

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

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.

Case Scenario I

Rinku Ltd is a manufacturing company which is producing bags of different varieties. The company is planning to establish a new plant in the neighboring country to produce the bags. New plant has a production capacity of 2,00,000 units per year. As per the studies, normal capacity utilization is 90% of the production capacity. The company will be able to sell the whole production after making price adjustments.

The following are the annual cost data on the basis of cost studies for the new plant in the neighboring country:

Material Cost	= ₹ 42,00,000 (100% variable)
Labour	= ₹ 40,00,000 (70% variable)
Factory Overheads	= ₹ 35,00,000 (60% variable)

Administrative Overheads = ₹ 10,00,000 (30% variable)

Bags are being produced and sold on steady basis. It is estimated that it costs ₹ 1 as inventory holding cost per bag per month and that the set up cost per run of bag manufacture is ₹ 1,000.

The production of the new plant will be sold only the sales agent in the neighboring country who will receive ₹ 5 per bag. There is no other selling expenses other than commission. Fixed cost are calculated on the basis of normal capacity utilization of the plant.

Assume 365 days in a year.

Being a cost manager of the company, you are required answer the following questions being asked by the management of the company:

1. What is the total variable cost of the bags being produced?
 - (a) ₹ 80,00,000
 - (b) ₹ 93,00,000
 - (c) ₹ 1,03,00,000
 - (d) ₹ 33,00,000
2. What is the total fixed cost of the bags being produced?
 - (a) ₹ 40,00,000
 - (b) ₹ 35,00,000
 - (c) ₹ 53,00,000
 - (d) ₹ 33,00,000
3. Calculate the break-even point if the sales price is ₹100 per bag?
 - (a) 65,159 bags
 - (b) 77,139 bags
 - (c) 93,000 bags
 - (d) 86,503 bags
4. Calculate the optimum run size and number of runs for bag manufacturing?
 - (a) 7,746 bags and 24 runs

- (b) 8,000 bags and 23 runs
 - (c) 6,503 bags and 28 runs
 - (d) 5,478 bags and 33 runs
5. What is the interval between two consecutive runs?
- (a) 11 days
 - (b) 10 days
 - (c) 15 days
 - (d) 19 days
- (5 x 2 = 10 Marks)**

Case Scenario II

A company is working in manufacturing sector and uses labour-force, which consists of skilled, semi-skilled, and unskilled workers.

The rate of Labour per week for skilled worker is ₹ 120, for semi-skilled workers is ₹ 80 and for unskilled worker is ₹ 60.

It had planned the labour for a job that would take 60 weeks to be completed, ideally. Ratio of workers employed in skilled, semi-skilled, and unskilled would be 5:3:4. The management consultant who was employed to handle this job died in an accident. Board hired a new consultant to take over this job.

This new consultant had a different approach for doing this job. He thought that workers actually required would be in the ratio of 7:3:8. He changed the composition of labour-force and employed the workers in the new ratio.

Project was carried out successfully and it turned out that this change in Mix of labour-force saved the company ₹ 76,800 in the job but at the same time company also lost ₹ 1,29,600 due to poor productivity of the labourers.

As a result, management consultant was promoted and labour force was fired & was replaced with more experienced labour-force.

As the new management consultant was promoted, company found a new one to replace him. This 3rd management consultant was asked to understand and analyse the previous job done by the 2nd management consultant. Data in addition to above-given information was provided as follows:-

- Total time period taken for the job was 64 weeks.

- Net extra cost spent, in comparison to planned cost, was ₹ 1,04,000.
- Total number of weeks worked by all the type of labourers was 23,040 weeks.
- Skilled and semi-skilled labourers in reality charged ₹ 20 extra per week, whereas unskilled labourers were negotiated to charge ₹ 20 less per week, than what they had charged earlier.

Let say, you are the 3rd management consultant, and you have been given with all this information. Work out calculations and answer the following questions (MCQs 6 to 10) based on the information given above.

