

CA (INTER-New Syllabus)

COST AND MANAGEMENT ACCOUNTING



IMPORTANT QUESTIONS LIST SUPER 111 QUESTIONS

MAY -25 EXAMS

NOTE FROM AUTHOR:

- 1. Dear students as you know Costing is a very vast subject with a poll of questions.
- 2. We have selected super questions from this poll after considering Past exams papers, RTPs, MTPs and Study material.
- 3. We have prepared this list after considering all the factors and according to the past trends of ICAI.
- 4. We have provided you solutions along with working notes which will save your time.
- 5. We have tried to cover more then 90% topics which in our belief are the most important topics.
- 6. Please solve all the questions once before exam. You will see many questions and topics coming from super 111.
- 7. In case of any queries please reach out to us we are 24*7 committed to our students.

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Question 1

A company manufactures a product from a raw material, which is purchased at Rs. 80 per kg. The company incurs a handling cost of Rs. 370 plus freight of Rs. 380 per order. The incremental carrying cost of inventory of raw material is Rs. 0.25 per kg per month. In addition, the cost of working capital finance on the investment in inventory of raw material is Rs. 12 per kg per annum. The annual production of the product is 1,00,000 units and 2.5 units are obtained from one kg of raw material.

Required:

(i) Calculate the economic order quantity of raw materials.

(ii) Advice, how frequently company should order for procurement be placed.

(iii) If the company proposes to rationalize placement of orders on quarterly basis, what percentage of discount in the price of raw materials should be negotiated?

Assume 360 days in a year.

[(10 Marks) May 2014]

Answer 1

(i) Economic Order Quantity:

EOQ = $\sqrt{(2 \times A \times Ca / Ci)}$ EOQ = $\sqrt{(2 \times 40,000 \times 750 / 15)}$ EOQ = 2,000 Kg

Where: A = Annual Units required A = $1,00,000 \div 2.5 = 40,000$ Kg

Ca = Ordering Cost = 370 + 380 = Rs. 750 Ci = Carrying Cost = 12 + 3 = 15 (Incremental carrying cost = Rs. 0.25 per Kg per month)

(ii) Computation of Days for Placing Next Order



For 40,000 units \rightarrow 360 days For 2,000 units \rightarrow ? days

Days required = (2,000 × 360) ÷ 40,000 = 18 days

Alternative Solution: Frequency of Placing Orders for Procurement:

Annual consumption (A) = 40,000 Kg Quantity per order (E.O.Q) = 2,000 Kg

No. of orders per annum = A ÷ E.O.Q = 40,000 ÷ 2,000 = 20 orders

Frequency of placing orders (in days) = $360 \div 20 = 18$ days

(iii) Percentage of Discount in the Price of Raw Materials to be Negotiated

Particulars	On Quarterly Basis	On E.O.Q Basis		
1. Annual Usage (in Kg.)	40,000 Kg	40,000 Kg		
2. Size of the order	10,000 Kg	2, <mark>00</mark> 0 Kg		
3. No. of orders (1 ÷ 2)	4	20		
4. Cost of placing orders	Rs. 3,000	Rs. 15,000		
(No. of orders × Cost per order)	(4 orders × Rs. 750)	(20 orders × Rs. 750)		
5. Inventory carrying cost	Rs. 75,000	Rs. 15,000		
(Average inventory × Carrying cost per unit)	(10,000 Kg × ½ × Rs. 15)	(2,000 Kg × ½ × Rs. 15)		
6. Total Cost (4 + 5)	Rs. 78,000	Rs. 30,000		

When the order is placed on a quarterly basis, the ordering cost and carrying cost increase by Rs. 48,000 (Rs. 78,000 – Rs. 30,000).

So, discount required = Rs. 48,000

Total annual purchase = 40,000 Kg × Rs. 80 = Rs. 32,00,000

Percentage of discount to be negotiated = (Rs. 48,000 \div Rs. 32,00,000) × 100 = 1.5%



Question 2

Supreme Limited is a manufacturer of energy-saving bulbs. To manufacture the finished product, one unit of component 'LED' is required. Annual requirement of component 'LED' is 72,000 units, the cost being Rs. 300 per unit. Other relevant details for the year 2015-2016 are:

Cost of placing an order	Rs. 2,250
Carrying cost of inventory	12% per annum
Lead Time	Days
Maximum	20 days
Minimum	8 days
Average	14 days
Emergency purchase	5 days
Consumption	Units per day
Maximum	400 units per day
Minimum	200 units per day
Average	300 units per day

You are required to calculate:

- (i) Re-order quantity
- (ii) Re-ordering level
- (iii) Minimum stock level
- (iv) Maximum stock level
- (v) Danger level

