

INTERMEDIATE EXAMINATION

(REVISED SYLLABUS - 2008)

GROUP - II

Paper-8 : COST AND MANAGEMENT ACCOUNTING

Q. 1. (a) Select the correct answer in each of the following :

- (i) The forex component of imported material cost is converted :
 - (A) At rate on the date of settlement.
 - (B) At rate on the date of transaction.
 - (C) At rate on date of delivery.
 - (D) Non of the above.
- (ii) Material cost variance is ₹ 550(A) and material price variance is ₹ 150(F), the material usage variance should be :
 - (A) ₹ 400(A)
 - (B) ₹ 400(F)
 - (C) ₹ 700(A)
 - (D) ₹ 700(F)
- (iii) Maximum possible productive capacity of a plant when no operating time is lost , is its
 - (A) Practical capacity
 - (B) Theoretical capacity
 - (C) Normal capacity
 - (D) Capacity based on sales expectancy
- (iv) When production is below standard specification or quality and cannot be rectified by incurring additional cost, it is called
 - (A) Defective
 - (B) Spoilage
 - (C) Waste
 - (D) Scrap
- (v) CAS 8 requires each type of utility to be treated as :
 - (A) separate cost object
 - (B) not part of cost as not include in material
 - (C) not part of cost as they do not form part of product
 - (D) treated as administrative overheads.

(vi) Selling and distribution overhead doesnot include:

- (A) Cost of warehousing
- (B) Repacking cost
- (C) Trasportation cost
- (D) Demurrage charges.

(vii) Joint costs are allocated :

- (A) Based on a measure of the number of units, weight, or volume of joint products.
- (B) Based on the values attributed to the joint products.
- (C) Both of the above.
- (D) None of the above.

(viii) When overtime is required for meeting urgent orders, overtime premium should be

- (A) Charged to Costing Profit and Loss A/c.
- (B) Charged to overhead costs.
- (C) Charged to respective jobs.
- (D) None of the above.

(ix) Credit is given to the process account at a predetermined value of the byproduct under the—

- (A) Standard cost method
- (B) Reserve cost method
- (C) Opportunity cost method
- (D) Sales value

(x) Exchange losses or gains after purchase transaction is complete is treated as :

- (A) Product cost.
- (B) Overhead cost.
- (C) Purchase cost.
- (D) Finance cost

Q. 1. (b) Fill in the blanks with appropriate word(s) :

- (i) In Cost Accounting, abnormal losses are transferred to _____ .
- (ii) Reorder level = _____ .
- (iii) The technical term for charging of overheads to cost units is known as _____ .
- (iv) In brick kiln, cost unit is _____ .
- (v) Under _____ system, there is no need of reconciliation of cost and financial accounts.
- (vi) _____ determines the priorities in functional budgets.
- (vii) Gang composition variance is a sub variance of _____ variance.
- (viii) When P/V ratio is 30% and M/S ratio is 40%, the profit is _____ % of sales.
- (ix) In contract costing , work in progress certified is valued at _____ while uncertified work is valued at _____ .
- (x) Cost sheet is a document which provides for assembly of the detailed cost of a _____ .

Q. 1. (c) Match each item in Column A with appropriate item in Column B :

Column A	Column B
(i) Cost reduction	(A) Cost book keeping
(ii) Break even point	(B) Multiple costing
(iii) Differential costing	(C) Not assigned to products
(iv) Control accounts	(D) Value analysis
(v) Car manufacture	(E) Administration overhead
(vi) Equivalent production	(F) WIP
(vii) Period cost	(G) Decision making
(viii) Director's remuneration	(G) Current ratio
(ix) Liquidity	(I) Labour turnover
(x) Flux method	(J) No profit no loss

Answer 1. (a)

(i) (B) At rate on the date of transaction.

(ii) (C) ₹ 700(A)

Let M1=Actual cost of material used, M2= Standard cost of material used, M3=Standard cost of material in standard proportion, M4= Standard material cost of output.

Material Price variance= $M1-M2 = 550(A)$ ——(i)

Material Cost variance= $M1- M4 = 150(F)$ ——(ii)

Subtracting (ii) from (i)

Material usage variance = $M2-M4 = 700(A)$

(iii) (C) **Normal capacity**

Theoretical capacity is the denominator-level concept that is based on producing at full efficiency all the time., Practical capacity is a denominator-level concept that reduces the theoretical capacity by unavoidable operating interruptions such as scheduled maintenance time, shutdowns for holidays and so on. Normal capacity measures the denominator level in terms of demand for the output of the plant. Normal capacity utilization is a concept based on the level of capacity utilization that specifies the average customer demand over a time period, that includes seasonal, cyclical and trend factors.

(iv) (B) **Spoilage**

(1) Spoiled goods-goods that do not meet production standards and are either sold for their salvage value or discarded; (2) Defective units-goods that do not meet standards and are sold at a reduced price or reworked and sold at the regular or a reduced price; (3) Waste-material that is lost in the manufacturing process by shrinkage, evaporation, etc.; and (4) Scrap-by-product of the manufacturing process that has a minor market value.

(v) (A) **separate cost object**

(vi) (D) **Demurrage charges.**

(vii) (C) **Both of the above.**

(viii) (C) **Charged to respective jobs.**

When cost is incurred for specified job, the cost should be charged to that job only.

- (ix) (A) **Standard cost method**
- (x) (D) **Finance cost.**

Answer 1. (b)

- (i) Costing Profit and Loss A/c
- (ii) maximum consumption × maximum reorder period
- (iii) absorption
- (iv) 1000 bricks
- (v) integral
- (vi) Key factor
- (vii) Labour efficiency
- (viii) 12
- (ix) contract price, cost
- (x) cost centre or cost unit

Answer 1. (c)

- (i) — (D)
- (ii) — (J)
- (iii) — (G)
- (iv) — (A)
- (v) — (B)
- (vi) — (F)
- (vii) — (C)
- (viii) — (E)
- (ix) — (H)
- (x) — (I)



Q. 2. (a) The cost structure of an article the selling price of which is ₹ 45,000 is as follows :

Direct Materials	50%
Direct Labour	20%
Overheads	30%

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

Your are required :

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

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

(b) Distinguish between :

(i) 'Cost centre' and 'cost unit'.

(ii) Bill of material and material requisition note.

Answer 2. (a)

Working Notes :

1. Let 'x' be the total cost and 'y' be the profit for an article whose selling price is ₹ 45,000

Hence $x + y = ₹ 45,000$

(A)

2.

Statement Showing Present and anticipated cost per article

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

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

$1.125x + 0.75y = ₹ 45,000$

(B)

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

We get

$x = ₹ 30,000$

$y = ₹ 15,000$

(1)

Present Statement of Profit Per Article

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

Note : Profit as a percentage of Cost Price = 50%

$(₹ 15,000 / ₹ 30,000) \times 100$

Profit as a percentage of Selling Price = 33-1/3%

$(₹ 15,000 / ₹ 45,000) \times 100$

(2)

Statement of Revised Selling Price

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

Answer 2. (b) (i)

Cost Centre	Cost Unit
The term Cost Centre is defined as a location, person or an item of equipment or a group of these for which costs may be ascertained and used for the purposes of Cost Control. Cost Centres can be personal Cost Centres, impersonal Cost Centres, operation cost and process Cost Centres. Thus each sub-unit of an organisation is known as a Cost Centre, if cost can be ascertained for it. In order to recover the cost incurred by a Cost Centre, it is necessary to express it as the cost of output.	The term Cost Unit is defined as a unit of quantity of product, service or time (or a combination of these) in relation to which costs may be ascertained or expressed. It can be for a job, batch, or product group. The unit of output in relation to which cost incurred by a Cost Centre is expressed is called a Cost Unit.
Each sub-unit of an organisation is known as a Cost Centre, if cost can be ascertained for it. In order to recover the cost incurred by a Cost Centre, it is necessary to express it as the cost of output.	The unit of output in relation to which cost incurred by a Cost Centre is expressed is called a Cost Unit.

(ii)

Bill of material	Material requisition note
It is a comprehensive list of materials with exact description and specifications, required for a job or other production units. This also provides information about required quantities so that if there is any deviation from the standards, it can easily be detected. It is prepared by the Engineering or Planning Department in a standard form.	It is a formal written demand or request, usually from the production department to store for the supply of specified materials, stores etc. It authorises the storekeeper to issue the requisitioned materials and record the same on bin card.
The purpose of bill of material is to act as a single authorisation for the issue of all materials and stores items mentioned in it. It provides an advance intimation to store department about the requirements of materials. It reduces paper work. It serves as a work order to the production department and a document for computing the cost of material for a particular job or work order to the cost department.	The purpose of material requisition note is to draw material from the store by concerned departments.

Q. 3. (a) (i) ABC Ltd has received an offer of quantity discounts on his order of materials as under :

Price per tonne ₹	Tonnes Nos.
1,200	Less than 500
1,180	500 and less than 1,000
1,160	1,000 and less than 2,000
1,140	2,000 and less than 3,000
1,120	3,000 and above.

The annual requirement for the material is 5,000 tonnes. The ordering cost per order is ₹ 1,200 and the stock holding cost is estimated at 20% of material cost per annum. You are required to complete the most economical purchase level.

(ii) What will be your answer to the above question if there are no discount offered and the price per tonne is ₹ 1,500?

(b) What is material handling cost? How will you deal it in Cost Accounts?

Answer 3. (a)

(i)

Total Annual Requirement	Order size (units)	No. of Orders	Cost of Inventory S × Per unit cost	Ordering Cost	Carrying Cost p.u. p. a.	Total Cost
(A)	q	(A)		(A) × ₹ 1200	$\frac{1}{2} \times q \times 20\%$ of cost per unit	(4+5+6)
			₹	₹	₹	₹
1	2	3	4	5	6	7
5000 units	400	12.5	60,00,000 (5,000 × ₹ 1200)	15,000	48,000 (200 × ₹ 240)	60,63,000
	500	10	59,00,000 (5,000 × ₹ 1180)	12,000	59,000 (250 × ₹ 236)	59,71,000
	1,000	5	58,00,000 (5,000 × ₹ 1160)	6,000	1,16,000 (500 × ₹ 232)	59,22,000
	2,000	2.5	57,00,000 (5,000 × ₹ 1140)	3,000	2,28,000 (1,000 × ₹ 228)	59,31,000
	3,000	1.666	56,00,000 (5,000 × ₹ 1120)	2,000	3,36,000 (1500 × ₹ 224)	59,38,000

The above table shows that the total cost of 5000 units including ordering and carrying cost is minimum (₹ 59,22,000) when the order size is 1000 units. Hence the most economical purchase level is 1000 units.

(ii) $EOQ = \sqrt{\frac{2 \times A \times O}{C}}$ Where A is the annual inventory requirement, O, is the ordering cost per order and C is the carrying cost per unit per annum.

$$= \sqrt{\frac{2 \times 5000 \times ₹1200}{20\% \times ₹1500}} = 200 \text{ tonnes}$$

Answer 3. (b)

Material handling cost refers to the expenses involved in receiving, storing, issuing and handling materials. To deal with this cost in cost accounts there are two prevalent approaches as under :

First approach suggests the inclusion of these costs as part of the cost of materials by establishing a separate material handling rate e.g., at the rate of percentage of the cost of material issued or by using a separate material handling rate which may be established on the basis of weight of materials issued.

Under another approach these costs may be included along with those of manufacturing overhead and be charged over the products on the basis of direct labour or machine hours.

Q. 4. (a) The following data are available in respect of material X for the year ended 31st March 2012.

	₹
Opening stock	90,000
Purchase during the year	2,70,000
Closing stock	1,10,000

Calculate —

- Inventory turnover ratio; and
 - the number of days for which the average inventory is held.
- (b) At what price per unit would Part No. G 112 be entered in the Stores Ledger, if the following invoice was received from a supplier :

	₹
Invoice	
200 units Part No. G112 @ ₹ 5	1,000.00
Less: 20% discount	<u>200.00</u>
	800.00
Add: Excise Duty @ 10%	<u>80.00</u>
	880.00
Add Packing charges (5 non-returnable boxes)	<u>50.00</u>
	<u>930.00</u>

Notes:

- A 2% discount will be given for payment in 30 days.
 - Documents substantiating payment of excise duty is enclosed for claiming MODVAT credit.
- (c) From the details given below, calculate
- Re-ordering level
 - Maximum level
 - Minimum level

(iv) Danger level

Re-ordering quantity is to be calculated on the basis of following information :

Cost of placing a purchase order is ₹ 20

Number of units to be purchased during the year is 5,000.

Purchase price per unit inclusive of transportation cost is ₹ 50.

Annual cost of storage per unit is ₹ 5.

Details of lead time : Average 10 days, Maximum 15 days, Minimum 6 days. For emergency purchases 4 days.

Rate of consumption : Average: 15 units per day, Maximum : 20 units per day.

Answer 4. (a)

- (i) Inventory turnover ratio = $\frac{\text{Cost of stock of raw material consumed}}{\text{Average stock of raw material}}$
 (Refer to working note)
- $$= \frac{\text{₹ } 2,50,000}{\text{₹ } 1,00,000} = 2.5$$
- (ii) Average number of days for which the average inventory is held
- $$= \frac{365 \text{ days}}{\text{Inventory turnover ratio}} = \frac{365 \text{ days}}{2.5}$$
- $$= 146 \text{ days}$$

Working note :

	₹
Opening stock of raw material on 1.4.2011	= 90,000
Add: Material purchases during the year	= 2,70,000
Less: Closing stock of raw material	= <u>1,00,000</u>
Cost of stock of raw material consumed	= <u>2,50,000</u>

$$\text{Average stock of raw material} = \frac{1}{2} \left\{ \begin{array}{l} \text{Opening stock of} \\ \text{raw material} \end{array} + \begin{array}{l} \text{Closing stock of} \\ \text{raw material} \end{array} \right\}$$

$$= \frac{1}{2} \{ \text{₹ } 90,000 + \text{₹ } 1,10,000 \} = \text{₹ } 1,00,000$$

Answer 4. (b)

200 units net cost after trade discount	800
Add: Packing charges	<u>50</u>
Total cost for 200 units	<u>850</u>

$$\text{Cost per unit} = \frac{\text{₹ } 850}{200} = \text{₹ } 4.25$$

Answer 4. (c)**Basic data :**

O (Ordering Cost per order)	= ₹ 20
A (Number of units to be purchased annually)	= 5,000 units
P (Purchase price per unit inclusive of transportation cost)	= ₹ 50
C (Annual cost of storage per unit)	= ₹ 5

Workings :

- (i) **Re-ordering level (ROL)** = Maximum usage × Maximum re-order period
 = 20 units per day × 15 days
 = 300 units
- (ii) **Maximum level** = ROL + ROQ – $\left[\frac{\text{Minimum rate of consumption}}{\text{of consumption}} \times \frac{\text{Minimum reorder period}}{\text{period}} \right]$
 (Refer to working note 1 and 2)
 = 300 units + 200 units – $\left[\frac{10 \text{ units}}{\text{per day}} \times \frac{\text{Average reorder period}}{\text{period}} \right]$
 = 440 units
- (iii) **Minimum level** = ROL – $\left[\frac{\text{Average rate of consumption}}{\text{of consumption}} \times \frac{\text{Average reorder period}}{\text{period}} \right]$
 = 300 units – (15 units per day × 10 days)
 = 150 units
- (iv) **Danger level** = Average consumption × Lead time for emergency purchases
 = 15 units per day × 4 days
 = 60 units

Working Notes :

- ROQ = $\sqrt{\frac{2AO}{C}} = \sqrt{\frac{2 \times 5,000 \text{ units} \times ₹ 20}{₹ 5}}$
 = 200 units
- Average rate of consumption = $\frac{\text{Minimum rate of consumption (x)} + \text{Maximum rate of consumption}}{2}$
 15 units per day = $\frac{x + 20 \text{ units per day}}{2}$
 or x = 10 units per day

Q. 5. (a) Discuss the accounting treatment of Idle time and overtime wages.

(b) The cost accountant of Zed Ltd. has computed labour turnover rates for the quarter ended 31st March, 2012 as 10%, 5% and 3% respectively under Flux method, 'Replacement method' and 'Separation method'. If the number of workers replaced during that quarter is 30, find out the number of (i) workers recruited and joined and (ii) workers left and discharged.

