Mock Test Paper - Series I: March 2025

Date of Paper: 15th March 2025

Time of Paper: 10 AM – 1 PM

INTERMEDIATE: GROUP – II

PAPER – 4: COST AND MANAGEMENT ACCOUNTING

Suggested Answers/ Solution

PART I – Case Scenario based MCQs

1. (c) ₹ 1,03,00,000

2. (d) ₹ 33,00,000

Working note

Particulars	₹
Variable Cost:	
Material	42,00,000
Labour (40,00,000 x 70%)	28,00,000
Factory Overheads (35,00,000 x 60%)	21,00,000
Administrative Overheads (10,00,000 x 30%)	3,00,000
Commission (1,80,000 x 5)	9,00,000
Total Variable cost	1,03,00,000
Fixed Cost:	
Labour (40,00,000 x 30%)	12,00,000
Factory Overheads (35,00,000 x 40%)	14,00,000
Administrative Overheads (10,00,000 x 70%)	7,00,000
Total Fixed Cost	33,00,000

3. (b) 77,139 bags

Variable cost per bag = ₹ 1,03,00,000/1,80,000

= ₹ 57.22

Contribution per bag = ₹ 100 – ₹ 57.22 = ₹ 42.78

Break-even point (in number of bags)

= Fixed cost/Contribution per bag

= ₹33,00,000/₹42.78

= 77,139 bags

4. (d) 5,478 bags and 33 runs

$$EBQ = \sqrt{\frac{2DS}{C}}$$

Where,

D = no. of bags to be produced annually

S = Set up cost per production run

C = Carrying cost per unit per annum

$$EBQ = \sqrt{\frac{2 \times 1,80,000 \times 1000}{1 \times 12}}$$

= 5,478 bags

No. of optimum runs = 1,80,000/5,478

= 32.86 or 33 runs

5. (a) 11 days

Interval between 2 runs (in days) = 365 days/33 = 11 days

6. (a) 1,82,400 (Adverse)

Working Note

Total actual weeks = 23,040

Ratio of actual workers = 7:3:8

Let's assume that total number of workers is 'X'

(7/18 x X x64) + (3/18 x X x 64) + (8/18 x X x 64) = 23,040

X = 360

	Standard		Actual	
	Workers	Rate per week	Workers	Rate per week
Skilled	150	120	140	140
Semi-skilled	90	80	60	100
unskilled	120	60	160	40

Standard time = 60 weeks

Actual time = 64 weeks

	Standard			Actual		
	Weeks	Rate	Amount	Weeks	Rate	Amount
Skilled	9,000	120	10,80,000	8,960	140	12,54,400
Semi-skilled	5,400	80	4,32,000	3,840	100	3,84,000
unskilled	7,200	60	4,32,000	10,240	40	4,09,600
total	21,600		19,44,000	23,040		20,48,000

1. Cost Variance = 19,44,000 – 20,48,000 = 1,04,000(A)
2. Rate Variance =

Skilled	8,960x(120-140)	1,79,200 (A)
Semi-skilled	3,840x(80-100)	76,800 (A)
unskilled	10,240x(60-40)	2,04,800 (F)
		51,200 (A)

3. Efficiency Variance =

Skilled	120x(9,000-8,960)	4,800(F)
Semi-skilled	80x(5,400-3,840)	1,24,800(F)
unskilled	60x(7,200-10,240)	1,82,400(A)
		52,800(A)

4. Revised Labour Efficiency Rate=

Skilled	120x(9,000-9,600)	72,000(A)
Semi-skilled	80x(5,400-5,760)	28,800(A)
unskilled	60x(7,200-7,680)	28,800(A)
		1,29,600(A)

5. Labour Mix Variance=

Skilled	120x(9,600-8,960)	76,800(F)
Semi-skilled	80x(5,760-3,840)	1,53,600(F)
unskilled	60x(7,680-10,240)	1,53,600(A)
		76,800(F)

Labour Mix Variance (76,800 F) + Revised Labour Efficiency Variance (1,29,600 A)

= Total Labour Efficiency (52,800 A)

Total Lab Efficiency Variance – Labour Efficiency Variance of Skilled And Semi Skilled

= Labour Efficiency Variance of Unskilled

52,800A – 1,29,600A = 1,82,400A,

So, Labour Efficiency Variance of Unskilled = 1,82,400A

	No. of workers	Weeks worked
Skilled	140	140x64= 8,960
Semi-skilled	60	60x64= 3,840
unskilled	160	160x64= 10,240

7. (c) 2,04,800 & 2,56,000

Money saved or spent:

	Weeks worked	Saved/spent extra, per week	Total
Skilled	8,960	20 spent extra	-1,79,200
Semi-skilled	3,840	20 spent extra	-76,800
unskilled	10,240	20 saved	+2,04,800

Saved = 2,04,800

Spent = 2,56,000

8. (b) -10, -30, +40

Actual weeks = 23,040

(-) extra = (1,440)

Planned weeks =21,600

Original standard ratio = 5:3:4

Standard weeks chart:

