



PAPER – 4: COST AND MANAGEMENT ACCOUNTING



QUESTIONS

PART I - Case Scenario based MCQs

Case Scenarios

1. Apex Mobility Systems Ltd. manufactures smart airport luggage carts used in major international airports. The company operates a centralized factory with two production departments—Fabrication and Assembly, and two service departments—Stores and Maintenance.

Due to rising operational costs and increased competition, management has decided to analyze overhead allocation and costing accuracy for better pricing and profitability decisions.

For the financial year ending 31st March 2026, the following budgeted data is available:

Allocated Overhead Costs (₹)

Department	Amount (₹)
Fabrication	18,20,000
Assembly	9,60,000
Stores	3,00,000
Maintenance	2,40,000

Other Overheads (₹)

Particulars	Amount (₹)
Factory Rent	18,00,000
Building Insurance	2,00,000
Plant Insurance	2,40,000
Depreciation on Machinery	3,20,000
Canteen Subsidy	5,00,000

Direct Costs (₹)

Department	Material (₹)	Labour (₹)	Total (₹)
Fabrication	75,00,000	10,00,000	85,00,000
Assembly	2,00,000	15,00,000	17,00,000

Additional Information

Basis	Fabrication	Assembly	Stores	Maintenance
Floor area (sq. m.)	30,000	12,000	3,000	5,000
Plant value (₹)	20,00,000	10,00,000	1,00,000	2,00,000
Store requisitions	4,000	2,000	—	—
Maintenance hours	3,000	2,500	500	—
No. of employees	150	100	40	20
Machine hours	35,00,000	80,000	—	—
Labour hours	80,000	30,00,000	—	—

The company also received a **special job order (Job No. AMS-101)** with the following details:

- Direct Material = ₹ 1,50,000
- Direct Labour:
 - Fabrication: 300 hours @ ₹ 20/hr
 - Assembly: 200 hours @ ₹ 20/hr

- Machine hours:
 - Fabrication: 250 hours
 - Assembly: 180 hours

You are required to answer the following questions:

- (i) Total overhead allocated from Stores Department to production Department is:
 - (A) ₹ 2,53,099
 - (B) ₹ 5,43,669
 - (C) ₹ 5,06,197
 - (D) ₹ 5,01,486
- (ii) Total overhead allocated from Maintenance Department to other Department is:
 - (A) ₹ 5,43,669
 - (B) ₹ 5,01,486
 - (C) ₹ 5,06,197
 - (D) ₹ 42,186
- (iii) Most appropriate overhead recovery rate for Fabrication Department is:
 - (A) ₹ 1.21 per machine hour
 - (B) ₹ 12 per machine hour
 - (C) ₹ 20 per machine hour
 - (D) ₹ 4.56 per machine hour
- (iv) Most appropriate overhead recovery rate for Assembly Department is:
 - (A) ₹ 18 per labour hour
 - (B) ₹ 2.50 per labour hour
 - (C) ₹ 20 per labour hour
 - (D) ₹ 0.71 per labour hour

(v) Full production cost of Job No. AMS-101 is:

- (A) ₹ 2,20,000
- (B) ₹ 2,50,099
- (C) ₹ 1,60,445
- (D) ₹ 3,62,525

2. NutritionCrunch Pvt. Ltd. is a fast-growing company in the health food industry, specializing in the production of nutritious snack bars. The company manufactures three popular variants—Alpha, Beta, and Gamma—in a fully automated production facility.

Due to increasing competition and pressure on margins, management has become concerned that the existing conventional costing system, which allocates overheads simply based on units sold, may not be accurately reflecting the true cost and profitability of each product.

To improve cost accuracy, the company is considering the adoption of an Activity-Based Costing (ABC) system, which allocates overheads based on actual resource consumption such as inspection hours, machine usage, and special activities like packaging and advertising.

The following data has been compiled for analysis for one month:

Overheads (Per Month)

- Inspection Cost = ₹ 84,000
- Machine Repairs & Maintenance = ₹ 1,56,000
- Mold (Dye) Cost = ₹ 14,500
- Total Selling Overheads = ₹ 1,80,000

Product Data

Particulars	Alpha	Beta	Gamma
Prime Cost per unit (₹)	14	10	9
Selling Price per unit (₹)	22	16	13
Units per Production Run	2,440	3,020	3,220
Defective Units per Run	40	20	20

Inspection Hours per Run	2	5	3
Mold Cost per Run (₹)	300	400	350
Machine Hours per Run	25	15	35
Units Sold per Month	24,000	60,000	32,000

The following Additional Information is provided:

1. The company follows a just-in-time approach, meaning all non-defective units produced are sold during the same month. There is no opening or closing inventory.
2. Under the current system, all production and selling overheads are allocated purely based on the number of units sold, without considering the actual consumption of resources by each product.
3. Out of total selling overheads, ₹ 90,000 relates to advertising expenses, which are incurred only for Beta and Gamma, as these products face stiff competition in the market.
4. Alpha does not require advertising due to its established demand.
5. Product Beta requires special packaging to maintain its competitive position.
6. A cost of ₹ 60,000 per month is incurred exclusively for this purpose and is included in the total selling overheads.

As a production cum finance manager of the company, you are required to answer the following questions:

- (i) What is the total combined gross margin of all the products?
 - (A) ₹ 6,12,000
 - (B) ₹ 6,48,500
 - (C) ₹ 6,30,000
 - (D) ₹ 6,68,600
- (ii) What is the total prime cost excluding cost of defective for all the products?
 - (A) ₹ 19,18,000

- (B) ₹ 12,16,000
 (C) ₹ 12,24,000
 (D) ₹ 10,10,000
- (iii) Ranking of Products under Conventional System is:
 (A) Beta – I, Alpha – II, Gamma – III
 (B) Alpha – I, Beta – II, Gamma – III
 (C) Beta – I, Gamma – II, Alpha – III
 (D) Gamma – I, Beta – II, Alpha – III
- (iv) What is the total net profit for all the products:
 (A) ₹ 2,34,100
 (B) ₹ 2,28,000
 (C) ₹ 2,04,000
 (D) ₹ 1,98,000
- (v) Ranking of Products under ABC System is:
 (A) Alpha – I, Beta – II, Gamma – III
 (B) Beta – I, Alpha – II, Gamma – III
 (C) Alpha – I, Gamma – II, Beta – III
 (D) Gamma – I, Beta – II, Alpha – III
3. Kanika Ltd. has furnished the following information pertaining to its process account for the month of March 2026:

Value of opening work-in-process	₹ 10,020
Cost incurred during the month	₹ 1,14,180
Finished goods units	1665
Closing work-in-process	150

Closing work-in-process is completed to the extent of 40%. Costs are incurred evenly throughout the month. The Company uses weighted average method for flow of costs.

What is the value of finished goods for the month of March 2026?

- (A) ₹ 1,19,880
 - (B) ₹ 1,25,000
 - (C) ₹ 1,24,200
 - (D) ₹ 98,500
4. The current selling price is ₹ 136 per unit. Variable costs are expected to increase from ₹ 76 to ₹ 82 per unit. Fixed costs of ₹ 5,32,000 will not change. How many additional units are required to be sold in the order to maintain an operating income of ₹ 3,45,500?
- (A) 1,500 units
 - (B) 1,462 units
 - (C) 1,625 units
 - (D) 1,250 units

PART - II Descriptive Questions

Material Cost

5. M/s Esha Materials Private Limited produces a product which names "ESS". The consumption of raw material for the production of "ESS" is 210 Kgs to 350 Kgs per week. Other information is as follows:

Procurement Time: 5 to 9 Days

Purchase price of Raw Materials: ₹ 100 per kg

Ordering Cost per Order: ₹ 200

Storage Cost: 1% per month plus ₹ 2 per unit per annum

Consider 365 days a year.

You are required to CALCULATE:

- (a) Economic Order Quantity

- (b) Re-Order Level (ROL)
- (c) Maximum Stock Level
- (d) Minimum Stock Level
- (e) Average Stock Level
- (f) Number of Orders to be placed per year
- (g) Total Inventory Cost
- (h) If the supplier is willing to offer 1% discount on purchase of total annual quantity in two orders, whether offer is acceptable?
- (i) If the answer is no, what should be the counteroffer w.r.t. percentage of discount?