Answer 5. (a)

Accounting treatment of idle time wages in cost accounts :

Normal idle time is treated as a part of the cost of production. Thus, in the case of direct workers, an allowance for normal idle time is built into the labour cost rates. In the case of indirect workers, normal idle time is spread over all the products or jobs through the process of absorption of factory overheads.

Abnormal idle time: It is defined as the idle time which arises on account of abnormal causes; e.g. strikes; lockouts; floods; major breakdown of machinery; fire etc. Such an idle time is uncontrollable.

The cost of abnormal idle time due to any reason should be charged to Costing Profit & Loss Account.

Accounting treatment of overtime premium in cost accounts :

If overtime is resorted to at the desire of the customer, then the overtime premium may be charged to the job directly.

- If overtime is required to cope with general production programme or for meeting urgent orders, the overtime premium should be treated as overhead cost of particular department or cost center which works overtime.
- Overtime worked on account of abnormal conditions should be charged to costing Profit & Loss Account.
- If overtime is worked in a department due to the fault of another department the overtime premium should be charged to the latter department.

Answer 5. (b)

Working Note :

Average number of workers on roll:

$$\text{Labour turnover rate (under Replacement method)} = \frac{\text{No. of replacements}}{\text{Average number of workers on roll}} \times 100$$

$$\text{Or } \frac{5}{10} = \frac{30}{\text{Average number of workers on roll}}$$

$$\text{Average number of workers on roll} = \frac{30 \times 100}{5} = 600$$

(i) Number of workers recruited and joined :

$$\text{Labour turnover rate (Flux method)} = \frac{\text{No. of separations (S) + No. of accessions (A)}}{\text{Av. number of workers on roll}} \times 100$$

(Refer to Working Note)

$$\text{Or } \frac{10}{100} = \frac{18 + A}{600}$$

$$\text{Or } A = \left[\frac{6000}{100} - 18 \right] = 42$$

No. of workers recruited and joined 42.

(ii) Number of workers left and discharged :

$$\text{Labour turnover rate (Separation method)} = \frac{\text{No. of separations (S)}}{\text{Av. number of workers on roll}} \times 100$$

(Refer to working note)

$$\frac{3}{100} = \frac{S}{600}$$

$$\text{Or } S = 18$$

Hence, number of workers left and discharged comes to 18.

Q. 6. (a) A job can be executed either through workman A or B. A takes 32 hours to complete the job while B finishes it in 30 hours. The standard time to finish the job is 40 hours.

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

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

(b) The management of SS Ltd. wants to have an idea of the profit lost/foregone as a result of labour turnover last year.

Last year sales accounted to ₹ 66,000,000 and the P/V Ratio was 20%. The total number of actual hours worked by the direct labour force was 3.45 lakhs. As a result of the delays by the Personnel Department in filling vacancies due to labour turnover, 75,000 potential productive hours were lost. The actual direct labour hours included 30,000 hours attributable to training new recruits, out of which half of the hours were unproductive. The costs incurred consequent on labour turnover revealed on analysis the following :

	₹
Settlement cost due to leaving	27,420
Recruitment costs	18,725
Selection costs	12,750
Training costs	16,105

Assuming that the potential production lost due to labour turnover could have been sold at prevailing prices, ascertain the profit foregone/lost last year on account of labour turnover.

Answer 6. (a)

Working notes :

1. Time saved and wages :

Workmen	A	B
Standard time (hrs.)	40	40
Actual time taken (hrs.)	<u>32</u>	<u>30</u>
Time saved (hrs.)	<u>08</u>	<u>10</u>
Wages paid @ ₹ x per hr. (₹)	32x	30x

2. Bonus Plan :

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

3. Total wages :

Workman A: $32x + 4x = ₹ 36x$
 Workman B: $30x + 7.5x = ₹ 37.5x$

Statement of factory cost of the job

Workmen	A	B
	₹	₹
Material cost	y	y
Wages (Refer to working note 3)	36x	37.5x
Works overhead	<u>240</u>	<u>225</u>
Factory cost	<u>2,600</u>	<u>2,600</u>

The above relations can be written as follows :

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

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

Answer 6. (b)

Working notes :

- Actual productive hours 3,30,000
 (Actual hours worked – Unproductive training hours)
 (3,45,000 hrs. – 15,000 hrs.)
- Sales per productive hour (₹) 20
 (Total Sales/Actual productive hours)
 (₹ 66,00,000/3,30,000 hrs.)
- Potential productive hours lost 75,000
- Sales foregone (₹) 15,00,000
 (75,000 hours × ₹ 20)
- Contribution foregone (₹) 3,00,000
 P/V ratio × Sales foregone)
 (20% × ₹ 15,00,000)

**Statement of Profit foregone
as a result of labour turnover of M/s. SS Ltd.**

	₹
Contribution foregone (Refer to working note 5)	3,00,000
Settlement cost due to leaving	27,420
Recruitment costs	18,725
Selection costs	12,750
Training costs	<u>16,105</u>
Total profit foregone	<u>3,75,000</u>

Subtracting (i) from (ii) we get

$$1.5x - 15 = 0$$

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

$$\text{or } x = ₹ 10 \text{ per hour}$$

On substituting the value of x in (i) we get y = ₹ 2,000

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

Q. 7. (a) A departmental store has several departments. What bases would you recommend for apportioning the following items of expense to its departments :

- (i) Fire insurance of Building.
- (ii) Rent
- (iii) Delivery Expenses.
- (iv) Purchase Department Expenses.
- (v) Credit Department Expenses.
- (vi) General Administration Expenses.
- (vii) Advertisement.
- (viii) Sales Assistants Salaries.
- (ix) Personal Department expenses.
- (x) Sales Commission

(b) PQ Ltd. is a manufacturing company having three production departments, 'A' 'B' and 'C' and two service departments 'S1' and 'S2'. The following is the budget for December 2011 :

	Total ₹	A ₹	B ₹	C ₹	S1 ₹	S2 ₹
Direct Material		1,000	2,000	4,000	2,000	1,000
Direct Wages		5,000	2,000	8,000	1,000	2,000
Factory rent	4,000					
Power	2,500					
Depreciation	1,000					
Other overheads	9,000					
Additional information						
Area (Sq. ft.)		500	250	500	250	500
Capital Value (₹ Lacs) of assets		20	40	20	10	10
Machine hours		1,000	2,000	4,000	1,000	1,000
Horse power of machines		50	40	20	15	25

A technical assessment or the apportionment of expenses of service departments is as under :

	A	B	C	S1	S2
	%	%	%	%	%
Service Dept. 'S1'	45	15	30	-	10
Service Dept. 'S2'	60	35	-	5	-

Required :

- A statement showing distribution of overheads to various departments.
- A statement showing re-distribution of service departments expenses to production departments.
- Machine hours rates of the production departments 'A', 'B' and 'C'.

Answer 7. (a)

Items of expenses	Basis For apportioning
Fire Insurance of Building.	Floor Area
Rent	Floor Area
Delivery Expenses.	Volume or Distance or Weight
Purchase department Expenses	No. of Purchase order/Value of Purchases
Credit Department Expenses.	Credit Sales Value
General Administration Expenses.	Works cost
Advertisement.	Actual sales
Sales Assistants Salaries.	Actual/Time devoted
Personal Department expenses.	No. of Employees
Sales Commission	Actual

Answer 7. (b)

(i)

Overhead Distribution Summary

	Basis	Total ₹	A ₹	B ₹	C ₹	S1 ₹	S2 ₹
Direct materials	Direct	-	-	-	-	2,000	1,000
Direct wages	"					1,000	2,000
Factory rent	Area	4,000	1,000	500	1,000	500	1,000
Power	H.P X M/c Hrs.	2,500	500	800	800	150	250
Depreciation	Cap. Value	1,000	200	400	200	100	100
Other							
Overheads	M/c hrs.	9,000	1,000	2,000	4,000	1,000	1,000
		-	2,700	3,700	6,000	4,750	5,350

(ii) **Redistribution of Service Department's expenses:**

	A ₹	B ₹	C ₹	S1 ₹	S2 ₹
Total Overheads	2,700	3,700	6,000	4,750	5,350
Dept . X overhead apportioned in the ratio (45 : 15 : 30 : 10)	2,138	712	1,425	- 4,750	475
Dept . Y overhead apportioned in the ratio (60: 35 : — : 5)	3,495	2,039	—	291	- 5,825
Dept . X overhead apportioned in the ratio (45 : 15 : 30 : 10)	131	44	87	- 291	29
Dept . Y overhead apportioned in the ratio (60: 35 : — : 5)	17	10	—	2	- 29
Dept . X overhead apportioned in the ratio (45 : 15 : 30 : 10)	1	—	1	- 2	—
	8,482	6,505	7,513	—	—

(iii) **Machine Hour rate**

Machine hours	1,000	2,000	4,000
Machine hour rate (₹)	8.48	3.25	1.88

Q. 8. (a) In FBG Ltd, factory overhead was recovered at a pre- determined rate of ₹ 25 per man – day. The total factory overhead expenses incurred and the man-days actually worked were ₹ 41.50 lacs and 1.5 lacs man-days respectively. Out of the 40,000 units produced during a period, 30,000 were sold.

On analysing the reasons, it was found that 60% of the unabsorbed overheads were due to defective planning and the rest were attributable to increase in overhead costs.

How would unabsorbed overheads be treated in Cost Accounts?

(b) KBC Ltd manufacturing two products furnishes the following data for a year.

Product	Annual output (Units)	Total Machine hours	Total number of purchase orders	Total number of set-ups
A	5,000	20,000	160	20
B	60,000	1,20,000	384	44

The annual overheads are as under :

	₹
Volume related activity costs	5,50,000
Set up related costs	8,20,000
Purchase related costs	6,18,000

You are required to calculate the cost per unit of each Product A and B based on :

- Traditional method of charging overheads.
- Activity based costing method.

Answer 8. (a)**Computation of Unabsorbed Overheads**

Man – days worked	1,50,000 ₹
Overhead actually incurred	
Less: Overhead absorbed @ ₹ 25/- per man - day (₹ 25 × 1,50,000)	41,50,000 <u>37,50,000</u>
Unabsorbed Overheads	4,00,000
Unabsorbed Overheads due to defective planning (i.e 60% of ₹ 4,00,000)	2,40,000
Balance of Unabsorbed Overheads	<u>1,60,000</u>

Treatment of Unabsorbed Overheads in Cost Accounts

- (i) The unabsorbed overheads of ₹ 2,40,000 due to defective planning to be treated as abnormal and therefore be charged to Costing Profit and Loss Accounts.
- (ii) The balance unabsorbed overheads of ₹ 1,60,000 be charged to production i.e. 40,000 units at the supplementary overhead absorption rate i.e. ₹ 4/- per unit.
(Refer to Working Note)

	₹
Charge to Costing Profit and Loss Account as part of the cost of units sold (30,000 units @ ₹ 4/- p.u.)	1,20,000
Add : To Closing stock of finished goods (10,000 units @ ₹ 4/- p.u.)	40,000
Total	<u>1,60,000</u>

Working Note :

$$\text{Supplementary Overhead Absorption Rate} = \frac{\text{₹ 1,60,000}}{\text{₹ 40,000}} = \text{₹ 4/- p.u.}$$

Answer 8. (b)**Working notes :**

$$\begin{aligned} 1. \text{ Machine hour rate} &= \frac{\text{Total annual overheads}}{\text{Total machine hours}} \\ &= \frac{\text{₹ 19,88,000}}{1,40,000 \text{ hours}} = \text{₹ 14.20 per hour} \\ 2. \text{ Machine hour rate} &= \frac{\text{Total annual overhead cost for volume related activities}}{\text{Total machine hours}} \\ &= \frac{\text{₹ 5,50,000}}{1,40,000 \text{ hours}} = \text{₹ 3.93 (approx.)} \end{aligned}$$

$$\begin{aligned}
 3. \text{ Cost of one set-up} &= \frac{\text{Total costs related to set-ups}}{\text{Total number of set-ups}} \\
 &= \frac{\text{₹ 8,20,000}}{64 \text{ set-ups}} = \text{₹ 12,812.50} \\
 4. \text{ Cost of a purchase order} &= \frac{\text{Total costs related to purchases}}{\text{Total number of purchase order}} \\
 &= \frac{\text{₹ 6,18,000}}{544 \text{ orders}} = \text{₹ 1,136.03}
 \end{aligned}$$

(i) **Statement showing overhead cost per unit
(based on traditional method of charging overheads)**

Products	Annual output (units)	Total machine hours	Overhead cost component (Refer to W, Note 1) ₹	Overhead cost per unit ₹
A	5,000	20,000	2,84,000 (20,000 hrs. × ₹ 14.20)	56.80 (₹ 2,84,000 / 5,000 units)
B	60,000	1,20,000	17,04,000 (1,20,000 hrs. × ₹ 14.20)	28.40 (₹ 17,04,000 / 60,000 units)

(ii) **Statement showing overhead cost per unit
(based on activity based costing method)**

Products	Annual output units	Total Machine Hours	Cost related to volume activities ₹	Cost related to purchases ₹	Cost related to set-ups ₹	Total cost ₹	Cost per unit ₹
	(a)	(b)	(c)	(d)	(e)	(f)=[(c)+(d)+(e)]	(g)=(f)/(a)
A	5,000	20,000	78,600 (20,000 hrs × ₹ 3.93)	1,81,764.80 (160 orders × ₹ 1136.03)	2,56,250 (20 set ups × ₹ 12,812.50)	5,16,614.80	103.32
B	60,000	1,20,000	4,71,600 (1,20,000 hrs × ₹ 3.93)	4,36,235.52 (384 orders × ₹ 1136.03)	5,63,750 (44 set ups × ₹ 12,812.50)	14,71,585.52	24.53

Note : Refer to working notes 2,3 and 4 for computing costs related to volume activities, set-ups and purchases respectively.

Q. 9. (a) What do you understand by Batch Costing? In which industries it is applied?

(b) Discuss the process of estimating profit/loss on incomplete contracts.

(c) P and E are engaged in construction and erection of a bridge under a long-term contract. The cost incurred upto 31.03.2012 was as under :

	₹ in lacs
Fabrication	
Direct Material	280
Direct Labour	100
Overheads	<u>60</u>
	440
Erection costs to date	<u>110</u>
	<u>550</u>

The contract price is ₹ 11 crores and the cash received on account till 31.03.2012 was ₹ 6 crores.

The technical estimate of the contract indicates the following degree of completion of work.
Fabrication – Direct Material – 70%, Direct Labour and Overheads 60% Erection – 40%.

You are required to estimate the profit that could be taken to Profit and Loss Account against this partly completed contract as at 31.03.2012.

Answer 9. (a)

Batch Costing is a form of job costing. In this, the cost of a group of products is ascertained. The unit of cost is a batch or a group of identical products instead of a single job, order or contract. Separate cost sheets are maintained for each batch of products by assigning a batch number. The cost per unit is ascertained by dividing the total cost of a batch by the number of items produced in that batch.

Batch costing is employed by companies manufacturing in batches. It is used by readymade garment factories for ascertaining the cost of each batch of cloths made by them. Pharmaceutical or drug industries, electronic component manufacturing units, radio manufacturing units too use this method of costing for ascertaining the cost of their product.

Answer 9. (b)

Process of estimating profit / loss on incomplete contracts

(i) If completion of contract is less than 25% no profit should be taken to profit and loss account.