6. If the total of labour efficiency variance of skilled and semiskilled labourers is ₹ 1,29,600 (Favourable), what is the labour efficiency variance of unskilled labour?
 - (a) 1,82,400 (Adverse)
 - (b) 52,800 (Adverse)
 - (c) 1,29,600 (Adverse)
 - (d) 76,800 (Favourable)
7. What are the amounts that company saved & paid extra to labourers, respectively?
 - (a) 2,56,000 & 2,04,800
 - (b) 1,79,200 & 204,800
 - (c) 2,04,800 & 2,56,000
 - (d) 204,800 & 1,79,200
8. If in total 1,440 weeks were worked in addition to what was planned, how many extra/less workers were used in actual, compared to standard? (Answer in sequence of skilled, semi-skilled, & unskilled).
 - (a) -10, -30, -40
 - (b) -10, -30, +40
 - (c) +10, +30, -40
 - (d) +10, +30, +40
9. Calculate revised standard weeks for all 3 types of labour forces? (Answer in sequence of skilled, semi-skilled, & unskilled).

- (a) 9,400, 5,650, & 7,990
 (b) 9,550, 6,280, & 7,210
 (c) 8,520, 6,850, & 7,670
 (d) 9,600, 5,760, & 7,680
10. If standard rates charged by skilled, semi-skilled, and unskilled were ₹ 120, ₹ 80, & ₹ 60, respectively, then which labour force performed worst, better, & best, due to change in labour composition?
- (a) Semi-skilled, skilled, & unskilled
 (b) Skilled, semi-skilled, unskilled
 (c) Unskilled, skilled, & semi-skilled
 (d) Unskilled, semi-skilled, & skilled **(5 x 2 = 10 Marks)**
11. A manufacturing firm is presently producing and selling 10,000 units of a product at ₹ 500 per unit in the domestic market. The fixed cost per unit at the current level of operation is ₹ 150 and variable cost is ₹ 300 per unit. The firm has received an export order for supply of 5,000 units of the product at ₹ 400 per unit. After meeting the domestic demand, if the firm accepts the export offer, the profit of the firm is expected to:
- (a) decrease by ₹ 5,00,000.
 (b) increase by ₹ 2,00,000.
 (c) decrease by ₹ 3,00,000.
 (d) increase by ₹ 5,00,000. **(2 Marks)**
12. A truck having a capacity of 5 tonnes of goods normally carries 80% of the load on the outward journey and 40% of the load on inward journey. The distance is 300 km for one side. It takes 2 days to complete the round trip. The truck is on the road for 310 days in a year. Which one of the following is the total tonne-km in a year?
- (a) 3,70,000
 (b) 3,20,000
 (c) 2,79,000
 (d) 2,50,000 **(2 Marks)**

13. A company manufactures 5,000 units of a product per month. The cost of placing an order is ₹ 100. The purchase price of the raw material is ₹ 10 per kg. The re-order period is 4 to 8 weeks. The consumption of raw materials varies from 100 kg to 450 kg per week, the average consumption being 275 kg. The carrying cost of inventory is 20% per annum. What is Maximum level of stock?
- (a) 4,396 kg.
 (b) 5,500 kg
 (c) 6,210 kg
 (d) 3,956 kg **(2 Marks)**
14. Product Y yields two by-products A and B. The joint cost of manufacture is ₹ 2,00,000. Sales of A and B are ₹ 80,000 and ₹ 50,000 respectively. Manufacturing expenses after separation of A and B are ₹ 10,000 and ₹ 8,000 respectively while their respective estimated selling expenses on sales is 20% for both products. The estimated profit on sales of A and B is 25% and 30% respectively. What is the cost of product Y after adjusting joint cost apportioned to by-products A and B?
- (a) ₹ 1,50,000
 (b) ₹ 1,49,000
 (c) ₹ 1,82,000
 (d) ₹ 1,20,000 **(2 Marks)**
15. The accountant for Brilliant Tools Ltd applies overhead based on machine hours. The budgeted overhead and machine hours for the year are ₹ 1,30,000 and 8,000 hours, respectively. The actual overhead and machine hours incurred were ₹ 1,37,500 and 10,000 hours.
- What is the amount of over/under absorbed overhead for the year?
- (a) Over absorbed by ₹ 25,000
 (b) Under absorbed by ₹ 25,000
 (c) Over a absorbed by ₹ 32,500
 (d) Under absorbed by ₹ 32,500 **(2 Marks)**

PART-II – Descriptive Questions (70 Marks)

Question No. 1 is compulsory.

