



CA INTER - COSTING **CASE STUDY** **MAY 2025**

Prepared By : **CA PURUSHOTTAM AGGARWAL**

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About CA Purushottam Aggarwal Sir

Purushottam Aggarwal is a throughout first class graduate from Delhi University in the Year 2005. He is a Fellow member of The Institute of Chartered Accountants of India. **He Qualified CA in November 2007.**

- a) **Presence All Over India** - CA Purushottam Sir is most respected, loved & well known faculty of India. Currently Purushottam Sir Costing Classes has **113 satellite centers** All Over India.
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- d) **Teaching is Sir's first Love** - After getting professional practical experience of Business Environment. He started doing what he loves i.e. Teaching. He has been faculty of Cost and Management Accounting in various Management and Professional Institutes.
- e) **Vast Experience of Sir** - His technique of approaching the subject matter, strategy for preparation of examination and scientific method of teaching are quite popular among the students.

He is teaching costing paper at various levels for more than 16 Years.

His **arrears of specialization** include Costing Paper.

At Present he is a professional financial consultant and faculty of Costing Paper at various professional levels e.g. CMA Final, CMA Inter, CA Final & CA Inter.

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Case Scenario Based Questions

Case Scenario on Material Costing Chapter

The purchase committee of A Ltd. has been entrusted to review the material procurement policy of the company. The chief marketing manager has appraised the committee that the company at present produces a single product X by using two raw materials A and B in the ratio of 3:2. Material A is perishable in nature and has to be used within 10 days from Goods received note (GRN) date otherwise material becomes obsolete. Material B is durable in nature and can be used even after one year. Material A is purchased from the local market within 1 to 2 days of placing order. Material B, on the other hand, is purchased from neighbouring state and it takes 2 to 4 days to receive the material in the store.

The purchase price of per kilogram of raw material A and B is ₹30 and ₹44 respectively exclusive of taxes. To place an order, the company has to incur an administrative cost of ₹1,200. Carrying cost for Material A and B is 15% and 5% respectively. At present material A is purchased in a lot of 15,000 kg. to avail 10% discount on market price. GST applicable for both the materials is 18% and the input tax credit is availed.

The sales department has provided an estimate that the company could sell 30,000 kg. in January 2024 and also projected the same trend for the entire year.

The ratio of input and output is 5:3. Company works for 25 days in a month and production is carried out evenly.

The following queries/ calculations to be kept ready for purchase committees' reference:

- (i) For the month of January 2024, what would be the quantity of the materials to be requisitioned for both material A and B:*
 - (a) 9,000 kg & 6,000 kg respectively*
 - (b) 18,000 kg & 12,000 kg respectively*
 - (c) 27,000 kg & 18,000 kg respectively*
 - (d) 30,000 kg & 20,000 kg respectively.*
- (ii) The economic order quantity (EOQ) for both the material A & B:*
 - (a) 13,856 kg & 16,181 kg respectively*
 - (b) 16,197 kg & 17,327 kg respectively*
 - (c) 16,181 kg & 17,165 kg respectively*

- (d) 13,197 kg & 17,165 kg respectively
- (iii) What would the maximum stock level for material A:
- (a) 18,200 kg.
 (b) 12,000 kg.
 (c) 16,000 kg.
 (d) 16,200 kg.
- (iv) Calculate saving/ loss in purchase of Material A if the purchase order quantity is equal to EOQ.
- (a) Profit of ₹ 3,21,201.
 (b) Loss of ₹ 3,21,201.
 (c) Profit of ₹ 2,52,500.
 (d) Loss of ₹ 2,52,500.
- (v) What would the minimum stock level for material A:
- (a) 1,800 kg.
 (b) 1,200 kg.
 (c) 600 kg.
 (d) 2,400 kg.

Solution

1.

i.	(d)	ii.	(a)	iii.	(b)	iv.	(b)	v.	(c)
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(i) (d) Monthly Production of X = 30,000 kgs.

$$\text{Raw Material Required} = \frac{30,000}{3} \times 5 = \mathbf{50,000 \text{ kgs.}}$$

$$\text{Material A} = \frac{50,000}{5} \times 3 = \mathbf{30,000 \text{ kg.}}$$

$$\text{Material B} = \frac{50,000}{5} \times 2 = \mathbf{20,000 \text{ kg.}}$$

(ii) (a) Calculation of Economic Order Quantity (EOQ):

$$\text{Material A} = \sqrt{\frac{2 \times \text{Annual consumption} \times \text{Order cost}}{\text{Carrying cost per unit p.a.}}}$$

$$= \sqrt{\frac{2 \times (30,000 \times 12) \times 1,200}{15\% \text{ of } 30}} = \mathbf{13,856 \text{ kg.}}$$

$$\text{Material B} = \sqrt{\frac{2 \times (20,000 \times 12) \times 1,200}{5\% \text{ of } 44}} = \mathbf{16,181 \text{ kg.}}$$

- (iii) (b) Calculation of Maximum Stock level: Since, the Material A is perishable in nature and it required to be used within 10 days, hence, the Maximum Stock Level shall be lower of two:

- (a) Stock equal to 10 days consumption

$$= \frac{30000}{25} \times 10 \text{ days} = 12,000 \text{ kg.}$$

- (b) Maximum Stock Level for Material A:

Re-order Quantity + Re-order level – (Min consumption* × Min. lead time)

Where,

Re-order Quantity = 15,000 kg.

Re-order level = Max. Consumption* × Max. Lead time
= 30,000/25 × 2 days = 2,400 kg.

Maximum stock Level = 15,000 kg. + 2,400 kg. –
(30,000/25 × 1 day)
= 17,400 – 1,200 = 16,200 kg.

Stock required for 10 days consumption is lower than the maximum stock level calculated through the formula. Therefore, Maximum Stock Level will be **12,000 kg.**

(*Since, production is processed evenly throughout the month hence material consumption will also be even.)

- (iv) (b) **Calculation of Savings/ loss in Material A if purchase quantity equals to EOQ.**

	Purchase Quantity = 15,000 kg.	Purchase Quantity = EOQ i.e. 13,856 kg.
Annual consumption	3,60,000 kg. (30,000 × 12 months)	3,60,000 kg. (30,000 × 12 months)
No. of orders [Note- (i)]	30 (3,60,000 ÷ 12,000)	30 (3,60,000 ÷ 12,000)
Ordering Cost (a)	₹36,000 (₹1200 × 30)	₹36,000 (₹1200 × 30)

Carrying Cost (b) [Note- (ii)]	₹30,375 (15% of ₹27 × 7,500)	₹31,176 (15% of ₹30 × 6,928)
Purchase Cost (c) (for good portion)	₹97,20,000 (₹27 × 3,60,000)	₹1,08,00,000 (₹30 × 3,60,000)
Loss due to obsolescence (d) [Note- (iii)]	₹24,30,000 [₹27 × (30 × 3,000)]	₹16,70,400 [₹30 × (30 × 1,856)]
Total Cost [(a) + (b) + (c) + (d)]	₹ 1,22,16,375	₹ 1,25,37,576

Purchasing of material -A at present policy of 15,000 kg. saves ₹ **3,21,201.**

Notes: (i) Since, material gets obsolete after 10 days, the quantity in excess of 10 days consumption i.e. 12,000 kg. are wasted. Hence, after 12,000 kg. a fresh order needs to be given.