Employee Cost and Direct Expenses

6. The existing incentive system of Alpha Limited is as under:

Normal working week	5 days of 8 hours each plus 3 late shifts of 3 hours each
Rate of Payment	Day work: ₹ 160 per hour Late shift: ₹ 225 per hour
Average output per operator for 49-hours week i.e. including 3 late shifts	240 articles

In order to increase output and eliminate overtime, it is decided to switch on to a system of payment by results. The following information is obtained:

Time-rate (as usual)	:	₹ 160 per hour
Basic time allowed for 15 articles	:	2.5 hours
Piece-work rate	:	Add: 20% to basic piece-rate
Premium Bonus	:	Add: 50% to time.

If during the last week 270 articles are produced in a 40-hour week.

Required:

- (i) CALCULATE weekly earnings, number of articles produced and labour cost per article for one operator under the following systems:
 - (a) Existing time-rate
 - (b) Straight piece-work
 - (c) Rowan system
 - (d) Halsey premium system
 - (ii) PREPARE a Statement showing hours worked, weekly earnings, number of articles produced and labour cost per article for one operator under the above systems.
7. The following expenditures were incurred in Aditya Ltd. For the month of March 20X8:

		Amount (₹)
(i)	Paid for power & fuel	4,80,200
(ii)	Wages paid to factory workers	8,44,000
(iii)	Bill paid to job workers	9,66,000
(iv)	Royalty paid for production	8,400
(v)	Fee paid to technician hired for the job	96,000
(vi)	Administrative overheads	76,000
(vii)	Commission paid to sales staffs	1,26,000

You are required to CALCULATE direct expenses for the month.

Cost Sheet

8. The following details are available from the books of Nova Manufacturing Ltd. for the year ending 31st March 2026:

Nova Manufacturing Ltd. produces high-precision metal components for industrial machinery. During the year, the company invested in new automation facilities, expanded factory supervision, and adopted new inventory control systems. The following data has been extracted from the cost accounting records:

Particulars	Amount (₹)
Purchase of raw materials	1,02,50,000
Consumable materials	6,20,000
Direct wages	72,40,000
Carriage inward	2,10,000
Wages to foreman and storekeeper	10,20,000
Other indirect wages to factory staff	1,95,000
Expenditure on research & development for new automation systems	12,80,000
Salary to accountants	8,40,000
Employer's contribution to EPF & ESI	9,00,000
Cost of power & fuel	33,20,000
Production planning office expenses	15,50,000
Salary to delivery staff	18,20,000
Income tax for the assessment year 2025–26	3,60,000
Fees to statutory auditor	2,20,000
Fees to cost auditor	1,10,000
Fees to independent directors	11,80,000
Factory maintenance & repairs	7,30,000
Depreciation on plant & machinery	9,20,000
Quality control department expenses	5,40,000
Office rent	11,50,000
Insurance on finished goods warehouse	3,40,000
Packing materials	4,80,000
Donation to State Disaster Relief Fund	1,50,000
Value of sales	3,48,90,000

Opening Inventories (as on 01-04-2025):

- Raw Materials: ₹ 8,10,000

- Work-in-Progress: ₹ 9,25,000
- Finished Goods: ₹ 16,90,000

Closing Inventories (as on 31-03-2026):

- Raw Materials: ₹ 5,90,000
- Work-in-Progress: ₹ 7,80,000
- Finished Goods: ₹ 12,40,000

During the year, 2,000 defective units were produced due to machine malfunction.

The abnormal loss (not includible in cost) amounted to ₹ 4,60,000 and the scrap value realized was ₹ 40,000.

From the above information, PREPARE a COST SHEET for the year ended 31st March 2026.

Cost Accounting Systems

9. The financial books of a company reveal the following data for the year ended 31st March, 2026:

	(₹)
Opening Stock:	
Finished goods 875 units	76,525
Work-in-process	33,000
01.04.2025 to 31.3.2026	
Raw materials consumed	7,84,000
Direct Labour	4,65,000
Factory overheads	2,65,000
Goodwill written off	95,000
Administration overheads	3,15,000
Interest paid	72,000
Bad Debts	21,000
Selling and Distribution Overheads	65,000

Interest received	18,500
Rent received	72,000
Sales 14,500 units	20,80,000
Closing Stock: Finished goods 375 units	43,250
Work-in-process	48,200

The cost records provide as under:

Factory overheads are absorbed at 60% of direct wages.

Administration overheads are recovered at 20% of factory cost.

Selling and distribution overheads are charged at ₹ 5 per unit sold.

Opening Stock of finished goods is valued at ₹ 105 per unit.

The company values work-in-process at factory cost for both Financial and Cost Profit Reporting.

Required:

- (i) Prepare statements for the year ended 31st March, 2026, show
 - the profit as per financial records
 - the profit as per costing records.
- (ii) Present a statement reconciling the profit as per costing records with the profit as per Financial Records.

Job & Batch Costing

10. Pintu Ltd. operates in beverages industry where it manufactures soft-drink in three sizes of Large (3 litres), Medium (1.5 litres) and Small (600 ml) bottles. The products are processed in batches. The 5,000 litres capacity processing plant consumes electricity of 90 Kilowatts per hour and a batch takes 1 hour 45 minutes to complete. Only symmetric size of products can be processed at a time. The machine set-up takes 15 minutes to get ready for next batch processing. During the set-up power consumption is only 20%.
 - (i) The current price of Large, Medium and Small are ₹ 150, ₹ 90 and ₹ 50 respectively.

- (ii) To produce a litre of beverage, 14 litres of raw material-W and 25 ml of Material-C are required which costs ₹ 0.50 and ₹ 1,000 per litre respectively.
- (iii) 20 direct workers are required. The workers are paid ₹ 880 for 8 hours shift of work.
- (iv) The average packing cost per bottle is ₹ 3
- (v) Power cost is ₹ 7 per Kilowatt -hour (Kwh)
- (vi) Other variable cost is ₹ 30,000 per batch.
- (vii) Fixed cost (Administration and marketing) is ₹ 4,90,00,000.
- (viii) The holding cost is ₹ 1 per bottle per annum.

The marketing team has surveyed the following demand (bottle) of the product:

Large	Medium	Small
3,00,000	7,50,000	20,00,000

You are required to CALCULATE profit/ loss per batch and also COMPUTE Economic Batch Quantity (EBQ).

Process Costing

11. A company produces a component, which passes through two processes. During the month of November, 2025, materials for 40,000 components were put into Process- I of which 30,000 were completed and transferred to Process- II. Those not transferred to Process- II were 100% complete as to materials cost and 50% complete as to labour and overheads cost. The Process- I costs incurred were as follows:

Direct Materials	₹ 3,00,000
Direct Wages	₹ 3,50,000
Factory Overheads	₹ 2,45,000

Of those transferred to Process II, 28,000 units were completed and transferred to finished goods stores. There was a normal loss with no salvage value of 200 units in Process II. There were 1,800 units, remained

unfinished in the process with 100% complete as to materials and 25% complete as regard to wages and overheads.

Costs incurred in Process-II are as follows:

Packing Materials	₹ 80,000
Direct Wages	₹ 71,125
Factory Overheads	₹ 85,350

Packing material cost is incurred at the end of the second process as protective packing to the completed units of production.

Required:

- (i) PREPARE Statement of Equivalent Production, Cost per unit and Process I A/c.
- (ii) PREPARE statement of Equivalent Production, Cost per unit and Process II A/c.

Joint Product and By-Product

12. A manufacturing unit producing Product X also generates a by-product Y, which undergoes additional processing to obtain the finished product. The details of the joint manufacturing costs are provided below:

Material	₹ 5,000
Labour	₹ 3,000
Overhead	₹ 2,000
	<u>₹ 10,000</u>

Subsequent cost in ₹ are given below:

	X	Y
Material	3,000	1,500
Labour	1,400	1,000
Overhead	600	500
	<u>5,000</u>	<u>3,000</u>

Selling prices are

X	₹ 16,000
Y	₹ 8,000

Estimated profit on selling prices is 25% for X and 20% for Y.