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

1. (a) A company uses three raw materials A, B and C for a particular product for which the following data apply:

Raw Material	Usage per unit of product (Kg.)	Re-order Quantity (Kg.)	Price per Kg. (₹)	Delivery period (in weeks)			Re-order level (Kg.)	Minimum level (Kg.)
				Minimum	Average	Maximum		
A	10	10,000	0.10	1	2	3	8,000	?
B	4	5,000	0.30	3	4	5	4,750	?
C	6	10,000	0.15	2	3	4	?	2,000

Weekly production varies from 175 to 225 units, averaging 200 units of the said product.

WHAT would be the following quantities:

- (i) Minimum Stock of A?
- (ii) Maximum Stock of B?
- (iii) Re-order level of C?
- (iv) Average stock level of A? **(5 Marks)**

- (b) S Travels has been promised a contract to run a tourist car on a 20 km. long route for a multinational firm. He buys a car costing ₹ 4,50,000. The annual cost of insurance and taxes are ₹ 7,500 and ₹ 1,800 respectively. He has to pay ₹ 2,500 per month for a garage where he keeps the car when it is not in use. The annual repair costs are estimated at ₹ 12,000. The car is estimated to have a life of 10 years at the end of which the scrap value is likely to be ₹ 50,000.

He hires a driver who is to be paid ₹ 3,000 per month plus 10% of the takings as commission. Other incidental expenses are estimated at ₹ 2,000 per month.

Petrol and oil will cost ₹ 220 per 100 kms. The car will make 4 round trips each day. Assuming that a profit of 15% on takings is desired and that the car will be on the road for 25 days on an average per month, WHAT should he charge per round-trip? **(5 Marks)**

- (c) PR Ltd. totally understands the importance of employee motivation and retention, thus, it has implemented a structured wage policy. The basic wage rate is set at

₹ 100 per hour along with Dearness Allowance (DA) of 50%, which is competitive within the industry. To encourage productivity and compensate for the demands of overtime, the company offers enhanced rates for hours worked beyond the standard schedule. The normal working days are from Monday to Saturday, and the worker would be paid overtime premium of-

75% of basic wage rate (inclusive of DA) for working before and after normal working hours, and

125% of basic wage rate (inclusive of DA) for working on Sundays.

Throughout the previous year, the following hours were worked-

Normal time	4,00,000 hours
Overtime before and after normal working hours	80,000 hours
Overtime on Sundays	20,000 hours
Total	5,00,000 hours

However, the hours recorded for job 'PR123' are as follows:

Normal time	4,000 hours
Overtime before and after normal working hours	400 hours
Overtime on Sundays	100 hours
Total	4,500 hours

You are required to CALCULATE the employee cost chargeable to job 'PR123' and the treatment of overtime premium:

- (i) where overtime is worked regularly throughout the year as a policy due to the workers' shortage.
- (ii) where overtime is worked irregularly to meet the requirements of production. **(4 Marks)**

2. (a) Electraunika Ltd. manufactures two types of cables- 'USB Type C Cable' and 'USB Lightning Cable'. As the market is currently dominated by 'USB Type C Cable', it is produced 3 times the 'USB Lightning Cable'.

The combined cost data of both the cables for the month of March is given below:

Particulars	(₹)
Direct Materials	2,06,25,000
Direct Wages	1,15,50,000
Production Overhead	66,00,000

Administration overhead (related to production)	33,00,000
Selling Cost	59,40,000

Cost bifurcation between both the cables is ascertained as follows:

- (i) Direct material cost per unit of 'USB Lightning Cable' was twice than that of 'USB Type C Cable'.
- (ii) Direct wages per unit for 'USB Lightning Cable' were $\frac{5}{3}$ times the rate of 'USB Type C Cable'.
- (iii) Production overhead, Administration overhead and selling cost per unit were at same rate for both the types of cable.