(ii) If completion of contract is upto 25% or more but less than 50% then

$$1/3 \times \text{Notional Profit} \times \frac{\text{Cash received}}{\text{Work certified}}$$

may be taken to profit and loss account.

(iii) If completion of contract is 50% or more but less than 90% then

$$2/3 \times \text{Notional Profit} \times \frac{\text{Cash received}}{\text{Work certified}}$$

may be taken to profit and loss account

(iv) If completion of contract is greater than or equal to 90% then one of the following formulas may be used for taking the profit to profit and loss account.

1. Estimated Profit $\times \frac{\text{Work certified}}{\text{Contract price}}$
2. Estimated Profit $\times \frac{\text{Work certified}}{\text{Contract price}} \times \frac{\text{Cash received}}{\text{Work certified}}$
3. Estimated Profit $\times \frac{\text{Cost of the work to date}}{\text{Estimated total cost}}$
4. Estimated Profit $\times \frac{\text{Cost of the work to date}}{\text{Estimated total cost}} \times \frac{\text{Cash received}}{\text{Work certified}}$
5. Notional Profit $\times \frac{\text{Work certified}}{\text{Contract price}}$

Answer 9. (c)

Estimation of Profit to be taken to Profit and Loss Account against partly completed contract as at 31.03.2012.

$$\begin{aligned}
 \text{Profit to be taken to P/L Account} &= \frac{2}{3} \times \text{Notional profit} \times \frac{\text{Cash received}}{\text{Work certified}} \\
 &\quad (\text{Refer to working notes 1,2,3 \& 4}) \\
 &= \frac{2}{3} \times ₹ 92.48 \text{ lacs} \times \frac{₹ 600 \text{ lakhs}}{₹ 642.48 \text{ lakhs}} \\
 &= ₹ 57.576 \text{ lacs}
 \end{aligned}$$

Working Notes :

1. Statement showing estimated profit to date and future profit on the completion of contract

Particulars	Cost to date		Further Costs		Total Cost ₹ (a)+(b)
	% Completion to date	Amount ₹ (a)	% completion to be done	Amount ₹ (b)	
Fabrication costs :					
Direct material	70	280.00	30	120.00	400.00
Direct labour	60	100.00	40	66.67	166.67
Overheads	60	60.00	40	40.00	100.00
Total Fabrication cost (A)		440.00		226.67	666.67
Erection cost: (B)	40	110.00	60	165.00	275.00
Total estimated costs: (A+B)		550.00		391.67	491.67
Profit (Refer to working note 2)		92.48		65.85	158.33
		642.48		457.52	1,100.00

2. Profit to date (Notional Profit) and future profit are calculated as below :

$$\text{Profit to date (Notional Profit)} = \frac{\text{Estimated profit on the whole contract} \times \text{Cost to date}}{\text{Total Cost}}$$

$$= \frac{₹ 158.33 \times ₹ 550}{₹ 941.67}$$

$$= ₹ 92.48 \text{ (lacs)}$$

$$\text{Future Profit} = ₹ 158.33 - ₹ 92.48$$

$$= ₹ 65.85$$

3. Work certified :

$$= \text{Cost of the contract to date} + \text{Profit to date}$$

$$= ₹ 550 + ₹ 92.49 = ₹ 642.48 \text{ lacs}$$

4. Degree of Completion of Contract to date:

$$= \frac{\text{Cost of the Contract to date}}{\text{Contract Price}} \times 100$$

$$= \frac{₹ 642.48 \text{ lacs}}{₹ 1,100 \text{ lacs}} \times 100$$

$$= 58.40\%$$

Q. 10. (a) "The value of scrap generated in a process should be credited to the process account." Do you agree with this statement? Give reasons.

(b) In a manufacturing company, a product passes through 5 operations. The output of the 5th operation becomes the finished product. The input, rejection, output and labour and overheads of each operation for a period are as under :

Operation	Input (units)	Rejection (units)	Output(units)	Labour and Overhead (₹)
1	21,600	5,400	16,200	1,94,400
2	20,250	1,350	18,900	1,41,750
3	18,900	1,350	17,550	2,45,700
4	23,400	1,800	21,600	1,40,400
5	17,280	2,880	14,400	86,400

You are required to :

- Determine the input required in each operation for one unit of final output.
- Calculate the labour and overhead cost at each operation for one unit of final output and the total labour and overhead cost of all operations for one unit of final output.

Answer 10. (a)

This statement is not correct The value of scrap (as normal loss) received from its sale is credited to the process account. But the value of scrap received from its sale under abnormal conditions should be credited to Abnormal Loss Account.

Answer 10. (b)**(i) Statement of Input required in each operation for one unit of final output:**

(Refer to Working Note)

Operation	Output (Units)	Rejection of output in %	Input required
5	1	20	1.20 ($1 \times \frac{120}{100}$)
4	1.20	8.33	1.30 ($1.20 \times \frac{108.33}{100}$)
3	1.30	7.69	1.40 ($1.30 \times \frac{107.69}{100}$)
2	1.40	7.14	1.50 ($1.40 \times \frac{107.14}{100}$)
1	1.50	33.33	2.00 ($1.50 \times \frac{133.33}{100}$)

Working Note :**Input required for final output**

Operation	Input (units)	Rejection (units)	Output (units)	Rejection as % of output	Input required for final output
1	21,600	5,400	16,200	33.33	2.00
2	20,250	1,350	18,900	7.14	1.50
3	18,900	1,350	17,550	7.69	1.40
4	23,400	1,800	21,600	8.33	1.30
5	17,280	2,880	14,400	20.00	1.20

(ii) Statement of labour and overhead cost at each operation for one unit of final output

Operation	Input (Units)	Labour & Overheads	Labour & Overhead per unit of input	Input units required for one unit or final output	Labour and Overhead cost per unit of final output
	(₹)	(₹)	(₹)		(₹)
(a)	(b)	(c)	(d) = (c)/(b)	(e)	(f) = (d)×(e)
1	21,600	1,94,400	9	2.00	18.00
2	20,250	1,41,750	7	1.50	10.50
3	18,900	2,45,700	13	1.40	18.20
4	23,400	140,400	6	1.30	7.80
5	17,280	86,400	5	1.20	6.00
					60.50

Total labour and overhead cost of all operations for one unit of final output is ₹ 60.50.

Q. 11. (a) Following information is available regarding process A for the month of February, 2012 : Production Record.

Units in process as on 1.2.2012	4,000	
(All materials used, 25% complete for labour and overhead)		
New units introduced	16,000	
Units completed	14,000	
Units in process as on 28.2.2012	6,000	
(All materials used, 33-1/3% complete for labour and overhead)		
Cost Records		
Work-in-process as on 1.2.2012	₹	
Materials	6,000	
Labour	1,000	
Overhead	<u>1,000</u>	
		<u>8,000</u>
Cost during the month		
Materials	25,600	
Labour	15,000	
Overhead	<u>15,000</u>	
		<u>55,600</u>

Presuming that average method of inventory is used, prepare :

- Statement of equivalent production.
- Statement showing cost for each element.
- Statement of apportionment of cost.
- Process cost account for process A.

(b) Explain briefly the procedure for the valuation of Work-in-process.

Answer 11. (a)

(i)

Statement of equivalent production
(Average cost method)

Particulars Input (Units)	Output	Units	Equivalent Production					
			Materials		Labour		Overheads	
			% completion	Equivalent units	% completion	Equivalent units	% completion	Equivalent units
20,000	Completed	14,000	100	14,000	100	14,000	100	14,000
	WIP	6,000	100	6,000	33-1/3	2,000	33-1/3	2,000
<u>20,000</u>		<u>20,000</u>		<u>20,000</u>		<u>16,000</u>		<u>16,000</u>

(ii) Statement showing cost for each element

Particulars	Materials	Labour	Overhead	Total
Cost of opening work-in-progress (₹)	6,000	1,000	1,000	8,000
Cost incurred during the month (₹)	<u>25,600</u>	<u>15,000</u>	<u>15,000</u>	<u>55,600</u>
Total cost (₹) : (A)	31,600	16,000	16,000	63,600
Equivalent units : (B)	20,000	16,000	16,000	
Cost per equivalent unit (₹) : C = (A/B)	1.58	1	1	3.58

(iii) Statement of apportionment of cost

	₹	₹
Value of output transferred: (a) 14,000 units @ ₹ 3.58		50,120
Value of closing work-in-progress: (b)		
Material 6,000 units @ ₹ 1.58	9,480	
Labour 2,000 units @ Re. 1	2,000	
Overhead 2,000 units @ Re. 1	<u>2,000</u>	<u>13,480</u>
Total cost : (a+b)		63,600

(iv) Process cost account for process A:

Process A Cost Account

Particulars	Units	₹	Particulars	Units	₹
To Opening WIP	4,000	8,000	By Completed units	14,000	50,120
To Materials	16,000	25,600	By Closing WIP	6,000	13,480
To Labour		15,000			
To Overhead		<u>15,000</u>			
	<u>20,000</u>	<u>63,600</u>		<u>20,000</u>	<u>63,600</u>

Answer 11. (b)

The valuation of work-in-process can be made in the following three ways, depending upon the assumptions made regarding the flow of costs.

- First-in-first out (FIFO) method
- Last-in-first out (LIFO) method
- Average cost method

A brief account of the procedure followed for the valuation of work-in-process under the above three methods is as follows;

FIFO method : According to this method the units first entering the process are completed first. Thus the units completed during a period would consist partly of the units which were incomplete at the beginning of the period and partly of the units introduced during the period.

The cost of completed units is affected by the value of the opening inventory, which is based on the cost of the previous period. The closing inventory of work-in-process is valued at its current cost.

LIFO method : According to this method units last entering the process are to be completed first. The completed units will be shown at their current cost and the closing-work in process will continue to appear at the cost of the opening inventory of work-in-progress along with current cost of work in progress if any.

Average cost method : According to this method opening inventory of work-in-process and its costs are merged with the production and cost of the current period, respectively. An average cost per unit is determined by dividing the total cost by the total equivalent units, to ascertain the value of the units completed and units in process.

Q. 12. (a) The yield of a certain process is 80% as to the main product, 15% as to the by-product and 5% as to the process loss. The material put in process (5,000 units) cost ₹ 23.75 per unit and all other charges are ₹ 14,250, of which power cost accounted for $33\frac{1}{3}\%$. It is ascertained that power is chargeable as to the main product and by-product in the ratio of 10 : 9.

Draw up a statement showing the cost of the by-product.

(b) Distinguish between Joint products and By-products.

Answer 12. (a)

Yield per 5,000 input units

	Yield in Percentage	Yield in Units
Main product	80%	4,000
By product	15%	750
Process loss	5%	250

Statement Showing the Cost of the By-Product

Particulars	₹
Cost of Material $(5,000 \times ₹ 23.75) \times \frac{750}{4,750}$	18,750
Other Charges (except power) $(₹ 14,250 \times 66\frac{2}{3}\%) \times \frac{750}{4,750}$	1,500
Power $(₹ 14,250 \times 33\frac{1}{3}\%) \times \frac{9}{19}$	2,250
Total Cost	22,500

Answer 12. (b)

Joint Products are defined as the products which are produced simultaneously from same basic raw materials by a common process or processes but none of the products is relatively of more importance or value as compared with the other. For example spirit, kerosene oil, fuel oil, lubricating oil, wax, tar and asphalt are the examples of joint products.

By products, on the other hand, are the products of minor importance jointly produced with other products of relatively more importance or value by the common process and using the same basic materials. These products remain inseparable upto the point of split off. For example in Dairy industries, butter or cheese is the main product, but butter milk is the by-product.

Points of Distinction :

- (1) Joint product are the products of equal economic importance, while the by-products are of lesser importance.
- (2) Joint products are produced in the same process, whereas by-products are produced from the scrap or the discarded materials of the main product.
- (3) Joint products are not produced incidentally, but by-products emerge incidentally also.

Q. 13. (a) Q Ltd operates a chemical process which produces four products: A, B, C and D from a basic raw material. The company's budget for a month is as under :

	₹
Raw materials consumption	17,520
Initial processing wages	16,240
Initial processing overheads	16,240

Product	Production Kgs.	Sales ₹	Additional Processing Costs after split-off ₹
A	16,000	1,09,600	28,800
B	200	5,600	—
C	2,000	30,000	16,000
D	360	21,600	6,600

The company presently intends to sell product L at the point of split-off without further processing. The remaining products, A, C and D are to be further processed and sold. However, the management has been advised that it would be possible to sell all the four products at the split-off point without further processing and if this course was adopted, the selling prices would be as under :

Product	A	B	C	D
Selling Price ₹ Per kg.	4.00	28.00	8.00	40.00

The joint costs are to be apportioned on the basis of the sales value realisation at the point of split-off.

Required :

- (i) Prepare the statement showing the apportionment of joint costs.
- (ii) Present a statement showing the product wise and total budgeted profit or loss based on the proposal to sell product B at the split-off point and products A, C and D after further processing.
- (iii) Prepare a statement to show the product wise and total profit or loss if the alternative strategy to sell all the products at split-off stage was adopted.

Recommend any other alternative which in your opinion can increase the total profit further. Calculate the total profit as also the product wise profit or loss, based on your recommendation.

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

Answer 13. (a)

(i)

Statement showing Apportionment of Joint Costs

Products	A	B	C	D	Total (₹)
Production (Kgs.): (A)	16,000	200	2,000	360	
Selling Price at split off point(Rs./Kg.): (B)	4	28	8	40	
Sales value at split off point(Rs.): (C) = (A X B)	64,000	5,600	16,000	14,400	1,00,000
Joint Cost apportionment (Refer to Working Note)	32,000	2,800	8,000	7,200	50,000

(ii)

Statement of Total Budgeted Profit or Loss
(Based on the proposal to sell B at the split off
point and products A, C and D after further processing)

Products	A ₹	B ₹	C ₹	D ₹	Total ₹
Sales Revenue: (A)	1,09,600	5,600	30,000	21,600	1,66,800
Joint Cost: (B) (Refer to Working Note)	32,000	2,800	8,000	7,200	50,000
Addl. Processing Cost: (C)(after split off)	28,800	—	16,000	6,600	51,400
Total Cost: (D) = (B + C)	60,800	2,800	24,000	13,800	1,01,400
Profit: (A – D)	48,800	2,800	6,000	7,800	65,400

(iii)

Statement of Profit or Loss
(When all the products are sold at split-off stage)

Products	A ₹	B ₹	C ₹	D ₹	Total ₹
Sales revenue	64,000	5,600	16,000	14,400	1,00,000
Less : Joint Cost (Refer to Working Note)	32,000	2,800	8,000	7,200	50,000
Profit	32,000	2,800	8,000	7,200	50,000

(iv)

Statement of Profit or Loss
(On the basis of another alternative)

Products	A ₹	B ₹	C ₹	D ₹	Total ₹
Incremental sales revenue on further processing	45,600	—	14,000	7,200	
	(₹ 1,09,600 – ₹ 64,000)		(₹ 30,000 – ₹ 16,000)	(₹ 21,600 – ₹ 14,400)	
Less: Additional processing Cost	28,800	—	16,000	6,600	
Profit (Loss)	16,800	—	(2,000)	600	

Since further processing of A and D adds to profit, therefore the recommended mix that would increase total profit is to process products A and D further and sell products B and C at the split - off point.