[(5 Marks) Nov 2016]

Answer

(i) Calculation of Re-order quantity:

EOQ = $\sqrt{(2 \times A \times Ca \div Ci)}$ EOQ = $\sqrt{(2 \times 72,000 \times 2,250 \div (300 \times 12\%))}$ EOQ = $\sqrt{(32,40,00,000 \div 36)}$ EOQ = $\sqrt{90,00,000}$ EOQ = 3,000 units



(ii) Calculation of Re-ordering level:

Re-ordering level = Maximum Re-order period × Maximum usage = 20 days × 400 units per day = 8,000 units

(iii) Calculation of Minimum stock level:

Minimum stock level = ROL - (Average Consumption × Average Lead time) = 8,000 - (300 × 14) = 8,000 - 4,200 = 3,800 units

(iv) Calculation of Maximum stock level:

Maximum stock level = ROL - (Minimum Consumption × Minimum Lead time) + ROQ = 8,000 - (200 × 8) + 3,000 = 8,000 - 1,600 + 3,000 = 9,400 units

(v) Calculation of Danger level:

Danger level = Minimum consumption × Emergency delivery time

- = 200 units × 5 days
- = 1,000 units

Question 3

ASJ manufacturer produces a product which requires a component costing ₹1,000 per unit. Other information related to the component are as under:

Details	Values
Usage of component	1,500 units per month
Ordering cost	₹75 per order
Storage cost rate	2% per annum
Obsolescence rate	1% per annum
Maximum usage	400 units per week



Lead Time 6–8 weeks

The firm has been offered a quantity discount of 5% by the supplier on the purchase of the component, if the order size is 6,000 units at a time.

You are required to compute:

(i) Economic Order Quantity (EOQ)

(ii) Re-order Level and advise whether the discount offer be accepted by the firm or not.

[(5 Marks) May 2018]

Answer

(i) Annual usage of Components (A) = 1500 × 12 = 18,000 Units Ordering Cost (O) = ₹75 per order Carrying cost per unit per annum (C) i.e., Storage cost + Obsolescence cost = 2% + 1% = 3%

Calculation of Economic Order Quantity

EOQ = $\sqrt{2 \times A \times O \div C}$ = $\sqrt{2 \times 18,000 \times ₹75 \div ₹1000 \times 3\%}$ = 300 units

(ii) Re-Order level = (Maximum usage × Maximum lead time) VS GUDE = 400 units × 8 weeks

= 3,200 units

Evaluation of Profitability of Different Options of Order Quantity

When EOQ is ordered

Particulars	Calculation	Amount (₹)
Purchase Cost	(18,000 × 1,000)	1,80,00,000
Ordering Cost (A ÷ Q × O)	(18,000 ÷ 300 × ₹75)	4,500
Carrying Cost (Q ÷ 2 × C × i)	(300 ÷ 2 × ₹1,000 × 3%)	4,500
Total Cost		1,80,09,000



When Quantity Discount is accepted

Particulars	Calculation	Amount (₹)
Purchase Cost	[18,000 × (1,000 – 5%)]	1,71,00,000
Ordering Cost (A ÷ Q × O)	(18,000 ÷ 6,000 × ₹75)	225
Carrying Cost (Q ÷ 2 × C × i)	(6,000 ÷ 2 × ₹950 × 3%)	85,500
Total Cost		1,71,85,725

So, Savings in cost = ₹8,23,275 (₹1,80,09,000 – ₹1,71,85,725)

Advice – The total cost of inventory is higher if EOQ is adopted. If we accept the quantity discount of 5% offered by the supplier, 'ASJ' will save ₹8,23,275/-. Hence, the company is advised to accept the quantity discount.

Question 4

M/s. X Private Limited is manufacturing a special product which requires a component "SKY BLUE". The following particulars are available for the year ended 31st March, 2021:

Particulars	Details
Annual demand of "SKY BLUE"	12,000 Units
Cost of placing an order	₹ 1,800
Cost per unit of "SKY BLUE"	₹ 640
Carrying cost per annum	18.75%

The company has been offered a quantity discount of 5% on the purchases of "SKY BLUE" provided the order size is 3,000 components at a time.

You are required to:

(i) Compute the Economic Order Quantity.

(ii) Advise whether the quantity discount offer can be accepted.