On the assumption that selling and distribution expenses are incurred in proportion to the respective sales values, distribute the joint manufacturing costs and prepare a statement indicating the cost of production of X and Y.

Service Costing

13. Royal Transport Services runs fleet of buses within the limits of Jaipur city. The following are the details which were incurred by the company during October, 2025:

	(₹)
Cost of each Bus	24,00,000
Garage Rent	1,00,000
Insurance	25,000
Road tax	20,000
Manager's Salary	60,000
Assistant's Salary (Two)	32,000 each
Supervisor's Salary (Three)	24,000 each
Driver's Salary (Twenty-Five)	20,000 each
Cleaner's Salary (Twenty)	5,000 each
Office Staff's Salary	1,00,000
Consumables	1,20,000
Repairs & Maintenance	90,000
Other Fixed Expenses	72,000
Diesel (10 Kms per Litre)	80 per litre
Oils & Lubricants	1,45,000
Tyres and tubes	35,000
Depreciation	10% p.a. on Cost

Other details are as below:

Capacity

12 Buses 60 Passengers

13 Buses 50 Passengers

Each bus makes 4 round trips a day covering a distance of 10 Kilometers in each trip (One Way) on an average. During the trips 80% of the seats are occupied. The annual records show that 5 buses are generally required to be kept away from roads each day for repairs.

You are required to CALCULATE cost per passenger-km.

Cost sheet to be prepared on the basis of 25 buses.

Standard Costing and Budget & Budgetary Control

14. ABC Manufacturing Ltd. is a medium-sized manufacturing company engaged in the production of a single industrial component used in engineering applications. In recent months, the company has experienced fluctuations in demand due to changing market conditions and increased competition.

In order to ensure better cost control, efficient utilization of resources, and improved planning, the management has decided to implement a detailed budgeting and standard costing system for the financial year 2025. The Cost Accountant of the company has been entrusted with the responsibility of preparing budgets and analyzing variances for performance evaluation.

You are provided with the following data relating to the first six months of the year 2025:

Sales Budget (Units)

Month	January	February	March	April	May	June
Units	12,000	13,500	15,000	16,500	17,000	18,500

The company follows a policy of maintaining finished goods inventory at the end of each month equal to 25% of the budgeted sales for the following month. The opening finished goods inventory as on

1st January 2025 was 3,000 units. There is no work-in-progress inventory at any point of time.

Each unit of finished product requires two types of materials as detailed below:

Material	Quantity per Unit	Rate per kg
Material A	5 kg	₹ 12
Material B	4 kg	₹ 18

The stock of raw materials on 1st January 2025 was:

- Material A: 25,000 kg
- Material B: 18,000 kg

The company maintains closing stock of raw materials at the end of each month equal to 60% of the next month's production requirement to avoid stock-outs and ensure uninterrupted production.

Direct Labour

Each unit of finished product requires 0.8 direct labour hours.

Based on past experience and wage agreements, the total budgeted direct labour cost for the first quarter of the year has been estimated at ₹ 15,36,000.

Actual data for the quarter one, ended on March 31, 2025 is as under:

Despite careful planning, actual results differed from estimates due to operational inefficiencies and changes in input prices.

Actual production: 42,000 units

Actual Material Consumption

Material	Quantity (kg)	Rate per kg
Material A	2,10,000	₹12.50
Material B	1,65,000	₹18.40

Actual Labour Data

- Actual hours worked: 35,000 hours
- Actual labour cost: ₹ 17,85,000

Required:

- (A) Prepare the following budgets:
1. Monthly production budget for the quarter January to March, 2025.
 2. Monthly raw material consumption quantity budget for January to April, 2025.
 3. Materials purchase quantity budget for the first quarter of the year 2025.
- (B) Calculate the following variances for the quarter ended 31st March, 2025:
1. Material Cost Variance
 2. Material Price Variance
 3. Material Usage Variance
 4. Labour Cost Variance
 5. Labour Rate Variance
 6. Labour Efficiency Variance

Marginal Costing

15. XYZ Limited manufactures three different products and the following information has been collected from the books of accounts:

	Products		
	A	B	C
Sales Mix	35%	35%	30%
Selling Price	₹ 30	₹ 40	₹ 20
Variable Cost	₹ 15	₹ 20	₹ 12
Total Fixed Costs			₹ 1,80,000
Total Sales			₹ 6,00,000

The company has currently under discussion, a proposal to discontinue the manufacture of Product C and replace it with Product P, when the following results are anticipated:

	Products		
	A	B	C
Sales Mix	50%	25%	25%
Selling Price	₹ 30	₹ 40	₹ 30
Variable Cost	₹ 15	₹ 20	₹ 15
Total Fixed Costs			₹ 1,80,000
Total Sales			₹ 6,40,000

Will you advise the company to change over to production of P? Give reasons for your answer.

Miscellaneous

16. (a) You have been asked to install a costing system in a manufacturing company. What practical difficulties will you expect and how will you propose to overcome the same?
- (b) State the types of cost in the following cases:
- Interest paid on own capital not involving any cash outflow.
 - Withdrawing money from bank deposit for the purpose of purchasing new machine for expansion purpose.
 - Rent paid for the factory building which is temporarily closed
 - Cost associated with the acquisition and conversion of material into finished product.
- (c) Describe the steps involved in the budgetary control technique.
- (d) 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



SUGGESTED ANSWERS

1. Working Note:

Table of Primary Distribution of Overheads and Direct Costs

Particulars	Basis of Apportionment	Total Amount	Production Department		Service Departments	
			Fabrication	Assembly	Stores	Maintenance
Overheads Allocated	Allocation	33,20,000	18,20,000	9,60,000	3,00,000	2,40,000
Direct Costs	Actual	1,02,00,000	85,00,000	17,00,000	---	---
Total			1,03,20,000	26,60,000	3,00,000	2,40,000

Other Overheads

Particulars	Basis	Total (₹)	Fabrication	Assembly	Stores	Maintenance
Factory Rent	Floor Area (30:12:3:5)	18,00,000	10,80,000	4,32,000	1,08,000	1,80,000
Building Insurance	Floor Area	2,00,000	1,20,000	48,000	12,000	20,000
Plant Insurance	Plant Value (20:10:1:2)	2,40,000	1,45,455	72,727	7,273	14,545
Depreciation	Plant Value	3,20,000	1,93,939	96,970	9,697	19,394
Canteen Subsidy	Employees (150:100:40:20)	5,00,000	2,41,935	1,61,290	64,516	32,258
Total		30,60,000	17,81,329	8,10,987	2,01,486	2,66,197

Total after Primary Distribution

Particulars	Total (₹)	Fabrication	Assembly	Stores	Maintenance
Total Overheads	63,80,000	36,01,330	17,70,987	5,01,486	5,06,197

Re-distribution of Service Departments' Expenses (Step Method)

Particulars	Basis of Apportionment	Production Department		Service Departments	
		Fabrication	Assembly	Stores	Maintenance
Overheads as per Primary distribution	As per Primary distribution	36,01,330	17,70,987	5,01,486	5,06,197
Maintenance Department Cost	Maintenance Hours (30:25:5:-)	2,53,099	2,10,915	42,183	(5,06,197)
		38,54,429	19,81,902	5,43,669	---
Stores Department	No. of Stores Requisition (5:2:-:-)	3,88,335	1,55,334	(5,43,669)	
		42,42,764	21,37,236	---	---

(i) (B) ₹ 5,43,669

Total overhead allocated from Stores Department
= ₹ 5,43,669

(ii) (C) ₹ 5,06,197

Total overhead allocated from Maintenance Department
= ₹ 5,06,197

(iii) (A) ₹ 1.21 per machine hour**Overhead Recovery Rate - Fabrication Department**

Basis: Machine Hours = 35,00,000

Rate = $42,42,764 / 35,00,000 = ₹ 1.21$ per machine hour

(iv) (D) ₹ 0.71 per labour hour**Overhead Recovery Rate - Assembly Department**

Basis: Labour Hours = 30,00,000

Rate = $21,37,236 / 30,00,000 = ₹ 0.71$ per labour hour

(v) (C) ₹ 1,60,445

Calculation of Full Production Cost (Job AMS-101)