Profit and Loss statement based on recommended alternative

Products	A Process further & sell ₹	B Sell at split off ₹	C Sell at split off ₹	D Process further & sell ₹	Total ₹
Profit at split off point: (I)	32,000	2,800	8,000	7,200	
Incremental profit on sale after further processing: (II)	16,800	—	—	600	
Total : (III) = (I + II)	<u>48,800</u>	<u>2,800</u>	<u>8,000</u>	<u>7,800</u>	<u>67,400</u>

Working Note :

Joint Cost

= Raw material consumption + Initial processing wages + Initial processing overheads

= ₹ 17,520 + ₹ 16,240 + ₹ 16,240 = ₹ 50,000

Joint Cost apportionment (On the basis of sales value at split off point)

$$= \frac{\text{Joint Cost}}{\text{Total sales value}} \times \text{Sales value of the product}$$

Products

Joint Cost apportionment

A	$\frac{₹ 50,000}{₹ 1,00,000} \times ₹ 64,000 = ₹ 32,000$
B	$\frac{₹ 50,000}{₹ 1,00,000} \times ₹ 5,600 = ₹ 2,800$
C	$\frac{₹ 50,000}{₹ 1,00,000} \times ₹ 16,000 = ₹ 8,000$
D	$\frac{₹ 50,000}{₹ 1,00,000} \times ₹ 14,000 = ₹ 7,200$

Product	Apportioned Joint Cost	Sale value at split off	Profit at split off	Further processing	Final Sale value	Total Cost=AJC+FPC	Final profit/(loss)
A	32000	64000	32000	28800	109600	60800	48800
B	2800	5600	2800	-	5600	2800	2800
C	8000	16000	8000	16000	30000	24000	6000
D	7200	14400	7200	6600	21600	13800	7800
Total	50000	100000	50000	51400	166800	101400	65400

Answer 13. (b)

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.
- (ii) *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. 14. (a) Coal is transported from two mines – 'P' and 'Q' and unloaded at plots in a Railway Station. Mine P is at a distance of 10 kms, and Q is at a distance of 15 kms. from railhead plots. A fleet of lorries of 5 tonne carrying capacity is used for the transport of mineral from the mines. Records reveal that the lorries average a speed of 30 kms. per hour, when running and regularly take 10 minutes to unload at the railhead. At mine 'P' loading time averages 30 minutes per load while at mine 'Q' loading time averages 20 minutes per load.

Drivers' wages, depreciation, insurance and taxes are found to cost ₹ 9 per hour operated. Fuel, oil, tyres, repairs and maintenance cost ₹ 1.20 per km.

Draw up a statement, showing the cost per tonne-kilometer of carrying coal from each mine.

(b) In order to develop tourism, XYZ airline has been given permit to operate three flights in a week between A and B cities (both side). The airline operates a single aircraft of 160 seats capacity. The normal occupancy is estimated at 60% through out the year of 52 weeks. The one-way fare is ₹ 7,200. The cost of operation of flights are :

Fuel cost (variable)	₹ 96,000 per flight
Food served on board on non-chargeable basis	₹ 125 per passenger
Commission	5% of fare applicable for all booking
Fixed cost :	
Aircraft lease	₹ 3,50,000 per flight
Landing Charges	₹ 72,000 per flight

Required :

- (i) Calculate the net operating income per flight.
- (ii) The airline expects that its occupancy will increase to 108 passengers per flight if the fare is reduced to ₹ 6,720. Advise whether this proposal should be implemented or not.

Answer 14. (a)

Statement showing the cost per tonne-kilometer of carrying mineral from each mine

	Mine P ₹	Mine Q ₹
Fixed cost per trip (Driver's wages, depreciation, insurance and taxes)		
P: 1 hour 20 minutes @ ₹ 9 per hour	12	
Q: 1 hour 30 minutes @ ₹ 9 per hour (Refer to working note 1)		13.50
Running and maintenance cost: (Fuel, oil, tyres, repairs and maintenance)		
P: 20 kms ₹ 1.20 per km.	24	
Q: 30 kms. ₹ 1.20 per km.		36.00
Total cost per trip	36	49.50
Cost per tonne – km	0.72	0.66
(Refer to working note 2)	(₹ 36/50 tonnes kms)	(₹ 49.50/75 tonnes kms)

Working notes :

	Mine P	Mine Q
1. Total operated time taken per trip	40 minutes	60 minutes
Running time to & from	$\left(20\text{kms.} \times \frac{60\text{minutes}}{30\text{kms}}\right)$	$\left(30\text{kms.} \times \frac{60\text{minutes}}{30\text{kms}}\right)$
Unloading time	10 minutes	10 minutes
Loading time	<u>30 minutes</u>	<u>20 minutes</u>
Total operated time	80 minutes or 1 hour 20 minutes	90 minutes or 1 hour 30 minutes
2. Effective tones – kms	50 (5 tonnes × 10 kms)	75 (5 tonnes × 15 kms.)

Answer 14. (b)

	₹	₹
No. of passengers $160 \times 60/100 = 96$		
(i) Fare collection $96 \times 7,200$		6,91,200
Variable costs:		
Fuel		96,000
Food 96×125		12,000
Commission 5%		<u>34,560</u>
Total variable Costs		1,42,560
Contribution per flight		5,48,640
Fixed costs: Lease	3,50,000	
Crew	72,000	<u>4,22,000</u>
Net income per flight		<u>1,26,640</u>
(ii) Fare collection $108 \times 6,720$		7,25,760
Variable costs:		
Fuel		96,000
Food 108×125		13,500
Commission @ 5%		<u>36,288</u>
Contribution		<u>5,79,972</u>

There is an increase in contribution by ₹ 31,332. Hence the proposal is acceptable.

Q. 15. (a) PQR Limited has collected the following data for its two activities. It calculates activity cost rates based on cost driver capacity.

Activity	Cost Driver	Capacity	Cost
Power	Kilowatt hours	50,000 kilowatt hours	₹ 2,00,000
Quality Inspections	Number of Inspections	10,000 Inspections	₹ 3,00,000

The company makes three products M, S and T. For the year ended March 31, 2004, the following consumption of cost drivers was reported:

Product	Kilowatt hours	Quality Inspections
P	10,000	3,500
Q	20,000	2,500
R	15,000	3,000

Required :

- (i) Compute the costs allocated to each product from each activity.
 - (ii) Calculate the cost of unused capacity for each activity.
 - (iii) Discuss the factors the management considers in choosing a capacity level to compute the budgeted fixed overhead cost rate.
- (b) Give three examples of Cost Drivers of following business functions in the value chain :
- (i) Research and development
 - (ii) Design of products, services and processes
 - (iii) Marketing

Answer 15. (a)

(i) **Statement of cost allocation to each product from each activity**

	Product			
	P	Q	R	Total
	₹	₹	₹	₹
Power (Refer to working note)	40,000 (10,000 kwh x ₹ 4)	80,000 (20,000 kwh x ₹ 4)	60,000 (15,000 kwh x ₹ 4)	1,80,000
Quality Inspections (Refer to working note)	1,05,000 (3,500 inspections x ₹ 30)	75,000 (2,500 inspections x ₹ 30)	90,000 (3,000 inspections x ₹ 30)	2,70,000

Working note :

Rate per unit of cost driver :

Power : (₹ 2,00,000 / 50,000 kwh) = ₹ 4/kwh

Quality Inspection : (₹ 3,00,000 / 10,000 inspections) = ₹ 30 per inspection

(i) **Computation of cost of unused capacity for each activity :**

	₹
Power (₹ 2,00,000 – ₹ 1,80,000)	20,000
Quality Inspections (₹ 3,00,000 – ₹ 2,70,000)	30,000
Total cost of unused capacity	50,000

(ii) **Factors management consider in choosing a capacity level to compute the budgeted fixed overhead cost rate :**

- Effect on product costing & capacity management
- Effect on pricing decisions.
- Effect on performance evaluation
- Effect on financial statements
- Regulatory requirements.
- Difficulties in forecasting chosen capacity level concepts.

Answer 15. (b)

A cost driver is any factor whose change causes a change in the total cost of a related cost object. In other words, a change in the level of cost driver will cause a change in the level of the total cost of a related cost object.

The cost drivers for business functions viz. Research & Development; Design of products, services and processes; Marketing are as follows :

Business functions	Cost Drivers
(i) Research & Development	– Number of research projects – Personnel hours on a project – Technical complexities of the projects
(ii) Design of products, services and processes	– Number of products in design – Number of parts per product – Number of engineering hours
(iii) Marketing	– Number of advertisement run – Number of sales personnel – Sales revenue – Number of products and volume of sales (in quantitative terms)

Q. 16. (a) P Q R S Co. Ltd. produces and sells four products P, Q, R and S. These products are similar and usually produced in production runs of 10 units and sold in a batch of 5 units. The production details of these products are as follows :

Product	P	Q	R	S
Production (Units)	100	110	120	150
Cost per unit :				
Direct material (₹)	30	40	35	45
Direct labour (₹)	25	30	30	40
Machine hour (per unit)	5	4	3	4

The production overheads during the period are as follows :

	₹
Factory works expenses	22,500
Stores receiving costs	8,100
Machine set up costs	12,200
Cost relating to quality control	4,600
Material handling and dispatch	9,600
	57,000

The cost drivers for these overheads are detailed below :

Cost	Cost drivers
Factory works expenses	Machine hours
Stores receiving costs	Requisitions raised
Machine set up costs	No. of production runs
Cost relating to quality control	No. of production runs
Material handling and dispatch	No. of orders executed

The number of requisitions raised on the stores was 25 for each product and number of orders executed was 96, each order was in a batch of 05 units.

Required :

- Total cost of each product assuming the absorption of overhead on machine hour basis;
- Total cost of each product assuming the absorption of overhead by using activity base costing; and
- Show the differences between (i) and (ii) and comment.

(b) Discuss the different stages in the Activity-based Costing.

Answer 16. (a)

(i) Statement showing total cost of each product assuming absorption of overheads on Machine Hour Rate Basis.

Particulars	P	Q	R	S	Total
Output (units)	100	110	120	150	480
Direct material (₹)	30	40	35	45	150
Direct Labour (₹)	25	30	30	40	125
Direct labour- Machine hrs	5	4	3	4	
Overhead @ ₹ 30/- per Machine hr	150	120	90	120	480
Total cost per unit (₹)	205	190	155	205	755
Total cost (₹)	20500	20900	18600	30750	90750

$$\text{Overhead Rate} = \frac{\text{Total Overhead Cost}}{\text{Total Machine Hrs.}} = \frac{\text{₹ } 57,000}{1,900} = \text{₹ } 30 \text{ per unit}$$

(ii) Total Overheads ₹

Factory works expenses	22,500	Factory exp per unit	22,500/1,900 = ₹ 11.84
Stores receiving cost	8,100	Stores receiving cost	8100/100 = ₹ 81
Machine set up costs	12,200	Machine set-up cost	12,200/48 = ₹ 254.1
Costs relating to quality control	4,600	Cost relating to QC	4,600/48 = ₹ 95.83
Expense relating to material handling & dispatch	9,600	Material handling & dispatch	9,600 / 96 = ₹ 100
Total	57,000		

Statement showing total cost of each product assuming Activity Based Costing.

Particulars	P	Q	R	S	Total
Output (Units)	100	110	120	150	480
No. of production runs	10	11	12	15	48
No. of stores requisition	25	25	25	25	100
No. of sales orders	20	22	24	30	96
Unit costs - Direct material (₹)	30.00	40.00	35.00	45.00	
Unit costs - Direct labour (₹)	25.00	30.00	30.00	40.00	
Unit costs - Factory works expenses (₹)	59.20	47.36	35.52	47.36	
Unit costs - Stores receiving cost (₹)	20.25	18.41	16.88	13.50	
Unit costs - Machine set-up cost (₹)	25.42	25.42	25.42	25.42	
Unit costs – QC (₹)	9.58	9.58	9.58	9.58	
Unit costs – Material Handling (₹)	20.00	20.00	20.00	20.00	
Unit cost (₹)	189.45	190.77	172.40	200.86	
Total cost (₹)	18,945	20,984.7	20,688.00	30,129	

(iii)

Statement showing differences (in ₹)

Particulars	P	Q	R	S
(a) Unit cost MHR	205	190	155	205
(b) Unit cost ABC	189.45	190.77	172.40	200.86
(c) Unit cost - difference = (a) - (b)	15.55	-0.77	-17.40	4.14
Total cost MHR	20,500	20,900	18,600	30,750
Total cost ABC	18,945	20,985	20,688	30,128

The difference is that A consumes comparatively more of Machine hours.

The use of activity based costing gives different product costs than what were arrived at by utilising traditional costing. It can be argued that Product costs using ABC are more precise as overheads have been identified with specific activities.

Answer 16. (b)

Different stages in activity –based costing are as follows :

- Identify the different activities within the organization.
- Relate the overheads cost to the identified activities.
- Support activities are then spread across the primary activities.
- Determine the activity cost drivers.
- Calculate the activity cost driver rates.

Compute the overhead cost to be charged over the product by using cost driver rates.

Q. 17. (a) A fire destroyed some accounting records of a company. You have been able to collect the following from the spoilt papers/records and as a result of consultation with accounting staff in respect of January 2012 :

(i) Incomplete Ledger Entries :

Raw-Materials Account

	₹		₹
Beginning Inventory	32,000		

Work-in-Progress Account

	₹		₹
Beginning Inventory	9,200	Finished Stock	1,51,000

Creditors Account

	₹		₹
Closing Balance	16,200	Opening Balance	16,400

Manufacturing Overheads Account

	₹		₹
Amount Spent	29,600		

Finished Goods Account

	₹		₹
Opening Inventory	24,000	Closing Inventory	30,000

(ii) **Additional Information :**

- (1) The cash-book showed that ₹ 89,200 have been paid to creditors for raw-material.
- (2) Ending inventory of work-in-progress included material ₹ 5,000 on which 300 direct labour hours have been booked against wages and overheads.
- (3) The job card showed that workers have worked for 7,000 hours. The wage rate is ₹ 10 per labour hour.
- (4) Overhead recovery rate was ₹ 4 per direct labour hour.

You are required to complete the above accounts in the cost ledger of the company.

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

Answer 17. (a)

(i)

Creditors Account

Dr.

Cr.

Particulars	₹	Particulars	₹
To Cash & Bank (l)	89,200	By Balance b/d	16,400
To Balance c/d (Balancing figure)	19,200	By Purchases	92,000
	1,08,400		1,08,400

Work-in-progress Account

Dr.

Cr.

Particulars	₹	Particulars	₹
To Balance b/d	9,200	By Finished stock	1,51,000
To Raw-materials (Balancing figure)	53,000	By Balance c/d	
To Wages (3) (7,000 hrs. × ₹ 10)	70,000	Material (2): ₹ 5,000	
To Overheads (4) (7,000 hrs. × ₹ 4)	28,000	Labour (2): ₹ 3,000 (300 hrs. × 4 hrs)	9,200
	1,60,200	Overheads (2) (300 hrs. × ₹ 4)	1,200
			1,60,200

Raw-materials Account

Dr.

Cr.

Particulars	₹	Particulars	₹
To Balance b/d	32,000	By Work-in-progress (As above)	53,000
To Purchase (As above)	92,000	By Balance c/d	71,000
	1,24,000		1,24,000

Finished Goods Account

Dr.

Cr.

Particulars	₹	Particulars	₹
To Balance b/d	24,000	By Cost of sales (Balancing figure)	1,45,000
To W.I.P. (As above)	1,51,000	By Balance c/d	30,000
	1,75,000		1,75,000

Manufacturing Overheads Account

Dr.

Cr.

Particulars	₹	Particulars	₹
To Sundries	29,600	By W.I.P. (7000 × ₹ 4)	28,000
		By Under-absorbed Overheads A/c	1,600
	29,600		29,600

Answer 17. (b)**Reasons for disagreement of profits as per cost and financial accounts**

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

1. Items appearing only in financial accounts

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

(i) Income :

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

(ii) Expenditure :

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

(iii) Appropriation :

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

2. Items appearing only in cost accounts

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

These are :

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

3. Under or over-absorption of overhead

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

4. Different bases of stock valuation

In financial books, stocks are valued at cost or market price, whichever is lower. In cost books, however, stock of materials may be valued on FIFO or LIFO basis and work-in-progress may be valued at prime cost or works cost. Differences in store valuation may thus cause a difference between the two profits.