[(5 Marks) May 2018]



Answer:

Annual demand (A) = 12,000 units Ordering Cost (O) = ₹ 1,800 Carrying cost per unit per annum (c × i) = ₹ 640 × 18.7596 = ₹ 120

(i) Calculation of Economic Order Quantity:

EOQ = √((2 × A × O) / (c × i)) EOQ = √((2 × 12,000 × ₹ 1,800) / ₹ 120) = 600 units

(ii) Evaluation of Profitability of Different Options of Order Quantity

Particulars	When EOQ is ordered	When discount of 5% is accepted and order size is 3,000 units
Size of the order	600 units	3,000 units
No. of orders	20 (12,000 ÷ 600)	4 (12,000 ÷ 3,00 <mark>0</mark>)
Total Purchase Cost	₹ 7 <mark>6,80,000 (12,000</mark> kgs × ₹ 640)	₹ 72,96,000 (12,000 kgs × ₹ 608)
Total ordering cost	₹ 36,000 (₹ 1,800 × 20 orders)	₹ 7,200 (₹ 1,800 × 4 orders)
Total carrying cost	₹ 36,000 (600 units × ½ × ₹ 640 × 18.75%)	₹ 1,71,000 (3,000 units × ½ × ₹ 608 × 18.7596)
Total Cost	₹ 77,52,000	₹ 74,74,200

Note: Here, it is assumed that the carrying cost varies due to discount in the purchase price. Alternatively, it may be assumed that the carrying cost per unit is fixed and does not vary due to discount in purchase price. In such case the Total carrying cost, for order size is 3000 units, shall be:

Carrying Cost = 3,000 units × ½ × ₹ 640 × 18.75% = ₹ 1,80,000

Advice: The total cost is lower if the company accepts an offer of 5% discount by the supplier. The company is advised **not to accept the EOQ.**



Question 5

The following are the details of receipt and issue of material 'CXE' in a manufacturing company during the month of April 2019:

Date	Particulars	Quantity (kg)	Rate per kg (₹)
April 4	Purchase	3000	16
April 8	Issue	1000	
April 15	Purchase	1500	18
April 20	Issue	1200	
April 25	Return to supplier (out of purchase made on April 15)	300	51
April	Issue	1000	
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April 28	Purchase	500	17

Opening stock as on 01-04-2019 is 1000 kg @ ₹15 per kg. On 30th April, 2019 it was found that 50 kg of material 'CXE' was fraudulently misappropriated by the store assistant and never recovered by the company.

Required: Prepare a store ledger account under each of the following methods of pricing the issue: (A) Weighted Average Method, (B) LIFO

What would be the value of material consumed and value of closing stock as on 30-04-2019 as per these two methods?

[(10 Marks) May 2019]



Answer

(A)Stores Ledger of Material CXE (Weighted Average Method)

Date	Receipts	5		Issues			Balance		
April	Units	Rate	Value	Units	Rate	Value	Units	Rate	Value
1	-	-	-	-	-	-	1000	15	15,000
4	3000	16	48,000	-	-	-	4000	15.75	63,000
8	-	-	-	1000	15.75	15,750	3000	15.75	47,250
15	1500	18	27,000	-	-	-	4500	16.50	74,250
20	-	-	-	1200	16.50	19,800	3300	16.50	54,450
25	-	-	Return	300	18	5400	3000	16.35	49,050
26	-	-	-	1000	1 <mark>6.35</mark>	16,350	2000	1 <mark>6.</mark> 35	32,700
28	500	17	8, <mark>50</mark> 0	-	-	-	2500	1 <mark>6.</mark> 48	41,200
30	-	-	Shortage	50	16.48	824	2450	16.48	40,376

(B) Stores Ledger of Material CXE (LIFO Method)

Date	Receipts	;		Issues	Issues			Balance		
Артт	Units	Rate	Value	Units	Rate	Value	Units	Rate	Value	
1	-	-	-	-	-	-	1000	15	15,000	
4	3000	16	48,000	-	-	-	1000	15	15,000	
							3000	16	48,000	
8	-	-	-	1000	16	16,000	1000	15	15,000	
							2000	16	32,000	
15	1500	18	27,000	-	-	-	1000	15	15,000	



							2000	16	32,000
							1500	18	27,000
20	-	-	-	1200	18	21,600	1000	15	15,000
							2000	16	32,000
							300	18	5,400
25	-	-	Return	300	18	5400	1000	15	15,000
							2000	16	32,000
26	-	-	-	1000	16	16,000	1000	15	15,000
							1000	16	16,000
28	500	17	8,500	-	-	-	1000	15	15,000
							1000	16	16,000
							500	17	8,500
30	-	-	Shortage	50	17	850	1000	15	15,000
							1000	1 <mark>6</mark>	16,000
							450	17	7,650

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Value of material consumed and closing stock:

	Material Consumed	Closing Stock
Under Weighted Average	51,900	40,376
Under LIFO	53,600	38,650

Question 6

An Automobile company purchases 27,000 spare parts for its annual requirements. The cost per order is ₹240 and the annual carrying cost of average inventory is 12.5%. Each spare part costs ₹50.

