

Mock Test Paper - Series I: March, 2024

Date of Paper: 12 March, 2024

Time of Paper: 2 P.M. to 5 P.M.

INTERMEDIATE: GROUP – II

PAPER – 4: COST AND MANAGEMENT ACCOUNTING

Answers are to be given only in English except in the case of the candidates who have opted for Hindi medium. If a candidate has not opted for Hindi medium his/ her answer in Hindi will not be valued.

Working notes should form part of the answer.

Time Allowed – 3 Hours

Maximum Marks – 100

1. *The question paper comprises two parts, Part I and Part II.*
2. *Part I comprises Case Scenario based Multiple Choice Questions (MCQs) for 30 marks*
3. *Part II comprises questions which require descriptive type answers for 70 marks.*

PART I – Case Scenario based MCQs

Part I is compulsory.

Write the most appropriate answer to each of the following multiple-choice questions by choosing one of the four options given. All questions are compulsory.

1. Arnav Ltd. manufactures chemical solutions used in paint and adhesive products. Chemical solutions are produced in different processes. Some of the processes are hazardous in nature which may results in fire accidents.

At the end of the last month, one fire accident occurred in the factory. The fire destroyed some of the paper files containing records of the process operations for the month.

You being an associate to the Chief Manager (Finance), are assigned to prepare the process accounts for the month during which the fire occurred. From the documents and files of other sources, following information could be retrieved:

Opening work-in-process at the beginning of the month was 500 litres, 80% complete for labour and 60% complete for overheads. Opening work-in-process was valued at ₹ 2,78,000.

Closing work-in-process at the end of the month was 100 litres, 20% complete for labour and 10% complete for overheads.

Normal loss is 10% of input (fresh) and total losses during the month were 800 litres partly due to the fire damage.

Output transferred to finished goods was 3,400 litres.

Losses have a scrap value of ₹ 20 per litre.

All raw materials are added at the commencement of the process.

The cost per equivalent unit is ₹ 660 for the month made up as follows:

Raw Material ₹ 300 Labour ₹ 200 Overheads ₹ 160

The company uses FIFO method to value work-in-process and finished goods.

The following information are required for managerial decisions:

- i. How much quantity of raw material introduced during the month?
 - A. 4,300 Litres
 - B. 3,500 Litres
 - C. 4,200 Litres
 - D. 3,800 Litres
- ii. The Quantity of normal loss and abnormal loss are:
 - A. Normal loss- 380 litres & Abnormal loss- 420 litres
 - B. Normal loss- 350 litres & Abnormal loss – 450 litres
 - C. Normal loss- 430 litres & Abnormal loss – 370 litres
 - D. Normal loss- 420 litres & Abnormal loss – 380 litres.
- iii. Value of raw material added to the process during the month is:
 - A. ₹ 10,10,000
 - B. ₹ 10,33,600
 - C. ₹ 10,18,400
 - D. ₹ 10,20,000
- iv. Value of labour and overhead in closing Work-in-process are:
 - A. ₹ 4,000 & ₹ 1,600 respectively
 - B. ₹ 20,000 & ₹ 16,000 respectively
 - C. ₹ 16,000 & ₹ 9,000 respectively
 - D. ₹ 13,200 & ₹ 6,600 respectively
- v. Value of output transferred to finished goods is:
 - A. ₹ 22,57,200
 - B. ₹ 20,06,400
 - C. ₹ 22,44,000
 - D. ₹ 19,27,200

(5 x 2 = 10 Marks)

2. M Ltd. is producing a single product and may expand into product diversification in next one to two years. M Ltd. is amongst a labour-intensive company where majority of processes are done manually. Employee cost is a major cost element in the total cost of the company. The company conventionally uses performance parameters Earnings per manshift (EMS) to measure cost paid to an employee for a shift of 8 hours, and Output per manshift (OMS) to measure an employee's output in a shift of 8 hours.

The Chief Manager (Finance) of the company has emailed you few information related to the last month. The email contains the following data related to the last month:

During the last month, the company has produced 2,34,000 tonnes of output. Expenditures for the last months are:

- (i) Raw materials consumed ₹ 50,00,000
- (ii) Power consumed 13,000 Kwh @ ₹ 8 per Kwh to run the machines for production.
- (iii) Diesels consumed 2,000 litres @ ₹ 93 per litre to run power generator used as alternative or backup for power cuts.
- (iv) Wages & salary paid – ₹ 6,40,00,000
- (v) Gratuity & leave encashment paid – ₹ 64,20,000
- (vi) Hiring charges paid for HEMM- ₹ 30,00,000. HEMM are directly used in production.
- (vii) Hiring charges paid for cars used for official purpose – ₹ 66,000
- (viii) Reimbursement of diesel cost for the cars – ₹ 22,000
- (ix) The hiring of cars attracts GST under RCM @5% without credit.
- (x) Maintenance cost paid for weighing bridge (used for weighing of final goods at the time of dispatch) – ₹ 12,000
- (xi) AMC cost of CCTV installed at weighing bridge (used for weighing of final goods at the time of dispatch) and factory premises is ₹ 8,000 and ₹ 18,000 per month respectively.
- (xii) TA/ DA and hotel bill paid for sales manager- ₹ 36,000
- (xiii) The company has 1,800 employees works for 26 days in a month.