5. Depreciation

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

Q. 18. (a)) The financial records of M M Ltd. reveal the following for the year ended 30-6-2012 :

	₹ in '000
Sales (20,000 units)	4,000
Materials	1,600
Wages	800
Factory Overheads	720
Office and Administrative Overheads	416
Selling and Distribution Overheads	288
Finished Goods (1,230 units)	240
Work-in-progress	48
Labour	32
Overheads (Factory)	<u>32</u> 112
Goodwill written off	320
Interest on Capital	32

In the Costing records, factory overhead is charged at 100% wages, administration overhead 10% of factory cost and selling and distribution overhead at the rate of ₹ 16 per unit sold.

Prepare a statement reconciling the profit as per cost records with the profit as per financial records of the company.

(b) A manufacturing company disclosed a net loss of ₹ 3,47,000 as per their cost accounts for the year ended March 31, 2012. The financial accounts however disclosed a net loss of ₹ 5,10,000 for the same period. The following information was revealed as a result of scrutiny of the figures of both the sets of accounts.

	₹
(i) Factory Overheads under-absorbed	40,000
(ii) Administration Overheads over-absorbed	60,000
(iii) Depreciation charged in Financial Accounts	3,25,000
(iv) Depreciation charged in Cost Accounts	2,75,000
(v) Interest on investments not included in Cost Accounts	96,000
(vi) Income-tax provided	54,000
(vii) Interest on loan funds in Financial Accounts	2,45,000

(viii) Transfer fees (credit in financial books)	24,000
(ix) Stores adjustment (credit in financial books)	14,000
(x) Dividend received	32,000
Prepare a Memorandum Reconciliation Account.	

Answer 18. (a)

**Profit & Loss Account of Modern Manufacturers
for the year ended 30-6-2012**

(₹ in '000)

Particulars	₹	Particulars	₹
To Materials	1,600	By Sales (20,000 units)	4,000
To Wages	800	By Closing Stock	
To Factory Overheads	720	By Finished Goods	240
To Office and Admn. Overheads	416	(1230 units)	
To Selling & Distribution Overheads	288	Work-in-Progress	112
To Goodwill written off	320		
To Interest on Capital	32		
To Net Profit	176		
	4,325		4,352

Profit as per Cost Record

	(₹ in '000)
Materials	1,600
Wages	800
Prime Cost	2,400
Factory Overhead (100% of wages)	800
Gross Factory Cost	3,200
Less: Closing WIP	112
Factory Cost (21,230 units)	3,088
Add: Office & Administrative Overhead (10% of Factory Cost)	308.80
Total Cost of output	3,396.80
Less: Closing stock (1,230 units) of Finished Goods (See Working Note 1)	196.80
Cost of Production of 20,000 units	3,200.00
Selling and Distribution overhead (@ ₹ 16 p u.)	320.00
Cost of sales (20,000 units)	3,520.00
Sales Revenue (20,000 units)	4,000.00
Profit	480.00

Reconciliation Statement

Particulars	₹ ('000)	₹ ('000)
Profit as per Cost Accounts		480
Add : Factory overhead Overabsorbed (800-720)	80	
Selling and Distribution Overhead Overabsorbed (320-288)	32	
Closing stock overvalued in Financial Accounts (240-196.8)	43.20	152.2
		635.20
Less: Office & Administrative Overhead underabsorbed (416-308.80)	107.20	
Goodwill written off	320.00	
Interest on Capital	32.00	459.20
Profit as per Financial Accounts		176.00

Working Note :

1. Cost per unit of finished good = $\frac{\text{Total Cost of output}}{\text{Total number of units produced}}$
- $= \frac{\text{₹ 3396.80 Thousand}}{21,230 \text{ units}} = \text{₹ 160}$
- Cost of 1230 units = ₹ 160 × 1230 = ₹ 1,96,800

Answer 18. (b)**Memorandum Reconciliation Account**

Dr.

Cr.

Particulars	₹	Particulars	₹
To Net Loss as per Costing books	3,47,000	By Administration overheads over recovered in cost accounts	60,000
To Factory overheads under absorbed in Cost Accounts	40,000	By Interest on investment not included in Cost Accounts	96,000
To Depreciation under charged in Cost Accounts	50,000	By Transfer fees in Financial books	24,000
To Income-Tax not provided in Cost Accounts	54,000	By Stores adjustment (Credit in financial books)	14,000
To Interest on Loan Funds in Financial Accounts	2,45,000	By Dividend received in financial books	32,000
		By Net loss as per Financial books	5,10,000
	7,36,000		7,36,000

Q. 19. (a) HFC Chemicals Ltd. produces GDX. The standard ingredients of 1 kg. of GDX are :

0.65 kg. of ingredient G @ ₹ 4.00 per kg.

0.30 kg. of ingredient D @ ₹ 6.00 per kg.

0.20 kg. of ingredient X @ ₹ 2.50 per kg.

1.15 kg.

Production of 4,000 kg. of GDX was budgeted for August, 2012. The production of GDX is entirely automated and production costs attributed to GDX production comprise only direct materials and overheads. The GDX production operation works on a JIT basis and no ingredient of GDX inventories are held.

Overheads were budgeted August, 2012 for the GDX production operation as follows :

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

In August, 2012, 4,200 kg. of GDX were produced and cost details were as follows :

• Materials used :

2,840 kg. of G, 1,210 kg. of D and 860 kg of X

Total cost ₹ 20,380

• Actual overhead costs :

12 Supplier deliveries (cost ₹ 4,800) were made, and 38 customer dispatches (cost ₹ 7,800) were processed.

Prepare a variance analysis for GDX production costs in August, 2012: separate the material cost variance into price, mixture and yield components; separate the overhead cost variance into expenditure, capacity and efficiency components using consumption of ingredient G as the overhead absorption base.

(b) ABC Ltd worked 10% more days than budgeted and achieved 25% more output than original budget. But it was observed that the average capacity utilization was only 90%. Find out the efficiency in operations.

Answer 19. (a)

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

Standard overhead rate = ₹ 12,000 / Budgeted standard qty. of ingredient G $(4,000 \times 0.65)$

= ₹ 4.6154 per kg. of ingredient G

Standard overhead rate per kg of output of GDX = ₹ 0.65 kg $\times ₹ 4.6154 = ₹ 3$

₹

Standard cost of actual output :

Materials $(4,200 \times ₹ 4.90)$ 20,580

Overheads $(4,200 \times ₹ 3)$ 12,600

33,180

Actual cost of output :

Materials 20,380

Overheads $(₹ 7,800 + ₹ 4,800)$ 12,600

32,980

Variance calculations :

Materials price variance	= (Standard price – Actual price) × Actual quantity
	= (Standard price × Actual quantity) – Actual cost
	= (₹ 4 × 2,840) + (₹ 6 × 1,210) + (₹ 2.50 × 860) – ₹ 20,380
	= ₹ 20,770 – ₹ 20,380
	= ₹ 390 F
Material yield variance	= (Actual yield – Standard yield) × Standard materials cost per unit of output
	= (4,200 – 4,910 materials used / 1.15) × ₹ 4.90
	= 341 A
Material mix variance	= (Actual quantity in actual mix at standard prices) – (Actual quantity in standard mix at standard prices)
G (4,910 × 0.65/1.15 = 2,775 – 2,840) × ₹ 4	= 260 (A)
D (4,910 × 0.30/1.15 = 1,281 – 1,210) × ₹ 6	= 426 (F)
X (4,910 × 0.20/1.15 = 854 – 860) × ₹ 2.50	= 15 (A) 151 (F)
Overhead efficiency variance	= (Standard quantity of ingredient G – Actual quantity) × Standard overhead rate per kg. of ingredient G
	= [(4200 × 0.65) – 2840] × ₹ 4.6154
	= 508 (A)
Overhead capacity variance	= (Budgeted input of ingredient G – Actual input) × standard overhead rate per kg of ingredient G
	= [(4000 × 0.65) – 2,840] × ₹ 4.6154 = 1,108 (F)
Overhead expenditure variance	= Budgeted cost – Actual cost
	= ₹ 12,000 – ₹ 12,600
	= 600 A

Reconciliation of standard cost and actual cost of output :

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

Answer 19. (b)

Activity or Volume Ratio = Capacity Ratio × Efficiency Ratio × Calendar Ratio
 or 125% = 90% × Efficiency Ratio × 110%

Solving the equation, we get,

Efficiency Ratio = 125.00% / (90% × 110%) = 126.26%

Q. 20. (a) Chief Accountant of a TDH Ltd was given the following information regarding the Overheads for June 2012 —

- (i) Overhead (OH) Cost Variance ₹ 1400 (A)
- (ii) Overhead Volume Variance ₹ 1000(A)
- (iii) Budgeted Hours for June, 2012-1200 hours
- (iv) Budgeted Overheads for June 2012- ₹ 6000
- (v) Actual Rate of Recovery of Overheads ₹ 8 per hour.

You are required to assist him in computing the following for the month of June, 2012.

- (I) Overhead Expenditure Variance
- (II) Actual Overheads incurred
- (III) Actual Hours for Actual Production
- (IV) Overheads Capacity Variance
- (V) Overhead Efficiency Variance
- (VI) Standard hours for Actual Production.

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

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

The standard cost data for a batch of jam are :

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

Standard processing loss 3%

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

The actual results for the batch were :

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

Actual output was 1,164 kg. of Jam.

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

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

Calculate the total variances for the batch.

Answer 20. (a)

Since OH Capacity and Efficiency Variances are to be computed, Fixed OH Variances are to be analysed.

(i) Fixed OH Standard Rate per hour = Budgeted Fixed OH/Budgeted Hours = ₹ 6000/1200 = ₹ 5 per hour. (WN 1)

(ii) Fixed Volume Variance = Absorbed Fixed OH (i.e Std. Hr. × Std Rate /hr. **less** Budgeted Fixed OH
= ₹ 1000(A)

Given, Budgeted Fixed OH = ₹ 6000/- , Std. rate/hr. = ₹ 5/-(WN 1),

(Std Hr × ₹ 5) – 6000 = (–) 1000

So, Std Hr (SH) = 1000 hrs. (WN2)

(iii) Fixed OH Cost Variance = ₹ 1400(A) and volume variance = ₹ 1000(A),

Expenditure variance = (bal.fig) = ₹ 400(A)

Fixed OH Expenditure variance = Budgeted Fixed OH less Actual Fixed OH = 400(A)

Since Budgeted Fixed OH is ₹ 6000/-(A)

We get, 6000- Actual Fixed OH = (–) ₹ 400

Hence, Actual Fixed OH = ₹ 6400 (WN 3)

(iv) Actual Hours for Actual production= Actual Fixed OH/ Actual Rate per hr = ₹ 6400/₹ 8 = 800 hours. (WN4)

Fixed Overhead Computation Chart

AO × SR pu = SH × SR ph (1)	AH × SR (2)	Budgeted Fixed OH (3)	Actual Fixed OH (4)
1000(WN2) × 5/hr (WN1) = ₹ 5000	800 hrs (WN4) × ₹ 5/hr (WN 1) = ₹ 4000	₹ 6000 (given)	₹ 6400 (WN3)

(I) OH Expenditure Variance = ₹ 400(A)

(II) Actual OH incurred = ₹ 6400 (WN 3)

(III) Actual Hrs for actual production = 800 hrs (WN 4)

(IV) Overheads Capacity Variance = Fixed OH for actual hrs at std rate **less** budgeted fixed OH
= ₹ 4000 – ₹ 6000 = ₹ 2000(A)

(V) Overhead Efficiency Variance = ₹ 5000 – ₹ 4000 (1-2)
= ₹ 1000(F)

(VI) Std. hrs for actual production = 1000 hrs.(WN 2)

Answer 20. (b)**Statement showing original, revised and actual data**

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

Original Input = (400 + 700 + 99 + 1) = 1200
 Less – 3% process loss = 36
 Original output = 1,164

Actual Input = (428 + 742 + 125 + 1) = 1296
 Less – Process loss = 132
 Actual output = 1,164

(a) Planning variance = original cost – revised cost

Fruit extract = 64 – 76 = ₹ 12 A
 Glucose syrup = 70 – 84 = ₹ 14 A
 Total = 227.368 – 253.368 = ₹ 26 A

(b) Ingredient operating variance = Revised – Actual

= ₹ 194.868 – ₹ 208.03 = ₹ 13.162 A

For calculation of variances

Actual cost of actual material (a) = ₹ 208.03
 Standard cost of material used (b) = 428 × 0.19 = 81.32
 742 × 0.12 = 89.04
 125 × 0.332 = 41.50
 1 × 2.00 = 2.00
 213.86

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

(400 / 1,200) × 1,296 × 0.19 = 82.08
 (700 / 1200) × 1,296 × 0.12 = 90.72
 (99 / 1200) × 1,296 × 0.332 = 35.497
 (1 / 1,200) × 1,296 × 2 = 2.16
 ₹ 210.457

Standard material cost of output (d) = $(194.868 / 1,164) \times 1,164 = 194.868$

1. Material price variance = (a) – (b) = ₹ 208.03 – ₹ 213.86 = ₹ 5.83 F
2. Material usage variance = (b) – (d) = ₹ 213.86 – ₹ 194.868 = ₹ 18.992 A
3. Labour cost variance = Actual cost – Standard cost
= ₹ 60.00 – ₹ 58.50 = ₹ 1.50 A

1. Mixture variance = (b) – (c) = ₹ 213.86 – ₹ 210.457 = ₹ 3.403 A
2. Yield variance = (c) – (d) = ₹ 210.457 – ₹ 194.868 = ₹ 15.589

Total variance = Original standard cost – Actual cost
= ₹ 227.368 – ₹ 268.03 = ₹ 40.662 A

Q. 21. (a) Distinguish between Indifference Point and Break–Even Point

(b) ABC Ltd. maintains a margin of safety of 37.5% with an overall contribution to sales ratio of 40%. Its fixed costs amount to ₹ 5,00,000. Calculate the following :

- (i) Break Even Sales
- (ii) Total Sales
- (iii) Total Variable Cost
- (iv) Current Profits

New 'Margin of Safety' if the sales volume is increased by 7.5 %.

Answer 21. (a)

Indifference Point	Break- Even Point (BEP)
(i) Indifference point is the level of Sales at which Total Costs and Profits of two options are equal.	BEP is the level of sales at which the Total Contribution equals the Fixed Costs. Hence, there is neither a Profit nor a Loss to the Firm.
(ii) Indifference Point = (Difference in Fixed Costs/ Difference in PV ratio)	BEP= Fixed Cost/PV ratio
(iii) It is the activity level at which Total cost under two alternatives are equal.	It is the activity level where total revenue is equal to total cost
(iv) Used to choose between two alternative options for achieving the same objective.	Used for profit planning.

Answer 21. (b)

- (i) Break Even Sales = Fixed Cost / (Profit/Volume Ratio)
= ₹ 5, 00,000/40%
= ₹ 12, 50, 000

- (ii) Total Sales = Break Even Sales + Margin of Safety
Margin of Safety = Actual Sales – Break-Even Sales
Let the actual sales be 100, Margin of Safety is 37.5%
Hence Break even sales will be ₹ 62.5

Now, if the Break even sales are ₹ 62.5, actual sales are ₹ 100, hence if Break even sales are ₹ 12.5 lakhs, actual sales will be $100/62.5 \times 12.5 = ₹ 20$ lacs.

(iii) Contribution = Sales – Variable Cost. As the contribution is 40% of sales, the variable cost is 60% of sales and so variable cost will be 60% of ₹ 20 lacs, i.e. ₹ 12 lacs.