(ii) Carrying cost is incurred on average stock of Materials purchased.

(iii) the excess quantity of material becomes obsolete and loss has to be incurred.

(v) (c) Minimum Stock Level for Material A

= Re-order level – (Average Consumption Rate × Average Re-order Period)

= 2400 – (1200 × 1.5) = **600 kgs**

Re-order level = Max. Consumption* × Max. Lead time

= 30,000/25 × 2 days = 2,400 kg.

Average Consumption Rate = (30,000/25 + 30,000/25)/2

= 1,200 Kg

Average Re-order Period = (1 + 2)/2 = 1.5 Days

Stock required for 10 days consumption is lower than the maximum stock level calculated through the formula. Therefore, Maximum Stock Level will be 12,000 kg.

(*Since, production is processed evenly throughout the month hence material consumption will also be even.)

Case Scenario on Employee Cost & Direct Expenses

The board of the J Ltd. has been appraised by the General Manager (HR) that the employee attrition rate in the company has increased. The following facts has been presented by the GM(HR):

- (1) Training period of the new recruits is 50,000 hours. During this period their productivity is 60% of the experienced workers. Time required by an experienced worker is 10 hours per unit.*
- (2) 20% of the output during training period was defective. Cost of rectification of a defective unit was ₹25.*
- (3) Potential productive hours lost due to delay in recruitment were 1,00,000 hours.*
- (4) Selling price per unit is ₹180 and P/V ratio is 20%.*
- (5) Settlement cost of the workers leaving the organization was ₹1,83,480.*
- (6) Recruitment cost was ₹1,56,340*
- (7) Training cost was ₹1,13,180*

You being an associate finance to GM(HR), has been asked the following questions:

- (i) How much quantity of output is lost due to labour turnover?*
 - (a) 10,000 units*
 - (b) 8,000 units*
 - (c) 12,000 units*
 - (d) 12,600 units*
- (ii) How much loss in the form of contribution, the company incurred due to labour turnover?*
 - (a) ₹4,32,000*
 - (b) ₹4,20,000*
 - (c) ₹4,36,000*
 - (d) ₹4,28,000*
- (iii) What is the cost repairing of defective units?*
 - a) ₹ 75,000**
 - b) ₹ 15,000**
 - c) ₹ 50,000**
 - d) ₹ 25,000**

- (iv) Calculate the profit lost by the company due to increased labour turnover.
- (a) ₹ 7,50,000
 (b) ₹ 15,00,000
 (c) ₹ 5,00,000
 (d) ₹ 9,00,000
- (v) How much quantity of output is lost due to inexperience of the new worker?
- a) 1,000 units
 b) 2,600 units
 c) 2,000 units
 d) 12,600 units

Solution

i.	(c)	ii.	(a)	iii.	(b)	iv.	(d)	v.	(c)
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(i) (c) Output by experienced workers in 50,000 hours

$$= \frac{50,000}{10} = 5,000 \text{ units}$$

∴ Output by new recruits = 60% of 5,000 = 3,000 units

Loss of output = 5,000 – 3,000 = 2,000 units

Total loss of output = Due to delay recruitment + Due to inexperience
 = 10,000 + 2,000 = 12,000 units

(ii) (a) Contribution per unit = 20% of ₹180 = ₹ 36

Total contribution lost = ₹36 × 12,000 units = ₹ 4,32,000

(iii) (b) Cost of repairing defective units = 3,000 units × 0.2 × ₹ 25
 = ₹ 15,000

(iv) (d) **Calculation of loss of profit due to labour turnover**

Particulars	Amount (₹)
Loss of Contribution	4,32,000
Cost of repairing defective units	15,000
Recruitment Cost	1,56,340
Training cost	1,13,180
Settlement Cost of Workers Leaving	1,83,480
Profit forgone in 2022-23	9,00,000

(v) (c) Output by experienced workers in 50,000 hours

$$= \frac{50,000}{10} = 5,000 \text{ units}$$

∴ Output by new recruits = 60% of 5,000 = 3,000 units

Loss of output = 5,000 – 3,000 = 2,000 units

Case Scenario on Overheads Chapter

During half year ending inter departmental review meeting of P Ltd., cost variance report was discussed and the performance of the departments were assessed. The following figures were presented.

For a period of first six months of the financial year, following information were extracted from the books:

Actual production overheads *₹ 34,08,000*

The above amount is inclusive of the following payments made:

<i>Paid as per court's order</i>	<i>₹ 4,50,000</i>
<i>Expenses of previous year booked in current year</i>	<i>₹ 1,00,000</i>
<i>Paid to workers for strike period under an award</i>	<i>₹ 4,20,000</i>
<i>Obsolete stores written off</i>	<i>₹ 36,000</i>

Production and sales data for the six months are as under:

Production:

<i>Finished goods</i>	<i>1,10,000 units</i>
<i>Works-in-progress</i>	
<i>(50% complete in every respect)</i>	<i>80,000 units</i>

Sale:

<i>Finished goods</i>	<i>90,000 units</i>
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Machine worked during the period was 3,000 hours.

At the of preparation of revenue budget, it was estimated that a total of ₹ 50,40,000 would be required for budgeted machine hours of 6,000 as production overheads for the entire year.

During the meeting, a data analytic report revealed that 40% of the over/under-absorption was due to defective production policies and the balance was attributable to increase in costs.

You were also present at the meeting; the chairperson of the meeting has asked you to be ready with the followings for the performance appraisal of the departmental heads:

- (i) *How much was the budgeted machine hour rate used to recover overhead?*
- (a) ₹ 760
 - (b) ₹ 820
 - (c) ₹ 780
 - (d) ₹ 840
- (ii) *How much amount of production overhead has been recovered (absorbed) upto the end of half year end?*
- (a) ₹ 25,20,000
 - (b) ₹ 34,08,000
 - (c) ₹ 24,00,000
 - (d) ₹ 24,60,000
- (iii) *What is the amount of overhead under/ over absorbed?*
- (a) 1,18,000 over-absorbed
 - (b) 1,18,000 under- absorbed
 - (c) 18,000 over-absorbed
 - (d) 18,000 under-absorbed
- (iv) *What is the supplementary rate for apportionment of over/under absorbed overheads over WIP, Finished goods and Cost of sales?*
- (a) ₹ 0.315 per unit
 - (b) ₹ 0.472 per unit
 - (c) ₹ 0.787 per unit
 - (d) ₹ 1 per unit
- (v) *What is the amount of over/under absorbed overhead apportioned to Work in Progress?*
- (a) ₹ 9,440
 - (b) ₹ 42,480
 - (c) ₹ 18,880
 - (d) ₹ 70,800