	Weeks	Workers
Skilled	21,600x5/12 = 9,000	9,000/60 weeks = 150
Semi-skilled	21,600x3/12 = 5,400	5,400/60 weeks = 90
unskilled	21,600x4/12 = 7,200	7,200/60 weeks = 120

	Planned workers	Actual workers	Actual compared to standard
Skilled	150	140	-10
Semi-skilled	90	60	-30
unskilled	120	160	+40

9. (d) 9,600, 5,760, & 7,680

Actual weeks is divided in standard ratio of workers

23,040 in 5:3:4

	Revised Standard Weeks
Skilled	9,600
Semi-skilled	5,760
unskilled	7,680

10. (c) Unskilled, skilled, & semi-skilled

Change in performance of workers, due to change in labour composition can be evaluated through labour mix variance. We have already calculated labour mix variance above. Answers are:

	Labour mix variance
Skilled	76,800 F
Semi-skilled	1,53,600 F
unskilled	1,53,600 A

This means unskilled labour performed the worst, skilled labour performed better than unskilled, and semi skilled performed the best.

11. (d) increase by ₹ 5,00,000.

Total Revenue (Domestic) = 10,000 × 500 = 50,00,000

Total Cost (Domestic) = Fixed Cost + Variable Cost

= (10,000 × 150) + (10,000 × 300) = 15,00,000+30,00,000 = 45,00,000

Profit (Domestic) =Total Revenue−Total Cost = 50,00,000−45,00,000 = 5,00,000

Contribution per Unit (Export) = Export Price−Variable Cost = 400−300 = 100

Total Contribution from Export = 100 × 5,000 = 5,00,000

12. (c) 2,79,000

Tonne-Km for Outward Journey = 4 tonnes × 300 km = 1,200 tonne-km

Tonne-Km for Inward Journey = 2 tonnes × 300 km = 600 tonne-km

Total Tonne-Km per Round Trip = 1,200 + 600 = 1,800 tonne-km

Total Tonne-Km in a year = 1,800 × 155 = 2,79,000 tonne-km

13. (a) 4,396 kg.

Annual consumption of raw material (A) = (275 kg. × 52 weeks) = 14,300 kg.

Cost of placing an order (O) = ₹ 100

Carrying cost per kg. Per annum (c × i) = ₹ 10 × 20% = ₹ 2

Economic order quantity (EOQ)/ **Reorder Quantity (ROQ)** = $\sqrt{\frac{2AO}{C \times i}}$

$= \sqrt{\frac{2 \times 14,300 \text{ kgs.} \times ₹ 100}{₹ 2}}$

= 1,196 Kg. (Approx)

Reorder level (ROL) = Maximum usage × Maximum re-order period

= 450 kg. × 8 weeks = 3,600 kg.

Maximum level = ROL + ROQ – (Min. usage × Min. re-order period)

= 3,600 kg. + 1,196 kg. – (100 kg. × 4 weeks)

= 4,396 kg.

14. (b) ₹ 1,49,000

Total Cost=Sales Revenue−Profit

For A:

Total Cost of A = 80,000−20,000=60,000

For B:

Total Cost of B = 50,000−15,000=35,000

For A:

Joint Cost Allocated to A = 60,000−(Manufacturing Expenses + Selling Expenses)

= 60,000−(10,000+16,000) = 34,000

For **B**:

Joint Cost Allocated to B = 35,000−(Manufacturing Expenses + Selling Expenses)

= 35,000 − (8,000 + 10,000) = 17,000

Cost of Product Y = Total Joint Cost−Joint Cost Allocated to A and B = 2,00,000 − 51,000 = 1,49,000

15. (a) Overabsorbed by ₹ 25,000

Predetermined Overhead Rate = Budgeted Overhead / Budgeted hours i.e. 1,30,000 / 8,000 = ₹ 16.25 per hour.

Hence, absorbed overhead = 10,000 X 16.25 = ₹ 1,62,500.

Since actual overhead incurred were ₹ 1,37,500

Hence the overhead were over absorbed by 1,62,500 – 1,37,500 = ₹ 25,000.

PART II Descriptive Questions

1. (a) (i) Minimum stock of A

Re-order level – (Average consumption × Average time required to obtain delivery)

= 8,000 kg. – (200 units × 10 kg. × 2 weeks) = 4,000 kg.

(ii) Maximum stock of B

Re-order level – (Min. Consumption × Min. Re-order period) + Re-order quantity

= 4,750 kg. – (175 units × 4 kg. × 3 weeks) + 5,000 kg.

= 9,750 - 2,100 = 7,650 kg.

(iii) Re-order level of C

Maximum re-order period × Maximum Usage

= 4 weeks × (225 units × 6 kg.) = 5,400 kg.

OR

= Minimum stock of C + (Average consumption × Average delivery time)

= 2,000 kg. + [(200 units × 6 kg.) × 3 weeks] = 5,600 kg.