At present, the order size is 3,000 spare parts. (Assume that number of days in a year = 360 days)

Find out:

(i) How much the company's cost would be saved by opting EOQ model?(ii) The Re-order point under EOQ model if lead time is 12 days.



(iii) How frequently should orders for procurement be placed under EOQ model?

[(10 Marks) Nov 2020]

Answer

(i) Calculation of Economic Order Quantity (EOQ):

EOQ = $\sqrt{[(2 \times \text{Annual consumption} \times \text{Ordering cost per order)} \div \text{Carrying cost per unit p.a.]}$

EOQ = √[(2 × 27,000 units × ₹240 per order) ÷ (₹50 × 12.5%)]

EOQ = √[(2 × 27,000 × ₹240) ÷ ₹6.25]

EOQ = 1,440 units.

(ii) Calculation of the savings arising from switching over to EOQ:

Particulars	Present System	EOQ System
(a) Order size (un <mark>its)</mark>	3,000	<mark>1,440</mark>
(b) No. of orders p. <mark>a. (</mark> 27,000 ÷ a)	9	<mark>18.75</mark>
(c) Ordering cost p.a. [b × ₹240]	₹2,160	₹4,500
(d) Carrying cost p.a. [a ÷ 2 × ₹6.25]	₹9,375 EXA	₹4,500 DE
(e) Total cost p.a. [c + d]	₹11,535	₹9,000
(f) Savings from switching over		₹2,535

(iii) Calculation of Re-order Point:

Consumption per day = $27,000 \div 360 = 75$ units per day

Re-order Point = 75 units per day × 12 days = 900 units.

(iv) Calculation of frequency of orders under EOQ model:

Frequency of orders = No. of days in a year ÷ No. of orders p.a.

Frequency of orders = 360 days \div 18.75 orders \approx 19.2 days.



Question 7

MM Ltd. has provided the following information about the items in its inventory:

Item Code Number	Units	Unit Cost (₹)
101	25	50
102	300	01
103	50	80
104	75	08
105	225	02
106	75	12

MM Ltd. has adopted the policy of classifying the items constituting 15% or above of Total Inventory Cost as 'A' category, items constituting 6% or less of Total Inventory Cost as 'C' category and the remaining items as 'B' category.

You are required to :

(i) Rank the items on the basis of % of Total Inventory Cost.(ii) Classify the items into A, B and C categories as per ABC Analysis of Inventory Control adopted by MM Ltd

[(5 Marks) July 2021]

Answer

(i) Statement of Total Inventory Cost and Ranking of Items:

ltem Code No.	Units	Unit Cost (₹)	Total Inventory Cost (₹)	% of Total Inventory Cost	Ranking
101	25	50	1,250	16.67	2
102	300	01	300	4.00	6
103	50	80	4,000	53.33	1



104	75	08	600	8.00	4
105	225	02	450	6.00	5
106	75	12	900	12.00	3
Total	750		7,500	100.00	

(ii) Classifying Items as per ABC Analysis of Inventory Control:

Basis for ABC Classification as % of Total Inventory Cost:

- 15% & above -- 'A' items
- 7% to 14% -- 'B' items
- 6% & Less -- 'C' items

Ranking	ltem Code No.	Total Inventory Cost (₹)	% of Total Inventory Cost	Category
1	103	4,000	53.33	Α
2	101	1,250	16.67	A
	Total A	5,250	70.00	
3	106	900	12.00	В
4	104	600	8.00	B
	Total B	1,500	20.00	
5	105	450	6.00	С
6	102	300	4.00	С
	Total C	750	10.00	
	Grand Total	7,500	100.00	

Question 8

XYZ Ltd uses two types of raw materials – 'Material A' and 'Material B' in the production process and has provided the following data year ended on 31st March, 2021:



Particulars	Material A (₹)	Material B (₹)
Opening stock as on	30,000	32,000
01.04.2020 Purchase during	90,000	51,000
the year Closing stock as on	20,000	14,000
31.03.2021		

You are required to calculate:

The inventory turnover ratio of 'Material A' and 'Material B'. The number of days for which the average inventory is held for both materials 'A' and 'B'. Based on above calculations, give your comments. (Assume 360 days i

Based on above calculations, give your comments. (Assume 360 days in a year.)