(iv) Current Profits = Sales – [Fixed Cost + Variable Cost]
 $= ₹ 20,00,000 - [₹ 12, 00,000 + ₹ 5,00,000]$
 $= ₹ 3,00,000$

(v) New Margin of Safety if the sales volume is increased by 7.5%
 New Sales Volume = ₹ 20,00,000 + 7.5% of ₹ 20,00,000 = ₹ 21,50,000
 Hence, New Margin of Safety = ₹ 21,50,000 – BEP Sales ₹ 12,50,000
 $= ₹ 9,00,000$.

Q. 22. (a) RJD Ltd. has prepared the following budget estimates for a financial year —

Sales units	15000
Sales value	₹ 150000
Fixed Expenses	₹ 34000
Variable costs	₹ 6/- per unit

Calculate Profit / Volume Ratio, BEP, Margin of Safety.

Calculate revised Profit / Volume Ratio, BEP, Margin of Safety in each of the following cases :

- (i) Decrease of 10% in Selling price.
- (ii) Increase of 10% Variable Cost
- (iii) Increase in sales volume by 2000 units.
- (iv) Increase of ₹ 6000/- in Fixed Costs.

(b) What do you understand by the following terms :

- (i) Key factor or Limiting Factor.
- (ii) Margin of Safety.

Answer 22. (a)

Working Notes :

Present Selling Price (SP) p.u. = ₹ 150000/15000 = ₹ 10p.u

Present Contribution p.u. = Selling Price p.u – Variable Costs p.u = ₹ 10 – ₹ 6 = ₹ 4 p.u

Profit / Volume Ratio = Contribution p.u/Sales Price p.u × 100

* BEQ = Fixed Costs/Contribution p.u

Computation of PVR, BEP and MOS

Particulars	PVR	BEQ = Refer WN	BES = BEQ × SP p.u	MOS (Qty)	MOS (₹)
For data given	$(10-6)/10 = 40\%$	₹ 34000/₹ 4 = 8500 units	$8500 \times ₹ 10 = ₹ 85000$	$15000-8500 = 6500$ units	$6500 \times ₹ 10 = ₹ 65000$
Decrease of 10% in Selling price.	$(9-6)/9 = 33.33\%$	₹ 34000/₹ 3 = 11333 units	$11333 \times ₹ 9 = ₹ 101997$ units	$15000-11333 = 3667$ units	$3667 \times ₹ 9 = ₹ 33003$
Increase of 10% Variable Cost	$(10-6.6)/10 = 34\%$	₹ 34000/₹ 3.4 = 10000 units	$10000 \times ₹ 10 = ₹ 100000$	$15000-10000 = 5000$ units	$5000 \times ₹ 10 = ₹ 50000$
Increase in sales volume by 2000 units.	$(10-6)/10 = 40\%$	₹ 34000/₹ 4 = 8500 units	$8500 \times ₹ 10 = ₹ 85000$	$17000-8500 = 8500$ units	$8500 \times ₹ 10 = ₹ 85000$
Increase of ₹ 6000 in Fixed Costs.	$(10-6)/10 = 40\%$	₹ 34000/₹ 3.4 = 10000 units	$10000 \times ₹ 10 = ₹ 100000$	$15000-10000 = 5000$ units	$5000 \times ₹ 10 = ₹ 50000$

Answer 22. (b)

- (i) The marginal costing technique provides that the product with highest contribution per unit is preferred. This inference holds true so long as it is possible to sell as much as it can produce. But sometimes an organisation can sell all it produces but production is limited due to scarcity of raw material, labour, electricity, plant capacity or capital.

These are called key factors or limiting factors. A key factor or limiting factor puts a limit on production and profit of the firm. In such situation, management has to take a decision whose production is to be increased, decreased or stopped. In such cases, selection of the product is done on the basis of contribution per unit of scarce factor of production. The key factor or scarce factor should be utilized in such a manner that contribution per unit of scarce resource is the maximum. Mathematically,

$$\text{Profitability} = \frac{\text{Contribution}}{\text{Key Factor}}$$

For example, if raw material is the limiting factor, the profitability of each product is determined by contribution per Kg of raw material. If machine capacity is a limiting factor then contribution per machine hour is calculated. If electricity is the limiting factor, then contribution per unit of electricity of each product is calculated.

In case of Key factor situation, procedure of decision making is as under :

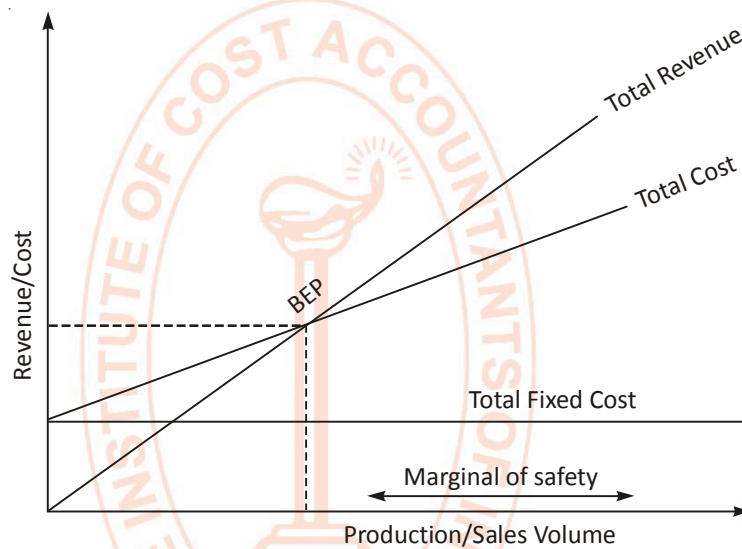
- Identify key factor
- Compute Total Contribution
- Compute Contribution per unit of Key Factor
- Rank the products based on Contribution per unit of key factor
- Allocate the key resources on basis of ranks.

- (ii) Margin of safety (MOS) is the excess of budgeted or actual sales over the break even volume of sales. It states the amount by which sales can drop before losses begin to be incurred. The higher the margin of safety, the lower the risk of not breaking even.

Margin of Safety = Total budgeted or actual sales – Break even sales

or, $\frac{\text{Profit}}{\text{PVRatio}}$

or, $\frac{\text{Profit}}{\text{Contribution per unit}}$



Q. 23. (a) A company produces three products. The General Manager has prepared the following draft budget for the next year.

	Products		
	A	B	C
Number of units	30000	20000	40000
Selling price (₹/unit)	40	80	20
P/V Ratio	20%	40%	10%
Raw material cost as percentage to sales value	40%	35%	45%
Maximum sales potential (units)	40000	30000	50000

The company uses the same raw material in all the three products and the price per kg. of the raw material is ₹ 2.

The company envisages profit of 10% on the budgeted turnover before interest and depreciation which are fixed. Interest and depreciation are estimated at ₹ 3,00,000 and ₹ 1,00,000 respectively. The draft budget makes full utilization on the available raw material which is in short supply.

The Managing Director is not satisfied with the budgeted profitability and hence he has passed on the aforesaid draft budget to you for review.

Required :

- (i) Set an optimal product mix for the next year and find its profit.
- (ii) The company has been able to locate a source for the purchase of an additional 20,000 kgs. of raw materials at an enhanced price. The transport cost of this additional quantity of raw material is ₹ 10,000. What is the maximum price per kg. that can be offered by the company for the additional quantity of raw material.

(b) What are the limitations of Marginal Costing system?

Answer 23. (a)

Details	A	B	C
Sales	₹ 1200000	₹ 1600000	₹ 800000
P/V Ratio	20%	40%	10%
Contribution	240000	640000	80000
Number of units	30000	20000	40000
Contribution per unit	₹ 8	₹ 32	₹ 2
Selling price (₹/unit)	40	80	20
Raw material cost as percentage to sales value	40%	35%	45%
Raw material cost per unit	₹ 16	₹ 28	₹ 9
Consumption of material per unit in kg. (Price ₹ 2 per Kg)	8 kg	14 kg	4.5 kg
Contribution per kg	Re. 1.00	Re. 2.28	Re. 0.44
Ranking based on contribution per kg.	II	I	III

Total material, for which the optimum utilization is to be attempted based on key factor consideration

Products	No. of units produced	Consumption per unit(kg)	Total consumption(kg)
A	30000	8	240000
B	20000	14	280000
C	40000	4.5	180000

(i) Optimal product mix for next year

Product	Maximum	Proposed No.	Consumption units (kg)	Material used (kg)	Material balance (kg)	Contribution per kg	Total
B	30000	30000	14	420000	280000	2.2857	960000
A	40000	35000	8	280000	-	1.0000	280000
Total contribution							1240000
Less: Fixed cost (Refer to note)							1000000
Profit by optimal mix							240000

*Rs. 32/ 14 = 2.2857

Note :

Turnover	₹ 36,00,000
Profit before interest and depreciation 10% of ₹ 36 lakhs	3,60,000
Less : Interest and depreciation	<u>4,00,000</u>
Loss	40,000

We know that :

Sales – Variable cost = Fixed cost + Profit

Or, Contribution = Fixed cost + Profit

Or, Contribution = Fixed cost – Loss

Or, Contribution + Loss = Fixed cost

Or, Fixed cost = ₹ 9,60,000 + ₹ 40,000 = ₹ 10,00,000

(ii) Raw material cost of A	₹ 16
Price per kg.	₹ 2
Raw material consumed per unit of A = 16 kg / 2 =	8 kg
Additional quantity available	20,000 kg
Additional unit of A to be produced = 20,000 / 8 =	2,500 units

Since only 35,000 units are produced by optimum plan proposed in (i) and maximum production limit of product A is 40,000, company can purchase this additional quantity of raw material for production of product A.

Additional contribution per unit of A = ₹ 8	
Additional contribution will be 2,500 units × ₹ 8	₹ 20,000
Less : Transport cost	<u>10,000</u>
Balance available for price increase	<u>10,000</u>

Maximum additional price = 10,000 / 20,000 = ₹ 0.50 per kg.

Or, Maximum price = ₹ 2.00 + 0.50 = ₹ 2.50 per kg.

Answer 23. (b)

The limitations of Marginal Costing system are as follows :

- The classification of total costs into fixed and variable cost is difficult. Most of the expenses are neither totally fixed or variable.
- In this technique fixed costs are totally eliminated for the valuation of inventory of finished and semi-finished goods. Such elimination affects the profitability adversely. Overheads of fixed nature cannot be altogether be excluded particularly in large contracts while valuing WIP.
- In marginal costing historical data is used while management decisions are related to future events.
- It does not provide any standard for the evaluation of performance.
- Selling price fixed on the basis of marginal cost will be useful only for short period of time. Hence sales staff may be cautioned against incorrect pricing decisions while giving them information on marginal cost.

- (vi) Marginal costing ignores time factor and investment. The effect of time value of money is not analysed by Marginal Costing. For example, marginal cost of two jobs may be same but time taken for completion and cost of machines may differ.

Q. 24. (a) The monthly budgets for manufacturing overhead of a concern for two levels of activity were as follows :

Capacity	60%	100%
Budgeted production (units)	600	1,000
Wages	₹ 1,200	₹ 2,000
Consumable stores	900	1,500
Maintenance	1,100	1,500
Power and fuel	1,600	2,000
Depreciation	4,000	4,000
Insurance	1,000	1,000
	9,800	12,000

You are required to :

- (i) Indicate which of the items are fixed, variable and semi variable
 - (ii) Prepare a budget for 80% capacity; and
 - (iii) Find the total cost, both fixed and variable, per unit of output at 60%, 80% and 100% capacity.
- (b) (i) What do you understand by the term performance budgeting?
(ii) What are the types of functional budgets?

Answer 24. (a)

(i) Fixed :

- Depreciation - Since it remains constant at both the given levels.
Insurance - Same as above.

Variable :

- Wages - Because it is ₹ 2 per unit at both the given levels.
Consumable stores - Because it is ₹ 1.50 per unit at both the given levels.

Semi-variable :

- Maintenance - Since it is neither fixed nor the quantum of increase is proportionate to the increase in volume.
Power and fuel - Same as above.

(ii) First of all, find out the variable portion of semi-variable overhead.

Working notes :

Maintenance :

Variable portion = Change in production/ Change in overhead
= ₹ 400 ÷ 400 = Re. 1 per unit.

Fixed portion = ₹ 1,100 – (600 units × Re. 1) = ₹ 500

At 80% capacity level = (800 units × Re. 1) + ₹ 500 = ₹ 1,300

Power and fuel :

Variable portion = ₹ 400 ÷ 400 = Re. 1 per unit.

Fixed portion = ₹ 1,600 – (600 units × Re. 1) = ₹ 1,000

At 80% capacity level = (800 units × Re. 1) + ₹ 1,000 = ₹ 1,800

Budget for 80% capacity level

Budgeted production (80% capacity)	800 units
Wages @ ₹ 2 per unit	1,600
Consumables stores @ ₹ 1.5 per unit	1,200
Maintenance : – as per above working	1,300
Power and fuel : – do –	1,800
Depreciation	4,000
Insurance	<u>1,000</u>
Total	<u>10,900</u>

To sum up, the variable cost per unit works out to ₹ 5.50. It consists of wages – ₹ 2, consumable stores – ₹ 1.50, maintenance – Re. 1 and power and fuel – Re. 1. The total fixed cost comes to ₹ 6,500 i.e. maintenance ₹ 500 + power and fuel ₹ 1,000 + depreciation ₹ 4,000 + insurance ₹ 1,000.

	Capacity		
	60%	80%	100%
(iii) Total cost per unit	60%	80%	100%
Production (units)	600	800	1,000
	₹ Per unit		
Variable cost	5.50	5.50	5.50
Fixed cost (₹ 6,500 ÷ production)	<u>10.83</u>	<u>8.13</u>	<u>6.50</u>
Total	<u>16.33</u>	<u>13.63</u>	<u>12.00</u>

It should be noted that total cost (both fixed and variable) per unit is required and not total cost at different capacity levels.

Answer 24. (b)

- (i) It is budgetary system where the input costs are related to the performance i.e. the end results. This budgeting is used extensively in the Government and Public Sector Undertakings. It is essentially a projection of the Government activities and expenditure thereon for the budget period. This budgeting starts with the broad classification of expenditure according to functions such as education, health, irrigation, social welfare etc. Each of the functions is then classified into programs, sub classified into activities or projects. The main features of performance budgeting are as follows :
- Classification into functions, programs or activities
 - Specification of objectives for each program
 - Establishing suitable methods for measurement of work as far as possible.
 - Fixation of work targets for each program.

Objectives of each program are ascertained clearly and then the resources are applied after specifying them clearly. The results expected from such activities are also laid down. Annual,

quarterly and monthly targets are determined for the entire organization. These targets are broken down for each activity center. The next step is to set up various productivity or performance ratios and finally target for each program activity is fixed. The targets are compared with the actual results achieved. Thus the procedure for the performance budgets include allocation of resources, execution of the budget and periodic reporting at regular intervals.

The budgets are initially compiled by the various agencies such as Government Department, public undertakings etc. Thereafter these budgets move on to the authorities responsible for reviewing the performance budgets. Once the higher authorities decide about the funds, the amount sanctioned are communicated and the work is started. It is the duty of these agencies to start the work in time, to ensure the regular flow of expenditure, against the physical targets, prevent over runs under spending and furnish report to the higher authorities regarding the physical progress achieved.

In the final phase of performance budgetary process, progress reports are to be submitted periodically to higher authorities to indicate broadly, the physical performance to be achieved, the expenditure incurred and the variances together with explanations for the variances.

- (ii) The functional budgets are prepared for each function of the organization. These budgets are normally prepared for a period of one year and then broken down to each month.

Functional budgets are broadly grouped under following heads :

- (A) *Physical Budgets* : Budgets that contain information in terms of physical units about sales, production, etc, for example, quantity of sales, quantity of production, etc.
- (B) *Cost Budgets* : Budgets which provide cost information in respect of manufacturing, sales, administration, R&D Cost Budgets.
- (C) *Profits Budgets* : Budgets that enable ascertainment of profit, for e.g sales budget, profit and loss budget etc.
- (D) *Financial Budget* : A budget which facilitates to ascertain the Financial Position of a concern, for eg. Cash budget, Capital Expenditure Budget etc.

