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C	17,500	18,000	15,000
	₹99,000	₹1,02,500	₹95,000

1. AQAP = Actual Sales = ₹ 99,000
  2. AQSP = Actual Quality of Sales = ₹1,02,500
  3. SQSP = Standard or Budgeted Sales = ₹ 95,000
- a. Sales Volume Variance = 2 – 3 = ₹ 7,500 (F)
  - b. Sales Price Variance = 1 – 2 = ₹ 3,500 (A)

	AQAR (1) (₹)	AQSR (2) (₹)	SQSR (3) (₹)
A	1,400 × 7.5714	1,400 × 9	1,250 × 9
B	950 × 3.9473	950 × 5	1,000 × 5
C	900 × 4.4444	900 × 5	750 × 5
A	10,600	12,600	11,250
B	3,750	4,750	5,000
C	4,000	4,500	3,750
	₹18,350	₹21,850	₹20,000

SR = Standard Selling Price – Standard Cost per unit

AR = Actual Selling Price – Standard Cost per unit

SR: A = 9; B = 5; and C = 5

AR:

$$A = (54000/1400) - 31 = ₹ 7.5714$$

$$B = (27500/950) - 25 = ₹ 3.9473$$

$$C = (17500/900) - 15 = ₹ 4.4444$$

1. AQAR = Actual Profit = ₹ 18,350
  2. AQSR = Actual Sales at Standard Rate of Profit = ₹ 21,850
  3. SQSR = Budgeted Profit = ₹ 20,000
- a. Profit Variance Due to Sales Volume = 2 – 3 = ₹ 1,850 (F)
  - b. Profit Variance due to Selling Price = 1 – 2 = ₹ 3,500 (A)
  - c. Total Profit Variance = 1 – 3 = ₹ 1,650 (A)

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### Material Variance:

SQSP (1) (₹)	AQSP (2) (₹)	AQAP (3) (₹)
26,650	26,150	27,150

1. SQSP = Standard Cost of Standard Material = ₹ 26,650
2. AQSP = Standard Cost of Actual material = ₹ 26,150
3. AQAP = Actual Cost of Material = ₹ 27,150
  - a. Material Usage Variance = 1 – 2 = ₹ 500 (F)
  - b. Material Price Variance = 2 – 3 = ₹ 1,000 (A)

### Labour Variances:

SRSH (1) (₹)	SRAH (2) (₹)	ARAH (3) (₹)
$0.9 \times 22,500$	$0.9 \times 22,000$	
20,250	19,800	21,300

1. SRSH = Standard Cost of Standard Labour = ₹ 20,250
2. SRAH = Standard Cost of Actual Labour = ₹ 19,800
3. ARAH = Actual Cost of Labour = ₹ 21,300
  - a. Labour Efficiency Variance = 1 – 2 = ₹ 450 (F)
  - b. Labour Rate Variance = 2 – 3 = ₹ 1,500 (A)

### Variable Overhead Variances:

SRSH (1) (₹)	SRAH (2) (₹)	ARAH (3) (₹)
$1 \times 22,500$	$1 \times 22,000$	
₹ 22,500	₹ 22,000	₹ 21,500

1. SRSH = Standard Cost Standard Variable Overheads = ₹ 22,500
2. SRAH = Standard Cost of Actual Variable Overheads = ₹ 22,000
3. ARAH = Actual Variable Overheads = ₹ 21,500
  - a. Variable Overheads Efficiency Variance = 1 – 2 = ₹ 500 (F)
  - b. Variable Overheads Expenditure Variance = 2 – 3 = ₹ 500 (A)

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### Fixed Overhead Variances:

(1) SRSH (₹)	(2) SRAH (₹)	(3) SRBH (₹)	(4) ARAH (₹)
$0.5 \times 22,500$	$0.5 \times 22,000$	$0.5 \times 20,000$	
₹11,250	₹11,000	₹10,000	₹12,000

1. SRSH = Standard Cost of Standard Fixed Overheads = ₹ 11,250
2. SRAH = Standard Cost of Actual Fixed Overheads = ₹ 11,000
3. SRBH = Budgeted Fixed Overheads = ₹ 10,000
4. ARSH = Actual Fixed Overheads = ₹ 12,000
  - a. Fixed Overheads Efficiency Variance =  $1 - 2 = ₹ 250$  (F)
  - b. Fixed Overheads Capacity Variance =  $2 - 3 = ₹ 1,000$  (F)
  - c. Fixed Overheads Expenditure Variance =  $3 - 4 = ₹ 2,000$  (A)