Other information:

- (i) 75,000 units of 'USB Lightning Cable' were produced.
- (ii) 90% of both the cables produced were sold.
- (iii) Selling Price was ₹ 385 per unit for 'USB Lightning Cable'.

You are required to PREPARE a cost sheet for 'USB Lightning Cable' showing per unit and Total Sales Value. **(8 Marks)**

- (b) DISCUSS the effect of overtime payment on productivity. **(4 Marks)**

- (c) DESCRIBE briefly, how joint costs upto the point of separation may be apportioned amongst the joint products under the following methods:

- (i) Market value after further processing
- (ii) Net realizable value method **(2 Marks)**

- 3. (a) PR Ltd., a leading chemical company specializing in the production of specialty chemicals and industrial products, manufactures Product X through two distinct processes – Process-I and Process-II. Known for its innovation in chemical manufacturing, the company uses advanced technologies and industry best practices to ensure high-quality production. The following information is provided from the books of account for the year:

Particulars	Process- I	Process- II
Raw materials used	1,50,000 units	--
Raw materials cost per unit	₹ 400	--
Actual Output	1,38,000 units	96,000 units
Output transferred to next process	$\frac{3}{4}$ th	--

Output sold	1/4 th	96,000 units
Normal loss (on inputs)	6%	10%
Direct wages	₹ 39,00,000	₹ 58,50,000
Direct Expenses	20% of Direct wages	15% of Direct wages
Manufacturing overheads	₹ 2,25,00,000 to be recovered as a percentage of direct wages	
Realisable value of scrap per unit	₹ 25	₹ 40
Selling price per unit of output	₹ 650	₹ 950

Management & Selling expenses of ₹ 1,27,50,000 are directly attributable to the Costing Profit & Loss Account.

You are required to PREPARE the following:

- (i) Process-I Account
- (ii) Process-II Account
- (iii) Abnormal Loss
- (iv) Abnormal Gain Account
- (v) Costing Profit & Loss Account **(10 Marks)**

- (b) AeBee Ltd. disclosed a net loss of ₹ 9,02,200 as per their cost accounts for the year ending 31st March. However, the financial accounts disclosed a net loss of ₹ 13,26,000 for the same period. On scrutiny of both the sets of accounts, following information was revealed-

Particulars	(₹)
(i) Depreciation charged in Financial Accounts	8,45,000
(ii) Factory Overheads under-absorbed in Cost Accounts	7,41,000
(iii) Depreciation charged in Cost Accounts	7,15,000
(iv) Interest on investments not included in Cost Accounts	3,12,000
(v) Administration Overheads over-absorbed in cost accounts	1,56,000
(vi) Income-tax provided	1,40,400
(vii) Dividend received	83,200
(viii) Stores adjustment (credit in financial books)	36,400

PREPARE a memorandum Reconciliation Account. **(4 Marks)**

4. (a) ChispyChip Ltd. manufactures 3 types of packed chips namely Crunchy Potato, Crispy Corn and Crumbly Banana and offers to sell them at wholesale price to the retailers. The following data is available for the current year:

	Crunchy Potato (₹)	Crispy corn (₹)	Crumbly Banana (₹)
Revenues	1,53,35,250	1,63,36,900	1,55,23,850
Cost of goods sold	1,12,70,000	1,27,37,400	1,18,45,000

The information regarding cost pool activities and their cost driver is also provided below:

Cost Pool Activity	Total Cost (₹)	Cost Driver
Placing of orders	17,94,000	No. of purchase orders
Physical delivery of goods	28,98,000	No. of deliveries
Stocking of goods on store shelves	19,87,200	Hours of shelf-stocking time
Supervising cost	13,80,000	Direct labour hours
Quality Inspections	9,03,900	No. of Inspections

Further, bifurcation of cost driver of the individual type of Chips is as follows:

Particulars	Crunchy Potato	Crispy corn	Crumbly Banana
Number of purchase orders placed	1,127	1,242	1,219
Number of deliveries made	2,185	2,668	2,392
Hours of shelf-stocking time	6,072	7,130	6,670
Direct Labour hours	19,159	19,435	18,906
Number of Inspections done	759	782	736

Due to banana being ripening in nature, it takes double the time during inspection than the other type of Chips.