Particulars	Amount (₹)
Direct Materials	1,50,000
Direct Labour:	
- Fabrication Deptt. (300 hours × ₹ 20)	6,000
- Assembly Deptt. (200 hours × ₹ 20)	4,000
Production Overheads:	
- Fabrication Deptt. (250 hours × ₹ 1.21)	303
- Assembly Deptt. (200 hours × ₹ 0.71)	142
Total Production Cost	1,60,445

2. (i) (D) ₹ 6,68,600

(ii) (C) ₹ 12,24,000

Statement Showing Total Gross Margin

Particulars	Alpha (₹)	Beta (₹)	Gamma (₹)	Total (₹)
Sales Units	24,000	60,000	32,000	1,16,000
Selling Price per unit	22	16	13	—
Sales Value (A)	5,28,000	9,60,000	4,16,000	19,04,000
Prime Cost per unit	14	10	9	—
Prime Cost (B)	3,36,000	6,00,000	2,88,000	12,24,000
Gross Margin (A – B)	1,92,000	3,60,000	1,28,000	6,80,000
Cost of Defective units	5,600	4,000	1,800	11,400
Net Gross Margin (B – C)	1,86,400	3,56,000	1,26,200	6,68,600

(iii) (A) Beta – I, Alpha – II, Gamma – III

Statement Showing Rank and Net Profit as per Conventional Accounting System

Particulars	Alpha	Beta	Gamma	Total
Sales Units/ Production (good units)	24,000	60,000	32,000	1,16,000
Gross Margin (₹) ...(A)	1,92,000	3,60,000	1,28,000	6,80,000
Cost of Defective units...(B)	5,600	4,000	1,800	11,400
Production Overheads (₹) $(\frac{2,54,500}{116} \times 24/60/32)$	52,655	1,31,638	70,207	2,54,500
Selling Overheads (₹) $(\frac{1,80,000}{116} \times 24/60/32)$	37,241	93,103	49,656	1,80,000
Sub-Total Overheads (₹) ...(C)	89,896	2,24,741	1,19,863	4,34,500
Net Profit (₹) ...(A – B – C)	96,504	1,31,259	6,337	2,34,100
Ranking	II	I	III	—

(iv) (A) ₹ 2,45,500

(v) (A) Alpha – I, Beta – II, Gamma – III

Workings

No.	Particulars	Alpha	Beta	Gamma	Total
(1)	Gross Production (Units / Run)	2,440	3,020	3,220	—
(2)	Defectives / Run	40	20	20	—
(3)	Good Units / Run	2,400	3,000	3,200	—
(4)	Sales Units	24,000	60,000	32,000	—
(5)	No. of Runs	10	20	10	—
(6)	Gross Production 1 x 5)	24,400	60,400	32,200	—
(7)	Prime Cost / Unit	14	10	9	—
(8)	Prime Cost (₹)	3,41,600	6,04,000	2,89,800	12,35,400
(9)	Inspection Hours / Run	2	5	3	—

(10)	Total Inspection Hours (9 x 5)	20	100	30	150
(11)	Machine Hours / Run	25	15	35	—
(12)	Total Machine Hours (11 x 5)	250	300	350	900
(13)	Mold Cost / Run	300	400	350	—
(14)	Total Mold Cost (13 x 5)	3,000	8,000	3,500	14,500

Statement Showing Production & Selling Overheads

Particulars	Alpha	Beta	Gamma	Total
Inspection Cost $(\frac{84,000}{150} \times 20/100/30)$	11,200	56,000	16,800	84,000
Machine Maintenance $(\frac{1,56,000}{900} \times 250/300/350)$	43,333	52,000	60,667	1,56,000
Mold Cost	3,000	8,000	3,500	14,500
Production Overheads	57,533	1,16,000	80,967	2,54,500
Advertisement $(\frac{90,000}{92} \times 60/32)$	—	58,696	31,304	90,000
Packing	—	60,000	—	60,000
Other Overheads $(\frac{30,000}{116} \times 24/60/32)$	6,207	15,517	8,276	30,000
Selling Overheads	6,207	1,34,213	39,580	1,80,000

Statement Showing Rank and Net Profit as per Activity Based Costing System

Particulars	Alpha	Beta	Gamma	Total
Sales Units	24,000	60,000	32,000	1,16,000
Gross Margin (₹) ...(A)	1,92,000	3,60,000	1,28,000	6,80,000
Cost of Defective units(B)	5,600	4,000	1,800	11,400
Production Overheads (₹)	57,533	1,16,000	80,967	2,54,500

Selling Overheads (₹)	6,207	1,34,213	39,580	1,80,000
Sub-Total Overheads (₹)(C)	63,740	2,50,213	1,20,547	4,34,500
Net Profit (₹)(A – B – C)	1,22,660	1,05,787	5,653	2,34,100
Ranking	I	II	III	—

Calculate Cost of Defective Units:

Product	Defectives per Run	Runs	Total Defectives	Per unit cost	Total cost (₹)
Alpha	40	10	400	14	5,600
Beta	20	20	400	10	4,000
Gamma	20	10	200	9	1,800

3. (A) ₹ 1,19,880

Equivalent Units = 100% of 1665 + 40% of 150 units
= 1665 + 60 = 1,725 units

Cost per unit = (₹ 10,020 + ₹ 1,14,180) ÷ 1,725
= ₹ 72 per unit

Cost of Completed units in the process:

= 1665 × 72 = ₹ 1,19,880

4. (C) 1,625 units

Projected Unit sales = (Fixed costs + Target operating income) ÷ unit Contribution margin.

= (₹ 5,32,000 + ₹ 3,45,500) ÷ (₹ 136 - ₹82)

= ₹ 8,77,500 ÷ 54

= 16,250 units

Existing Sales in units = (Fixed costs + operating income) ÷ unit Contribution margin.

= (₹ 5,32,000 + ₹ 3,45,500) ÷ (₹ 136 - ₹ 76)

= ₹ 8,77,500 ÷ 60

= 14,625 units

Increase in units: $16,250 - 14,625 = 1,625$ units

5. As procurement time is given in days, consumption should also be calculated in days:

$$\text{Maximum Consumption per Day: } \frac{350}{7} = 50 \text{ Kgs}$$

$$\text{Minimum Consumption per Day: } \frac{210}{7} = 30 \text{ Kgs.}$$

$$\text{Average Consumption per Day: } \frac{(50+30)}{2} = 40 \text{ Kgs}$$

(a) Calculation of Economic Order Quantity (EOQ)

Annual consumption of Raw Materials (A): $40 \text{ Kgs} \times 365 \text{ days} = 14,600 \text{ Kgs}$

Storage or Carrying Cost per unit per annum (C): $(₹ 100 \times 1\% \times 12 \text{ months}) + ₹ 2 = ₹ 14$

Ordering Cost (O): ₹ 200 per Order

$$\begin{aligned} \text{EOQ} &= \sqrt{\frac{2 \times A \times O}{C}} \\ &= \sqrt{\frac{2 \times 14,600 \times 200}{14}} = 646 \text{ Kgs.} \end{aligned}$$

(b) Re-Order Level (ROL) = (Maximum consumption Rate × Maximum Procurement Time)

$$= 50 \text{ kgs per day} \times 9 \text{ days}$$

$$= 450 \text{ kgs}$$

(c) Maximum Stock Level = Recorder Level + Recorder Quantity – (Minimum Consumption Rate × Minimum Procurement Time)

$$= 450 \text{ kgs} + 646 \text{ kgs} - (30 \text{ kgs} \times 5 \text{ days})$$

$$= 946 \text{ kgs}$$

(d) Minimum Stock Level = Recorder Level – (Average consumption Rate × Average Procurement Time)

$$= 450 \text{ kgs} - (40 \text{ kgs} \times 7 \text{ days})$$

$$= 170 \text{ kgs}$$

$$\begin{aligned}
 \text{(e) Average Stock Level} &= \frac{\text{Maximum Stock Level} + \text{Minimum Stock Level}}{2} \\
 &= \frac{946 \text{ kgs} + 170 \text{ kgs}}{2} \\
 &= 558 \text{ kgs}
 \end{aligned}$$