Solution

i.	(d)	ii.	(a)	iii.	(a)	iv.	(b)	v.	(c)
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(i) (d) Budgeted Machine hour rate (Blanket rate)

$$= \frac{\text{₹ } 50,40,000}{6,000 \text{ hours}} = \text{₹ } 840 \text{ per hour}$$

(ii) (a) ₹ 25,20,000

(iii) (a)

	Amount (₹)	Amount (₹)
Total production overheads actually incurred during the period		34,08,000
Less: Amount paid to worker as per court order	4,50,000	
Expenses of previous year booked in the current year	1,00,000	
Wages paid for the strike period under an award	4,20,000	
Obsolete stores written off	36,000	10,06,000
		24,02,000

Less: Production overheads absorbed as per machine hour rate (3,000 hours × ₹ 840*)		25,20,000
Amount of over absorbed production overheads		1,18,000

* Budgeted Machine hour rate (Blanket rate) calculated in part (i)

- (iv) (b) **Accounting treatment of over absorbed production overheads:** As, 40% of the over absorbed overheads were due to defective production policies, this being abnormal, hence should be credited to Costing Profit and Loss Account.

Amount to be credited to Costing Profit and Loss Account

$$= ₹ 1,18,000 \times 40\% = ₹ 47,200.$$

Balance of over absorbed production overheads should be distributed over Works in progress, Finished goods and Cost of sales by applying supplementary rate*.

$$\text{Amount to be distributed} = ₹ 1,18,000 \times 60\% = ₹ 70,800$$

$$\text{Supplementary rate} = \frac{₹ 70,800}{1,50,000 \text{ units}} = ₹ 0.472 \text{ per unit}$$

- (v) (c) Apportionment of over absorbed production overheads over WIP, Finished goods and Cost of sales:

	Equivalent completed units	Amount (₹)
Work-in-Progress (80,000 units × 50% × 0.472)	40,000	18,880
Finished goods (20,000 units × 0.472)	20,000	9,440
Cost of sales (90,000 units × 0.472)	90,000	42,480
Total	1,50,000	70,800

Case Scenario on Activity Based Costing Chapter

The sales department of A Limited is analysing the customer profitability for its Product Z. It has decided to analyse the profitability of its five new customers using activity-based costing method. It buys Product Z at ₹ 5,400 per unit and sells to retail customers at a listed price of ₹ 6,480 per unit. The data pertaining to five customers are:

	Customers				
	A	B	C	D	E
Units sold	4,500	6,000	9,500	7,500	12,750
Listed Selling Price	₹6,480	₹6,480	₹6,480	₹6,480	₹6,480
Actual Selling Price	₹6,480	₹6,372	₹5,940	₹6,264	₹5,832
Number of Purchase orders	15	25	30	25	30

Number of Customer visits	2	3	6	2	3
Number of deliveries	10	30	60	40	20
Kilometers travelled per delivery	20	6	5	10	30
Number of expedited deliveries	0	0	0	0	1

After a detailed analysis and computation, the following activities has been identified and respective cost has been calculated:

Activity	Cost Driver Rate
Order taking	₹4,500 per purchase order
Customer visits	₹ 3,600 per customer visit
Deliveries	₹ 7.50 per delivery Km travelled
Product handling	₹ 22.50 per case sold
Expedited deliveries	₹ 13,500 per expedited delivery

You have been assigned the following task of computing different cost information for managerial decision making:

- (i) How much cost on customer visit is incurred on customer E?
- (a) ₹ 7,200
- (b) ₹ 10,800

- (c) ₹ 21,600
 (d) ₹ 3,600
- (ii) *What is the cost of goods sold for customer D?*
 (a) ₹ 2,43,00,000
 (b) ₹ 3,24,00,000
 (c) ₹ 5,13,00,000
 (d) ₹ 4,05,00,000
- (iii) *How much is the cost of expediting delivery for customer A?*
 (a) ₹ 13,500
 (b) ₹ 27,000
 (c) ₹ 40,500
 (d) ₹ 0
- (iv) *Compute the customer-level operating income of each of customers A.*
 (a) ₹ 55,72,350
 (b) ₹ 46,82,550
 (c) ₹ 47,57,400
 (d) ₹ 50,57,325
- (v) *Compute the customer-level operating income of each of five retail customers D and E.*
 (a) ₹ 46,82,550 & 50,65,720
 (b) ₹ 55,72,350 & 46,85,500
 (c) ₹ 47,57,400 & 55,72,350
 (d) ₹ 61,88,550 & 50,57,325

Solution

i.	(b)	ii.	(d)	iii.	(c)	iv.	(b)	v.	(d)
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- (i) **(b)** ₹ 10,800
 (ii) **(d)** ₹ 4,05,00,000
 (iii) **(c)** ₹ 0
 (iv) **(b)** ₹ 46,82,550
 (v) **(d)** ₹ 61,88,550 & 50,57,325

Working note:

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

	Customers				
	A	B	C	D	E
Units sold: (a)	4,500	6,000	9,500	7,500	12,750
Revenues (at listed price) (₹): (b) {(a) × ₹6,480}	2,91,60,000	3,88,80,000	6,15,60,000	4,86,00,000	8,26,20,000
Revenues (at listed price) (₹): (c) {(a) × Actual selling price}	2,91,60,000 (4,500 × 6,480)	3,82,32,000 (6,000 × 6,372)	5,64,30,000 (9,500 × 5,940)	4,69,80,000 (7,500 × 6,264)	7,43,58,000 (12,750 × 5,832)
Discount (₹) (d) {(b) – (c)}	0	6,48,000	51,30,000	16,20,000	82,62,000
Cost of goods sold (₹) : (e) {(a) × ₹5,400}	2,43,00,000	3,24,00,000	5,13,00,000	4,05,00,000	6,88,50,000
Customer level operating activities costs					
Order taking costs (₹): (No. of purchase orders × ₹ 4,500)	67,500	1,12,500	1,35,000	1,12,500	1,35,000
Customer visits costs (₹) (No. of customer visits × ₹ 3,600)	7,200	10,800	21,600	7,200	10,800
Delivery vehicles travel costs (₹) (Kms travelled by delivery vehicles × ₹ 7.50 per km.)	1,500	1,350	2,250	3,000	4,500
Product handling costs (₹) {(a) × ₹ 22.50}	1,01,250	1,35,000	2,13,750	1,68,750	2,86,875
Cost of expediting deliveries (₹)	-	-	-	-	13,500

{No. of expedited deliveries x ₹ 13,500}					
Total cost of customer level operating activities (₹)	1,77,450	2,59,650	3,72,600	2,91,450	4,50,675