You are asked to calculate the followings:

- i. What is the amount of prime cost incurred during the last month:
 - A. ₹ 7,54,20,000
 - B. ₹ 7,57,10,000
 - C. ₹ 7,56,06,000
 - D. ₹ 7,87,10,000

- ii. What is the total and per shift cost of production for last month:
- ₹ 7,87,10,000 and ₹ 336.37 respectively
 - ₹ 7,87,10,000 and ₹ 1,681.84 respectively
 - ₹ 7,87,28,000 and ₹ 1,682.22 respectively
 - ₹ 7,87,28,000 and ₹ 336.44 respectively
- iii. What is the value of administrative cost incurred during the last month:
- ₹ 92,400
 - ₹ 88,000
 - ₹ 1,48,400
 - ₹ 1,44,000
- iv. What is the value of selling and distribution cost and total cost of sales:
- ₹ 36,000 & ₹ 7,88,76,400 respectively
 - ₹ 56,000 & ₹ 7,88,76,400 respectively
 - ₹ 36,000 & ₹ 7,88,72,000 respectively
 - ₹ 56,000 & ₹ 7,88,72,000 respectively
- v. What is the value EMS and OMS for the last month:
- ₹ 1,504.70 & 5 tonnes respectively
 - ₹ 1,367.52 & 5 tonnes respectively
 - ₹ 1,504.70 & 4.37 tonnes respectively
 - ₹ 1,367.52 & 4.37 tonnes respectively **(5 x 2 = 10 Marks)**
3. The wages budget for the last period was based on a standard repair time of 30 minutes per unit and a standard wage rate of ₹ 50 per hour. The actual data for the last period are as follows:
- Number of units = 30,000
- Labour rate variance = 7,500 (A)
- Labour efficiency variance = Nil
- From the information find out the actual rate of wages per unit
- ₹ 50
 - ₹ 25.50
 - ₹ 50.50
 - ₹ 25.25 **(2 Marks)**

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

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

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

- A. ₹ 32,00,0000
B. ₹ 34,00,000
C. ₹ 30,00,000
D. ₹ 36,00,000 **(2 Marks)**
5. Which of the following statements relating to Zero Based Budgeting (ZBB) is false:
- A. It is a method of budgeting whereby all activities are re-evaluated each time a budget is formulated.
B. ZBB attempts to eliminate unnecessary expenditure being retained in budgets.
C. It is probably the least time consuming and least costly approach to budgeting.
D. It requires that budgets are built up from scratch. **(2 Marks)**
6. Based on the data below, what is the amount of the overhead under-/over-absorbed?
- Budgeted overhead – ₹ 5,25,000
Budgeted machine hours- 17,500
Actual machine hours- 17,040
Actual overheads- ₹ 5,20,000
- A. 5,000 under-absorbed
B. 8,800 under-absorbed
C. 8,800 over-absorbed
D. 5,000 over-absorbed **(2 Marks)**
7. A customer has been ordering 80,000 caps during the year. It is estimated that it costs ₹ 1 as inventory holding cost per cap per month and that the set up cost per run of cap manufacture is ₹ 3,500
- What is optimum run size of cap manufacture?
- A. 12 runs
B. 10 runs
C. 15 runs
D. 7 runs **(2 Marks)**

PART-II – Descriptive Questions (70 Marks)

Question No. 1 is compulsory.

Attempt any **four** questions out of the remaining **five** questions.

1. P Ltd. manufactures two products called 'X' and 'Y'. Both products use a common raw material Z. The raw material Z is purchased @ ₹ 72 per kg from the market. The company has decided to review inventory management policies for the forthcoming year.

The following forecast information has been extracted from departmental estimates for the year ended 31st March 2025 (the budget period):

	Product X	Product Y
Sales (units)	28,000	13,000
Finished goods stock increase by year-end	320	160
Post-production rejection rate (%)	4	6
Material Z usage (per completed unit, net of wastage)	5 kg	6 kg
Material Z wastage (%)	10	5

Additional information:

- Usage of raw material Z is expected to be at a constant rate over the period.
- Annual cost of holding one unit of raw material in stock is 11% of the material cost.
- The cost of placing an order is ₹ 15,600 per order.
- The management of P Ltd. has decided that there should not be more than 40 orders in a year for the raw material Z.

Required:

- (a) (i) Prepare Production budget for Products X and Y (in units) for the year ended 31st March 2025.
- (ii) Calculate the Economic Order Quantity for Material Z (in kgs).
(3+2=5 Marks)
- (b) Prepare Purchases budget for Material Z (in kgs and value) for the year ended 31st March 2025.
(5 Marks)
- (c) If there is a sole supplier for the raw material Z in the market and the supplier do not sale more than 4,000 kg. of material Z at a time. Keeping the management purchase policy and production quantity mix into consideration, calculate the maximum number of units of Product X and Y that could be produced.
(4 Marks)

2. (a) Chiku Transport Service is a Delhi based national goods transport service provider, owning four trucks for this purpose. The cost of running and maintaining these trucks are as follows:

Particulars	Amount
Diesel cost	₹ 19.20 per km.
Engine oil	₹ 4,200 for every 13,000 km.
Repair and maintenance	₹ 36,000 for every 10,000 km.
Driver's salary	₹ 24,000 per truck per month
Cleaner's salary	₹ 15,000 per truck per month
Supervision and other general expenses	₹ 14,000 per month
Cost of loading of goods	₹ 180 per Metric Ton (MT)

All four trucks were purchased for ₹ 30 lakhs with an estimated life of 7,20,000 km each.