(f) Number of Orders to be placed per year

$$\begin{aligned}
 &= \frac{\text{Annual Consumption of Raw Materials}}{\text{EOQ}} \\
 &= \frac{14600 \text{ kgs}}{646 \text{ kgs}} \\
 &= 22.60 \text{ Orders or } 23 \text{ Orders}
 \end{aligned}$$

(g) Total Inventory Cost

$$\begin{aligned}
 \text{Cost of Materials (A x Purchase Price) (14600 kgs x ₹ 100)} &= ₹ 14,60,000 \\
 \text{Total Ordering Cost (No. of Orders x O) (23 Orders x 200)} &= ₹ 4,600 \\
 \text{Total Carrying Cost (EOQ / 2 x C) (646 kgs / 2 x ₹ 14)} &= ₹ 4,522 \\
 \text{Total Inventory Cost} &= ₹ 14,69,122
 \end{aligned}$$

(h) If the supplier is willing to offer 1% discount on purchase of total annual quantity in two orders:

$$\begin{aligned}
 \text{Offer Price} &= ₹ 100 \times 99\% = ₹ 99 \\
 \text{Revised Carrying Cost} &= (₹ 99 \times 1\% \times 12 \text{ months}) + ₹ 2 = ₹ 13.88 \\
 \text{Revised Order Quantity} &= 14600 \text{ kgs} / 2 \text{ Orders} = 7300 \text{ kgs}
 \end{aligned}$$

Total Inventory Cost at Offer Price

$$\begin{aligned}
 \text{Cost of Materials (A x Purchase Price) (14600 kgs x ₹ 99)} &= ₹ 14,45,400 \\
 \text{Total Ordering Cost (No. of Orders x O) (2 Orders x 200)} &= ₹ 400 \\
 \text{Total Carrying Cost (EOQ / 2 x C) (7300 kgs / 2 x ₹ 13.88)} &= ₹ 50,662 \\
 \text{Total Inventory Cost} &= ₹ 14,96,462
 \end{aligned}$$

Advice: As total inventory cost at offer price is ₹ 27,340 (14,96,462 – 14,69,122) higher, offer should not be accepted.

(i) **Counter-offer:**

Let Discount Rate = $z\%$

Counter-Offer Price = $\text{₹ } 100 - z\% = \text{₹ } 100 - z$

Revised Carrying Cost = $[(\text{₹ } 100 - z) \times 1\% \times 12 \text{ months}] + \text{₹ } 2$

= $\text{₹ } 12 - 0.12z + \text{₹ } 2$

= $\text{₹ } 14 - 0.12z$

Total Inventory Cost at Counter-Offer Price

Cost of Materials (A x Purchase Price) $[14600 \text{ kgs} \times (\text{₹ } 100 - z)]$
= $\text{₹ } 14,60,000 - 14,600z$

Total Ordering Cost (No. of Orders x O) $(2 \text{ Orders} \times 200) = \text{₹ } 400$

Total Carrying Cost (EOQ / 2 x C) $[7300 \text{ kgs} / 2 \times (\text{₹ } 14 - 0.12z)]$

= $\text{₹ } 51,100 - 438z$

Total Inventory Cost = $\text{₹ } 15,11,500 - 15038z$

$\text{₹ } 14,69,122 = \text{₹ } 15,11,500 - 15038z$

Or $15038z = 42,378$

Or $z = 2.82$

Therefore, discount should be at least 2.82% in offer price.

6. (i) (a) **Existing time rate**

Weekly wages:

Normal shift	(40 hours × ₹ 160):	₹ 6,400
Late shift	(9 hours × ₹ 225)	₹ 2,025
		<u>₹ 8,425</u>

(b) **Piece Rate System**

15 articles are produced in 2.5 hours

Therefore, to produce 270 articles, hours required is

$\frac{2.5 \text{ hours}}{15 \text{ articles}} \times 270 \text{ articles} = 45 \text{ hours.}$

Cost of producing 270 articles:

At basic time rate (45 hours × ₹160) = ₹7,200

Add: Bonus @ 20% on basic Piece rate ₹1,440

Earning for the week ₹8,640

(c) Rowan Premium System

(i) Time allowed for producing 270 articles

$$\left(\frac{2.5 \text{ hours}}{15 \text{ articles}} \times 270 \text{ articles} \times 150\% \right) = 67.5 \text{ hours}$$

(ii) Time taken to produce 270 articles = 40.0 hours

(iii) Time Saved = 67.5 – 40 = 27.5 hours

Earnings under Rowan Premium system:

$$= (\text{Time taken} \times \text{Rate per hour}) + \left(\frac{\text{Time saved}}{\text{Time allowed}} \times \text{Time taken} \times \text{Rate per hour} \right)$$

$$= (40 \text{ hours} \times ₹160) + \left(\frac{27.5 \text{ hours}}{67.5 \text{ hours}} \times 40 \text{ hours} \times ₹160 \right) = ₹ 9,007.41$$

(d) Halsey Premium System

$$= (\text{Time taken} \times \text{Rate per hour}) + \left(\frac{1}{2} \times \text{Time saved} \times \text{Rate per hour} \right)$$

$$= (40 \text{ hours} \times ₹160) + \left(\frac{1}{2} \times 27.5 \text{ hours} \times ₹160 \right) = ₹6,400 + ₹2,200$$

$$= ₹8,600$$

(ii) Statement showing hours worked, weekly earnings, number of articles produced and cost per article

Method of Payment	Hours worked	Weekly earnings (₹)	Number of articles produced	Labour cost per article (₹)
Existing time rate	49	8,425.00	240	35.10
Straight piece rate system	40	8,640.00	270	32.00

Rowan System	Premium	40	9,007.41	270	33.36
Halsey System	Premium	40	8,600.00	270	31.85

7. Calculation of Direct Expenses

		Amount (₹)
(i)	Paid for power & fuel	4,80,200
(ii)	Bill paid to job workers	9,66,000
(iii)	Royalty paid for production	8,400
(iv)	Fee paid to the technician	96,000
	Total Direct expenses	15,50,600

Notes:

- (i) Wages paid to factory workers is direct employee cost.
- (ii) Administrative overhead is indirect expense.
- (iii) Commission paid to sales staffs comes under selling expenses.

8. Statement of Cost of Nova Manufacturing Ltd. for the year ended 31st March, 2026:

Sl. No.	Particulars	Amount (₹)	Amount (₹)
(i)	Material Consumed:		
	Purchase of Raw Materials	1,02,50,000	
	Carriage Inward	2,10,000	
	Add: Opening Stock of Raw Materials	8,10,000	
	Less: Closing Stock of Raw Materials	(5,90,000)	
	Raw Material Consumed		1,06,80,000
(ii)	Direct Employee (Labour) Cost:		
	Direct Wages	72,40,000	
	Employer's Contribution to EPF & ESI	9,00,000	
	Total Direct Employee Cost		81,40,000

(iii)	Direct Expenses:		
	Consumable Materials	6,20,000	
	Cost of Power & Fuel	33,20,000	
	Total Direct Expenses		39,40,000
	Prime Cost		2,27,60,000
(iv)	Works / Factory Overheads:		
	Wages to Foreman & Storekeeper	10,20,000	
	Other Indirect Wages to Factory Staff	1,95,000	
	Factory Maintenance & Repairs	7,30,000	
	Depreciation on Plant & Machinery	9,20,000	
	<i>(Abnormal Loss – Not included in cost)</i>	—	
	Total Factory Overheads		28,65,000
	Gross Factory Cost		2,56,25,000
	Add: Opening WIP	9,25,000	
	Less: Closing WIP	(7,80,000)	
	Factory Cost		2,57,70,000
(v)	Quality Control Department Expenses		5,40,000
(vi)	Research & Development Cost (Automation Systems)		12,80,000
(vii)	Production Planning Office Expenses		15,50,000
	Cost Of Production		2,91,40,000
	Add: Opening Stock of Finished Goods	16,90,000	
	Less: Closing Stock of Finished Goods	(12,40,000)	
	Cost Of Goods Sold		2,95,90,000
(viii)	Administrative Overheads:		
	Salary to Accountants	8,40,000	
	Fees to Statutory Auditor	2,20,000	
	Fees to Cost Auditor	1,10,000	
	Fees to Independent Directors	11,80,000	

	Office Rent	11,50,000	
	Total Administrative Overheads		35,00,000
(ix)	Selling & Distribution Overheads:		
	Salary to Delivery Staff	18,20,000	
	Insurance on Finished Goods Warehouse	3,40,000	
	Packing Materials	4,80,000	
	Total Selling & Distribution Overheads		26,40,000
	Cost Of Sales		3,57,30,000
	Profit / (Loss) (Balancing Figure)		(8,40,000)
	Sales		3,48,90,000

Notes:

- Abnormal loss of ₹ 4,60,000 (Scrap ₹ 40,000) is excluded from the cost sheet.
- Income tax and donation are not included in cost sheets.