(iv) Average stock level of A

= Minimum stock level of A + $\frac{1}{2}$ Re-order quantity

= 4,000 kg. + $\frac{1}{2}$ 10,000 kg. = 4,000 + 5,000 = 9,000 kg.

OR

= $\frac{\text{Minimum stock + Maximum stock}}{2}$ (Refer to Working Note)

= $\frac{4,000 + 16,250}{2}$ = 10,125 kg.

Working note

Maximum stock of A = ROL + ROQ – (Minimum consumption × Minimum re-order period)

= 8,000 kg. + 10,000 kg. – [(175 units × 10 kg.) × 1 week] = 16,250 kg.

(b) Statement of Operating cost.

	Per Annum (₹)	Per Month (₹)
Standing charges:		
Depreciation [(4,50,000- 50,000)/10]	40,000	3,333.33
Insurance	7,500	625.00
Taxes	1,800	150.00
Garage (₹ 2,500 × 12)	30,000	2,500.00
Annual repairs	12,000	1,000.00
Driver's Salary (₹ 3,000× 12)	36,000	3,000.00
Incidental expenses (₹ 2,000 × 12)	24,000	2,000.00
	1,51,300	12,608.33
Variable expenses:		
Petrol and Oil $\left(4,000 * \text{kms} \times \frac{1}{100} \text{ kms.} \times \text{Rs. } 220\right)$		8,800.00
Total Cost (without commission)		21,408.33

[* 20 km. × 2 × 4 round trips × 25 days = 4,000 km.]

Let X be the total takings per month

Driver's Commission = 10% of X = $\frac{X}{10}$

Profit = 15% of X = $\frac{15}{100} X = \frac{3X}{20}$

Total takings per month = Total cost + Driver's Commission + Profit

or X = ₹ 21,408.33 + $\frac{X}{10} + \frac{3X}{20}$

or $X - \frac{3X}{20} - \frac{X}{10}$ = ₹ 21,408.33

or $\frac{20X - 3X - 2X}{20}$ = ₹ 21,408.33

or $\frac{15X}{20}$ = ₹ 21,408.33

or X = $\frac{\text{Rs. } 21{,}408.33 \times 4}{3}$

X = ₹ 28,544.44

Total number of round trips per month: 25 days × 4 round trips per day = 100 trips

Hence the charge per round trip = $\frac{₹\ 28{,}544.44}{100}$

= ₹ 285.44

(c) Workings

Basic wage rate = ₹ (100 + ₹ 50 for DA) per hour

= ₹ 150 per hour

Overtime wage rate before and after working hours

= ₹ 150 + 75% of ₹ 150

= ₹ 262.50 per hour

Overtime wage rate for Sundays = ₹ 150 + 125% of ₹ 150

= ₹ 337.50 per hour

Computation of average inflated wage rate (including overtime premium)

Particulars	(₹)
Annual wages for the previous year for normal time (4,00,000 hrs. × ₹ 150)	6,00,00,000
Wages for overtime before and after working hours (80,000 hrs. × ₹ 262.50)	2,10,00,000
Wages for overtime on Sundays (20,000 hrs. × ₹ 337.50)	67,50,000
Total wages for 5,00,000 hrs.	**8,77,50,000**

Average inflated wage rate = $\frac{₹\ 8,77,50,000}{5,00,000\ hrs.}$ = ₹ 175.50

(i) Where overtime is worked regularly as a policy due to workers' shortage:

The overtime premium is treated as a part of employee cost and job is charged at an inflated wage rate.

Hence, employee cost chargeable to job 'PR123'

= Total hours × Inflated wage rate

= 4,500 hrs. × ₹ 175.50 = **₹ 7,89,750**

(ii) Where overtime is worked irregularly to meet the requirements of production:

Basic wage rate is charged to the job and overtime premium is charged to factory overheads as under:

Employee cost chargeable to Job 'PR123'

= 4,500 hours @ ₹ 150 per hour

= ₹ 6,75,000

Factory overhead = {400 hrs. × ₹ (75% of ₹ 150)} +
{100 hrs. × ₹ (125% of ₹ 150)}
= {₹ 45,000 + ₹ 18,750}
= ₹ 63,750

2. (a) Preparation of Cost Sheet for 'USB Lightning Cable'

No. of units produced = 75,000 units

No. of units sold = 90% of 75,000 units
= 67,500 units

Particulars	Per unit (₹)	Total (₹)
Direct materials (Working note- (ii))	110.00	82,50,000
Direct wages (Working note- (iii))	55.00	41,25,000
Prime cost	**165.00**	**1,23,75,000**
Production overhead (Working note- (iv))	22.00	16,50,000
Factory Cost	**187.00**	**1,40,25,000**
Administration Overhead (Working note- (v))	11.00	8,25,000
Cost of production	**198.00**	**1,48,50,000**
Less: Closing stock (10% of 75,000 units)	-	(14,85,000)
Cost of goods sold i.e. 67,500 units	**198.00**	**1,33,65,000**
Selling cost (Working note- (vi))	22.00	14,85,000
Cost of sales/ Total cost	**220.00**	**1,48,50,000**
Profit	165.00	1,11,37,500
Sales value (₹ 385 × 67,500 units)	**385.00**	**2,59,87,500**