During the next month, it is expecting 6 bookings, the details are as follows:

Sl. No.	Journey	Distance in km	Weight-Up (in MT)	Weight- Down (in MT)
1.	Delhi to Kochi	2,700	14	6
2.	Delhi to Guwahati	1,890	12	0
3.	Delhi to Vijayawada	1,840	15	0
4.	Delhi to Varanasi	815	10	0
5.	Delhi to Asansol	1,280	12	4
6.	Delhi to Chennai	2,185	10	8
	Total	10,710	73	18

Required

- (i) Calculate the total absolute Ton-km for the vehicles. **(3 Marks)**
(ii) Calculate the cost per ton-km. **(6 Marks)**
- (b) S & Sons, an unregistered supplier under GST, purchases material from V Ltd. which is a GST registered supplier. The following information is available for one lot of 5,000 units of material purchased:

Listed price of one lot	₹ 5,00,000
Trade discount	@ 10% on listed price
CGST and SGST (Credit Not available)	18% (9% CGST + 9% SGST)
Cash discount	@ 10%

(Will be given only if payment is made within 30 days.)

Toll Tax paid	₹ 1,800
Freight and Insurance	₹ 36,000
Demurrage paid to transporter	₹ 5,000
Commission and brokerage on purchases	₹ 10,000
Amount deposited for returnable containers	₹ 30,000
Amount of refund on returning the container	₹ 26,000
Other Expenses	@ 2% of total cost

5% of material shortage is due to normal reasons.

The payment to the supplier was made within 21 days of the purchases.

You are required to calculate cost per unit of material purchased by S & Sons. **(5 Marks)**

3. (a) What are the important ledgers to be maintained under non-integrated accounting system in the Cost Accounting? **(4 Marks)**
- (b) The following particulars have been compiled in respect of three workers, which are under consideration of the management.

	I	II	III
Actual hours worked	380	100	540
Hourly rate of wages (in ₹)	40	50	60
Productions in units:			
- Product X	210	-	600
- Product Y	360	-	1350
- Product Z	460	250	-
Standard time allowed per unit of each product is:			
	X	Y	Z
Minutes	15	20	30

For the purpose of piece rate, each minute is valued at ₹ 1/-

You are required to calculate the wages of each worker under:

- (i) Guaranteed hourly rate basis
- (ii) Piece work earning basis, but guaranteed at 75% of basic pay (Guaranteed hourly rate if his earnings are less than 50% of basic pay.)
- (iii) Premium bonus basis where the worker received bonus based on Rowan scheme. **(10 Marks)**

4. (a) AB Ltd produces a single product V2 and sells it at a fixed price of ₹ 2,050 per unit. The production and sales data for first quarter of the year 2023-24 are as follows:

	April	May	June
Sales in units	4,200	4,500	5,200
Production in units	4,600	4,400	5,500

Actual/budget information for each month was as follows:

Direct materials	4 kilograms at ₹ 120 per kilogram
Direct labour	6 hours at ₹ 60 per hour
Variable production overheads	150% of direct labour
Fixed production overheads	₹ 5,00,000
Fixed selling overheads	₹ 95,000

There was no opening inventory at the start of the quarter. Fixed production overheads are budgeted at ₹ 60,00,000 per annum and are absorbed into products based on a budgeted normal output of 60,000 units per annum.

Required:

- Prepare a profit statement for each of the three months using absorption costing principles.
 - Prepare a profit statement for each of the three months using marginal costing principles.
 - Present a reconciliation of the profit or loss figures given in your answer to (i) and (ii). **(10 Marks)**
- (b) PQ Ltd. sells bottles and currently is trying to find out the profitability of opening another store which will have the following expenses and revenues:

	Amount per piece (₹)
Selling Price	600
Variable costs:	
Material cost	410
Salesmen's commission	60
Total variable cost	470
Annual fixed expenses are:	(₹)
- Rent	6,00,000
- Office and administrative expenses	20,00,000
- Advertising	8,00,000
- Other fixed expenses	2,00,000

Calculate the annual break-even point in units and in value. Also determine the profit or loss if 35,000 units of bottles are sold. **(4 Marks)**

5. (a) SARA Ltd. has furnished the following standard cost data per' unit of production:

Material 15 kg @ ₹ 15 per kg.

Labour 6 hours @ ₹ 5 per hour

Variable overhead 6 hours @ ₹ 12 per hour.

Fixed overhead ₹ 4,50,000 per month (Based on a normal volume of 30,000 labour hours.)

The actual cost data for the month of August 2023 are as follows:

Material used 65,000 kg at a cost of ₹ 9,85,000.

Labour paid ₹ 1,40,000 for 31,500 hours worked.

Variable overheads ₹ 3,60,200

Fixed overheads ₹ 4,70,000

Actual production 4,800 units.

CALCULATE:

- (i) Material Cost Variance.
- (ii) Labour Cost Variance.
- (iii) Fixed Overhead Cost Variance.
- (iv) Variable Overhead Cost Variance.

(6 Marks)

- (b) The following budgeted information relates to Pinku Ltd. for the year 2024:

	Products		
	A	B	C
Production and Sales (units)	1,00,000	80,000	60,000
	(₹)	(₹)	(₹)
Selling price per unit	90	180	140
Direct cost per unit	50	90	95
	Hours	Hours	Hours
Machine department (machine hours per unit)	3	4	5
Assembly department (direct labour hours per unit)	6	4	3

The estimated overhead expenses for the year 2024 will be as below:

Machine Department ₹ 73,60,000

Assembly Department ₹ 55,00,000

Overhead expenses are apportioned to the products on the following basis:

Machine Department On the basis of machine hours

Assembly Department On the basis of labour hours

After a detailed study of the activities the following cost pools and their respective cost drivers are found:

Cost Pool	Amount (₹)	Cost Driver	Quantity
Machining services	64,40,000	Machine hours	9,20,000 hours
Assembly services	44,00,000	Direct labour hours	11,00,000 hours
Set-up costs	9,00,000	Machine set-ups	9,000 set-ups
Order processing	7,20,000	Customer orders	7,200 orders
Purchasing	4,00,000	Purchase orders	800 orders

As per an estimate the activities will be used by the three products:

	Products		
	A	B	C
Machine set-ups	4,500	3,000	1,500
Customer orders	2,200	2,400	2,600
Purchase orders	300	350	150

Prepare a product-wise profit statement using Activity-based method.