Q. 25. (a) RST Ltd has its own power plant, which has two users, Cutting Department and Welding Department. When the plans were prepared for the power plant, top management decided that its practical capacity should be 1,50,000 machine hours. Annual budgeted practical capacity fixed costs are ₹ 9,00,000 and budgeted variable costs are ₹ 4 per machine-hour. The following data are available :

	Cutting Department	Welding Department	Total
Actual Usage in 2002-03 (Machine hours)	60,000	40,000	1,00,000
Practical capacity for each department (Machine hours)	90,000	60,000	1,50,000

Required :

- (i) Allocate the power plant's cost to the cutting and the welding department using a single rate method in which the budgeted rate is calculated using practical capacity and costs are allocated based on actual usage.
- (ii) Allocate the power plant's cost to the cutting and welding departments, using the dual -rate method in which fixed costs are allocated based on practical capacity and variable costs are allocated based on actual usage.

(iii) Allocate the power plant's cost to the cutting and welding departments using the dual-rate method in which the fixed-cost rate is calculated using practical capacity, but fixed costs are allocated to the cutting and welding department based on actual usage. Variable costs are allocated based on actual usage.

(iv) Comment on your results in requirements (i), (ii) and (iii).

(b) Based on the following information prepare a Cash Budget for PQR Ltd. :

₹

	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr
Opening cash balance	10000	—	—	—
Collection from customers	125000	150000	160000	221000
Payments :				
Purchase of materials	20000	35000	35000	54200
Other expenses	25000	20000	20000	17000
Salary and wages	90000	95000	95000	109200
Income tax	5000	—	—	—
Purchase of machinery	—	—	—	20000

The company desires to maintain a cash balance of ₹ 15,000 at the end of each quarter. Cash can be borrowed or repaid in multiples of ₹ 500 at an interest of 10% per annum. Management does not want to borrow cash more than what is necessary and wants to repay as early as possible. In any event, loans cannot be extended beyond four quarters. Interest is computed and paid when the principal is repaid.

Assume that borrowing take place at the beginning and payments are made at the end of the quarters.

Answer 25. (a)

Working notes :

- Fixed practical capacity cost per machine hour:
 Practical capacity (machine hours) 1,50,000
 Practical capacity fixed costs (₹) 9,00,000
 Fixed practical capacity cost per machine hour ₹ 6
 (₹ 9,00,000 / 1,50,000 hours)
- Budgeted rate per machine hour (using practical capacity):
 = Fixed practical capacity cost per machine hour + Budgeted variable cost per machine hour
 = ₹ 6 + ₹ 4 = ₹ 10

(i) Statement showing Power Plant's cost allocation to the Cutting & Welding departments by using single rate method on actual usage of machine hours.

	Cutting Department ₹	Welding Department ₹	Total ₹
Power plants cost allocation by using actual usage (machine hours) (Refer to working note 2)	6,00,000 (60,000 hours × ₹ 10)	4,00,000 (40,000 hours × ₹ 10)	10,00,000

(ii) Statement showing Power Plant's cost allocation to the Cutting & Welding departments by using dual rate method.

	Cutting Department ₹	Welding Department ₹	Total ₹
Fixed Cost (Allocated on practical capacity for each department i.e.): (90,000 hours : 60,000 hours)	5,40,000 $\left(\frac{₹9,00,000 \times 3}{5} \right)$	3,60,000 $\left(\frac{₹9,00,000 \times 2}{5} \right)$	9,00,000
Variable cost (Based on actual usage of machine hours)	2,40,000 (60,000 hours × ₹ 4)	1,60,000 (40,000 hours × ₹ 4)	4,00,000
Total cost	7,80,000	5,20,000	13,00,000

(iii) Statement showing Power Plant's cost allocation to the Cutting & Welding Departments using dual rate method

	Cutting Department ₹	Welding Department ₹	Total ₹
Fixed Cost Allocation of fixed cost on actual usage basis (Refer to working note 1)	3,60,000 (60,000 hours × ₹ 6)	2,40,000 (40,000 hours × ₹ 6)	6,00,000
Variable cost (Based on actual usage)	2,40,000 (60,000 hours × ₹ 4)	1,60,000 (40,000 hours × ₹ 4)	4,00,000
Total cost	6,00,000	4,00,000	10,00,000

(iv) Comments :

Under dual rate method, under (iii) and single rate method under (i), the allocation of fixed cost of practical capacity of plant over each department are based on single rate. The major advantage of this approach is that the user departments are allocated fixed capacity costs only for the capacity used. The unused capacity cost ₹ 3,00,00 (₹ 9,00,000 – ₹ 6,00,000) will not be allocated to the user departments. This highlights the cost of unused capacity.

Under (ii) fixed cost of capacity are allocated to operating departments on the basis of practical capacity, so all fixed costs are allocated and there is no unused capacity identified with the power plant.

Answer 25. (b)**Cash Budget for ABC Ltd.**

₹

	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr
Opening cash balance	10000	15000	15000	15325
Add : Collection from customers	125000	150000	160000	221000
Total cash available (A)	135000	165000	175000	236325
Payments :				
Purchase of materials	20000	35000	35000	54200
Other expenses	25000	20000	20000	17000
Salary and wages	90000	95000	95000	109200
Income tax	5000	—	—	—
Purchase of machinery	—	—	—	20000
Total cash payments (B)	140000	150000	150000	200400
Minimum cash balance required	15000	15000	15000	15000
Total cash required	155000	165000	165000	215400
Excess (deficit)	(20000)	—	10000	—
Financing :				
Borrowing	20000	—	—	—
Repayment	—	—	(9000)	(11000)
Interest payment	—	—	(675)*	(1100)
Total effect of financing (C)	<u>2000</u>	—	<u>(9675)</u>	<u>(12100)</u>
Cash balancing at the end of quarters (A-B+C)	15000	15000	15325	23825

* $9,000 \times 0.10 \times 9/12 = ₹ 675$. Similarly interest has been calculated for one year @10% per annum on ₹ 11,000.

Q. 26. (a) ADB Ltd. has received an order from Customer 'X' to be executed for ₹ 1,800 (all inclusive). The order requires the following materials, labour etc. :

Materials	Requirements	In stock	Book value	Replacement cost per kg.	Realisable value per kg.
P	100 kg	50 kg	₹ 250	₹ 7	₹ 3
Q	300 kg	140 kg	₹ 280	₹ 3	Re. 1

Labour :

Department I : 10 hrs. @ ₹ 15

Department II : 8 hrs. @ ₹ 12

Variable overhead : ₹ 150

Material 'P' is one that is regularly used by the firm and if used on this order has to be replaced for the use of other orders - Material 'Q' has no use and is the result of excessive purchase made for an order executed two years ago.

Labour in department I is available for this order but labour in department II is fully engaged on another order which is earning a contribution of ₹ 20 per hour and if the order from 'X' is to be executed, labour in department II has to be diverted from current operations.

State whether the order received from customer "X" has to be accepted. Show workings.

(b) DEF has prepared the following budget for the coming year :

	₹ in lacs	₹ in lacs
Sales		20
Costs : Direct materials	3.60	
Direct Labour	6.40	
Factory Overheads (Variable 2.20 + Fixed 2.60)	4.80	
Administration Overhead	1.80	
Sales Commission	1.00	
Fixed Selling overhead	0.40	
Total Costs		18.00
Profit		2.00

The company fixes selling price by charging all overhead other than the Prime Costs on the basis of percentage of Direct Wages and to add a mark up of $\frac{1}{9}$ th of Total Costs to profit.

The company has received a special order which is in excess of budgeted sales. Material and labour costs of special order are ₹ 36000 and ₹ 64000 respectively. DEF submitted a quotation for special order for ₹ 200,000 while customer quoted a price of ₹ 150000. Advise the company whether the order should be accepted at ₹ 150000.

(c) Identify two common pitfalls in relevant costs analysis.

Answer 26. (a)

Relevant cost of order received from Customer 'X'

		₹	₹
Material A	(100 kgs. @ ₹ 7)	700	
Material B	(140 kgs. @ Re 1)	140	
	(160 kgs. @ ₹ 3)	480	1,320
Labour	(Dept. I 10 hrs. @ ₹ 15)	150	
	(Dept. II 8 hrs. @ ₹ 12)	96	
	Opportunity cost of contribution lost	160	406
Variable overheads			150
Total relevant cost of order			1,876

Analysis : The relevant cost of order amount to ₹ 1,876 whereas customer "x" has offered only ₹ 1,800 and it cannot be accepted.

Answer 26. (b)

Particulars	Nature and computation	₹
Direct materials	To be incurred specifically, hence relevant	36000
Direct labour	To be incurred specifically, hence relevant	64000
Variable Factory OH	To be incurred specifically, hence relevant $220000/640000 \times 64000$	22000
Fixed Factory OH	Apportioned Fixed OH not relevant	nil
Admn. OH	Apportioned Fixed OH not relevant	nil
Sales commission	Special order is direct order. Sales commission not payable	nil
Total relevant costs = Minimum price at which Co. may accept the offer		122000
Estimated sales revenue (if accepted)		150000
Estimated profit		28000
Percentage of Profit to revenue (Company policy is 1/9 th , i.e 11.11%) only		18.66

Considering relevant cost and benefits the order may be accepted.

Answer 26. (c)

Two common pitfalls of relevant costs analysis are as follows :

- (i) All variable costs are relevant. Variable costs already incurred in past are historical and irrelevant. Even future variable costs which do not differ under different circumstances are irrelevant. For example, if company wishes to replace the manual operations with mechanizations, if same raw material is used, direct material cost is irrelevant.
- (ii) All fixed costs are irrelevant. There are fixed costs which are relevant as follows :
 - (A) Fixed Costs are specifically incurred for any Contract;
 - (B) When Fixed costs are incremental in nature;
 - (C) When fixed portion of semi variable costs increases due to change in level of activity consequent to acceptance of a contract;
 - (D) When Fixed Costs are avoidable or discretionary;
 - (E) When Fixed cost are such that one cost is incurred in lieu of the another.

Q. 27. (a) A company is organized into two divisions namely A and B produces three products K, L and M. Data per unit are :

	K	L	M
Market price (₹)	120	115	100
Variable costs (₹)	84	60	70
Direct labour hours	4	5	3
Maximum sales potential (units)	1,600	1,000	600

Division B has demand for 600 units of product L for its use. If Division A cannot supply the requirement, Division B can buy a similar product from market at ₹ 112 per unit. What should be the transfer price of 600 units of L for Division B, if the total direct labour –hours available in Division A are restricted to 15,000?

(b) DAV Ltd. is engaged in the manufacture of Sunflower Oil. The three divisions are :

Harvesting – it produces Oilseeds and transports the same to Oil Mill,

Oil Mill- process Oilseeds and manufactures Edible Oil,

Marketing Division- packs Edible Oil in 2 Kg containers for sale T ₹ 150 per container.

The Oil Mill has a yield of 1000 kg of oil from 2000 kg of Oilseeds during a period. The Marketing Division has a yield of 500 cans of Edible Oil of 2 Kg of Oil.

The cost data for each division for the 3rd Quarter of 2011 are as under —

Harvesting Division:	Variable Cost per kg of Oil seed	₹ 2.50
	Fixed cost per Kg of Oilseed	₹ 5.00
Oil Mill Division:	Variable Cost of Processed Edible Oil	₹ 10 per Kg
	Fixed Cost of Processed Edible Oil	₹ 7.50 per Kg
Marketing Division:	Variable Cost per Can of 2 Kg of Oil	₹ 3.75
	Fixed Cost per Can of 2 Kg of Oil	₹ 8.75

Fixed Costs are calculated on the basis of estimated quantity of 2000 kg of Oilseeds harvested, 1000 kg of processed oil and 500 cans of Edible Oil packed by the aforesaid divisions respectively during the period under review. The other oil mills buy the oilseeds of same quantity at ₹ 12.50 per Kg in the market. The market price of Edible oil processed by the Oil Mill, if sold without being packed by Marketing Division is ₹ 62.50 per Kg.

- Compute the Overall Profit of the Company of harvesting 2000 kg of Oilseeds, processing it into edible oil and selling the same in 2 cans as estimated for the period under review.
- Compute transfer prices using Shared Contribution Method in relation to Variable Costs and Market Pricing Method from (I) Harvesting Division to Oil Mill Division (II) Oil Mill Division to Marketing Division.
- Which method is preferable. Advice the divisional Manager.

Answer 27. (a)

Particulars	Product		
	K	L	M
Market price	120	115	100
Less : Variable cost	84	60	70
Contribution p.u. (i)	36	55	30
Direct labour hours p.u. (ii)	4	5	3
Contribution per D.L.H. (i)/(ii)	9	11	10
Rank	III	I	II

Product	Max sales	Hrs./unit	Production	Hours used	Balance Hrs.
L	1000	5	1000	5000	10000
M	600	3	600	1800	8200
K	1600	4	1600	6400	1800

Spare hours available in Division A	= 1,800 hrs.
Division A can produce product L in 1,800 spare hours	= 1,800 hrs./5 hrs. p.u.
	= 360 units of Product L
Balance units of product L required by Division B	= 600 units – 360 units
	= 240 units
Labour hours required for 240 units of product L	= 240 units x 5 hrs. p.u.
	= 1,200 hrs.
Opportunity contribution of K per hr.	= ₹ 9
Therefore, unit cost	= 9 hrs. × ₹ 5 = ₹ 45

Calculation of transfer price p.u.	(₹)
Variable cost (600 units × ₹ 60)	36,000
Opportunity cost of contribution lost (240 units × ₹ 45)	<u>10,800</u>
Total	<u>46,800</u>
Transfer price p.u. (₹ 46,800/600 units)	78

Answer 27. (b)

(i)

Statement of Company's Profit

	Harvesting	Oil Mill	Marketing	Total (₹)
(A) Sales (150 × 500)				
(B) Production (Qty)	2000 kg (oilseeds)	1000 kg (oil)	500 Cans	
(C) Variable Cost (VC) per unit	₹ 2.50	₹ 10.00	₹ 3.75	
(D) Total VC	₹ 5000	₹ 10000	₹ 1875	16875
(E) Contribution (A-D)				58125
(F) Total Fixed Cost	₹ 10000	₹ 7500	₹ 4375	21875
(G) Profit (E-F)				36250

(ii)

Computation of Transfer prices under different methods :

	Harvesting	Oil Mill	Marketing
(A) Shared Contribution in relation to Variable Cost, i.e ₹ 58125 shared in ratio of 5000:10000:1875	₹ 17222	₹ 34444	₹ 6459
(B) Own Variable Costs	₹ 5000	₹ 10000	₹ 1875
(C) Transfer in Variable Costs	—	₹ 22222	₹ 66666
(D) Transfer Price under shared Contribution method (A+B+C)	₹ 22222	₹ 66666	₹ 75000 (market price)
(E) Transfer Price under Market Price Method	₹ 12.50 × 2000 = ₹ 25000	₹ 62.50 × 1000 = ₹ 62500	MP = ₹ 75000

(iii) Computation of Divisional Profits under different Transfer Pricing Methods:

	Harvesting	Oil Mill	Marketing	Total (₹)
(1) Shared Contribution Method (WN ii)	₹ 22222	₹ 66666	₹ 75000	
Less : Own Variable Costs	₹ 5000	₹ 10000	₹ 1875	
Less : Transfer in Costs	-	₹ 22222	₹ 66666	
Less : Fixed Costs	₹ 10000	₹ 7500	₹ 4375	
Profits	₹ 7222	₹ 26944	₹ 2084	₹ 36250
(2) Market Price Method				
Transfer Price (WN ii)	₹ 25000	₹ 62500	MP = ₹ 75000	
Less : Own Variable Costs	₹ 5000	₹ 10000	₹ 1875	
Less : Transfer in Costs	-	₹ 25000	₹ 62500	
Less : Fixed Costs	₹ 10000	₹ 7500	₹ 4375	
Profits	₹ 10000	₹ 20000	₹ 6250	₹ 36250
Preferences	Market Price	Shared Contribution	Market Price	

Q. 28. (a) KNT Limited has decided to analyse the profitability of its five new customers. It buys bottled water at ₹ 90 per case and sells to retail customers at a list price of ₹ 108 per case. The data pertaining to five customers are:

	Customers				
	P	Q	R	S	T
Cases sold	4,680	19,688	1,36,800	71,550	8,775
List Selling Price	₹ 108	₹ 108	₹ 108	₹ 108	₹ 108
Actual Selling Price	₹ 108	₹ 106.20	₹ 99	₹ 104.40	₹ 97.20
Number of Purchase orders	15	25	30	25	30
Number of Customer visits	2	3	6	2	3
Number of deliveries	10	30	60	40	20
Kilometers travelled per delivery	20	6	5	10	30
Number of expedited deliveries	0	0	0	0	1

Its five activities and their cost drivers are :

Activity	Cost Driver Rate
Order taking	₹ 750 per purchase order
Customer visits	₹ 600 per customer visit
Deliveries	₹ 5.75 per delivery Km traveled
Product handling	₹ 3.75 per case sold
Expedited deliveries	₹ 2,250 per expedited delivery

Required :

- (i) Compute the customer-level operating income of each of five retail customers now being examined (P, Q, R, S and T). Comment on the results.