You are required to CALCULATE the operating income and its percentage of the revenue for each product line:

- if the company allocates all the support cost to product lines on the basis of cost of goods sold.
- if the company allocates all the support cost to product lines using an activity-based costing system. **(6 Marks)**

- (b) A company manufactures two products, X and Y, which are sold to retailers. These products are part of the company's core offerings and are crucial to meeting the demands of its retail partners. The company is anticipating a specific sales volume for each product in the upcoming quarter, which is expected to play a significant role in production planning, inventory management, and overall financial forecasting.

The budgeted sales volumes for the next quarter are as follows:

Product	Units
X	64,000
Y	1,12,000

The finished goods inventory is projected to rise by 2,000 units of Product X and fall by 4,000 units of Product Y by the end of the quarter.

Raw materials A and B are essential for the production of both products. The quantities needed of each raw material to produce one unit of the finished product, along with their purchase prices, are outlined in the table below:

	Raw Material A	Raw Material B
Product X	24 kg	12 kg
Product Y	12 kg	9 kg
Purchase price per kg	₹ 18.75	₹ 27.00
Budgeted opening inventory	1,80,000 kg	1,20,000 kg

The company intends to maintain a raw material inventory at the end of the quarter equivalent to 5% of the quarter's total raw material usage budget.

Additional information is provided relating to production of the products, X and Y:

- Product X requires 16 minutes of direct labour, while Product Y requires 20 minutes of direct labour. Labour cost is ₹ 540 for 1 day of 9 hours.
- Variable manufacturing overhead of ₹ 8 per unit is same for both the products.
- Variable selling and administration expenses are 10% of sales.

You are required to:

- PREPARE Production budget for the quarter(in units)
- PREPARE Raw material usage budget for the quarter (in kg)

- (iii) PREPARE Raw material purchase budget for the quarter(in kg and ₹)
- (iv) COMPUTE the budgeted variable cost to produce one unit of Product Y.

(2 + 2 + 2 + 2 = 8 Marks)

5. (a) RN Ltd. is a manufacturing company producing single product. The following information is available relating to current financial year:

Activity Level	100%
Sales and production (units)	4,400
	(₹)
Sales	88,00,000
Production costs:	
- Variable	35,20,000
- Fixed	8,80,000
Selling and distribution costs:	
- Variable	17,60,000
- Fixed	13,20,000

Fixed costs are incurred evenly throughout the year, and actual fixed costs are the same as budgeted. Thus, at 50% activity level, fixed production cost and fixed selling and distribution costs remains the same and other data/figures which are variable changes proportionately.

The normal level of activity for the year is 4,400 units.

There were no stock at the beginning of the year.

In the first quarter, 1,210 units were produced and 880 units were sold.

You are required to COMPUTE the profit for the quarter using-

- (i) Absorption costing

- (ii) Marginal costing.

(3 + 3 = 6 Marks)

- (b) Arnav Ltd. has three production departments M, N and O and two service departments P and Q. The following particulars are available for the month of September, 2024:

	(₹)
Lease rental	35,000

Power & Fuel	4,20,000
Wages to factory supervisor	6,400
Electricity	5,600
Depreciation on machinery	16,100
Depreciation on building	18,000
Payroll expenses	21,000
Canteen expenses	28,000
ESI and Provident Fund Contribution	58,000

Followings are the further details available:

Particulars	M	N	O	P	Q
Floor space (square meter)	1,200	1,000	1,600	400	800
Light points (nos.)	42	52	32	18	16
Cost of machines (₹)	12,00,000	10,00,000	14,00,000	4,00,000	6,00,000
No. of employees (nos.)	48	52	45	15	25
Direct Wages (₹)	1,72,800	1,66,400	1,53,000	36,000	53,000
HP of Machines	150	180	120	-	-
Working hours (hours)	1,240	1,600	1,200	1,440	1,440

The expenses of service department are to be allocated in the following manner:

	M	N	O	P	Q
P	30%	35%	25%	-	10%
Q	40%	25%	20%	15%	-

You are required to CALCULATE the overhead absorption rate per hour in respect of the three production departments. **(8 Marks)**

6. (a) Standard costs, marginal costs are some of the types of cost which helps the management in decision making. DISCUSS any five types of costs categorised based on its use in Managerial Decision Making. **(5 Marks)**

- (b) Provide EXAMPLE(S) of the cost driver for the following cost pools:

Cost Pool
Quality Control
Research and Development
Machine Maintenance
Employee Training Costs
Customer Service

(5 Marks)

- (c) Besides having advantages of Budgetary Control System being a powerful instrument used by business entity for the control of their expenditure, it has certain limitations as well. ELABORATE any four limitations of Budgetary Control System.

(4 Marks)

OR

- (d) Cost control emphasis is on past and present, while cost reduction emphasis is on present and future. DISCUSS some more differences between Cost control and Cost reduction.

(4 Marks)

Mock Test Paper - Series I: March 2025

Date of Paper: 15th March 2025

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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

$$\begin{aligned}\text{Variable cost per bag} &= ₹ 1,03,00,000 / 1,80,000 \\ &= ₹ 57.22\end{aligned}$$

$$\text{Contribution per bag} = ₹ 100 - ₹ 57.22 = ₹ 42.78$$

Break-even point (in number of bags)

$$= \text{Fixed cost} / \text{Contribution per bag}$$

$$= ₹33,00,000/₹42.78$$

$$= 77,139 \text{ bags}$$

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

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

$$= 5,478 \text{ bags}$$

$$\text{No. of optimum runs} = 1,80,000/5,478$$

$$= 32.86 \text{ or } 33 \text{ runs}$$

5. (a) 11 days

$$\text{Interval between 2 runs (in days)} = 365 \text{ days}/33 = 11 \text{ days}$$

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

Working Note

$$\text{Total actual weeks} = 23,040$$

$$\text{Ratio of actual workers} = 7:3:8$$

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

$$(7/18 \times X \times 64) + (3/18 \times X \times 64) + (8/18 \times X \times 64) = 23,040$$

$$X = 360$$

	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	<u>7,200</u>	60	<u>4,32,000</u>	<u>10,240</u>	40	<u>4,09,600</u>
total	<u>21,600</u>		<u>19,44,000</u>	<u>23,040</u>		<u>20,48,000</u>

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)	<u>2,04,800 (F)</u>
		<u>51,200 (A)</u>

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)	<u>1,82,400(A)</u>
		<u>52,800(A)</u>

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)	<u>28,800(A)</u>
		<u>1,29,600(A)</u>

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)	<u>1,53,600(A)</u>
		<u>76,800(F)</u>

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	$21,600 \times 5/12 = 9,000$	$9,000/60 \text{ weeks} = 150$
Semi-skilled	$21,600 \times 3/12 = 5,400$	$5,400/60 \text{ weeks} = 90$
unskilled	$21,600 \times 4/12 = 7,200$	$7,200/60 \text{ weeks} = 120$

	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) = $10,000 \times 500 = 50,00,000$

Total Cost (Domestic) = Fixed Cost + Variable Cost

$$= (10,000 \times 150) + (10,000 \times 300) = 15,00,000 + 30,00,000 = 45,00,000$$

$$\text{Profit (Domestic)} = \text{Total Revenue} - \text{Total Cost} = 50,00,000 - 45,00,000 = 5,00,000$$

$$\text{Contribution per Unit (Export)} = \text{Export Price} - \text{Variable Cost} = 400 - 300 = 100$$

$$\text{Total Contribution from Export} = 100 \times 5,000 = 5,00,000$$

12. (c) **2,79,000**

$$\text{Tonne-Km for Outward Journey} = 4 \text{ tonnes} \times 300 \text{ km} = 1,200 \text{ tonne-km}$$

$$\text{Tonne-Km for Inward Journey} = 2 \text{ tonnes} \times 300 \text{ km} = 600 \text{ tonne-km}$$

$$\text{Total Tonne-Km per Round Trip} = 1,200 + 600 = 1,800 \text{ tonne-km}$$

$$\text{Total Tonne-Km in a year} = 1,800 \times 155 = 2,79,000 \text{ tonne-km}$$