(8 Marks)

6. (a) EXPLAIN the treatment of over and under absorption of overheads in cost accounts. **(5 Marks)**

(b) "Technology has played a significant role in cost accounting enabling business to automate their process."

EXPLAIN the impact of Information Technology in Cost Accounting in the light of above statement. **(5 Marks)**

(c) As per the controllability, cost can be classified as controllable & uncontrollable costs. How will you DIFFERENTIATE them? **(4 Marks)**

OR

(d) How apportionment of joint costs upto the point of separation amongst the joint products using market value at the point of separation and net realizable value method is done? DISCUSS. **(4 Marks)**

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PAPER – 4: COST AND MANAGEMENT ACCOUNTING

Suggested Answers/ Solution

PART I – Case Scenario based MCQs

1. i. D

Inflow into process	Litres	Outflow from process	Litres
Opening WIP	500	Transferred to finished goods	3,400
Quantity introduced (Balancing figure)	3,800	Total loss	800
		Closing WIP	100
	4,300		4,300

ii. A

Total loss	800 litres
Normal loss (10% of fresh input i.e. 3,800)	380 litres
Abnormal loss	420 litres

iii. B

Calculation of Equivalent production units

Input Details	Units	Output Particulars	Units	Equivalent Production					
				Material		Labour		Overheads	
				%	Units	%	Units	%	Units
Opening WIP	500	From Opening WIP	500	-	-	20	100	40	200
Fresh inputs	3,800	From fresh units	2,900	100	2,900	100	2,900	100	2,900
		Normal loss	380	-	-	-	-	-	-
		Closing WIP	100	100	100	20	20	10	10
		Abnormal loss	420	100	420	100	420	100	420
	4,300		4,300		3,420		3,440		3,530

Value of raw materials introduced during the month

	Equivalent units	Cost per EU (₹)	Total cost (₹)
Total value of raw material	3420	300	10,26,000
Add: Scrap value of normal loss	380	20	7,600
Value of raw material introduced			10,33,600

iv. A

Value of labour and overhead in closing Work in process

Cost elements	Equivalent units	Cost per EU (₹)	Total cost (₹)
Labour	20	200	4,000
Overheads	10	160	1,600

v. C

Value of output transferred to finished goods

Output transferred (Units) × Equivalent cost per unit

$$3,400 \text{ Litres} \times ₹660 = ₹22,44,000$$

2. i. D

ii. C Please refer cost sheet below for cost of production

Cost of production per manshift =

Cost of production ÷ Total manshift

$$₹ 7,87,28,000 \div 46,800 = ₹1,682.22$$

iii. A Car hire charges including GST @5%, please refer the cost sheet

iv. B Selling and distribution cost includes the following:

Maintenance cost for weighing bridge	12,000
AMC cost of CCTV installed at weigh bridge	8,000
TA/ DA & hotel bill of sales manager	36,000
	56,000

For Cost of Sale please refer the cost sheet

v. A Manshift = 1,800 employees × 26 days = 46,800 manshifts

Computation of earnings per manshift (EMS):

$$\begin{aligned} \text{EMS} &= \frac{\text{Total employee benefits paid}}{\text{Manshift}} \\ &= \frac{\text{₹ 7,04,20,000}}{46,800} = \text{₹ 1504.70} \end{aligned}$$

Computation of Output per manshift (OMS):

$$\begin{aligned} \text{OMS} &= \frac{\text{Total Output/ Production}}{\text{Manshift}} \\ &= \frac{2,34,000 \text{ Tonne}}{46,800} = 5 \text{ tonnes} \end{aligned}$$

Workings

Cost Sheet of M Ltd. for the last month

Particulars	Amount (₹)	Amount (₹)
Materials consumed		50,00,000
Wages & Salary	6,40,00,000	
Gratuity & leave encashment	64,20,000	7,04,20,000
Power cost (13,000 kwh × ₹8)	1,04,000	
Diesel cost (2,000 ltr × ₹93)	1,86,000	2,90,000
HEMM hiring charges		30,00,000
Prime Cost		7,87,10,000
AMC cost of CCTV installed at factory premises		18,000
Cost of Production/ Cost of Goods Sold		7,87,28,000
Hiring charges of cars	66,000	
Reimbursement of diesel cost	22,000	
	88,000	
Add: GST @5% on RCM basis	4,400	92,400
Maintenance cost for weighing bridge	12,000	
AMC cost of CCTV installed at weigh bridge	8,000	20,000
TA/ DA & hotel bill of sales manager		36,000
Cost of Sales		7,88,76,400

3. D Labour rate variance = Standard time for actual production (SR- AR)
7,500 (A) = (30,000 × 30 minutes/60 minutes) × (50-AR)
AR = (7,50,000 + 7,500)/15,000 = ₹50.50 per hour