Working Notes:

(i) No. of units produced for 'USB Type C Cable' is 3 times the 'USB Lightning Cable'

= 3 x 75,000 units

= 2,25,000 units

(ii) Direct material cost per unit of 'USB Type C Cable' = M

Direct material cost per unit of 'USB Lightning Cable' = 2M

Total Direct Material cost = 2M × 75,000 units + M × 2,25,000 units

₹ 2,06,25,000 = 1,50,000 M + 2,25,000 M

$$M = \frac{₹\ 2,06,25,000}{3,75,000}$$

= ₹ 55

Therefore, Direct material Cost per unit of 'USB Lightning Cable'

= 2 × ₹ 55 = ₹ 110

(iii) Direct wages per unit for 'USB Lightning Cable' were 5/3 times the rate of 'USB Type C Cable'.

Direct wages per unit for 'USB Type C Cable' = W

Direct wages per unit for 'USB Lightning Cable' = $\frac{5}{3}$ W

So, ($\frac{5}{3}$ W x 75,000) + (W x 2,25,000) = ₹ 1,15,50,000

Or, W (3,75,000 + 6,75,000) = ₹ 3,46,50,000

Or, W = ₹ 33 per unit

Therefore, Direct material Cost per unit of 'USB Lightning Cable' -

= $\frac{5}{3}$ x ₹ 33 = ₹ 55 per unit

(iv) Production overhead per unit = $\frac{₹\ 66,00,000}{(75,000+2,25,000)}$ = ₹ 22

(v) Administration overhead per unit = $\frac{₹\ 33,00,000}{(75,000+2,25,000)}$ = ₹ 11

(vi) Selling cost per unit = $\frac{₹\ 59,40,000}{90\%\ \text{of}\ (75,000+2,25,000)}$ = ₹ 22

(b) *Effect of overtime payment on productivity:* Overtime work should be resorted to only when it is extremely essential because it involves extra cost. The overtime payment increases the cost of production in the following ways:

1. The overtime premium paid is an extra payment in addition to the normal rate.
2. The efficiency of operators during overtime work may fall and thus output may be less than normal output.
3. In order to earn more the workers may not concentrate on work during normal time and thus the output during normal hours may also fall.
4. Reduced output and increased premium of overtime will bring about an increase in cost of production.

(c) **(i)** **Market Value after further Processing:** Here the basis of apportionment of joint costs is the total sales value of finished products at the further processing. The use of this method is unfair where further processing costs after the point of separation are disproportionate or when all the joint products are not subjected to further processing.

(ii) **Net Realisable Value Method:** Here joint costs is apportioned on the basis of net realisable value of the joint products,

Net Realisable Value = Sale value of joint products (at finished stage)

(-) estimated profit margin

(-) selling & distribution expenses, if any

(-) post split off cost

3. (a) Process- I A/c

Particulars	Units	(₹)	Particulars	Units	(₹)
To Raw material used (₹ 400 × 1,50,000 units)	1,50,000	6,00,00,000	By Normal loss (6% of 1,50,000 units) × ₹ 25	9,000	2,25,000
To Direct wages	--	39,00,000	By Process- II A/c (₹ 520.96 × 1,03,500 units)	1,03,500	5,39,19,360
To Direct expenses (20% of Direct wages)	--	7,80,000	By Abnormal loss (₹ 520.96 × 3,000 units)	3,000	15,62,880
To Manufacturing overhead [₹ 2,25,00,000 × (390/975)]		90,00,000	By Costing Profit and Loss (P&L)	34,500	1,79,72,760
	1,50,000	7,36,80,000		1,50,000	7,36,80,000

Cost per unit:

$$\left(\frac{\text{Total Cost - Realisable value of normal loss}}{\text{Total input units - Normal Loss units}}\right)$$

$$= \left(\frac{₹\ 7,36,80,000 - ₹\ 2,25,000}{1,50,000 \text{ units} - 9,000 \text{ units}}\right) = ₹\ 520.96 \text{ per unit}$$

Process- II A/c

Particulars	Units	(₹)	Particulars	Units	(₹)
To Process- I A/c	1,03,500	5,39,19,360	By Normal loss (10% of 1,03,500 units) × ₹ 40	10,350	4,14,000
To Direct wages	--	58,50,000	By Costing P & L A/c	96,000	7,59,88,778
To Direct expenses (15% of Direct wages)	--	8,77,500			
To Manufacturing overhead [₹ 2,25,00,000 × (585/975)]	--	1,35,00,000			

To Abnormal gain (₹ 791.55 × 2,850 units)	2,850	22,55,918			
	1,06,350	7,64,02,778		1,06,350	7,64,02,778