[(5 Marks) Dec 2021]

Answer

Particulars	Material	Material
Opening stock Add: Purchases Less: Closing stock Materials consumed Average inventory (Opening stock + Closing stock) ÷ 2 Inventory turnover ratio (Materials consumed ÷ Average inventory) Inventory holding period (360 ÷ IT Ratio)	A 30,000 90,000 (20,000) 1,00,000 25,000 4 times 90 days	B 32,000 51,000 (14,000) 69,000 23,000 3 times 120 days

Statement Showing Inventory Turnover Ratio

Comment: The material turnover ratio of material A is higher than material B. Hence, A is the fast moving material. Inventory Turnover Ratio indicates that how much time a particular inventory is rotated during the year. Since, inventory turnover ratio of A is higher than that of B; it indicates that A is fast moving. This can be further verified by average inventory holding as it is lesser for A in comparison to B. Attempt should be therefore made to reduce the amount of capital locked up in B.

Question 9



RST Company Ltd. had computed labour turnover rates for the quarter ended 31st March, 2017 as 20%, 10% and 5% under Flux method, Replacement method and Separation method respectively. If the number of workers replaced during the quarter is 50, find out

(i) Workers recruited and joined,

(ii) Workers left and discharged and

(iii) Average number of workers on roll.

[(5 Marks) May 2017]

Answer

Calculation of workers recruited and joined:

Number of accessions = Replaced + New Joined = (10% + 5%) = 15% of average workers = 15% of 500 = 75 workers

Or

Number of accessions = Flux - Separated = (20% - 5%) = 15% of average workers = 15% of 500 = 75 workers

Calculation of workers left and discharged:

Number of workers separated = 5% of average workers = 5% of 500 = 25 workers

Calculation of average number of workers on roll:

Number of workers replaced = 10% of average workers = 50 workers

Therefore, Average workers = 50 ÷ 10% = 500 workers

Question 10

A worker takes 15 hours to complete a piece of work for which time allowed is 20 hours. His wage rate is ₹5 per hour. The following additional information is also available:



Item	Amount (₹)
Material cost of work	50
Factory overheads	100% of wages

Calculate the factory cost of work under the following methods of wage payments:

- (i) Rowan Plan
- (ii) Halsey Plan

[CA Inter May 2018, 5 Marks]

Answer:

Calculation of Factory Cost of Work:

	Rowan Plan (₹)	Halsey Plan (₹)
Materials	50	50
Direct Wages (Refer W.N.)	93.75	87.50
Prime Cost	143.7 <mark>5</mark>	137.50
Factory Overheads (100% of Direct Wages)	93.75	87.50
Factory Cost	237.50 EXA	225.00

Working Note:

Calculation of Direct Wages:

Rowan Plan

= Time Taken × Rate per hour + (Time Saved ÷ Time Allowed) × Time Taken × Rate per hour
= 15 hours × 5 + (5 hours ÷ 20 hours) × 15 hours × 5

- = 15 nours × 5 + (5 nours ÷ 20 nours) × 15 nours × 5 = ₹93.75
- Halsey Plan
 - = Time Taken × Time Rate + 50% of Time Saved × Time Rate
 - = 15 hours × 5 + (50% of 5 hours) × 5
 - = ₹87.50

Question 11



The following data have been extracted from the books of M/s. ABC Private Limited:

Item	Amount
(i) Salary (each employee, per month)	₹ 30,000
(ii) Bonus	25% of salary
(iii) Employer's contribution to PF, ESI etc.	15% of salary
(iv) Total cost at employees' welfare activities	₹ 6,61,500 per
	annum
(v) Total leave permitted during the year	30 days
(vi) No. of employees	175
(vii) Normal idle time	70 hours per annum
(viii) Abnormal idle time (due to failure of power supply)	50 hours
(ix) Working days per annum	310 days of 8 hours

You are required to calculate:

(i) Annual cost of each employee

(ii) Employee cost per hour

(iii) Cost of abnormal idle time, per employee.

E EXAMS GUIDE [CA Inter Nov 2018, 5 Marks]

Answer:

(i) Calculation of Annual Cost of each employee

Particulars	Amount (₹)
Salary (₹ 30,000 × 12)	3,60,000
Bonus (25% of salary)	90,000
Contribution to PF, ESI (15% of salary)	54,000
Cost of employees' welfare activities (₹ 6,61,500 ÷ 175 employees)	3,780
Total Annual Cost of each employee	5,07,780



(ii) Calculation of Employee cost per hour

Particulars	Hours
Working Hours (310 days × 8 hours)	2,480
Less: Employee leave hours (30 days × 8 hours)	240
Available working Hours	2,240
Less: Normal Idle Time	70
Effective Working Hours	2,170

Employee Cost per Hour = ₹ 5,07,780 ÷ 2,170 hours = ₹ 234 Note: It is assumed that 310 working days do not include leave days permitted to the employees.