13. (a) **4,396 kg.**

$$\text{Annual consumption of raw material (A)} = (275 \text{ kg.} \times 52 \text{ weeks}) = 14,300 \text{ kg.}$$

$$\text{Cost of placing an order (O)} = ₹ 100$$

$$\text{Carrying cost per kg. Per annum (c \times i)} = ₹ 10 \times 20\% = ₹ 2$$

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

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

$$= 1,196 \text{ Kg. (Approx)}$$

$$\text{Reorder level (ROL)} = \text{Maximum usage} \times \text{Maximum re-order period}$$

$$= 450 \text{ kg.} \times 8 \text{ weeks} = 3,600 \text{ kg.}$$

$$\text{Maximum level} = \text{ROL} + \text{ROQ} - (\text{Min. usage} \times \text{Min. re-order period})$$

$$= 3,600 \text{ kg.} + 1,196 \text{ kg.} - (100 \text{ kg.} \times 4 \text{ weeks})$$

$$= 4,396 \text{ kg.}$$

14. (b) **₹ 1,49,000**

$$\text{Total Cost} = \text{Sales Revenue} - \text{Profit}$$

For A:

$$\text{Total Cost of A} = 80,000 - 20,000 = 60,000$$

For B:

$$\text{Total Cost of B} = 50,000 - 15,000 = 35,000$$

For A:

$$\begin{aligned}\text{Joint Cost Allocated to A} &= 60,000 - (\text{Manufacturing Expenses} + \text{Selling Expenses}) \\ &= 60,000 - (10,000 + 16,000) = 34,000\end{aligned}$$

For B:

$$\begin{aligned}\text{Joint Cost Allocated to B} &= 35,000 - (\text{Manufacturing Expenses} + \text{Selling Expenses}) \\ &= 35,000 - (8,000 + 10,000) = 17,000\end{aligned}$$

$$\begin{aligned}\text{Cost of Product Y} &= \text{Total Joint Cost} - \text{Joint Cost Allocated to A and B} \\ &= 2,00,000 - 51,000 = 1,49,000\end{aligned}$$

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 = $10,000 \times 16.25 = ₹ 1,62,500$.

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)

$$= 8,000 \text{ kg.} - (200 \text{ units} \times 10 \text{ kg.} \times 2 \text{ weeks}) = 4,000 \text{ kg.}$$

(ii) Maximum stock of B

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

$$= 4,750 \text{ kg.} - (175 \text{ units} \times 4 \text{ kg.} \times 3 \text{ weeks}) + 5,000 \text{ kg.}$$

$$= 9,750 - 2,100 = 7,650 \text{ kg.}$$

(iii) Re-order level of C

Maximum re-order period × Maximum Usage

$$= 4 \text{ weeks} \times (225 \text{ units} \times 6 \text{ kg.}) = 5,400 \text{ kg.}$$

OR

$$= \text{Minimum stock of C} + (\text{Average consumption} \times \text{Average delivery time})$$

$$= 2,000 \text{ kg.} + [(200 \text{ units} \times 6 \text{ kg.}) \times 3 \text{ weeks}] = 5,600 \text{ kg.}$$

(iv) Average stock level of A

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

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

OR

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

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

Working note

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

$$= 8,000 \text{ kg.} + 10,000 \text{ kg.} - [(175 \text{ units} \times 10 \text{ kg.}) \times 1 \text{ week}] = 16,250 \text{ kg.}$$

(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		8,800.00
$\left(4,000 * \text{kms} \times \frac{1}{100} \text{ kms.} \times \text{Rs. } 220 \right)$		
Total Cost (without commission)		21,408.33

[* 20 km. $\times$ 2 $\times$ 4 round trips $\times$ 25 days = 4,000 km.]