(ii) What insights are gained by reporting both the list selling price and the actual selling price for each customer?

(iii) What factors KNT Limited should consider in deciding whether to drop one or more of five customers?

(b) How would you treat the following in Cost Accounts?

(i) Employee welfare costs

(ii) Research and development costs

(iii) Depreciation

Answer 28. (a)

Working note :

Computation of revenues (at listed price), discount, cost of goods sold and customer level operating activities costs :

	Customers				
	P	Q	R	S	T
Cases sold: (a)	4,680	19,688	1,36,800	71,550	8,775
Revenues (at listed price) (₹): (b){(a) × ₹ 108}	5,05,440	21,26,304	1,47,74,400	77,27,400	9,47,700
Discount (₹) :	-	35,438	12,31,200	2,57,580	94,770
(c){(a)×Discount per case}		(19,688 cases × ₹ 1.80)	(1,36,800 cases × ₹ 9)	(71,550 cases × ₹ 3.60)	(8,775 cases × ₹ 10.80)
Cost of goods sold (₹) : (d) {(a) × ₹ 90}	4,21,200	17,71,920	1,23,12,000	64,39,500	7,89,750
Customer level operating activities costs					
Order taking costs (₹):(No. of purchase orders × ₹ 750)	11,250	18,750	22,500	18,750	22,500
Delivery vehicles travel costs (₹)(₹ 5.75 per km) (Kms traveled by delivery vehicles × ₹ 5.75 per km.)	1,150	1,035	1,725	2,300	3,450
Product handling costs (₹) {(a) × ₹ 3.75}	17,550	73,830	5,13,000	2,68,313	32,906
Cost of expediting deliveries (₹){No. of expedited deliveries × ₹ 2,250}	-	-	-	-	2,250
Total cost of customer level operating activities (₹)	31,150	95,415	5,40,825	2,90,563	62,906

(i) **Computation of Customer level operating income**

	Customers				
	P ₹	Q ₹	R ₹	S ₹	T ₹
Revenues (At list price) (Refer to working note)	5,05,440	21,26,304	1,47,74,400	77,27,400	9,47,700
Less : Discount (Refer to working note)	—	35,438	12,31,200	2,57,580	94,770
Revenue (At actual price)	5,05,440	20,90,866	1,35,43,200	74,69,820	8,52,930
Less : Cost of goods sold (Refer to working note)	4,21,200	17,71,920	1,23,12,000	64,39,500	7,89,750
Gross margin	84,240	3,18,946	12,31,200	10,30,320	63,180
Less : Customer level operating activities costs (Refer to working note)	31,150	95,415	5,40,825	2,90,563	62,906
Customer level operating income	53,090	2,23,531	6,90,375	7,39,757	274

Comment on the results :

Customer S is the most profitable customer, despite having only 52.30% of the unit volume of customer R. The main reason is that R receives a ₹ 9 per case discount while customer S receives only a ₹ 3.60 discount per case.

Customer T is less profitable, in comparison with the small customer P being profitable. Customer T received a discount of ₹ 10.80 per case, makes more frequent orders, requires more customer visits and requires more delivery kms. in comparison with customer P.

(ii) Insight gained by reporting both the list selling price and the actual selling price for each customer:

Separate reporting of both-the listed and actual selling prices enables KNT Ltd. to examine which customer has received what discount per case, whether the discount received has any relationship with the sales volume. The data given below provides us with the following information;

Sales volume	Discount per case (₹)
R (1,36,800 cases)	9.00
S (71,550 cases)	3.60
Q (19,688 cases)	1.80
T (8,775 cases)	10.80
P (4,680 cases)	0

The above data clearly shows that the discount given to customers per case has a direct relationship with sales volume, except in the case of customer T. The reasons for ₹ 10.80 discount per case for customer 'T' should be explored.

(iii) Factors to be considered for dropping one or more customers :

Dropping customers should be the last resort to be taken by KNT Ltd. Factors to be considered should include :

What is the expected future profitability of each customer? Are the currently least profitable (T) or low profitable (P) customers are likely to be highly profitable in the future?

What costs are avoidable if one or more customers are dropped?

Can the relationship with the “problem” customers be restructured so that there is at “win win” situation?

Answer 28. (b)

(i) **Employee Welfare Costs** : It includes those expenses, which are incurred by the employers on the welfare activities of their employees. The welfare activities on which these expenses are usually incurred may include canteen, hospital, play grounds, etc. These expenses should be separately recorded as Welfare Department Costs. These Costs may be apportioned to production cost centres on the basis of total wages or the number of men employed by them.

(ii) **Research and development costs** : It is the cost/expense incurred for searching new or improved products, production methods/techniques or plants/equipments. Re- search cost may be incurred- for carrying basic or applied research. Both basic and applied research relates to original investigations to gain from new scientific or technical knowledge and understanding, which is not directed towards any specific practical aim (under basic research) and is directed towards a specific practical aim or objective (under applied research).

Treatment in Cost Accounts: Cost of Basic Research (if it is a continuous activity) be charged to the revenues of the concern. It may be spread over a number of years if research is not a continuous activity and amount is large.

Cost of applied research, if relates to all existing products and methods of production then it should be treated as a manufacturing overhead of the period during which it has been incurred and absorbed. Such costs are directly charged to the product, it is solely incurred for it.

If applied research is conducted for searching new products or methods of production etc. then the research costs treatment depends upon the outcome of such research. For example, if research findings are expected to produce future benefits or if it appears that such findings are going to result in failure then the costs incurred may be amortised by charging to the Costing Profit and Loss Account of one or more years depending upon the size of expenditure. If research proves successful, then such costs will be charged to the concerned product.

Development Costs begins with the implementation of the decision to produce a new or improved product or to employ a new or improved method. The treatment of development expenses is same as that of applied research.

(iii) **Depreciation** : It represents the fall in the asset value due to its use, wear and tear and passage of time. Depreciation is an indirect cost of production and operations. It is an important element of cost and without this true cost of production cannot be obtained. In costing; depreciation on plant and machinery is normally treated as part of the factory overheads.

Q. 29. (a) Enumerate the points on which uniformity is essential before introducing uniform costing system?

(b) What are the essential pre-requisites of integrated accounting system?

(c) Discuss the treatment in cost accounts of the cost of small tools of short effective life.

Answer 29. (a)**Points on which uniformity is essential before introducing uniform costing system are :**

1. The firms in the industry should be willing to share / furnish relevant data/ information.
2. A spirit of cooperation and mutual trust should prevail among the participating firms.
3. Mutual exchange of ideas, methods used, special achievements made, research and know-how etc. should be frequent.
4. Bigger firms should take the lead towards sharing their experience and know-how with the smaller firms to enable the latter to improve their performance.
5. Uniformity must be established with regard to several points before the introduction of uniform costing in an industry. In fact, uniformity should be with regard to following points :
 - Size of the various units covered by uniform costing.
 - Production methods
 - Accounting methods, principles and procedures used.

Answer 29. (b)**Essential pre-requisites of Integrated Accounting System :**

The essential pre-requisites of integrated accounting system include the following :

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

Under this system there is no need for a separate cost ledger. Of course, there will be a number of subsidiary ledgers; in addition to the useful Customers Ledger and the Bought Ledger, there will be :
 (a) Stores Ledger; (b) Stock Ledger and (c) Job Ledger.

Answer 29. (c)

Small tools are mechanical appliances used for various operations on a work place, specially in engineering industries. Such tools include drill bits, chisels, screw cutter, files etc.

Treatment of cost of small tools of short effective life :

- (i) Small tools purchased may be capitalized and depreciated over life if their life is ascertainable. Revaluation method of depreciation may be used in respect of very small tools of short effective life. Depreciation of small tools may be charged to :
 - Factory overheads
 - Overheads of the department using the small tool.
- (ii) Cost of small tools should be charged fully to the departments to which they have been issued, if their life is not ascertainable.

Q. 30. (a) LMN Ltd. has an installed capacity of 1,20,000 units per annum. The cost structure of the product manufactured is as under :

	₹
(i) Variable cost per unit -	
Materials	8
Labour (Subject to a minimum of ₹ 56,010 per month)	8
Overheads	3
(ii) Fixed overheads ₹ 1,68,750 per annum	
(iii) Semi-variable overheads – ₹ 48,000 per annum at 60% capacity, which increase by ₹ 6,000 per annum for increase of every 10% of the capacity utilisation or any part thereof, for the year as a whole.	

The capacity utilisation for the next year is estimated at 60% for two months, 75% for six months and 80% for the remaining part of the year. If the company is planning to have a profit of 25% on the selling price, calculate the selling price per unit. Assume that there are no opening and closing stocks.

(b) FBG Ltd of Surat purchased three Chemicals P, Q and R from Mumbai. The invoice gave the following information :

	₹
Chemical P :	12,600
Chemical Q :	19,000
Chemical R :	9,500
Sales Tax	2,055
Railway Freight	1,000
Total Cost	44,155

A shortage of 200 kg in Chemical A, of 280 kg. in Chemical B and of 100 kg. in Chemical C was noticed due to breakages. At Surat, the company paid Octroi duty @ Re 0.10 per kg. The Company also paid Cartage ₹ 22 for Chemical A, ₹ 63.12 for Chemical B and ₹ 31.80 for Chemical C. Calculate the stock rate that you would suggest for pricing issue of chemicals assuming a provision of 5% towards further deterioration.

(c) From the following information extracted from the books of KBC Ltd, compute Profit under (i) Absorption Costing (ii) Profit under Marginal Costing (iii) Statement reconciling the difference in profit under two methods if any.

	March	April
Sales	5000 units	10000 units
Production	10000	5000
Selling price/unit	₹ 100	₹ 100
Variable production cost/unit	50	50
Fixed production overhead incurred	100000	100000
Fixed production overhead cost per unit, being the predetermined overhead absorption rate	10	10
Fixed administration, selling and distribution cost	₹ 50000	₹ 50000

Answer 30. (a)**Statement of Selling Price and Profit**

	₹
Material 89,000 units × ₹ 8 p.u. (Refer to working note 1)	7,12,000
Labour cost (Refer to working note 2)	7,28,000
Variable overheads (89,000 units × ₹ 3)	2,67,000
Semi-variable overheads (Refer to working note 3)	60,000
Fixed overheads	1,68,750
Total cost	19,35,750
Add : Profit @ 25% of selling price or 33-1/3% on cost	6,45,250
Total sales value	25,81,000
Selling price per unit (₹ 25,81,000/89,000 units)	29.00

Working notes :

- Capacity utilisation (for the next year)

60% of capacity for first two months	= 2 months × 6,000 units = 12,000 units
75% capacity for next six months	= 6 months × 7,500 units = 45,000 units
80% of capacity for the remaining four months	= 4 months × 8,000 units = <u>32,000 units</u>
Total capacity utilisation	<u>89,000 units</u>

$$\text{Capacity utilisation} = \frac{89,000 \text{ units}}{1,20,000 \text{ units}} \times 100 = 74\frac{1}{6}\%$$

- Calculation of labour cost (subject to a minimum of ₹ 56,000 p.m.)

Labour cost of first two months 12,000 units × ₹ 8 = ₹ 96,000	
But minimum here is	1,12,000
Labour cost of next six months 45,000 units × ₹ 8 = ₹ 3,60,000	3,60,000
Labour cost of last four months 32,000 units × ₹ 8	<u>2,56,000</u>
Total labour cost	<u>7,28,000</u>

3. Calculation of semi-variable overheads (per annum) :

	₹
Semi-variable overheads at 60% capacity	48,000
Semi-variable overheads for additional 14-1/6% capacity are the same as that for 20% of the capacity utilisation for the whole year	<u>12,000</u>
	<u>60,000</u>

Answer 30. (b)**Statement showing the Issue Rate of Chemicals**

	Chemicals		
	P ₹	Q ₹	R ₹
Purchase Price	12,600	19,000	9,500
Add: Sales Tax @ 5% of purchase price (Refer to Working Note 2)	630	950	475
Add: Railway Freight in the ratio of 3:5:2 (Refer to Working Note 3)	300	500	200
Add: Octroi @ Re. 1.10 p.per kg. On the quantity of material received (Refer to Working Note 1)	280	472	190
Add: Cartage	22	6312	31.80
Total Price	<u>13,832</u>	<u>20,985.12</u>	<u>10,396.80</u>
Rate of issue per Kg = $\frac{\text{Total price}}{\text{Qty. available for issue}}$ (Refer to Working Note 1)	$\frac{\text{₹ } 13,832}{2,660 \text{ kg.}}$ = ₹ 5.20	$\frac{\text{₹ } 20,985.12}{4,484 \text{ Kg.}}$ = ₹ 4.68	$\frac{\text{₹ } 10,396.80}{1,805 \text{ kg.}}$ = ₹ 5.76

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

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

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

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

Answer 30. (c)**(i) Profit & Loss statement using absorption costing**

₹ In '000

	March	April
(A) Sales: (5000*100) (10000*100)	500	1000
(B) Cost of Goods sold:		
Opening stock	-	300
Variable cost of production:		
March(10000*50)April(5000*50)	500	250
Fixed production overhead:	100	100
	600	650
Less Closing stock	300	-
Cost of Goods sold:	300	650
Gross profit(A-B)	200	350
Less: Administration ,Selling and distribution overhead	50	50
Profit	150	300

(ii) Profit Statement under Marginal Costing

₹ In '000

	March	April
(A) Sales:	500	1000
(B) Cost of Goods sold:		
Opening stock		250
Production cost March (10000*50) April (5000*50)	500	250
Less: Closing Stock (5000*₹ 50)	250	-
Cost of Goods sold:	250	500
Contribution (A-B)	250	500
Less : Fixed Cost:		
Production overhead	100	100
Administration, selling and distribution overhead	50	50
Net profit	100	350

(iii) Statement showing reconciliation of profit

₹ In '000

	March	April
Profit under marginal costing	100	350
Add: Fixed overheads included in closing stock in March:	100	(100)
Less : Fixed overheads included in opening stock in April		
Less: Under absorption of Admn, selling and distribution overhead in March	(50)	50
Add: Over absorption of Admn, selling and distribution overhead in March		
Profit under Absorption Costing	150	300