Cost per unit:

$$\left(\frac{\text{Total Cost - Realisable value of normal loss}}{\text{Total input units - Normal Loss units}}\right)$$

$$= \left(\frac{₹\ 7,41,46,860 - ₹\ 4,14,000}{1,03,500 \text{ units} - 10,350 \text{ units}}\right) = ₹\ 791.55 \text{ per unit}$$

Abnormal Loss A/c

Particulars	Units	(₹)	Particulars	Units	(₹)
To Process- I A/c	3,000	15,62,880	By Bank	3,000	75,000
			By Costing P & L A/c		14,87,880
	3,000	15,62,880		3,000	15,62,880

Abnormal Gain A/c

Particulars	Units	(₹)	Particulars	Units	(₹)
To Normal Loss	2,850	1,14,000	By Process- II A/c	2,850	22,55,918
To Costing P & L A/c		21,41,918			
	2,850	22,55,918		2,850	22,55,918

Costing Profit & Loss Account

Particulars	(₹)	Particulars	(₹)
To Cost of sales	9,39,61,538	By Sales	
Process I- 1,79,72,760 Process II- 7,59,88,778		Process I- 34,500 @ 650 Process II- 96,000 @ 950	11,36,25,000
To Abnormal loss	14,87,880	By Abnormal gain	21,41,918
To Selling Expenses	1,27,50,000		
To Net Profit	75,67,500		
	11,57,66,918		11,57,66,918

(b) Memorandum Reconciliation Accounts

Dr. Cr.

	(₹)		(₹)
To Net Loss as per Costing books	9,02,200	By Administration overheads over recovered in cost accounts	1,56,000
To Factory overheads under absorbed in Cost Accounts	7,41,000	By Interest on investment not included in Cost Accounts	3,12,000
To Depreciation under charged in Cost Accounts	1,30,000	By Stores adjustment (Credit in financial books)	36,400
To Income-Tax not provided in Cost Accounts	1,40,400	By Dividend received in financial books	83,200
		By Net loss as per Financial books	13,26,000
	19,13,600		19,13,600

4. (a) Working notes:

1. Total support cost:

Particulars	Amount (₹)
Placing of orders	17,94,000
Physical delivery of goods	28,98,000
Stocking of goods on store shelves	19,87,200
Supervising cost	13,80,000
Quality Inspections	9,03,900
Total	**89,63,100**

2. Percentage of support cost to cost of goods sold (COGS):

$$= \frac{\text{Totalsupportcost}}{\text{Totalcostofgoodssold}} \times 100$$

$$= \left(\frac{₹\ 89,63,100}{₹\ 3,58,52,400} \times 100\right)$$

$$= 25\%$$

3. Cost for each activity cost driver:

Activity (1)	Total cost (₹) (2)	Cost allocation base (3)	Cost driver rate (4) = [(2) ÷ (3)]
Placing of orders	17,94,000	1,127 + 1,242 + 1,219 = 3,588 purchase orders	₹ 500 per purchase order
Physical delivery of goods	28,98,000	2,185 + 2,668 + 2,392 = 7,245 deliveries	₹ 400 per delivery
Stocking of goods on store shelves	19,87,200	6,072 + 7,130 + 6,670 = 19,872 hours of shelf-stocking	₹ 100 per stocking hour
Supervising cost	13,80,000	19,159 + 19,435 + 18,906 = 57,500 direct labour hour	₹ 24 per direct labour hour
Quality Inspections	9,03,900	759 + 782 + (736 x 2*) = 3,013 inspections	₹ 300 per inspection

* As the inspection duration for Crumbly Banana Chips is double, its base would be doubled to calculate cost driver rate under Activity Based Costing.

(i) Statement of Operating income and its percentage of revenues for each product line

(When support costs are allocated to product lines on the basis of cost of goods sold of each product)

	Crunchy Potato (₹)	Crispy corn (₹)	Crumbly Banana (₹)	Total (₹)
Revenues: (A)	1,53,35,250	1,63,36,900	1,55,23,850	4,71,96,000
Cost of Goods sold (COGS): (B)	1,12,70,000	1,27,37,400	1,18,45,000	3,58,52,400
Support cost (25% of COGS): (C) (Refer working notes)	28,17,500	31,84,350	29,61,250	89,63,100
Total cost: (D) = {(B) + (C)}	1,40,87,500	1,59,21,750	1,48,06,250	4,48,15,500
Operating income: E= {(A)-(D)}	12,47,750	4,15,150	7,17,600	23,80,500
Operating income as a percentage of revenues: (E/A) × 100)	8.14%	2.54%	4.62%	5.04%

(ii) Statement of Operating income and its percentage of revenues for each product line

(When support costs are allocated to product lines using an activity-based costing system)