### Operating Profit and Loss Statement for the month of May, 2012:

	Standard Variances	Actual Variances
	₹	₹
Budgeted Sales	95,000	
Variances due to Volume	7,500	
Variances due to Selling Prices	(3,500)	99,000
Budgeted Profit	20,000	
Variance due to Sales Volume	1,850	
Variance due to Selling prices	(3,500)	18,350
Production Cost Variances:		
Material usage	500	
Material Price	(1,000)	(500)
Labour efficiency	450	
Labour Rate	(1,500)	(1,050)



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Overheads:		
Expenditure: Variable	(500)	
Fixed	(2,000)	
Efficiency (Variable and Fixed)	750	
Capacity	1,000	(750)
Operating Profit		16,050

**Q. 26. The share of total production and the cost-based fair price computed separately for each of the four units in industry are as follows:**

	₹ per unit			
<b>Share of Production</b>	<b>40%</b>	<b>25%</b>	<b>20%</b>	<b>15%</b>
<b>Material Costs</b>	<b>150</b>	<b>180</b>	<b>170</b>	<b>190</b>
<b>Direct Labour</b>	<b>100</b>	<b>120</b>	<b>140</b>	<b>160</b>
<b>Depreciation</b>	<b>300</b>	<b>200</b>	<b>160</b>	<b>100</b>
<b>Other Overheads</b>	<b>300</b>	<b>300</b>	<b>280</b>	<b>240</b>
	<b>850</b>	<b>800</b>	<b>750</b>	<b>690</b>
<b>20% return on capital employed</b>	<b>630</b>	<b>430</b>	<b>350</b>	<b>230</b>
<b>Fair Price</b>	<b>1,480</b>	<b>1,230</b>	<b>1,100</b>	<b>920</b>
<b>Capital employed per unit is worked out as follows:</b>				
<b>Net Fixed Assets</b>	<b>3,000</b>	<b>2,000</b>	<b>1,600</b>	<b>1,000</b>
<b>Working Capital</b>	<b>140</b>	<b>150</b>	<b>150</b>	<b>150</b>
<b>Total</b>	<b>3,140</b>	<b>2,150</b>	<b>1,750</b>	<b>1,150</b>

Indicate with reasons, what should be the Uniform Price fixed for the product.

**Answer 26.**

**Computation of Uniform Price :**

$$\begin{aligned}
 \text{Weighted Average Cost} &= [850 \times 40\%] + [800 \times 25\%] + [750 \times 20\%] + [690 \times 15\%] \\
 &= 340 + 200 + 150 + 103.5 \\
 &= ₹ 793.5
 \end{aligned}$$

Weighted Average Return on Capital Employed (profit)

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$$\begin{aligned} &= [630 \times 40\%] + [430 \times 25\%] + [350 \times 20\%] + [230 \times 15\%] \\ &= 252 + 107.5 + 70 + 34.5 \\ &= ₹464 \end{aligned}$$

Uniform Price = 793.5 + 464 = ₹ 1,257.5

**Q. 27. Purchase of Materials ₹5,00,000 (inclusive of Trade Discount ₹8,000); Import Duty paid ₹45,000; Freight inward ₹62,000 ; Insurance paid for import by air ₹ 28,000; Rebates allowed ₹10,000; Cash discount ₹3,000; CENVAT Credit refundable ₹7,000; Abnormal Loss of Materials ₹14,000; Price variation due to computation of cost under standard rates ₹1,500. Compute the landed cost of material.**

**Answer 27.**

### Computation of Landed Cost of Material

	Particulars	Amount (₹)
	Purchase price of Material	5,00,000
<b>Add</b>	Import Duties of purchasing the material	45,000
<b>Add</b>	Freight Inward during the procurement of material	62,000
<b>Add</b>	Price Variation due to computation of cost under standard rates	1,500
	<b>Total</b>	<b>6,08,500</b>
<b>Less</b>	Trade Discount	8,000
<b>Less</b>	Abnormal Loss of materials	14,000
<b>Less</b>	Rebates	10,000
	<b>Value of Receipt of Material</b>	<b>5,76,500</b>

**Note:**

- Normal loss is not deducted
- Price variation is allowable inclusion as the cost was maintained on standard cost.