Computation of Customer level operating income

	Customers				
	A	B	C	D	E
	(₹)	(₹)	(₹)	(₹)	(₹)
Revenues (At list price) (Refer to working note)	2,91,60,000	3,82,32,000	5,64,30,000	4,69,80,000	7,43,58,000
Less: Cost of goods sold (Refer to working note)	(2,43,00,000)	(3,24,00,000)	(5,13,00,000)	(4,05,00,000)	(6,88,50,000)
Gross margin	48,60,000	58,32,000	51,30,000	64,80,000	55,08,000
Less: Customer level operating activities costs (Refer to working note)	(1,77,450)	(2,59,650)	(3,72,600)	(2,91,450)	(4,50,675)
Customer level operating income	46,82,550	55,72,350	47,57,400	61,88,550	50,57,325

Case Scenario on Cost Sheet Chapter

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

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

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

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

You are asked to calculate the followings:

- i. What is the amount of prime cost incurred during the last month:
- (a) ₹7,54,20,000
(b) ₹7,57,10,000
(c) ₹7,56,06,000
(d) ₹7,87,10,000
- ii. What is the total and per shift cost of production for last month:
- (a) ₹7,87,10,000 and ₹336.37 respectively
(b) ₹7,87,10,000 and ₹1,681.84 respectively
(c) ₹7,87,28,000 and ₹1,682.22 respectively
(d) ₹7,87,28,000 and ₹336.44 respectively
- iii. What is the value of administrative cost incurred during the last month:
- (a) ₹92,400
(b) ₹88,000
(c) ₹1,48,400
(d) ₹1,44,000
- iv. What is the value of selling and distribution cost and total cost of sales:
- (a) ₹36,000 & ₹7,88,76,400 respectively
(b) ₹56,000 & ₹7,88,76,400 respectively
(c) ₹36,000 & ₹7,88,72,000 respectively
(d) ₹56,000 & ₹7,88,72,000 respectively
- v. What is the value EMS and OMS for the last month:
- (a) ₹1,504.70 & 5 tonnes respectively
(b) ₹1,367.52 & 5 tonnes respectively
(c) ₹1,504.70 & 4.37 tonnes respectively
(d) ₹1,367.52 & 4.37 tonnes respectively

Solution

i.	(d)	ii.	(c)	iii.	(a)	iv.	(b)	v.	(a)
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i. d Please refer cost sheet below for prime cost

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

Cost of production per manshift =

Cost of production ÷ Total manshift

₹ 7,87,28,000 ÷ 46,800 = ₹1,682.22

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

iv. b Selling and distribution cost includes the following:

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

For Cost of Sale please refer the cost sheet

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

Computation of earnings per manshift (EMS):

EMS = $\frac{\text{Total employee benefits paid}}{\text{Manshift}}$

= $\frac{\text{₹ 7,04,20,000}}{46,800}$ = ₹ 1504.70

Computation of Output per manshift (OMS):

OMS = $\frac{\text{Total Output / Production}}{\text{Manshift}}$

$\frac{2,34,000 \text{ Tonne}}{46,800}$ = 5 tonnes

Workings

Cost Sheet of M Ltd. for the last month

Particulars	Amount (₹)	Amount (₹)
Materials consumed		50,00,000
Wages & Salary	6,40,00,000	
Gratuity & leave encashment	64,20,000	7,04,20,000
Power cost (13,000 kwh × ₹ 8)	1,04,000	
Diesel cost (2,000 ltr × ₹ 93)	1,86,000	2,90,000
HEMM hiring charges		30,00,000
Prime Cost		7,87,10,000

AMC cost of CCTV installed at factory premises		18,000
Cost of Production/ Cost of Goods Sold		7,87,28,000
Hiring charges of cars	66,000	
Reimbursement of diesel cost	22,000	
	88,000	
Add: GST @5% on RCM basis	4,400	92,400
Maintenance cost for weighing bridge	12,000	
AMC cost of CCTV installed at weigh bridge	8,000	20,000
TA/ DA & hotel bill of sales manager		36,000
Cost of Sales		7,88,76,400

Case Scenario on Unit & batch Chapter

Arnav 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

The following information has been sought from you for the purpose of performance review meeting:

- (i) Number of large size bottles that can be processed in a batch?
 - (a) 5,000 bottles
 - (b) 1,666 bottles
 - (c) 3,333 bottles
 - (d) 8,333 bottles
- (ii) Total number of batches to be run to process medium size bottles
 - a) 180
 - b) 225
 - c) 240

- d) 645
- (iii) Material -W required for small size bottles
- (a) 1,26,00,000 ltrs
- (b) 1,68,00,000 ltrs
- (c) 1,57,50,000 ltrs
- (d) 1,51,50,000 ltrs
- (iv) Calculate total profit/ loss per batch.
- (a) ₹ 3,46,28,460
- (b) ₹ 2,56,28,360
- (c) ₹ 2,82,17,370
- (d) ₹ 1,88,56,360
- (v) Compute Economic Batch Quantity (EBQ) for small size bottles.
- (a) 1,34,234 ltrs
- (b) 2,12,243 ltrs
- (c) 1,57,882 ltrs
- (d) 3,46,592 ltrs

Solution

i.	(b)	ii.	(b)	iii.	(b)	iv.	(c)	v.	(d)
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- (i) (b) **Working note 1: Maximum number of bottles that can be processed in a batch:**

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

Large		Medium		Small	
Qty (ltr)	Max bottles	Qty (ltr)	Max bottles	Qty (ml)	Max bottles
3	1,666	1.5	3,333	600	8,333

***For simplicity of calculation small fractions has been ignored.**

(ii) (b) Working note 2: 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 $[A \div B]$	180	225	240	645

*For simplicity of calculation small fractions has been ignored.

(iii) (b) Working note 3:

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) $[A \times B]$	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

(iv) (c) Workings:

4. 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×B]	360	450	480	1,290
D	No. of shifts required [C÷8]	45	57	60	162
E	Total manshift workers] [D×20]	900	1,140	1,200	3,240

5. 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	1.75
C	Total hours required (Hours) [A×B]	315	393.75	420	1,128.75
D	Power consumption per hour	90	90	90	90
E	Power consumption in Kwh [C×D]	28,350	35,437.5	37,800	1,01,587.5
F	Per batch consumption (Kwh) [E÷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×G]	45	56.25	60	161.25
I	Power consumption per hour [20%×90]	18	18	18	18
J	Power consumption in Kwh [H×I]	810	1,012.5	1,080	2,902.5

K	Per batch consumption (Kwh) $[J \div A]$	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 (₹) $[A \times B]$	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 $\times$ ₹0.50]	63,00,000	78,75,000	84,00,000	2,25,75,000
F	Material-C (₹) [Qty in WN-3 $\times$ ₹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 $\times$ ₹880]	7,92,000	10,03,200	10,56,000	28,51,200
I	Packing cost (₹) $[A \times ₹3]$	9,00,000	22,50,000	60,00,000	91,50,000
	Power cost (₹)				
J	For processing (₹) $[WN-5 \times ₹7]$	1,98,450	2,48,062.5	2,64,600	7,11,112.5

K	For set-up time (₹) $[WN-5 \times ₹7]$	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 $\times$ ₹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

(v) (d) 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

Case Scenario on Process & Operation Costing

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

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

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

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

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

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

Output transferred to finished goods was 3,400 litres.