	Crunchy Potato (₹)	Crispy corn (₹)	Crumbly Banana (₹)	Total (₹)
Revenues: (A)	1,53,35,250	1,63,36,900	1,55,23,850	4,71,96,000
Cost & Goods sold	1,12,70,000	1,27,37,400	1,18,45,000	3,58,52,400
Placing of orders	5,63,500 (1,127 x ₹ 500)	6,21,000 (1,242 x ₹ 500)	6,09,500 (1,219 x ₹ 500)	17,94,000
Physical delivery of goods	8,74,000 (2,185 x ₹ 400)	10,67,200 (2,668 x ₹ 400)	9,56,800 (2,392 x ₹ 400)	28,98,000
Stocking of goods on store shelves	6,07,200 (6,072 x ₹ 100)	7,13,000 (7,130 x ₹ 100)	6,67,000 (6,670 x ₹ 100)	19,87,200
Supervising cost	4,59,816 (19,159 x ₹ 24)	4,66,440 (19,435 x ₹ 24)	4,53,744 (18,906 x ₹ 24)	13,80,000
Quality Inspections	2,27,700 (759 x ₹ 300)	2,34,600 (782 x ₹ 300)	4,41,600 (736 x 2 x ₹ 300)	9,03,900
Total cost: (B)	1,40,02,216	1,58,39,640	1,49,73,644	4,48,15,500
Operating income C:{(A)-(B)}	13,33,034	4,97,260	5,50,206	23,80,500
Operating income as a percentage of revenues: (C/A) × 100)	8.69%	3.04%	3.54%	5.04%

(b) (i) Production budget (in units)

Particulars	Product X	Product Y
Budgeted Sales (units)	64,000	1,12,000
Increase/(decrease) in inventory	2,000	(4,000)
Production budget (units)	66,000	108,000

(ii) Raw material usage budget (in kg)

	Raw material A			Raw material B		
	X	Y	Total	X	Y	Total
Production budget (units) (a)	66,000	108,000	1,74,000	66,000	108,000	1,74,000
Kg per unit (b)	24	12	--	12	9	--
Material usage (kg) (a x b)	15,84,000	12,96,000	28,80,000	7,92,000	9,72,000	17,64,000

(iii) Raw material purchase budget (in kg and ₹)

Particulars	Raw Material A	Raw material B
Material usage (kg) (Total from (ii))	28,80,000	17,64,000
Add: Desired Closing Stock (5% of the quarter's material usage Budget)	1,44,000	88,200
Total Requirements	30,24,000	18,52,200
Less: Opening Stock	(1,80,000)	(1,20,000)
Quantity to be purchased (kg)	28,44,000	17,32,200
Price per kg	₹ 18.75	₹ 27.00
Cost of Purchase (₹)	5,33,25,000	4,67,69,400

(iv) Computation of the budgeted variable cost to produce one unit of Product Y

Particulars	(₹)
Raw – Material	
A: 12 kg @ ₹ 18.75	225
B: 9 kg @ ₹ 27.00	243
Direct Labour $\left(\frac{₹\ 540}{9 \text{ hours x } 60 \text{ minutes}}\right)$ x 20 minutes	20
Variable Manufacturing Overheads	8
Variable Cost of Production per unit of Product Y	**496**

5. (a) (i) Profit for the Quarter (Absorption Costing)

Particulars	(₹)	(₹)
Sales revenue (880 units × $\left(\frac{₹\ 88,00,000}{4,400\ \text{units}}\right)$): (A)		17,60,000
Less: Production costs:		
- Variable cost (1,210 units × $\left(\frac{₹\ 35,20,000}{4,400\ \text{units}}\right)$)	9,68,000	
- Fixed overheads absorbed (1,210 units × ₹ 200*)	2,42,000	12,10,000
Add: Opening stock		--
Less: Closing Stock[$\left(\frac{₹\ 12,10,000}{1,210\ \text{units}}\right)$ x 330 units]		(3,30,000)
Cost of Goods sold		8,80,000
Less: Adjustment for over-absorption of fixed production overheads **		(22,000)
Add: Selling & Distribution Overheads:		
- Variable (880 units × $\left(\frac{₹\ 17,60,000}{4,400\ \text{units}}\right)$)	3,52,000	
- Fixed (1/4th of ₹ 13,20,000)	3,30,000	6,82,000
Cost of Sales (B)		15,40,000
Profit {(A) – (B)}		**2,20,000**

* absorption rate: ₹ 8,80,000/4,400 = ₹ 200 per unit

** Actual fixed production overhead - Absorbed fixed production overhead

= ₹ 8,80,000/4 - 2,42,000 = ₹ (22,000)

(ii) Profit for the Quarter (Marginal Costing)

	(₹)	(₹)
Sales revenue (880 units × $\left(\frac{₹\ 88,00,000}{4,400\ \text{units}}\right)$): (A)		17,60,000
Less: Production costs:		
- Variable cost (1,210 units × $\left(\frac{₹\ 35,20,000}{4,400\ \text{units}}\right)$)		9,68,000
Add: Opening stock		--
Less: Closing Stock [$\left(\frac{₹\ 9,68,000}{1,210\ \text{units}}\right)$ x 330 units]		(2,64,000)
Variable cost of goods sold		7,04,000
Add: Selling & Distribution Overheads:		