9. (i) **Statement of Profit as per financial records
(for the year ended March 31, 2026)**

	(₹)		(₹)
To Opening stock:		By Sales	20,80,000
Finished Goods	76,525	By Closing stock:	
Work-in-process	33,000	Finished Goods	43,250
To Raw materials consumed	7,84,000	Work-in-Process	48,200
To Direct labour	4,65,000	By Rent received	72,000
To Factory overheads	2,65,000	By Interest received	18,500
To Goodwill written off	95,000		
To Administration overheads	3,15,000		
To Selling & distribution overheads	65,000		
To Interest paid	72,000		
To Bad debts	21,000		

To Profit	70,425		
	22,61,950		22,61,950

**Statement of Profit as per costing records
(for the year ended March 31,2026)**

	(₹)	(₹)
Sales revenue (14,500 units) (A)		20,80,000
<u>Cost of Sales:</u>		
Opening stock (875 units x ₹ 105)	91,875	
Add: Cost of production of 14,000 units (Refer to Working Note 1& 2)	18,15,360	
Less: Closing stock $\left(\frac{₹18,15,360 \times 375 \text{ units}}{14,000 \text{ units}} \right)$	(48,626)	
Production cost of goods sold (14,500 units)	18,58,609	
Selling & distribution overheads (14,500 units x ₹ 5)	72,500	
Cost of sales: (B)	19,31,109	19,31,109
Profit: {(A) – (B)}		1,48,891

(ii) Statement of Reconciliation

(Reconciling the profit as per costing records with the profit as per financial records)

	(₹)	(₹)
Profit as per Cost Accounts		1,48,891
Add: Factory overheads over absorbed (₹ 2,79,000 – ₹ 2,65,000)	14,000	
S&D overheads over absorbed (₹ 72,500 – ₹ 65,000)	7,500	
Opening stock overvalued (₹ 91,875 – ₹ 76,525)	15,350	
Interest received	18,500	

Rent received	72,000	1,27,350
		2,76,241
Less: Administration overheads under recovery (₹ 3,15,000 – ₹ 3,02,560)	12,440	
Closing stock overvalued (₹ 48,626 – ₹ 43,250)	5,376	
Goodwill written off	95,000	
Interest paid	72,000	
Bad debts	21,000	2,05,816
Profit as per financial accounts		70,425

Working Notes:

1. Number of units produced		Units
Sales		14,500
Add: Closing stock		<u>375</u>
Total		14,875
Less: Opening stock		<u>875</u>
Number of units produced		<u>14,000</u>
2. Cost Sheet		
	(₹)	(₹)
Raw materials consumed		7,84,000
Direct labour		4,65,000
Prime cost		12,49,000
Factory overheads (60% of direct wages)		2,79,000
Factory cost		15,28,000
Add: Opening work-in-process		33,000
Less: Closing work-in-process		(48,200)
Factory cost of goods produced		15,12,800

Administration overheads (20% of factory cost)		3,02,560
Cost of production of 14,000 units		18,15,360

Cost of production per unit:

$$= \frac{\text{Total Cost of Production}}{\text{No. of units produced}} = \frac{\text{₹ 18,15,360}}{14,000 \text{ units}} = \text{₹ 129.67}$$

10. Workings:

1. **Maximum number of bottles that can be processed in a batch:**

$$2. = \frac{5,000 \text{ ltrs}}{\text{Bottle volume}}$$

Large		Medium		Small	
Qty (ltr)	Max bottles	Qty (ltr)	Max bottles	Qty (ltr)	Max bottles
3	1,666	1.5	3,333	0.6	8,333

*For simplicity of calculation small fractions has been ignored.

Number of batches to be run:

		Large	Medium	Small	Total
A	Demand	3,00,000	7,50,000	20,00,000	
B	Bottles per batch (Refer WN-1)	1,666	3,333	8,333	
C	No. of batches [A÷B]	180	225	240	645

*For simplicity of calculation small fractions has been ignored.

Quantity of Material-W and Material C required to meet demand:

	Particulars	Large	Medium	Small	Total
A	Demand (bottle)	3,00,000	7,50,000	20,00,000	
B	Qty per bottle (Litre)	3	1.5	0.6	
C	Output (Litre) [A×B]	9,00,000	11,25,000	12,00,000	32,25,000
D	Material-W per litre of output (Litre)	14	14	14	

E	Material-W required (Litre) $[C \times D]$	1,26,00,000	1,57,50,000	1,68,00,000	4,51,50,000
F	Material-C required per litre of output (ml)	25	25	25	
G	Material-C required (Litre) $[(C \times F) \div 1000]$	22,500	28,125	30,000	80,625

3. No. of Man-shift required:

		Large	Medium	Small	Total
A	No. of batches	180	225	240	645
B	Hours required per batch (Hours)	2	2	2	
C	Total hours required (Hours) $[A \times B]$	360	450	480	1,290
D	No. of shifts required $[C \div 8]$	45	57	60	162
E	Total manshift $[D \times 20 \text{ workers}]$	900	1,140	1,200	3,240

4. Power consumption in Kwh

		Large	Medium	Small	Total
For processing					
A	No. of batches	180	225	240	645
B	Hours required per batch (Hours)	1.75	1.75	1.75	21.75
C	Total hours required (Hours) $[A \times B]$	315	393.75	420	1,128.75
D	Power consumption per hour	90	90	90	90
E	Power consumption in Kwh $[C \times D]$	28,350	35,437.5	37,800	1,01,587.5
F	Per batch consumption (Kwh) $[E \div A]$	157.5	157.5	157.5	157.5
For set-up					
G	Hours required per batch (Hours)	0.25	0.25	0.25	0.25
H	Total hours required (Hours) $[A \times G]$	45	56.25	60	161.25
I	Power consumption per hour $[20\% \times 90]$	18	18	18	18
J	Power consumption in Kwh $[H \times I]$	810	1,012.5	1,080	2,902.5

K	Per batch consumption (Kwh) [J ÷ A]	4.5	4.5	4.5	4.5
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Calculation of Profit/ loss per batch:

	Particulars	Large	Medium	Small	Total
A	Demand (bottle)	3,00,000	7,50,000	20,00,000	30,50,000
B	Price per bottle (₹)	150	90	50	
C	Sales value (₹) [A × B]	4,50,00,000	6,75,00,000	10,00,00,000	21,25,00,000
	Direct Material cost:				
E	Material-W (₹) [Qty in WN - 3 × ₹ 0.50]	63,00,000	78,75,000	84,00,000	2,25,75,000
F	Material-C (₹) [Qty in WN-3 × ₹ 1,000]	2,25,00,000	2,81,25,000	3,00,00,000	8,06,25,000
G	[E+F]	2,88,00,000	3,60,00,000	3,84,00,000	10,32,00,000
H	Direct Wages (₹) [Man-shift in WN-4 × ₹ 880]	7,92,000	10,03,200	10,56,000	28,51,200
I	Packing cost (₹) [A × ₹ 3]	9,00,000	22,50,000	60,00,000	91,50,000
	Power cost (₹)				
J	For processing (₹) [WN-5 × ₹ 7]	1,98,450	2,48,062.5	2,64,600	7,11,112.5
K	For set-up time (₹) [WN-5 × ₹ 7]	5,670	7,087.5	7,560	20,317.5
L	[J+K]	2,04,120	2,55,150	2,72,160	7,31,430
M	Other variable cost (₹) [No. of batch in WN - 2 × ₹ 30,000]	54,00,000	67,50,000	72,00,000	1,93,50,000