Losses have a scrap value of ₹20 per litre.

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

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

Raw Material ₹300 Labour ₹200 Overheads ₹160

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

The following information are required for managerial decisions:

- i. How much quantity of raw material introduced during the month?*
 - (a) 4,300 Litres*
 - (b) 3,500 Litres*
 - (c) 4,200 Litres*
 - (d) 3,800 Litres*

- ii. *The Quantity of normal loss and abnormal loss are:*
- (a) *Normal loss- 380 litres & Abnormal loss- 420 litres*
 - (b) *Normal loss- 350 litres & Abnormal loss – 450 litres*
 - (c) *Normal loss- 430 litres & Abnormal loss – 370 litres*
 - (d) *Normal loss- 420 litres & Abnormal loss – 380 litres.*
- iii. *Value of raw material added to the process during the month is:*
- (a) ₹10,10,000
 - (b) ₹10,33,600
 - (c) ₹10,18,400
 - (d) ₹10,20,000
- iv. *Value of labour and overhead in closing Work-in-process are:*
- (a) ₹4,000 & ₹1,600 respectively
 - (b) ₹20,000 & ₹16,000 respectively
 - (c) ₹16,000 & ₹9,000 respectively
 - (d) ₹13,200 & ₹6,600 respectively
- v. *Value of output transferred to finished goods is:*
- (a) ₹22,57,200
 - (b) ₹20,06,400
 - (c) ₹22,44,000
 - (d) ₹19,27,200

Solution

i. d

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

ii. a

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

iii. b

Calculation of Equivalent production units

Input Details	Units	Output Particulars	Units	Equivalent Production					
				Material		Labour		Overheads	
				%	Units	%	Units	%	Units
Opening WIP	500	From Opening WIP	500	-	-	20	100	40	200
Fresh inputs	3,800	From fresh units	2900	100	2900	100	2900	100	2900
		Normal loss	380	-	-	-	-	-	-
		Closing WIP	100	100	100	20	20	10	10
		Abnormal loss	420	100	420	100	420	100	420
	4,300		4,300		3,420		3,440		3,530

Value of raw materials introduced during the month

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

iv. a **Value of labour and overhead in closing Work in process**

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

v. c **Value of output transferred to finished goods**

Output transferred (Units) × Equivalent cost per unit

3,400 Litres × ₹660 = ₹22,44,000

- (a) ₹2,22,656.25 and ₹4,89,843.75
 - (b) ₹2,49,375 and ₹4,63,125
 - (c) ₹2,21,587.50 and ₹4,90,912.50
 - (d) ₹2,85,000 and ₹4,27,500
- (ii) *how much joint cost is allocated between the chocolate powder and milk-chocolate liquor bases respectively using Physical measure (gallons)?*
- (a) ₹2,22,656.25 and ₹4,89,843.75
 - (b) ₹2,49,375 and ₹4,63,125
 - (c) ₹2,21,587.50 and ₹4,90,912.50
 - (d) ₹2,85,000 and ₹4,27,500
- (iii) *how much joint cost is allocated between the chocolate powder and milk-chocolate liquor bases respectively using Estimated net realisable value, (NRV)?*
- (a) ₹2,22,656.25 and ₹4,89,843.75
 - (b) ₹2,49,375 and ₹4,63,125
 - (c) ₹2,21,587.50 and ₹4,90,912.50
 - (d) ₹2,85,000 and ₹4,27,500
- (iv) *What is the constant gross-margin percentage NRV ?*
- (a) 8%
 - (b) 9%
 - (c) 12%
 - (d) 12.5%
- (v) *how much joint cost is allocated between the chocolate powder and milk-chocolate liquor bases respectively using Constant gross-margin percentage NRV?*
- (a) ₹2,22,656.25 and ₹4,89,843.75
 - (b) ₹2,49,375 and ₹4,63,125
 - (c) ₹2,21,587.50 and ₹4,90,912.50
 - (d) ₹2,85,000 and ₹4,27,500

Solution

(i) (b) Sales Value at Split-off Point Method

	Chocolate powder liquor base	Milk chocolate liquor base	Total
Sales value of products at split off	₹ 2,99,250*	₹ 5,55,750**	₹ 8,55,000
Weights	0.35	0.65	1.00
Joint cost allocated	₹ 2,49,375 (₹7,12,500 × 0.35)	₹ 4,63,125 (₹7,12,500 × 0.65)	₹ 7,12,500

* $(3,000 \text{ lbs} \div 200 \text{ lbs}) \times 20 \text{ gallon} \times ₹ 997.50 = ₹ 2,99,250$

** $(5,100 \text{ lbs} \div 340 \text{ lbs}) \times 30 \text{ gallon} \times ₹ 1,235 = ₹ 5,55,750$

(ii) (d) Physical Measure Method

	Chocolate powder liquor base	Milk chocolate liquor base	Total
Output	300 gallon*	450 gallon**	750 gallons
Weight	$300/750 = 0.40$	$450/750 = 0.60$	1.00
Joint cost allocated	₹ 2,85,000 (₹ 7,12,500 × 0.40)	₹ 4,27,500 (₹ 7,12,500 × 0.60)	₹ 7,12,500

* $(3,000 \text{ lbs} \div 200 \text{ lbs}) \times 20 \text{ gallon} = 300 \text{ gallon}$

** $(5,100 \text{ lbs} \div 340 \text{ lbs}) \times 30 \text{ gallon} = 450 \text{ gallon}$

(iii) (a) Net Realisable Value (NRV) Method

	CPLB	MCLB	Total
Sale value after further processing	Rs. 5,70,000 (3000 Pounds x Rs. 190)	Rs12,11,250 (5100 pounds x Rs. 237.50)	Rs17,81,250
Less: Further processing costs	Rs3,02,812.50	Rs6,23,437.50	Rs9,26,250
Net realisable value	Rs2,67,187.50	Rs5,87,812.50	Rs8,55,000
Joint cost	Rs2,22,656.25	Rs4,89,843.75	Rs7,12,500

(iv) (a) Final sales value of total production = ₹17,81,250

Less: Joint and separable cost = ₹ 16,38,750 (₹ 7,12,500 + ₹ 9,26,250)

Gross Margin = ₹ 1,42,500

Gross margin (%) = $\frac{₹ 1,42,500}{₹ 17,81,250} \times 100 = 8\%$

(v) (c) Constant Gross Margin(%) NRV method

	Chocolate powder Liquor base	Milk chocolate liquor Base	Total
Final sales value of production	₹ 5,70,000	₹ 12,11,250	₹ 17,81,250
Less: Gross margin* 8%	₹ 45,600	₹ 96,900	₹ 1,42,500
Cost of goods available for sale	₹ 5,24,400	₹ 11,14,350	₹ 16,38,750
Less: Separable costs	₹ 3,02,812.50	₹ 6,23,437.50	₹ 9,26,250
Joint cost allocated	₹ 2,21,587.50	₹ 4,90,912.50	₹ 7,12,500