(iii) Cost of abnormal idle time, per employee

= ₹ 234 × 50 hours = **₹ 11,700**

Question 12

Zico Ltd. has its factory at two locations viz Nasik and Satara. Rowan plan is used at Nasik factory and Halsey plan at Satara factory. Standard time and basic rate of wages are the same for a job which is similar and is carried out on similar machinery. Normal working hours is 8 hours per day in a 5-day week.

Job in Nasik factory is completed in 32 hours while at Satara factory it has taken 30 hours. Conversion costs at Nasik and Satara are ₹ 5,408 and ₹ 4,950. Overheads account for ₹ 25 per hour.

Required:

(i) To find out the normal wages; and

(ii) To compare the respective conversion costs.

[CA Inter Nov. 2019, 10 Marks]



Answer:

Calculation of Total labour costs at both the factories

Particulars	Nasik	Satara
Hours worked	32 hrs.	30 hrs.
Conversion Costs	₹ 5,408	₹ 4,950
Less: Overheads	₹ 800 (₹ 25 × 32 hrs.)	₹ 750 (₹ 25 × 30 hrs.)
Labour Costs	₹ 4,608	₹ 4,200

(i) Calculation of Normal Wage Rate:

Let wage rate be ₹ R per hour, which is the same for both the Nasik and Satara factory.

Normal time allowed for completing the job is 40 hours, i.e., 8 hours per day × 5 days.

Normal wage rate can be found out taking total cost of either factory.

Nasik: Rowan Plan

Total Labour Cost = Wages for hours worked + Bonus as per Rowan plan ₹ 4,608 = Time taken × Rate per hour + (Time saved ÷ Time Allowed) × Time taken × Rate per hour ₹ 4,608 = 32 hrs × R + [(40 - 32) ÷ 40] × 32 × R ₹ 4,608 = 32R + 6.4R

R = ₹ 120 per hour THE COMPLETE EXAMS GUIDE

OR

• Satara: Halsey Plan

Total Labour Cost = Wages for hours worked + Bonus as per Halsey plan ₹ 4,200 = Time taken × Time Rate + 50% of Time Saved × Time Rate ₹ 4,200 = 30 hrs × R + 50% of (40 hrs - 30 hrs) × R ₹ 4,200 = 30R + 5R ₹ 4,200 = 35R **R = ₹ 120 per hour**

(ii) Comparative Statement of Respective Conversion Costs

Particulars	Nasik (₹)	Satara (₹)
Normal Wages	3,840 (₹ 120 × 32)	3,600 (₹ 120 × 30)
Bonus	768 (6.4 × ₹ 120)	600 (5 × ₹ 120)



Factory Overhead	800	750
Conversion Costs	5,408	4,950

Question 13

Following are the particulars of two workers 'R' and 'S' for a month:

Particulars	R	S
(i) Basic Wages (₹)	15,000	30,000
(ii) Dearness Allowance	50%	50%
(iii) Contribution to EPF (on basic wages)	7%	7.5%
(iv) Contribution to ESI (on basic wages)	2%	2%
(v) Overtime (hours)	20	-

The normal working hours for the month are 200 hours. Overtime is paid at double the total of normal wages and dearness allowance. Employer's contribution to State Insurance and Provident Fund are at equal rates with employees' contributions.

Both workers were employed on jobs A, B, and C in the following proportions:

Jobs	Α	В	С
R	75%	10%	15%
S	40%	20%	40%

Overtime was done on job 'A'. You are required to:

(i) Calculate ordinary wage rate per hour of 'R' and 'S'.

(ii) Allocate the worker's cost to each job 'A', 'B', and 'C'.

[(6 Marks) Nov 2020]

Answer

(i) Calculation of Net Wages paid to Worker 'R' and 'S'



Particulars	R (₹)	S (₹)
Basic Wages	15,000.00	30,000.00
Dearness Allowance (DA) (50% of Basic Wages)	7,500.00	15,000.00
Overtime Wages (Refer to Working Note 1)	4,500.00	
Gross Wages earned	27,000.00	45,000.00
Less: Provident Fund (7% × ₹ 15,000); (7.5% × ₹ 30,000)	(1,050.00)	(2,250.00)
Less: ESI (2% × ₹ 15,000); (2% × ₹ 30,000)	(300.00)	(600.00)
Net Wages paid	25,650.00	42,150.00

Calculation of ordinary wage rate per hour of Worker 'R' and 'S'