Actual wages per unit = 50.50/2 = ₹25.25

4. **B** Variable overhead for each % of level of activity

$$= \frac{40,00,000 - 30,00,000}{75 - 50} = 40,000$$

$$\text{Fixed cost} = 30,00,000 - (40,000 \times 50) = 10,00,000$$

Total overheads for 60% level of activity

$$= 10,00,000 + (40,000 \times 60) = 34,00,000$$

5. **C**

6. **B** Actual Overhead – (Actual machine hours × machine hour rate)

$$5,20,000 - (17040 \times 30) = 8,800 \text{ under absorbed}$$

7. **A** Optimum batch size or Economic Batch Quantity (EBQ):

$$\text{EBQ} = \sqrt{\frac{2DS}{C}} = \sqrt{\frac{2 \times 80,000 \times 3,500}{12}} = 6,832 \text{ units.}$$

$$\text{Number of Optimum runs} = 80,000 \div 6,832 = 11.70 \text{ or } 12 \text{ run}$$

PART-II

1. (a) (i) **Production Budget (in units) for the year ended 31st March 2025**

	Product X	Product Y
Budgeted sales (units)	28,000	13,000
Add: Increase in closing stock	320	160
No. good units to be produced	28,320	13,160
Post production rejection rate	4%	6%
No. of units to be produced	29,500	14,000
	$\left(\frac{28,320}{0.96} \right)$	$\left(\frac{13,160}{0.94} \right)$

- (ii) **Calculation of Economic Order Quantity for Material Z**

$$\text{EOQ} = \sqrt{\frac{2 \times 2,52,310 \times 15,600}{72 \times 11\%}} = \sqrt{\frac{5,04,620 \times 15,600}{72 \times 11\%}} = 31,526.95 \text{ kg.}$$

- (b) **Purchase budget (in kgs and value) for Material Z**

	Product X	Product Y
No. of units to be produced	29,500	14,000
Usage of Material Z per unit of production	5 kg.	6 kg.
Material needed for production	1,47,500 kg.	84,000 kg.

Materials to be purchased	1,63,889 kg. $\left(\frac{1,47,500}{0.90}\right)$	88,421 kg. $\left(\frac{84,000}{0.95}\right)$
Total quantity to be purchased	2,52,310 kg.	
Rate per kg. of Material Z	₹72	
Total purchase price	₹1,81,66,320	

- (c) Since, the maximum number of orders per year cannot be more than 40 orders and the maximum quantity per order that can be purchased is 4,000 kg. Hence, the total quantity of Material Z that can be available for production:

$$= 4,000 \text{ kg.} \times 40 \text{ orders} = 1,60,000 \text{ kg.}$$

	Product X	Product Y
Material needed for production to maintain the same production mix	1,03,929 kg. $\left(1,60,000 \times \frac{1,63,889}{2,52,310}\right)$	56,071 kg. $\left(1,60,000 \times \frac{88,421}{2,52,310}\right)$
Less: Process wastage	10,393 kg.	2,804 kg.
Net Material available for production	93,536 kg.	53,267 kg.
Units to be produced	18,707 units $\left(\frac{93,536 \text{ kg.}}{5 \text{ kg.}}\right)$	8,878 units $\left(\frac{53,267 \text{ kg.}}{6 \text{ kg.}}\right)$

2. (a) (i) Calculation of Absolute Ton-km for the next month:

Journey	Distance in km	Weight-Up (in MT)	Ton-km	Weight-Down (in MT)	Ton-km	Total
	(a)	(b)	(c)=(a)×(b)	(d)	(e)=(a)×(d)	(c)+(e)
Delhi to Kochi	2,700	14	37,800	6	16,200	54,000
Delhi to Guwahati	1,890	12	22,680	0	0	22,680
Delhi to Vijayawada	1,840	15	27,600	0	0	27,600
Delhi to Varanasi	815	10	8,150	0	0	8,150
Delhi to Asansol	1,280	12	15,360	4	5,120	20,480
Delhi to Chennai	2,185	10	21,850	8	17,480	39,330
Total	10,710	73	1,33,440	18	38,800	1,72,240

Total Ton-Km = 1,72,240 ton-km

(ii) Calculation of cost per ton-km:

Particulars	Amount (₹)	Amount (₹)
A. Running cost:		
- Diesel Cost {₹19.20 × (10,710 × 2)}	4,11,264.00	
- Engine oil cost ($\frac{₹4,200}{13,000\text{km}} \times 21,420\text{km}$)	6,920.31	
- Cost of loading of goods {₹180 × (73+18)}	16,380.00	
- Depreciation {(30,00,000/720,000×21,420 km)×4}	3,57,000.00	7,91,564.31
B. Repairs & Maintenance Cost (36,000/10,000×21,420)		77,112.00
C. Standing Charges		
- Drivers' salary (₹24,000 × 4 trucks)	96,000.00	
- Cleaners' salary (₹15,000 × 4 trucks)	60,000.00	
- Supervision and other general exp.	14,000.00	1,70,000.00
Total Cost (A + B + C)		10,38,676.31
Total ton-km		1,72,240
Cost per ton-km		6.03

(b) Calculation of cost per unit:

Particulars	Units	(₹)
Listed Price of Materials	5,000	5,00,000
Less: Trade discount @ 10% on invoice price		(50,000)
		4,50,000
Add: GST @18% of ₹ 4,50,000		81,000
		5,31,000
Add: Toll Tax		1,800
Freight and Insurance		36,000
Commission and Brokerage Paid		10,000

Add: Cost of returnable containers:		
Amount deposited	₹ 30,000	
Less: Amount refunded	<u>₹ 26,000</u>	4,000
		5,82,800
Add: Other Expenses @ 2% of Total Cost ($\frac{₹ 5,82,800}{98} \times 2$)		11,894
Total cost of material		5,94,694
Less: Shortage material due to normal reasons @ 5%	250	-
Total cost of material of good units	4,750	5,94,694
Cost per unit (₹ 5,94,694/4,750 units)		125.20

Note:

1. GST is payable on net price i.e., listed price less discount.
2. GST paid on purchase is added with cost as ITC on GST cannot be claimed
3. Cash discount is treated as interest and finance item; hence it is ignored.
4. Demurrage is penalty imposed by the transporter for delay in unloading or off-loading of materials. It is an abnormal cost and not included.
5. Shortage due to normal reasons should not be deducted from cost to ascertain total cost of good units.