- Variable (880 units × $\left(\frac{₹\ 17,60,000}{4,400\ \text{units}}\right)$)		3,52,000
Cost of Sales (B)		10,56,000
Contribution {(C) = (A) – (B)}		**7,04,000**
Less: Fixed Costs:		
- Production cost $\left(\frac{₹\ 8,80,000}{4}\right)$	(2,20,000)	
- Selling & distribution cost $\left(\frac{₹\ 13,20,000}{4}\right)$	(3,30,000)	(5,50,000)
Profit		**1,54,000**

(b) Primary Distribution Summary

Item of cost	Basis of apportionment	Total (₹)	Production Dept.			Service Dept.	
			M (₹)	N (₹)	O (₹)	P (₹)	Q (₹)
Lease rental	Floor space (6 : 5 : 8 : 2 : 4)	35,000	8,400	7,000	11,200	2,800	5,600
Power & Fuel	HP of Machines × Working hours (93: 144 : 72)	4,20,000	1,26,408	1,95,728	97,864	-	-
Supervisor's wages*	Working hours (31 : 40 : 30)	6,400	1,964	2,535	1,901	-	-
Electricity	Light points (21: 26: 16 : 9 : 8)	5,600	1,470	1,820	1,120	630	560
Depreciation on machinery	Value of machinery (6 : 5 : 7 : 2 : 3)	16,100	4,200	3,500	4,900	1,400	2,100
Depreciation on building	Floor space (6 : 5 : 8 : 2 : 4)	18,000	4,320	3,600	5,760	1,440	2,880
Payroll expenses	No. of employees (48: 52: 45: 15: 25)	21,000	5,448	5,903	5,108	1,703	2,838
Canteen expenses	No. of employees (48: 52: 45: 15: 25)	28,000	7,265	7,870	6,811	2,270	3,784
ESI and PF contribution	Direct wages (864: 832: 765: 180: 265)	58,000	17,244	16,606	15,268	3,593	5,289
		6,08,100	**1,76,719**	**2,44,562**	**1,49,932**	**13,836**	**23,051**

* Wages to supervisor is to be distributed to production departments only.

Let 'P' be the overhead of service department P and 'Q' be the overhead of service department Q.

P = 13,836 + 0.15 Q

Q = 23,051 + 0.10 P

Substituting the value of Q in P we get

P = 13,836 + 0.15 (23,051 + 0.10 P)

P = 13,836 + 3,457.65 + 0.015 P

0.985 P = 17,293.65

$\therefore$ P = ₹ 17,557

$\therefore$ Q = 23,051 + 0.10 $\times$ 17,557

= ₹ 24,806.70 or ₹ 24,807

Secondary Distribution Summary

Particulars	Total	M	N	O
	(₹)	(₹)	(₹)	(₹)
Allocated and Apportioned over-heads as per primary distribution	5,71,213	1,76,719	2,44,562	1,49,932
P (90% of ₹17,557)	15,801	5,267	6,145	4,389
Q (85% of ₹24,807)	21,086	9,923	6,202	4,961
		1,91,909	2,56,909	1,59,282

Overhead rate per hour

	M	N	O
Total overheads cost (₹)	1,91,909	2,56,909	1,59,282
Working hours	1,240	1,600	1,200
Rate per hour (₹)	154.77	160.57	132.74

6. (a) Type of costs categorised based on its use in Managerial Decision Making:

(i) Pre-determined Cost - A cost which is computed in advance before production or operations start, on the basis of specification of all the factors affecting cost, is known as a pre-determined cost.

(ii) Standard Cost - A pre-determined cost, which is calculated from managements 'expected standard of efficient operation' and the relevant necessary expenditure. It may be used as a basis for price fixation and for cost control through variance analysis.

(iii) **Marginal Cost -** The amount at any given volume of output by which aggregate costs increases if the volume of output is increased or decreased by one unit.

(iv) **Estimated Cost -** Kohler defines estimated cost as "the expected cost of manufacture, or acquisition, often in terms of a unit of product computed on the basis of information available in advance of actual production or purchase". Estimated costs are prospective costs since they refer to prediction of costs.

(v) **Differential Cost -** (Incremental and decremental costs). It represents the change (increase or decrease) in total cost (variable as well as fixed) due to change in activity level, technology, process or method of production, etc. For example, if any change is proposed in the existing level or in the existing method of production, the increase or decrease in total cost or in specific elements of cost as a result of this decision will be known as incremental cost or decremental cost.

(vi) **Imputed Costs -** These costs are notional costs which do not involve any cash outlay. Interest on capital, the payment for which is not actually made, is an example of imputed cost. These costs are similar to opportunity costs.

(vii) **Capitalized Costs -**These are costs which are initially recorded as assets and subsequently treated as expenses. Example, installation expenses on the erection of a machine are added to the cost of a machine.

(viii) **Product Costs -** These are the costs which are associated with the purchase and sale of goods (in the case of merchandise inventory). In the production scenario, such costs are associated with the acquisition and conversion of materials and all other manufacturing inputs into finished product for sale. Hence, under marginal costing, variable manufacturing costs and under absorption costing, total manufacturing costs (variable and fixed) constitute inventoriable or product costs.