Case Scenario on Service Costing Chapter

A LMV Pvt. Ltd, operates cab/ car rental service in Delhi/NCR. It provides its service to the offices of Noida, Gurugram and Faridabad. At present it operates CNG fuelled cars but it is also considering to upgrade these into Electric vehicle (EV). The following details related with the owning of CNG & EV propelled cars are as tabulated below:

Particulars	CNG Car	EV Car
Car purchase price (₹)	9,20,000	15,20,000
Govt. subsidy on purchase of car (₹)	--	1,50,000
Life of the car	15 years	10 years
Residual value (₹)	95,000	1,70,000
Mileage	20 km/kg	240 km per charge
Electricity consumption per full charge	--	30 Kwh
CNG cost per Kg (₹)	60	--
Power cost per Kwh (₹)	--	7.60
Annual Maintenance cost (₹)	8,000	5,200
Annual insurance cost (₹)	7,600	14,600
Tyre replacement cost in every 5 - year (₹)	16,000	16,000
Battery replacement cost in every 8- year (₹)	12,000	5,40,000

Apart from the above, the following are the additional information:

Particulars	
Average distance covered by a car in a month	1,500 km
Driver's salary (₹)	20,000 p.m
Garage rent per car (₹)	4,500 p.m
Share of Office & Administration cost per car (₹)	1,500 p.m

You have been approached by the management of A LMV Pvt. Ltd. for consultation on the two options of operating the cab service. The expected questions that may be asked by the management are as follows:

- (i) *What would be the depreciable value of EV Car?*
 - (a) ₹13,50,000
 - (b) ₹15,20,000
 - (c) ₹14,40,000
 - (d) ₹12,00,000
- (ii) *What would be the monthly cost of electricity for an EV car?*
 - (a) ₹1,425
 - (b) ₹1,500
 - (c) ₹1,450
 - (d) ₹1,525
- (iii) *What would be the total cost to be incurred for replacement of tyres for EV car?*
 - (a) ₹32,000
 - (b) ₹24,000
 - (c) ₹12,000
 - (d) ₹16,000
- (iv) *Calculate the operating cost of vehicle per month per car for CNG options.*
 - (a) ₹36,627.78
 - (b) ₹24,000.50
 - (c) ₹43,708.33
 - (d) ₹16,605.55
- (v) *Calculate the operating cost of vehicle per month per car for EV options*
 - (a) ₹36,627.78
 - (b) ₹24,000.50
 - (c) ₹43,708.33
 - (d) ₹16,605.55

Solution

(i) (d) ₹12,00,000

Calculation of Depreciation per month:

	Particulars	CNG Car	EV Car
A	Car purchase price (₹)	9,20,000	15,20,000
B	Less: Govt. subsidy (₹)	--	(1,50,000)
C	Less: Residual value (₹)	(95,000)	(1,70,000)
D	Depreciable value of car (₹) [A-B-C]	8,25,000	12,00,000
E	Life of the car	15 years	10 years
F	Annual depreciation (₹) [D÷E]	55,000	1,20,000
G	Depreciation per month (₹) [F÷12]	4,583.33	10,000

(ii) (a) ₹1,425

Fuel/ Electricity consumption cost per month:

	Particulars	CNG Car	EV Car
A	Average distance covered in a month (KM)	1,500	1,500
B	Mileage (KM)	20	240
C	Qty. of CNG/ Full charge required [A÷B]	75 kg.	6.25
D	Electricity Consumption [C×30kwh]	-	187.5
E	Cost of CNG per kg (₹)	60	-
F	Power cost per Kwh (₹)	-	7.60
G	CNG Cost per month (₹) [C×E]	4,500	-
H	Power cost per month (₹) [D×F]	-	1,425

(iii) (d) – Rs.16,000

	Particulars	CNG Car	EV Car
A	Life of vehicle	15 years	10 years
B	Replacement interval	5 years	5 years
C	No. of time replacement required	2 times	1 time
D	Cost of tyres for each replacement (₹)	16,000	16,000
E	Total replacement cost (₹) [C×D]	32,000	16,000
F	Amortised cost per year (₹) [E÷A]	2,133.33	1,600
E	Cost per month (₹) [F÷12]	177.78	133.33

(iv) (a) ₹ 36,627.78

(v) (c) ₹ 43,708.33

Amortised cost of Battery replacement:

	Particulars	CNG Car	EV Car
A	Life of vehicle	15 years	10 years
B	Replacement interval	8 years	8 years
C	No. of time replacement required	1 time	1 time
D	Cost of battery for each replacement (₹)	12,000	5,40,000
E	Total replacement cost (₹) [C×D]	12,000	5,40,000
F	Amortised cost per year (₹) [E÷A]	800	54,000
E	Cost per month (₹) [F÷12]	66.67	4,500

Calculation of Operating cost per month

	Particulars	CNG Car (₹)	EV Car (₹)
A	Running cost:		
	Fuel cost/ Power consumption cost [Refer WN-2]	4,500	1,425
B	Maintenance cost:		
	Annual Maintenance cost [Annual cost ÷ 12]	666.67	433.33
	Annual Insurance cost [Annual cost ÷ 12]	633.33	1,216.67
	Amortised cost of Tyre replacement [Refer WN-3]	177.78	133.33
	Amortised cost of Battery replacement [Refer WN-4]	66.67	4,500
		1,544.45	6,283.33
C	Fixed cost:		
	Depreciation [Refer WN-1]	4,583.33	10,000
	Driver's salary	20,000	20,000
	Garage rent	4,500	4,500
	Share of Office & Administration cost	1,500	1,500
		30,583.33	36,000
D	Operating cost per month [A+B+C]	36,627.78	43,708.33

Case Scenario on Standard Costing Chapter

K Ltd. is a manufacturer of a single product A. 8,000 units of the product A has been produced in the month of March 2024. At the beginning of the year a total 1,20,000 units of the product-A has been planned for production. The cost department has provided the following estimates of overheads:

Fixed	₹ 12,00,000	Variable	₹ 6,00,000
<i>Semi-Variable</i>	<i>₹ 1,80,000</i>		

Semi-variable charges are considered to include 60 per cent expenses of fixed nature and 40 per cent of variable nature.

The records of the production department shows that the company could have operated for 20 days but there was a festival holiday during the month.