**Q. 28. a) Gross pay ₹10,30,000 (including cost of idle time hours paid to employee ₹25,000); Accommodation provided to employee free of cost [this accommodation is owned by employer, depreciation of accommodation ₹1,00,000, maintenance charges of the accommodation ₹90,000, municipal tax paid for this accommodation ₹3,000], Employer's Contribution to P.F. ₹1,00,000 (including a penalty of ₹2,000 for violation of PF rules), Employee's Contribution to P.F. ₹75,000. Compute the Employee cost.**

**b) A research project, to date, has cost a company ₹ 2,50,000 and is under review. It is anticipated that, should the project be allowed to proceed, it will be completed in about one year and can be sold for ₹ 4,00,000. The following additional information is available -**

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(i) Materials have just been received for ₹ 60,000. These are extremely toxic, and if not used in the project, have to be disposed of by special means at ₹ 15,000.

(ii) Labour : ₹ 75,000. The men are highly skilled. If they are released from the Research Project, they may be transferred to the Works Department of the company and consequently the sales could increase by ₹ 1,50,000. The Accountant estimates that the prime cost of those sales would be ₹ 1,00,000 and the overhead absorbed (All fixed) would amount to ₹ 25,000.

(iii) Research staff : ₹ 1,60,000. A decision has already been taken that this will be the last major piece of research undertaken and consequently, when work on the project ceases, the staff involved will be made redundant. Redundancy and Severance Pay have been estimated at ₹ 25,000.

(iv) Share of General Building Expenses: ₹ 35,000. The Managing Director is not sure what is included in this amount, but the accounts staff charge similar amounts each year to each department.

You are required to advise whether the project should be allowed to proceed and explain the reasons for the treatment of each of the amounts above in your analysis.

**Answer 28.**

### a) Computation of Employee Cost

	Particulars	Amount (₹)
	Gross Pay ( net of cost of idle time) =[10,30,000 (-) 25,000]	9,95,000
<b>Add</b>	Cost of accommodation provided by employer = Depreciation (+) Municipal Tax paid (+) maintenance charges = 1,00,000 + 90,000 + 3,000 = 1,93,000	1,93,000
<b>Add</b>	Employer's Contribution to PF excluding penalty paid to PF authorities [= 1,00,000 (-) 2,000]	98,000
	<b>Employee Cost</b>	<b>12,86,000</b>

**Note:**

(i) Assumed that the entire accommodation is exclusively used by the employee. Hence, cost of accommodation provided includes all related expenses/costs, since these are identifiable/traceable to the cost centre.

(ii) Cost of idle time hours is an excludible item. Since it is already included in the gross pay, hence excluded.

(iii) Penalty paid to PF authorities is not a normal cost. Since, it is included in the amount of contribution, it is excluded.

### b) Effect of Continuing the Project

Particulars	Nature and Computation	₹
Cost incurred till date	Historical and irrelevant	Nil
Materials	Already purchased. Hence historical and irrelevant	Nil
Disposal cost	Not incurred if project is continued. Hence opportunity gain, relevant	(15,000)
Labour	Has alternative use. Hence variable cost + opportunity cost is relevant Variable cost = 75,000	1,25,000

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	Opportunity cost = Contribution lost on sales = 1,50,000 – 1,00,000 = 50,000 (Note : Absorbed FOH is not relevant in determining opportunity cost)	
Research staff	Variable cost. Hence relevant	1,60,000
Redundancy & Severance pay	Committed cost. Hence irrelevant	Nil
Share of general OH	Apportionment. Hence irrelevant	Nil
Total additional cost		2,70,000
Additional revenue from the project		4,00,000
Net benefit from continuing the project		1,30,000

Project may be continued since there is net benefit of ₹ 1,30,000.

**Q. 29.** The New Enterprises Ltd. has three producing departments A,B and C two service Departments D and E. The following figures are extracted from the records of the Co.