Particulars	R (₹)	S (₹)
Gross Wages (Basic Wages + DA) (excluding overtime)	22,500.00	45,000.00
Employer's contribution to P.F. and E.S.I.	1,350.00	2,8 <mark>50</mark> .00
Total	23,850.00	47,850.00
Ordinary wages Labour Rate per hour	119.25 (₹ 23,850 ÷ 200 hours)	239.25 (₹ 47,850 ÷ 200 hours)

(ii) Statement Showing Allocation of Workers Cost to Each Job

Worker	Total Wages	Jobs A (₹)	Jobs B (₹)	Jobs C (₹)
Worker R				
Ordinary Wages (15:2:3)	23,850.00	17,887.50	2,385.00	3,577.50
Overtime	4,500.00	4,500.00	-	-
Worker S				
Ordinary Wages (2:1:2)	47,850.00	19,140.00	9,570.00	19,140.00

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Total	76,200.00	41,527.50	11,955.00	22,717.50

Working Note:

- Normal Wages are considered as basic wages.
- Overtime
 - = 2 × (Basic wage + D.A.) × 20 hours ÷ 200 hours
 - = 2 × ₹ 22,500 × 20 ÷ 200
 - =₹4,500

Question 14

Z Ltd is working by employing 50 skilled workers. It is considering the introduction of an incentive scheme – either Halsey Scheme (with 50% Bonus) or Rowan Scheme of wage payment for increasing the labour productivity to adjust with the increasing demand for its products by 40%.

The company feels that if the proposed incentive scheme could bring about an average 20% increase over the present earnings of the workers, it could act as sufficient incentive for them to produce more and the company has accordingly given assurance to the workers.

Because of this assurance, an increase in productivity has been observed as revealed by the figures for the month of April, 2020:

Hourly rate of wages (guaranteed)	₹ 50
Average time for production one unit by one worker at the previous performance (this may be taken as time allowed)	1.975 hours
Number of working days in a month	24
Number of working hours per day of each worker	8
Actual production during the month	6,120 units

Required:

(i) Calculate the effective increase in earnings of workers in percentage terms under Halsey and Rowan scheme.

(ii) Calculate the savings to Z Ltd in terms of direct labour cost per unit under both the schemes.

(iii) Advise Z Ltd about the selection of the scheme that would fulfil its



assurance of incentivising workers and also to adjust with the increase in demand.

[(10 Marks) Jan 2021]

Answer

Working Notes:

- 1. Calculation of actual hours worked:
 - = 8 hrs. per day × 24 days per month × 50 workers = 9,600 hours
- 2. Calculation of Standard time and Time saved: Standard time allowed for actual output:
 - = 6,120 units × 1.975 hours
 - = 12,087 hours

Hence, Time saved:

- = Time allowed Time taken
- = 12,087 9,600
- = 2,487 hours

3. Calculation of wages under Halsey Scheme: Total wages:

- = (Hours worked × Rate per hour) + 50% (Time saved × Rate per hour)
- = (9,600 hrs. × ₹ 50) + 50% (2,487 hrs. × ₹ 50)
- = 4,80,000 + 62,175
- = ₹ 5,42,175

Hence, Effective earning per hour:

- = Total wages ÷ Actual hours
- = ₹ 5,42,175 ÷ 9,600 hours
- = ₹ 56.4765 per hour

4. Calculation of wages under Rowan Scheme:

Total wages:

= (Hour worked × Rate per hour) + (Time saved ÷ Time allowed) × (Hours worked × Rate per hour)

- = (9,600 hrs. × ₹ 50) + [(2,487 ÷ 12,087) × (9,600 × ₹ 50)]
- = 4,80,000 + 98,764
- = ₹ 5,78,764



Hence, Effective earning per hour:

- = Total wages ÷ Actual hours
- = ₹ 5,78,764 ÷ 9,600 hours
- = ₹ 60.2879 per hour

(i) Calculate the effective increase in % earnings of workers:

- (a) For Halsey Plan:
- = [(₹ 56.4765 per hour ₹ 50 per hour) ÷ ₹ 50 per hour] × 100 = 12.953%
- (b) For Rowan Plan:
- = [(₹ 60.2879 per hour ₹ 50 per hour) ÷ ₹ 50 per hour] × 100
- = 20.5758%

Particulars	Halsey Plan	Rowan Plan
Labour cost per unit at present	₹ 98.75	S ₹ 98.75 D =
[1.975 hrs. × ₹ 50 per hour]		
Total wages under incentive scheme	₹ 5,42,175	₹ 5,78,764
Actual Production (units)	6,120	6,120
Labour cost per unit under the scheme [b ÷ c]	₹ 88.59	₹ 94.57
Saving in cost per unit [a - d]	₹ 10.16	₹ 4.18

(ii) Calculate the savings to Z Ltd in terms of direct labour cost per unit:

(iii) Advise to Z Ltd about the selection of the scheme that would fulfil its assurance:

The company had given the assurance to workers that their wages will increase by 20% of their present earnings.