3. (a) The important ledgers to be maintained under non-integrated accounting system in the Cost Accounting are the followings:

- (a) **Cost Ledger** - This is the principle ledger of the cost department in which impersonal accounts are recorded. This ledger is made self-balancing by maintaining therein a Control Account for each subsidiary ledger.
- (b) **Stores Ledger** - It contains an account for each item of stores. The entries in each account maintained in this ledger are made from the invoice, goods received note, material requisitions, material received note etc. Accounts in respect of each item of stores show receipt, issue and balance in physical as well as in monetary terms.
- (c) **Work-in-Process Ledger** - This ledger is also known as job ledger, it contains accounts of unfinished jobs and processes. All material costs, wages and overheads for each job in process are posted to the respective job accounts in this ledger. The balance in a job account represents total balance of job/work-in-process, as shown by the job account.

- (d) **Finished Goods Ledger** - It contains an account for each item of finished product manufactured or the completed job. If the finished product is transferred to stock, a credit entry is made in the work-in-process ledger and a corresponding debit entry is made in this ledger.
- (b) (i) Computation of wages of each worker under guaranteed hourly rate basis

Worker	Actual hours worked (Hours)	Hourly wage rate (₹)	Wages (₹)
I	380	40	15,200
II	100	50	5,000
III	540	60	32,400

- (ii) Computation of Wages of each worker under piece work earning basis

Product	Piece rate per unit (₹)	Worker-I		Worker-II		Worker-III	
		Units	Wages (₹)	Units	Wages (₹)	Units	Wages (₹)
X	15	210	3,150	-	-	600	9,000
Y	20	360	7,200	-	-	1,350	27,000
Z	30	460	13,800	250	7,500	-	-
Total			24,150		7,500		36,000

Since each worker's earnings are more than 50% of basic pay. Therefore, worker-I, II and III will be paid the wages as computed i.e. ₹24,150, ₹7,500 and ₹36,000 respectively.

Working Notes:

1. Piece rate per unit

Product	Standard time per unit in minute	Piece rate each minute (₹)	Piece rate per unit (₹)
X	15	1	15
Y	20	1	20
Z	30	1	30

2. Time allowed to each worker

Worker	Product-X	Product-Y	Product-Z	Total Time (Hours)
I	210 units × 15 = 3,150	360 units × 20 = 7,200	460 units × 30 = 13,800	24,150/60 = 402.50

II	-	-	250 units × 30 = 7,500	7,500/60 = 125
III	600 units × 15 = 9,000	1,350 units × 20 = 27,000	-	36,000/60 = 600

(iii) Computation of wages of each worker under Premium bonus basis (where each worker receives bonus based on Rowan Scheme)

Worker	Time Allowed (Hr.)	Time Taken (Hr.)	Time saved (Hr.)	Wage Rate per hour (₹)	Earnings (₹)	Bonus (₹)*	Total Earning (₹)
I	402.5	380	22.5	40	15,200	850	16,050
II	125	100	25	50	5,000	1,000	6,000
III	600	540	60	60	32,400	3,240	35,640

$$* \frac{\text{Time Taken}}{\text{Time Allowed}} \times \text{Time Saved} \times \text{Wage Rate}$$

$$\text{Worker-I} = \frac{380}{402.5} \times 22.5 \times 40 = 850; \text{ Worker-II} = \frac{100}{125} \times 25 \times 50 = 1,000$$

$$\text{Worker-III} = \frac{540}{600} \times 60 \times 60 = 3,240$$

4. (a) (i) Statement of Profit under Absorption Costing

Particulars	April (₹)	May (₹)	June (₹)
Sales (units)	4,200	4,500	5,200
Selling price per unit	2,050	2,050	2,050
Sales value (A)	86,10,000	92,25,000	1,06,60,000
Cost of Goods Sold:			
Opening Stock @ ₹1,480	0	5,92,000	4,44,000
Production cost @ ₹1,480	68,08,000	65,12,000	81,40,000
Closing Stock @ ₹1,480	(5,92,000)	(4,44,000)	(8,88,000)
Under/ (Over) absorption	40,000	60,000	(50,000)
Add: Fixed Selling Overheads	95,000	95,000	95,000
Cost of Sales (B)	63,51,000	68,15,000	77,41,000
Profit (A – B)	22,59,000	24,10,000	29,19,000

Workings:**1. Calculation of full production cost**

	(₹)
Direct Materials (4 kg. × ₹ 120)	480
Direct labour (6 hours × ₹ 60)	360
Variable production Overhead (150% of ₹ 360)	540
Total Variable cost	1,380
Fixed production overhead $\left(\frac{₹60,00,000}{60,000 \text{ units}}\right)$	100
	1,480

2. Calculation of Opening and Closing stock

	April	May	June
Opening Stock	0	400	300
Add: Production	4,600	4,400	5,500
Less: Sales	4,200	4,500	5,200
Closing Stock	400	300	600

3. Calculation of Under/Over absorption of fixed production overhead

	April (₹)	May (₹)	June (₹)
Actual Overhead	5,00,000	5,00,000	5,00,000
Overhead absorbed	4,60,000 (4,600 units × ₹100)	4,40,000 (4,400 units × ₹100)	5,50,000 (5,500 units × ₹100)
Under/(Over) absorption	40,000	60,000	(50,000)