The actual cost data for the month of March 2024 are as follows:

Fixed	₹ 1,19,000	Variable	₹ 48,000
<i>Semi-Variable</i>	<i>₹ 19,200</i>		

The cost department of the company is now preparing a cost variance report for managerial information and action. You being an accounts officer of the company are asked to calculate the following information for preparation of the variance report:

- i. *What is the amount of variable overhead cost variance for the month of March 2024:*
 - (a) ₹ 10,200 (A)
 - (b) ₹ 10,400 (A)
 - (c) ₹ 10,800 (A)
 - (d) ₹ 10,880 (A)
- ii. *What is the amount of fixed overhead volume variance for the month of March 2024:*
 - (a) ₹ 9,000 (F)
 - (b) ₹ 9,000 (A)
 - (c) ₹ 21,800 (A)
 - (d) ₹ 11,000 (A)

- iii. What is the amount of fixed overhead expenditure variance for the month of March 2024:
- (a) ₹ 21,520 (A)
- (b) ₹ 21,500 (A)
- (c) ₹ 21,400 (A)
- (d) ₹ 21,480 (A)
- iv. What is the amount of fixed overhead calendar variance for the month of March 2024:
- (a) ₹ 5,400 (A)
- (b) ₹ 5,450 (A)
- (c) ₹ 5,480 (A)
- (d) ₹ 5.420 (A)
- v. What is the amount of fixed overhead cost variance for the month of March 2024:
- (a) ₹ 43,320 (A)
- (b) ₹ 43,300 (A)
- (c) ₹ 43,200 (A)
- (d) ₹ 43,380 (A)

Solution

i. d **Variable Overhead Cost Variance** = Standard Variable Overheads for Production – Actual Variable Overheads

= ₹ 44,800 – ₹ 55,680

= ₹ **10,880 (A)**

$$\begin{aligned} \text{ii. c Fixed Overhead Volume Variance} &= \frac{\text{Absorbed Fixed Overheads} - \text{Budgeted Fixed Overheads}}{\text{Budgeted Fixed Overheads}} \\ &= ₹ 87,200 - ₹ 1,09,000 \\ &= ₹ 21,800 \text{ (A)} \end{aligned}$$

$= \frac{\text{Budgeted Variable Overheads}}{\text{Budgeted Output}}$	
Standard Variable Overheads for 8,000 units @ ₹5.60	₹ 44,800
Budgeted Annual Fixed Overheads (₹ 12,00,000 + 60% of ₹ 1,80,000)	₹ 13,08,000
Possible Fixed Overheads $= \frac{\text{Budgeted Fixed Overheads}}{\text{Budgeted Days}} \times \text{Actual Days}$ $= 1,09,000/20 \text{ days} \times 19 \text{ days}$	₹ 1,03,550
Actual Fixed Overheads (₹ 1,19,000 + 60% of ₹ 19,200)	₹ 1,30,520
Actual Variable Overheads (₹ 48,000 + 40% of ₹ 19,200)	₹ 55,680

Case Scenario on Marginal Costing Chapter

A meeting of the heads of departments of the Arnav Ltd. has been called to review the operating performance of the company in the last financial year. The head of the production department appraised that during the last year the company could operate at 70% capacity level but in the coming financial year 95% capacity level can be achieved if an additional amount of ₹100 Crore on capex and working capital is incurred.

The head of the finance department has presented that during the last financial year the company had a P/V ratio of 40%, margin of safety and the break-even were ₹50 crore and ₹200 crore respectively.

To the reply to the proposal of increasing the production capacity level to 95%, the head of the finance department has informed that this could be achieved if the selling price and variable cost are reduced by 8% and 5% of sales respectively. Fixed cost will also increase by ₹20 crore due to increased depreciation on additional assets. The additional capital will be arranged at a cost of 15% p.a. from a bank.

In the coming financial year, it has been aimed to achieve an additional profit of ₹10 crore over and above the last year's profit after adjusting the interest cost on the additional capital.

The following points is required to be calculated on urgent basis to put the same in the meeting. You being an assistant to the head of finance, has been asked the followings:

- i. *What will be the revised sales for the coming financial year?*
 - (a) ₹ 322.22 Crore
 - (b) ₹ 311.11 Crore
 - (c) ₹ 300.00 Crore
 - (d) ₹ 324.24 Crore
- ii. *What will be the revised break-even point for the coming financial year?*
 - (a) ₹ 222.22 Crore
 - (b) ₹ 252.22 Crore
 - (c) ₹ 244.44 Crore
 - (d) ₹ 255.56 Crore

- iii. What will be the revised margin of safety for the coming financial year?
- (a) ₹ 100 Crore
(b) ₹ 58.89 Crore
(c) ₹ 55.56 Crore
(d) ₹ 66.66 Crore
- iv. The profit of the last year and for the coming year are:
- (a) ₹ 50 Crore & ₹95 Crore respectively
(b) ₹ 20 Crore & ₹ 65 Crore respectively
(c) ₹ 20 Crore & ₹ 30 Crore respectively
(d) ₹ 45 Crore & ₹ 66.66 Crore respectively
- v. The total cost of the last year and for the coming year are:
- (a) ₹ 230 Crore & ₹292.22
(b) ₹ 230 Crore & ₹275 Crore
(c) ₹ 220 Crore & ₹282.22 Crore
(d) ₹ 220 Crore & ₹292.22 Crore

Solution

- i. a Revised Sale = $\frac{\text{Revised Fixed Cost} + \text{Expected Profit}}{\text{P / V Ratio}}$
 $= \{₹115 + (20+10)\} \div 45\% = ₹ 322.22 \text{ crores}$
- ii. d Revised Break – even Point = $\frac{\text{Fixed Cost}}{\text{P / V Ratio}}$
 $= ₹115 \text{ Crore} \div 45\% = ₹255.56 \text{ Crore (Refer working notes)}$
- iii. d Revised Margin of Safety = Revised Sales – Revised Break–even Sales
 $= ₹ 322.22 \text{ Crores} - ₹ 255.56 \text{ Crores} = ₹ 66.66 \text{ Crores.}$
- iv. c ₹ 20 Crore & ₹30 Crore respectively (Refer working note)
- v. a Total cost in last year = ₹230 Crore
Total cost in coming year = Variable Cost + Fixed Cost
Revised sales $\times$ 55% + 115 Crore
 $= ₹ 322.22 \text{ Crore} \times 55\% + ₹ 115 \text{ Crore} = ₹ 292.22 \text{ Crore}$

Working Note

Present Sales and Profit

$$\begin{aligned}
 \text{Total Sales} &= \text{Break – even Sales} + \text{Margin of Safety} \\
 &= ₹ 200 \text{ Crores} + ₹ 50 \text{ Crores} \\
 &= ₹ 250 \text{ Crores} \\
 \text{P/V Ratio} &= 40\% \\
 \text{Variable Cost} &= 60\% \text{ of Sales} \\
 &= ₹ 250 \text{ Crores} \times 60\% \\
 &= ₹ 150 \text{ Crores} \\
 \text{Fixed Cost} &= \text{Break – even Sales} \times \text{P/V Ratio} \\
 &= ₹ 200 \text{ Crores} \times 40\% \\
 &= ₹ 80 \text{ Crores} \\
 \text{Total Cost} &= ₹ 150 \text{ Crores} + ₹ 80 \text{ Crores} \\
 &= ₹ 230 \text{ Crores} \\
 \text{Profit} &= \text{Total Sales} - \text{Total Cost} \\
 &= ₹ 250 \text{ Crores} - ₹ 230 \text{ Crores} \\
 &= ₹ 20 \text{ Cores}
 \end{aligned}$$