N	Total Variable cost per batch [G+H+I+L+M]	3,60,96,120	4,62,58,350	5,29,28,160	13,52,82,630
O	Profit/ loss before fixed cost [C-N]	89,03,880	2,12,41,650	4,70,71,840	7,72,17,370
P	Fixed Cost				4,90,00,000
Q	Total Profit [O-P]				2,82,17,370

Computation of Economic Batch Quantity (EBQ):

$$EBQ = \sqrt{\frac{2 \times D \times S}{C}}$$

D = Annual Demand for the Product = Refer A below

S = Set-up cost per batch = Refer D below

C = Carrying cost per unit per annum =Refer E below

	Particulars	Large	Medium	Small
A	Annual Demand (bottle)	3,00,000	7,50,000	20,00,000
Set-up Cost:				
B	Power cost for set-up time (₹) [Consumption per batch in WN-5 × ₹ 7]	31.50	31.50	31.50
C	Other variable cost (₹) *	30,000	30,000	30,000
D	Total Set-up cost [B+C]	30,031.50	30,031.50	30,031.50
E	Holding cost:	1.00	1.00	1.00
F	EBQ (Bottle)	1,34,234	2,12,243	3,46,592

* Other variable cost is assumed to be part of set-up cost.

11.

Process I
Statement of Equivalent Production and Cost

Input (Units)	Particulars	Output Units	Equivalent Production					
			Materials		Labour		Overheads	
			(%)	Units	(%)	Units	(%)	Units
40,000	Completed	30,000	100	30,000	100	30,000	100	30,000
	Closing WIP	10,000	100	10,000	50	5,000	50	5,000
40,000		40,000		40,000		35,000		35,000

Particulars	Materials	Labour	Overhead	Total
Cost incurred (₹)	3,00,000	3,50,000	2,45,000	8,95,000
Equivalent units	40,000	35,000	35,000	
Cost per equivalent unit (₹)	7.50	10.00	7.00	24.50

Process-I Account

Particulars	Units	(₹)	Particulars	Units	(₹)
To Materials	40,000	3,00,000	By Process-II A/c (30,000 units × ₹ 24.5)	30,000	7,35,000
To Labour		3,50,000	By Closing WIP*	10,000	1,60,000
To Overhead		2,45,000			
	40,000	8,95,000		40,000	8,95,000

* (Material 10,000 units × ₹ 7.5) + (Labour 5,000 units × ₹ 10) + (Overheads 5,000 units × ₹7)

= ₹ 75,000 + ₹ 50,000 + ₹ 35,000 = ₹ 1,60,000

Process II
Statement of Equivalent Production and Cost

Input (Units)	Particulars	Output Units	Equivalent Production					
			Materials		Labour		Overheads	
			(%)	Units	(%)	Units	(%)	Units
30,000	Completed	28,000	100	28,000	100	28,000	100	28,000
	Normal loss	200		--		--		--

	Closing WIP	1,800	100	1,800	25	450	25	450
30,000		30,000		29,800		28,450		28,450

Particulars	Materials	Labour	Overhead	Total
Process-I Cost	7,35,000	--	--	7,35,000
Cost incurred (₹)	--	71,125	85,350	1,56,475
Equivalent units	29,800	28,450	28,450	--
Cost per equivalent unit (₹)	24.6644	2.5000	3.0000	30.1644

Process-II Account

Particulars	Units	(₹)	Particulars	Units	(₹)
To Process-I A/c	30,000	7,35,000	By Normal loss A/c	200	--
To Packing Material	--	80,000	By Finished Goods Stock A/c	28,000*	9,24,604
To Direct Wages	--	71,125	By Closing WIP	1,800**	46,871
To Factory Overhead	--	85,350			
	30,000	9,71,475		30,000	9,71,475

* $28,000 \times ₹ 30.1644 = ₹ 8,44,603 + ₹ 80,000$ (Packing Material Cost)
= ₹ 9,24,604

** $1,800 \text{ units} \times ₹ 24.6644 + 450 \text{ units} \times (₹ 2.5 + ₹ 3) = ₹ 46,871$

12. Apportionment of Joint Costs

Particulars	X (₹)	Y (₹)
Selling Price	16,000	8,000
Less: Estimated profit	4,000 (25% of ₹ 16,000)	1,600 (20% of ₹ 8,000)
Cost of sales	12,000	6,400
Less: Selling & Distribution exp. (Refer working note)	267 (₹ 400 × 2/3)	133 (₹ 400 × 1/3)
Less: Subsequent cost	5,000	3,000
Share of Joint cost	6,733	3,267

So, Joint cost of manufacture is to be distributed to X & Y in the ratio of 6733:3267.

Statement showing Cost of Production of X and Y

Elements of cost	Joint Cost		Subsequent Cost		Total Cost	
	X	Y	X	Y	X	Y
Material	3,367	1,633	3,000	1,500	6,367	3,133
Labour	2,020	980	1,400	1,000	3,420	1,980
Overheads	1,346	654	600	500	1,946	1,154
Cost of production					11,733	6,267

Working Note:

Calculation of Selling and Distribution Expenses

Particulars	(₹)
Total Sales Revenue (₹ 16,000 + ₹ 8,000)	24,000
Less: Estimated Profit (₹ 4,000 + ₹ 1,600)	(5,600)
Cost of Sales	18,400
Less: Cost of production:	
- Joint Costs	(10,000)
- Subsequent costs (₹ 5,000 + ₹ 3,000)	(8,000)
Selling and Distribution expenses (Balancing figure)	400

13. Operating Cost Sheet

Particulars	Amount (₹)	Amount (₹)
<u>Standing Charges:</u>		
Depreciation (₹ 24,00,000 x 10% x 1/12 x 25)	5,00,000	
Garage Rent	1,00,000	
Insurance	25,000	
Road Tax	20,000	

Manager's Salary	60,000	
Assistant's Salary (₹ 32,000 x 2)	64,000	
Supervisor's Salary (₹ 24,000 x 3)	72,000	
Driver's Salary (₹ 20,000 x 25)	5,00,000	
Cleaner's Salary (₹ 5,000 x 20)	1,00,000	
Office Staff's Salary	1,00,000	
Consumables	1,20,000	
Repairs & Maintenance	90,000	
Other Fixed Expenses	<u>72,000</u>	18,23,000
<u>Running Charges</u>		
Diesel (49,600 Kms / 10 Kms x ₹ 80 per unit)	3,96,800	
Oils & Lubricants	1,45,000	
Tyres and tubes	<u>35,000</u>	<u>5,76,800</u>
Total Operating Cost		<u>23,99,800</u>

$$\begin{aligned}
 \text{Cost per passenger-km} &= \frac{\text{Total Operating Cost}}{\text{Passenger -kms}} \\
 &= \frac{23,99,800}{27,18,080} \\
 &= 0.883
 \end{aligned}$$

Working Note:

Calculation of Total Kilometers and Passenger Kilometers

Specification	Total Km.	Passenger-Km.
12 Buses (60 Passengers)	29,760 Kms (10 Kms × 4 x 2 trips × 31 days x 12 Buses)	14,28,480 (29760 Kms x 60 Pass. x 80%)
13 Buses (50 Passengers)	32,240 Kms (10 Kms × 4 x 2 trips × 31 days x 13 Buses)	12,89,600 (32240 Kms x 50 Pass. x 80%)
Total	62,000	27,18,080

Since 5 buses out of 25 buses are kept for repairs every day

Actual total Km. $62,000 \times 20/25 = 49,600$

14. (A) (i) Production Budget for January to March 2025

(Quantitative)

Particulars	Jan	Feb	Mar	April
Budgeted Sales	12,000	13,500	15,000	16,500
Add: Closing Stock (25% of next month sales)	3,375	3,750	4,125	4,250
Total Requirement	15,375	17,250	19,125	20,750
Less: Opening Stock	3,000	3,375	3,750	4,125
Budgeted Production	12,375	13,875	15,375	16,625