(ii) Statement of Profit under Marginal Costing

Particulars	April (₹)	May (₹)	June (₹)
Sales (units)	4,200	4,500	5,200
Selling price per unit	2,050	2,050	2,050
Sales value	86,10,000	92,25,000	1,06,60,000
Less: Variable production cost @ ₹1,380	57,96,000	62,10,000	71,76,000
Contribution	28,14,000	30,15,000	34,84,000
Less: Fixed Production Overheads	5,00,000	5,00,000	5,00,000

Less: Fixed Selling Overheads	95,000	95,000	95,000
Profit	22,19,000	24,20,000	28,89,000

(iii) Reconciliation of profit under Absorption costing to Marginal Costing

Particulars	April (₹)	May (₹)	June (₹)
Profit under Absorption Costing	22,59,000	24,10,000	29,19,000
Add: Opening Stock	0	40,000 (400 × ₹100)	30,000 (300 × ₹100)
Less: Closing Stock	40,000 (400 × ₹100)	30,000 (300 × ₹100)	60,000 (600 × ₹100)
Profit under Marginal Costing	22,19,000	24,20,000	28,89,000

(b) Total Fixed Cost = ₹ 6,00,000 + ₹20,00,000 + ₹8,00,000 + ₹ 2,00,000
= ₹ 36,00,000

Contribution per unit = ₹600 - ₹470 = ₹130

P/V Ratio = $\frac{\text{Contribution per unit}}{\text{Selling Price}} \times 100 = \frac{₹130}{₹600} \times 100 = 21.67\%$

Break-even Point = $\frac{\text{Total Fixed Cost}}{\text{Contribution per unit}}$
= $\frac{₹36,00,000}{₹130} = 27,692.31$ or 27,693 units

Break-even Sales = $\frac{\text{Total Fixed Cost}}{\text{P/V Ratio}} = \frac{₹36,00,000}{21.67\%} = ₹1,66,12,829$

Calculation of Profit/ (loss):

Total Contribution (₹130 × 35,000 units) = ₹45,50,000

Less: Fixed Cost = ₹36,00,000

Profit = ₹ 9,50,000

5. (a) Budgeted Production 30,000 hours ÷ 6 hours per unit = 5,000 units
Budgeted Fixed Overhead Rate = ₹ 4,50,000 ÷ 5,000 units = ₹ 90 per unit Or
= ₹ 4,50,000 ÷ 30,000 hours = ₹ 15 per hour.

- (i) Material Cost Variance = (Std. Qty. × Std. Price) – (Actual Qty. × Actual Price)
= (4,800 units × 15 kg. × ₹15) - ₹ 9,85,000
= ₹ 10,80,000 – ₹ 9,85,000
= ₹ 95,000 (F)
- (ii) Labour Cost Variance = (Std. Hours × Std. Rate) – (Actual Hours × Actual rate)
= (4,800 units × 6 hours × ₹ 5) – ₹1,40,000
= ₹ 1,44,000 – ₹ 1,40,000
= ₹ 4,000 (F)
- (iii) Fixed Overhead Cost Variance = (Budgeted Rate × Actual Qty) – Actual Overhead
= (₹ 90 × 4,800 units) – ₹ 4,70,000
= ₹ 38,000 (A)

OR

- = (Budgeted Rate × Std. Hours) – Actual Overhead
= (₹ 15 × 4,800 units × 6 hours) – ₹ 4,70,000
= ₹ 38,000 (A)
- (iv) Variable Overhead Cost Variance = (Std. Rate × Std. Hours) – Actual Overhead
= (4,800 units × 6 hours × ₹ 12) - ₹ 3,60,200
= ₹ 3,45,600 - ₹ 3,60,200
= ₹ 14,600 (A)

(b) Profit Statement using Activity based costing (ABC) method:

	Particulars	Product			Total
		A	B	C	
A.	Sales Quantity	1,00,000	80,000	60,000	
B.	Selling price per unit (₹)	90	180	140	
C.	Sales Value (₹) [A×B]	90,00,000	1,44,00,000	84,00,000	3,18,00,000
D.	Direct cost per unit (₹)	50	90	95	
E.	Direct Cost (₹) [A×D]	50,00,000	72,00,000	57,00,000	1,79,00,000
F.	Overheads: (Refer working note-3)				

(i)	Machining services (₹)	21,00,000	22,40,000	21,00,000	64,40,000
(ii)	Assembly services (₹)	24,00,000	12,80,000	7,20,000	44,00,000
(iii)	Set-up costs (₹)	4,50,000	3,00,000	1,50,000	9,00,000
(iv)	Order processing (₹)	2,20,000	2,40,000	2,60,000	7,20,000
(v)	Purchasing (₹)	1,50,000	1,75,000	75,000	4,00,000
G.	Total Cost (₹) [E+F]	1,03,20,000	1,14,35,000	90,05,000	3,07,60,000
H.	Profit (₹) (C-G)	(13,20,000)	29,65,000	(6,05,000)	10,40,000

Working Notes:

1.