Let X be the total takings per month

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

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

$$\text{Total takings per month} = \text{Total cost} + \text{Driver's Commission} + \text{Profit}$$

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

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

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

$$\text{or } \frac{15X}{20} = ₹ 21,408.33$$

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

$$X = ₹ 28,544.44$$

Total number of round trips per month: 25 days $\times$ 4 round trips per day = 100 trips

$$\begin{aligned} \text{Hence the charge per round trip} &= \frac{₹ 28,544.44}{100} \\ &= ₹ 285.44 \end{aligned}$$

(c) Workings

$$\begin{aligned} \text{Basic wage rate} &= ₹ (100 + ₹ 50 \text{ for DA}) \text{ per hour} \\ &= ₹ 150 \text{ per hour} \end{aligned}$$

$$\begin{aligned} \text{Overtime wage rate before and after working hours} &= ₹ 150 + 75\% \text{ of } ₹ 150 \\ &= ₹ 262.50 \text{ per hour} \end{aligned}$$

$$\begin{aligned} \text{Overtime wage rate for Sundays} &= ₹ 150 + 125\% \text{ of } ₹ 150 \\ &= ₹ 337.50 \text{ per hour} \end{aligned}$$

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

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

(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'

$$= 3 \times 75,000 \text{ units}$$

$$= 2,25,000 \text{ units}$$

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

$$\text{Direct material cost per unit of 'USB Lightning Cable'} = 2M$$

$$\text{Total Direct Material cost} = 2M \times 75,000 \text{ units} + M \times 2,25,000 \text{ units}$$

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

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

$$= ₹ 55$$

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

$$= 2 \times ₹ 55 = ₹ 110$$

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

$$\text{Direct wages per unit for 'USB Type C Cable'} = W$$

$$\begin{aligned} \text{Direct wages per unit for 'USB Lightning Cable'} &= \frac{5}{3} W \\ \text{So, } \left(\frac{5}{3} W \times 75,000\right) + (W \times 2,25,000) &= ₹ 1,15,50,000 \\ \text{Or, } W (3,75,000 + 6,75,000) &= ₹ 3,46,50,000 \\ \text{Or, } W &= ₹ 33 \text{ per unit} \\ \text{Therefore, Direct material Cost per unit of 'USB Lightning Cable' -} \\ &= \frac{5}{3} \times ₹ 33 = ₹ 55 \text{ per unit} \end{aligned}$$

$$\begin{aligned} \text{(iv) Production overhead per unit} &= \frac{₹ 66,00,000}{(75,000+2,25,000)} = ₹ 22 \\ \text{(v) Administration overhead per unit} &= \frac{₹ 33,00,000}{(75,000+2,25,000)} = ₹ 11 \\ \text{(vi) Selling cost per unit} &= \frac{₹ 59,40,000}{90\% \text{ of } (75,000+2,25,000)} = ₹ 22 \end{aligned}$$

(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,

$$\text{Net Realisable Value} = \text{Sale value of joint products (at finished stage)}$$

- (-) 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:

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

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

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:

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

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

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 I- 34,500 @ 650	11,36,25,000
Process II- 7,59,88,778		Process II- 96,000 @ 950	
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):**

$$\begin{aligned} &= \frac{\text{Totalsupportcost}}{\text{Totalcostofgoodssold}} \times 100 \\ &= \left(\frac{\text{₹ } 89,63,100}{\text{₹ } 3,58,52,400} \times 100 \right) \\ &= 25\% \end{aligned}$$

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 $\left(\frac{₹ 540}{9 \text{ hours} \times 60 \text{ minutes}} \right) \times 20 \text{ minutes}$	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 [$\left(\frac{₹ 12,10,000}{1,210 \text{ units}}\right) \times 330 \text{ units}$]		(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 (1/4 th 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 [$\left(\frac{₹ 9,68,000}{1,210 \text{ units}}\right) \times 330 \text{ units}$]		(2,64,000)
Variable cost of goods sold		7,04,000
Add: Selling & Distribution Overheads:		

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

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

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

$$0.985 P = 17,293.65$$

$$\therefore P = ₹ 17,557$$

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

$$= ₹ 24,806.70 \text{ or } ₹ 24,807$$

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.