	₹	
Rent and Rates	5,000	
General Lighting	600	
Indirect Wages	1,500	
Power	1,500	
Depreciation on Machinery	10,000	
Sundries	10,000	

The following further details are available:

	A	B	C	D	E
Floor Space (Sq.Mts.)	2,000	2,500	3,000	2,000	500
Light Points	10	15	20	10	5
Direct Wages	3,000	2,000	3,000	1,500	500
H.P. of machines	60	30	50	10	--
Working hours	6,226	4,028	4,066	--	--
Value of Material	60,000	80,000	1,00,000	--	--
Value of Assets	1,20,000	1,60,000	2,00,000	10,000	10,000

The expenses of D and E are allocated as follows:

	A	B	C	D	E
D	20%	30%	40%	--	10%
E	40%	20%	30%	10%	--

What is the factory cost of an article if its raw material cost is ₹50, labour cost ₹30 and it passes through Departments A, B and C. For 4, 5 & 3 hours respectively.

**Answer 29.**

Statement showing apportionment of overheads to departments

Particulars	Basis	Total (₹)	A (₹)	B (₹)	C (₹)	D (₹)	E (₹)
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Rent & Rates	Space (4:5:6:4:1)	5,000	1,000	1,250	1,500	1,000	250
Lighting	Light Points (2:3:4:2:1)	600	100	150	200	100	50
Indirect wages	Direct wages (6:4:6:3:1)	1,500	450	300	450	225	75
Power	Horse Power (6:3:5:1)	1,500	600	300	500	100	--
Depreciation	Value of Asset (12:16:20:1:1)	10,000	2,400	3,200	4,000	200	200
Sundries	Direct wages (6:4:6:3:1)	10,000	3,000	2,000	3,000	1,500	500
Wages	Actual	2,000	--	--	--	1,500	500
		<b>30,600</b>	<b>7,550</b>	<b>7,200</b>	<b>9,650</b>	<b>4,625</b>	<b>1,575</b>

### Repetitive Distribution Method

Particulars	A	B	C	D	E
Totals	7,550	7,200	9,650	4,625	1,575
Cost of D (2:3:4:1)	925	1,387	1,850	(4,625)	463
	8,475	8,587	11,500	--	2,038
Cost of E (4:2:3:1)	815	408	611	204	(2,038)
	9,290	8,995	12,111	204	--
Cost of D (2:3:4:1)	41	61	82	(204)	20
	9,331	9,056	12,193	--	20
Cost of E (4:2:3:1)	8	4	6	2	(20)
	9,339	9,060	12,199	2	--
Cost of D (2:3:4:1)	--	1	1	(2)	--
	9,339	9,061	12,200	--	--
Working Hours	6,226	4,028	4,066		
Rate per hour	1.5	2.25	3.00		

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### Computation of Factory Cost of the Article ₹

Particulars	Amount
Material	50.00
Labour	30.00
Overheads	6.00
Dept A (4 x 1.5)	11.25
Dept B (5 x 2.25)	9.00
Dept C (3 x 3)	
<b>Factory Cost</b>	<b>106.25</b>

### Simultaneous Equation Method

Let total cost of Service Department D be ₹ 'd'.

Let total cost of Service Department E be ₹ 'e'.

$$d = 4625 + 10/100 e$$

$$e = 1575 + 10/100 d$$

$$\Rightarrow 100 d = 462500 + 10 e$$

$$\Rightarrow 100 d - 10 e = 462500 \quad \rightarrow (1)$$

$$\Rightarrow 100 e = 157500 + 10 d$$

$$\Rightarrow -10 d + 100 e = 157500 \quad \rightarrow (2)$$

$$\text{Equ. (1)} \quad 100 d - 10 e = 462500$$

$$\text{Equ. (2) } \times 10 \quad -100 d + 1000 e = 1575000$$

$$990 e = 2037500$$

$$e = 2037500 / 990$$

$$= 2,058$$

Substituting the value of 'e' in Equation (1), we get

$$\Rightarrow 100 d - 10 (2058) = 462500$$

$$\Rightarrow d = 483080 / 100$$

$$\Rightarrow d = 4831$$

Particulars	A	B	C	D	E
Totals	7,550	7,200	9,650	4,625	1,575
Costs of D (2:3:4:1) (4831)	966	1,450	1,932	(4,831)	483
Costs of E (4:2:3:1) (2,058)	823	412	617	206	(2058)
	9,339	9,062	12,199	--	--

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Q. 30. a) Pink Limited undertakes to supply 1000 units of a component per month for the months of January, Feb. and March 20X1. Every month a batch order is opened against which materials and labour cost are booked at actual. Overheads are levied at a rate per labour hour. The selling price is contracted at ₹15 per unit.