		Products			Total
		A	B	C	
A.	Production (units)	1,00,000	80,000	60,000	
B.	Machine hours per unit	3	4	5	
C.	Total Machine hours [AxB]	3,00,000	3,20,000	3,00,000	9,20,000
D.	Rate per hour (₹)	8	8	8	
E.	Machine Dept. cost [CxD]	24,00,000	25,60,000	24,00,000	73,60,000
F.	Labour hours per unit	6	4	3	
G.	Total labour hours [AxF]	6,00,000	3,20,000	1,80,000	11,00,000
H.	Rate per hour (₹)	5	5	5	
I.	Assembly Dept. cost [GxH]	30,00,000	16,00,000	9,00,000	55,00,000

$$\text{Machine hour rate} = \frac{\text{₹73,60,000}}{9,20,000 \text{ hours}} = \text{₹8}$$

$$\text{Labour hour rate} = \frac{\text{₹55,00,000}}{11,00,000 \text{ hours}} = \text{₹5}$$

2. Calculation of cost driver rate

Cost Pool	Amount (₹)	Cost Driver	Quantity	Driver rate (₹)
Machining services	64,40,000	Machine hours	9,20,000 hours	7.00
Assembly services	44,00,000	Direct labour hours	11,00,000 hours	4.00
Set-up costs	9,00,000	Machine set-ups	9,000 set-ups	100.00
Order processing	7,20,000	Customer orders	7,200 orders	100.00
Purchasing	4,00,000	Purchase orders	800 orders	500.00

3. Calculation of activity-wise cost

		Products			Total
		A	B	C	
A.	Machining hours (Refer Working note-1)	3,00,000	3,20,000	3,00,000	9,20,000
B.	Machine hour rate (₹) (Refer Working note-2)	7	7	7	
C.	Machining services cost (₹) [A×B]	21,00,000	22,40,000	21,00,000	64,40,000
D.	Labour hours (Refer Working note-1)	6,00,000	3,20,000	1,80,000	11,00,000
E.	Labour hour rate (₹) (Refer Working note-2)	4	4	4	
F.	Assembly services cost (₹) [D×E]	24,00,000	12,80,000	7,20,000	44,00,000
G.	Machine set-ups	4,500	3,000	1,500	9,000
H.	Rate per set-up (₹) (Refer Working note-2)	100	100	100	
I.	Set-up cost (₹) [G×H]	4,50,000	3,00,000	1,50,000	9,00,000
J.	Customer orders	2,200	2,400	2,600	7,200

K.	Rate per order (₹) (Refer Working note-2)	100	100	100	
L.	Order processing cost (₹) [J×K]	2,20,000	2,40,000	2,60,000	7,20,000
M.	Purchase orders	300	350	150	800
N.	Rate per order (₹) (Refer Working note-2)	500	500	500	
O.	Purchasing cost (₹) [M×N]	1,50,000	1,75,000	75,000	4,00,000

6. (a) Treatment of over and under absorption of overheads are:-

- (i) Writing off to costing P&L A/c:– Small difference between the actual and absorbed amount should simply be transferred to costing P&L A/c, if difference is large then investigate the causes and after that abnormal loss/ gain shall be transferred to costing P&L A/c.
- (ii) Use of supplementary Rate: Under this method the balance of under and over absorbed overheads may be charged to cost of W.I.P., finished stock and cost of sales proportionately with the help of supplementary rate of overhead.
- (iii) Carry Forward to Subsequent Year: Difference should be carried forward in the expectation that next year the position will be automatically corrected.

(b) The impact of IT in cost accounting may include the followings:

- (i) After the introduction of ERPs, different functional activities get integrated and as a consequence a single entry into the accounting system provides custom made reports for every purpose and saves an organisation from preparing different sets of documents. Reconciliation process of results of both cost and financial accounting systems become simpler and less sophisticated.
- (ii) A move towards paperless environment can be seen where documents like Bill of Material, Material Requisition Note, Goods Received Note, labour utilisation report etc. are no longer required to be prepared in multiple copies, the related department can get e-copy from the system.
- (iii) Information Technology with the help of internet (including intranet and extranet) helps in resource procurement and mobilisation. For example, production department can get materials from the stores without issuing material requisition note physically. Similarly, purchase orders can be initiated to the suppliers with the help of extranet. This enables an entity to shift towards Just-in-Time (JIT) approach of inventory management and production.

- (iv) Cost information for a cost centre or cost object is ascertained with accuracy in timely manner. Each cost centre and cost object is codified and all related costs are assigned to the cost object or cost centre. This process automates the cost accumulation and ascertainment process. The cost information can be customised as per the requirement. For example, when an entity manufactures or provide services, it can know information job-wise, batch-wise, process-wise, cost centre wise etc.
- (v) Uniformity in preparation of report, budgets and standards can be achieved with the help of IT. ERP software plays an important role in bringing uniformity irrespective of location, currency, language and regulations.
- (vi) Cost and revenue variance reports are generated in real time basis which enables the management to take control measures immediately.
- (vii) IT enables an entity to monitor and analyse each process of manufacturing or service activity closely to eliminate non-value-added activities.

The above are examples of few areas where Cost Accounting is done with the help of IT.

- (c) **Controllable costs and Uncontrollable costs:** Cost that can be controlled, typically by a cost, profit or investment centre manager is called controllable cost. Controllable costs incurred in a particular responsibility centre can be influenced by the action of the executive heading that responsibility centre.

Costs which cannot be influenced by the action of a specified member of an undertaking are known as uncontrollable costs.

- (d) **Apportionment of Joint Cost amongst Joint Products using:**

Market value at the point of separation: This method is used for apportionment of joint costs to joint products upto the split off point. It is difficult to apply if the market value of the product at the point of separation is not available. It is useful method where further processing costs are incurred disproportionately.

Net realizable value Method: From the sales value of joint products (at finished stage) the followings are deducted:

- Estimated profit margins
- Selling & distribution expenses, if any
- Post split off costs.

The resultant figure so obtained is known as net realizable value of joint products. Joint costs are apportioned in the ratio of net realizable value.