(ix) **Opportunity Cost -** This cost refers to the value of sacrifice made or benefit of opportunity foregone in accepting an alternative course of action. For example, a firm financing its expansion plan by withdrawing money from its bank deposits. In such a case the loss of interest on the bank deposit is the opportunity cost for carrying out the expansion plan.

(x) **Out-of-pocket Cost -** It is that portion of total cost, which involves cash outflow. This cost concept is a short-run concept and is used in decisions relating to fixation of selling price in recession, make or buy, etc. Out–of–pocket costs can be avoided or saved if a particular proposal under consideration is not accepted.

(xi) **Shut down Costs -** Those costs, which continue to be, incurred even when a plant is temporarily shut-down e.g. rent, rates, depreciation, etc. These costs cannot be eliminated with the closure of the plant. In other words, all fixed costs, which cannot be avoided during the temporary closure of a plant, will be known as shut down costs.

(xii) **Sunk Costs -** Historical costs incurred in the past are known as sunk costs. They play no role in decision making in the current period. For example, in the case of a decision relating to the replacement of a machine, the written down value of the existing machine is a sunk cost and therefore, not considered.

(xiii) **Absolute Cost -** These costs refer to the cost of any product, process or unit in its totality. When costs are presented in a statement form, various cost components may be shown in absolute amount or as a percentage of total cost or as per unit cost or all together. Here the costs depicted in absolute amount may be called absolute costs and are base costs on which further analysis and decisions are made.

(xiv) **Discretionary Costs –** Such costs are not tied to a clear cause and effect relationship between inputs and outputs. They usually arise from periodic decisions regarding the maximum outlay to be incurred. Examples include advertising, public relations, executive training etc.

(xv) **Period Costs -** These are the costs, which are not assigned to the products but are charged as expenses against the revenue of the period in which they are incurred. All non-manufacturing costs such as general & administrative expenses, selling and distribution expenses are recognised as period costs.

(xvi) **Engineered Costs -** These are costs that result specifically from a clear cause and effect relationship between inputs and outputs. The relationship is usually personally observable. Examples of inputs are direct material costs, direct labour costs etc. Examples of output are cars, computers etc.

(xvii) **Explicit Costs -** These costs are also known as out-of-pocket costs and refer to costs involving immediate payment of cash. salaries, wages, postage and telegram, printing and stationery, interest on loan etc. are some examples of explicit costs involving immediate cash payment.

(xviii) **Implicit Costs -** These costs do not involve any immediate cash payment. They are not recorded in the books of account. They are also known as economic costs.

(b)

Cost Pool	Cost Driver
Quality Control	• Number of Inspections • Product Units Produced
Research and Development	• Number of research projects • Personnel hours on a project
Machine Maintenance	• Machine Hours
Employee Training Costs	• Number of Training Hours • Employees Trained
Customer Service	• Number of service calls • Number of products serviced • Hours spent on servicing products

(c) Limitations of Budgetary Control System

Points	Description
1. Based on Estimates	Budgets are based on a series of estimates, which are based on the conditions prevalent or expected at the time budget is established. It requires revision in plan if conditions change.
2. Time factor	Budgets cannot be executed automatically. Some preliminary steps are required to be accomplished before budgets are implemented. It requires proper attention and time of management. Management must not expect too much during the initial development period.
3. Co-operation Required	Staff co-operation is usually not available during the initial budgetary control exercise. In a decentralised organisation, each unit has its own objective and these units enjoy some degree of discretion. In this type of organisation structure, coordination among different units is required. The success of the budgetary control depends upon willing co-operation and teamwork.
4. Expensive	The implementation of budget is somewhat

	expensive. For successful implementation of the budgetary control, proper organisation structure with responsibility is prerequisite. Budgeting process start from the collection of information to for preparing the budget and performance analysis. It consumes valuable resources (in terms of qualified manpower, equipment, etc.) for this purpose; hence, it is an expensive process.
5. Not a substitute for management	Budget is only a managerial tool and must be intelligently applied for management to get benefited. Budgets are not a substitute for good management.
6. Rigid document	Budgets are sometime considered as rigid documents. But in reality, an organisation is exposed to various uncertain internal and external factors. Budget should be flexible enough to incorporate ongoing developments in the internal and external factors affecting the very purpose of the budget.

(d)

Cost Control	Cost Reduction
1. Cost control aims at maintaining the costs in accordance with the established standards.	1. Cost reduction is concerned with reducing costs. It challenges all standards and endeavours to improvise them continuously
2. Cost control seeks to attain lowest possible cost under existing conditions.	2. Cost reduction recognises no condition as permanent, since a change will result in lower cost.
3. Cost control is a preventive function.	3. Cost reduction is a corrective function. It operates even when an efficient cost control system exists.
4. Cost control ends when targets are achieved.	4. Cost reduction has no visible end and is a continuous process.