From the following data, present the cost and profit per unit of each batch order and the overall position of the order for the 3000 units.

Month	Batch Output(Numbers) ₹	Material Cost ₹	Labour cost ₹
January 20X1	1250	6250	2500
February 20X1	1500	9000	3000
March 20X1	1000	5000	2000

Labour is paid at the rate of ₹ 2 per hour. The other details are:

Month	Overheads	total Labour Hours
January 20X1	₹12000	4000
February 20X1	₹9000	4500
March 20X1	₹15000	5000

b) The Dynamic company has three divisions. Each of which makes a different product. The budgeted data for the coming year are as follows:

	A (₹)	B (₹)	C (₹)
Sales	1,12,000	56,000	84,000
Direct Material	14,000	7,000	14,000
Direct Labour	5,600	7,000	22,400
Direct Expenses	14,000	7,000	28,000
Fixed Cost	28,000	14,000	28,000
	61,600	35,000	93,400

The Management is considering to close down the division C'. There is no possibility of reducing fixed cost. Advise whether or not division C' should be closed down.

Answer 30.

a) Statement of Cost and profit per unit of each Batch

Particulars	January	February	March	Total
A. Batch output (Number)	1250	1500	1000	3750
B. Sales Value ( A x ₹ 15)	₹18,750	₹22,500	₹15,000	₹56,250
C. Material	6,250	9,000	5,000	20,250
Wages	2,500	3,000	2,000	7,500
Overheads	3,750	3,000	3,000	9,750
Total Cost	12,500	15,000	10,000	37,500
D. Profit per batch ( B-C)	6,250	7,500	5,000	18,750
E. Cost per Unite ( C/A)	10	10	10	10
F. Profit per Unit ( D/A)	5	5	5	5

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### Working Notes :

	Jan. 20X1	Feb. 20X1	March 20X1
A. Labour Hours (Labour Cost/ Labour Rate per hour	₹2500/2 = 1250	₹ 3000/2 = 1500	₹ 2000/2 = 1000
B. Overheads per hour (Total overheads/ Total Labour Hours)	₹ 12000/4000 = ₹ 3	₹ 9000/4 = ₹ 2	₹ 15000/5000 = ₹ 3
C. Overheads for the batch (A x B)	₹3750	₹ 3000	₹ 3000

Particulars	₹
Sales Value ( 3000 units x ₹15)	45,000
Less: Total cost ( 3000 units x ₹ 10)	30,000
Profit (A- B)	15,000

### b) Statement showing computation of profit before closing down of division C:

Sr. No.	Particulars	A (₹)	B (₹)	C (₹)	Total (₹)
I.	Sales	1,12,000	56,000	84,000	2,52,000
II.	Variable cost				
	Direct Material	14,000	7,000	14,000	35,000
	Direct Labour	5,600	7,000	22,400	35,000
	Direct expenses	14,000	7,000	28,000	49,000
III.	Total Variable Cost	33,600	21,000	64,400	1,19,000
IV.	Contribution (i - iii)	78,400	35,000	19,600	1,33,000
V.	Fixed cost				70,000
VI.	Profit (iv - v)				63,000

### Statement showing computation of profit after closing 'C':

Sr. No.	Particulars	A (₹)	B (₹)	Total (₹)
I.	Sales	1,12,000	56,000	1,68,000
II.	Variable cost			
	Direct Material	14,000	7,000	21,000
	Direct Labour	5,600	7,000	12,600
	Direct expenses	14,000	7,000	21,000
III.	Total Variable Cost	33,600	21,000	54,600



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IV.	Contribution (i - iii)	78,400	35,000	1,13,400
V.	Fixed cost			70,000
VI.	Profit (iv - v)			43,400

From the above computations, it was found that profit is decreased by ₹ 19,600 by closing down division 'C', it should not be closed down. In other words, as long as if there is a contribution of ₹ 1, from division 'C', it should not be closed down.