Total Budgeted Production (Q1) = $12,375 + 13,875 + 15,375$
= 41,625 units

(ii) Raw Material Consumption Budget (Quantity)

Month	Output (Units)	Material A (5 kg/unit)	Material B (4 kg/unit)
January	12,375	61,875	49,500
February	13,875	69,375	55,500
March	15,375	76,875	61,500
April	16,625	83,125	66,500
Total (Q1)		2,08,125	1,66,500

(iii) Raw Materials Purchase Quantity Budget (Quarter I)

Material A (kg)

Particulars	Quantity
Material required for production	2,08,125
Add: Closing Stock (60% of April requirement = $83,125 \times 60\%$)	49,875
Total Requirement	2,58,000
Less: Opening Stock	25,000
Purchase Quantity	2,33,000 kg

Material B (kg)

Particulars	Quantity
Material required for production	1,66,500
Add: Closing Stock (60% of April requirement = 66,500 × 60%)	39,900
Total Requirement	2,06,400
Less: Opening Stock	18,000
Purchase Quantity	1,88,400 kg

(B) Calculation of Material Cost Variance**Working Data**

- Standard Quantity for actual output (42,000 units):
 - Material A = 42,000 × 5 = 2,10,000 kg
 - Material B = 42,000 × 4 = 1,68,000 kg

Material Cost Variance Statement

Particulars	Material A (₹)	Material B (₹)	Total (₹)
(a) Std Price × Std Qty	₹ 12 × 2,10,000 = 25,20,000	₹ 18 × 1,68,000 = 30,24,000	55,44,000
(b) Std Price × Actual Qty	₹ 12 × 2,10,000 = 25,20,000	₹ 18 × 1,65,000 = 29,70,000	54,90,000
(c) Actual Cost	₹ 12.5 × 2,10,000 = 26,25,000	₹ 18.40 × 1,65,000 = 30,36,000	56,61,000

Material Usage Variance = Standard Rate × Std. Qty. – Standard Rate × Actual Quantity

- A = 25,20,000 – 25,20,000 = Nil
- B = 30,24,000 – 29,70,000 = 54,000 (F)
- Total = 54,000 (F)

Material Price Variance = Actual Quantity x Standard rate – Actual Quantity x Actual Rate

- A = 25,20,000 – 26,25,000 = 1,05,000 (A)
 - B = 29,70,000 – 30,36,000 = 66,000 (A)
- Total = 1,71,000 (A)

Material Cost Variance = Standard Cost for Actual output – Actual cost

- A = 25,20,000 – 26,25,000 = 1,05,000 (A)
 - B = 30,24,000 – 30,36,000 = 12,000 (A)
- Total = 1,17,000 (A)

Calculation of Labour Cost Variances:

Working Notes

Budgeted output (Q1) = 41,625 units

Standard labour hours = 41,625 × 0.8 = 33,300 hours

Standard rate per hour = $\frac{\text{Budgeted direct labour cost}}{\text{Budgeted direct labour hours}}$

= ₹ 15,36,000 / 33,300 = ₹ 46.13 (approx.)

Standard hours for actual output = 42,000 × 0.8 = 33,600 hours

Actual rate per hour = ₹ 17,85,000 / 35,000 = ₹ 51

Direct Labour Efficiency Variance = Std Rate × (Std Hours – Actual Hours)

= 46.13 × (33,600 – 35,000)

= 46.13 × (–1,400)

= ₹ 64,582 (A)

Direct Labour Rate Variance = Actual Hours × (Std Rate – Actual Rate)

= 35,000 × (46.13 – 51)

= 35,000 × (–4.87)

$$= ₹ 1,70,450 \text{ (A)}$$

$$\text{Direct Labour Cost Variance} = (\text{Std Rate} \times \text{Std Hours}) - \text{Actual Cost}$$

$$= (46.13 \times 33,600) - 17,85,000$$

$$= 15,49,968 - 17,85,000$$

$$= ₹ 2,35,032 \text{ (A)}$$

15.

XYZ Limited

Evaluation of Change over to Product P from Product C

Existing Production

	Products			Total
	A	B	C	
Selling Price (₹)	30	40	20	
Less: Variable Cost (₹)	15	20	12	
Contribution per unit (₹)	15	20	8	
P/V Ratio	50%	50%	40%	
Sales Mix	35%	35%	30%	
Contribution <i>per rupee of sales</i> (P/V Ratio $\times$ Sales Mix)	17½%	17½%	12%	47%
Present Total Contribution (₹ 6,00,000 $\times$ 47%)				₹ 2,82,000
Less: Fixed Costs				₹ 1,80,000
Present Profit				₹ 1,02,000
Present Break-Even Sales (₹ 1,80,000/0.47)				₹ 3,82,979

Proposed Production

	Products			Total
	A	B	C	
Selling Price (₹)	30	40	30	
Less: Variable Cost (₹)	15	20	15	
Contribution <i>per unit</i> (₹)	15	20	15	

P/V Ratio	50%	50%	50%	
Sales Mix	50%	25%	25%	
Contribution <i>per rupee of sales</i> (P/V Ratio x Sales Mix)	25%	12½%	12½%	50%
Proposed Total Contribution (₹ 6,40,000 x 50%)				₹ 3,20,000
Less: Fixed Costs				₹ 1,80,000
Proposed Profit				₹ 1,40,000
Proposed Break Even Sales (₹ 1,80,000/0.50)				₹ 3,60,000

16. (a) The practical difficulties with which one usually confronted with while installing a costing system in a manufacturing company are as follows:
- (i) **Lack of top management support:** Installation of a costing system does not receive the adequate support of top management. They consider it as interference in their work. They believe that such, a system will involve additional paperwork. They also have a misconception in their minds that the system is meant for keeping a check on their activities.
 - (ii) **Resistance from cost accounting departmental staff:** The staff resists because of fear of losing their jobs and importance after the implementation of the new system.
 - (iii) **Non-co-operation from user departments:** The foremen, supervisor and other staff members may not co-operate in providing requisite data, as this would not only add to their responsibilities but will also increase paper work of the entire team as well.
 - (iv) **Shortage of trained staff:** Since cost accounting system's installation involves specialised work, there may be a shortage of trained staff.

To overcome these practical difficulties, necessary steps required are:

- To sell the idea to top management – To convince them of the utility of the system.

- Resistance and non-co-operation can be overcome by behavioral approach. To deal with the staff concerned effectively.

- Proper training should be given to the staff at each level

Regular meetings should be held with the cost accounting staff, user departments, staff and top management to clarify their doubts/misgivings.

(b)

	Type of costs
Interest paid on own capital not involving any cash outflow.	Imputed Cost
Withdrawing money from bank deposit for the purpose of purchasing new machine for expansion purpose.	Opportunity Cost
Rent paid for the factory building which is temporarily closed	Shut Down Cost
Cost associated with the acquisition and conversion of material into finished product.	Product Cost

- (c) There are certain steps involved in the budgetary control technique. They are as follows:

- (i) **Definition of objectives:** A budget being a plan for the achievement of certain operational objectives, it is desirable that the same are defined precisely. The objectives should be written out; the areas of control demarcated; and items of revenue and expenditure to be covered by the budget stated.
- (ii) **Location of the key (or budget) factor:** There is usually one factor (sometimes there may be more than one) which sets a limit to the total activity. Such a factor is known as key factor. For proper budgeting, it must be located and estimated properly.
- (iii) **Appointment of controller:** Formulation of a budget usually

required whole time services of a senior executive known as budget controller; he must be assisted in this work by a Budget Committee, consisting of all the heads of department along with the Managing Director as the Chairman.

- (iv) **Budget Manual:** Effective budgetary planning relies on the provision of adequate information which are contained in the budget manual. A budget manual is a collection of documents that contains key information for those involved in the planning process.
- (v) **Budget period:** The period covered by a budget is known as budget period. The Budget Committee determines the length of the budget period suitable for the business. It may be months or quarters or such periods as coincide with period of trading activity.
- (vi) **Standard of activity or output:** For preparing budgets for the future, past statistics cannot be completely relied upon, for the past usually represents a combination of good and bad factors. Therefore, though results of the past should be studied but these should only be applied when there is a likelihood of similar conditions repeating in the future.

(d)

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