Revised Sales	(₹ in Crores)
Present Fixed Cost	80.00
Increase in Fixed Cost	20.00
Interest at 15 per cent on Additional Capital (₹100Crores × 15%)	15.00
Total Revised Fixed Cost (in crore)	115.00
Assuming that the Present Selling Price is ₹ 100	
Revised Selling Price will be (8% Less)	92.00
New Variable Cost (Reduced from 60% to 55%) of Sales (₹ 92 × 55%)	50.60
Contribution (₹ 92.00 – ₹ 50.60)	41.40

$$\begin{aligned}
 \text{New P / V Ratio} &= \frac{₹ 41.40}{₹ 92.00} \times 100 \\
 &= 45\%
 \end{aligned}$$

Case Scenario on Budgets Chapter

M Ltd. is a public sector undertaking (PSU), produces a product A. The company is in process of preparing its revenue budget for the year 2024. The company has the following information which can be useful in preparing the budget:

- (i) It has anticipated 12% growth in sales volume from the year 2023 of 4,20,000 tonnes.*
- (ii) The sales price of ₹23,000 per tonne will be increased by 10% provided Wholesale Price Index (WPI) increases by 5%.*
- (iii) To produce one tonne of product A, 2.3 tonnes of raw material are required. The raw material cost is ₹4,500 per tonne. The price of raw material will also increase by 10% if WPI increase by 5%.*
- (iv) The projected increase in WPI for 2022 is 4%*
- (v) A total of 6,000 employees works for the company. The company works 26 days in a month.*
- (vi) 85% of employees of the company are permanent and getting salary as per 5- year wage agreement. The earnings per manshift (means an employee cost for a shift of 8 hours) is ₹3,000 (excluding terminal benefits). The new wage agreement will be implemented from 1st July 2024 and it is expected that a 15% increase in pay will be given.*
- (vii) The casual employees are getting a daily wage of ₹850. The wages in linked to Consumer Price Index (CPI). The present CPI is 165.17 points and it is expected to be 173.59 points in year 2024.*
- (viii) Power cost for the year 2021 is ₹42,00,000 for 7,00,000 units (1 unit = 1 Kwh). 60% of power is used for production purpose (directly related to production volume) and remaining are for employee quarters and administrative offices.*
- (ix) During the year 2023, the company has paid ₹60,00,000 for safety and maintenance works. The amount will increase in proportion to the volume of production.*
- (x) During the year 2023, the company has paid ₹1,20,000 for the purchase of diesel to be used in car hired for administrative purposes. The cost of diesel will increase by 15% in year 2024.*
- (xi) During the year 2023, the company has paid ₹6,00,000 for car hire charges (excluding fuel cost). In year 2024, the company has decided to reimburse the diesel cost to the car rental company. Doing this will attract 5% GST on Reverse Charge Mechanism (RCM) basis on which the company will not get GST input credit.*

(xii) *Depreciation on fixed assets for the year 2023 is ₹80,40,00,000 and it will be 15% lower in 2024.*

You being an associate to the budget controller of the company is expected to answer the following question:

- (i) *What would be the sales volume for the FY 2024?*
 - (a) *4,70,400 tonnes*
 - (b) *4,70,000 tonnes*
 - (c) *4,70,600 tonnes*
 - (d) *4,70,200 tonnes*
- (ii) *What would be quantity of raw material in FY 2024?*
 - (a) *9,66,000 tonnes*
 - (b) *1,81,000 tonnes*
 - (c) *10,81,900 tonnes*
 - (d) *10,81,920 tonnes*
- (iii) *What would be the car hire charges for the FY 2023?*
 - (a) *₹6,00,000*
 - (b) *₹6,50,000*
 - (c) *₹6,40,000*
 - (d) *₹6,20,000*
- (iv) *What would be the car hire charges for the FY 2024?*
 - (a) *₹6,00,000*
 - (b) *₹7,74,900*
 - (c) *₹6,83,000*
 - (d) *₹6,20,000*
- (v) *What would be the budgeted profit/ loss for the year 2024?*
 - (a) *₹1273.043 lakhs*
 - (b) *(₹5142 lakhs)*
 - (c) *₹5142 lakhs*
 - (d) *(₹1273.043 lakhs)*

Solution

- (i) (a) **4,70,400 tonnes**
(ii) (d) **10,81,920 tonnes**
(iii) (a) **₹ 6,00,000**
(iv) (b) **₹7,74,900**
(v) (d) **(₹1273.043 lakhs)**

Revenue Budget (Flexible Budget) of M Ltd. for the Year 2024

	Particulars	PY 2023	CY 2024
A	Sales Volume (Tonnes)	4,20,000	4,70,400 [112%×4,20,000]
B	Selling Price per tonne (₹)	23,000	23,000
		(₹ in lakh)	(₹ in lakh)
C	Sales value [A×B]	96,600	1,08,192
D	Raw material Cost:		
(i)	Qty. of Material [2.3 tonnes × A] (tonnes)	9,66,000	10,81,920
(ii)	Price per tonne (₹)	4,500	4,500

(iii)	Total raw material cost (₹ in lakh) [(i)×(ii)]	43,470	48,686.40
E	Wages & Salary Cost:		
(i)	Wages to casual employees (15%×6,000 = 900 employees)	2,386.80 [900×26×12×₹850]	2,508.47 [900×26×12×₹893.33]
(ii)	Salary to permanent employees (85%×6,000 = 5,100 employees)	47,736 [5100×26×12×₹3,000]	51,316.20 [(5100×26×6×₹3,000)+(5100×26×6×₹3,450)]

(iii)	Total wages & salary [(i) + (ii) + (iii)]	50,122.80	53,824.67
F	Power cost:		
(i)	For production (units) [60% × 7,00,000]	4,20,000	4,70,400 [112% × 4,20,000]
(ii)	For employees & offices (units) [40% × 7,00,000]	2,80,000	2,80,000
(iii)	Total Power consumption (units) [(i) + (ii)]	7,00,000	7,50,400
(iv)	Power rate per unit (₹) [₹42,00,000 ÷ 7,00,000]	6.00	6.00
(v)	Total power cost [(iii) × (iv)]	42	45.024
G	Safety and maintenance Cost	60	67.20 [112% × 4,20,000]
H	Diesel cost	1.2	-
(i)	Car hire charge	6	6
(ii)	Fuel reimbursement cost	-	1.38 [115% × 1.2]
(iii)	GST@5% on RCM basis [5% × (i + ii)]	-	0.369
(iv)	Total Car hire charge cost [(i) + (ii) + (iii)]	6	7.749
J	Depreciation	8,040	6,834 [85% × 8040]
K	Total Cost [Sum of D to J]	1,01,742	1,09,465.043
L	Profit/ (Loss) [C-L]	(5,142)	(1,273.043)