This assurance is fulfilled under **Rowan Scheme**, because earnings of workers have increased by **20.5758%**.

Hence, Rowan scheme should be selected.



Normal production = Actual total hours ÷ Hours per unit = 9,600 ÷ 1.975 = 4,860 units (approx)

Production under incentive schemes = 6,120 units

% increase in production = [(6,120 - 4,860) ÷ 4,860] × 100 = 25.92%

Demand for our products has gone up by 40%, which will not get fulfilled.

Question 15

Following information is given of a newly setup organization for the year ended on 31st March, 2021.

Details	Number
Number of workers replaced during the period	50
Number of workers left and discharged during the period	25
Average number of workers on the roll during the period	500

You are required to:

(i) Compute the Employee Turnover Rates using Separation Method and Flux Method.

(ii) Equivalent Employee Turnover Rates for (i) above, given that the organization was setup on 31st January, 2021.

[(5 Marks) July 2021]

Answer

(i) Employee Turnover Rate

Using Separation method:

Number of employees Separated during the period ÷ Average number of employees during the period on roll × 100

 $= 25 \div 500 \times 100 = 5\%$ (for 2 months)

Using Flux method:

(Number of employees Separated + Number of employees Replaced during the period) ÷ Average number of employees during the period on roll × 100

 $= (50 + 25) \div 500 \times 100 = 15\%$ (for 2 months)



(ii) Equivalent Employee Turnover Rate per annum

Using Separate method: 5% × 12 months ÷ 2 months = 30%

Using Flux method: 15% × 12 months ÷ 2 months = 90%

Question 16

Here is the properly formatted content for direct use:

PQR Limited has replaced 72 workers during the quarter ended 31st March 2022. The labour rates for the quarter are as follows:

Rate	
16%	
8%	
<mark>5%</mark>	
	Rate 16% 8% 5%

You are required to ascertain:

(i) Average number of workers on roll (for the quarter),

(ii) Number of workers left and discharged during the quarter,

(iii) Number of workers recruited and joined during the quarter,

(iv) Equivalent employee turnover rates for the year.

[(5 Marks) May 2022]

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Answer

(i) Turnover Ratio using Replacement method Turnover Ratio = No. of workers replaced ÷ Avg. no. of workers × 100

 \therefore 8% = 72 ÷ Avg. no. of workers

 \therefore Average workers = 72 \div 8%

= 900 workers for the quarter



(ii) Turnover Ratio by Separation method

Turnover Ratio = No. of workers left and discharged ÷ Avg. no. of workers × 100

5% = X ÷ 900

∴ X = 5% × 900

: No. of workers left & discharged = 45 workers during the quarter

(iii) Flux Method

Flux Method = (No. of workers joined + No. of workers left) ÷ Avg. no. of workers × 100

 $16\% = (X + 45) \div 900$

∴ 900 × 16% = X + 45

∴ 144 = X + 45

∴ 144 - 45 = X

 \therefore X = 99 workers

∴ No. of workers recruited & joined = 99 workers during the quarter

(iv) Equivalent employee turnover rates for the year

Note: Turnover rates are already given in the question for a quarter. We need to just convert it into an annual rate as follows:

Flux Method = $16\% \times 4 = 64\%$ p.a. Replacement Method = $8\% \times 4 = 32\%$ p.a. Separation Method = $5\% \times 4 = 20\%$ p.a.

Question 17

A skilled worker, in PK Ltd., is paid a guaranteed wage of ₹ 15.00 per hour in a 48-hour week. The standard time to produce a unit is 18 minutes. During a week, a skilled worker – Mr. 'A' has produced 200 units of the product. The Company has taken a drive for cost reduction and wants to reduce its labour cost.

You are required to:

(i) Calculate wages of Mr. 'A' under each of the following methods:

A. Time rate,

- B. Piece-rate with a guaranteed weekly wage,
- C. Halsey Premium Plan,
- D. Rowan Premium Plan



(ii) Suggest which bonus plan i.e. Halsey Premium Plan or Rowan Premium Plan, the company should follow.

[(6 Marks) Nov 2022]

Answer

Calculation of wages of Mr. 'A' under various methods:

(A) Time Rate:
Wages = Hours worked × Rate per hour
= 48 hours × 15 = ₹ 720

(B) Piece Rate with Guaranteed Weekly Wage:
Guaranteed Weekly Wages = 48 hours × 15 = ₹ 720
Piece Rate = ₹ 15 ÷ 60 minutes × 18 minutes
= ₹ 4.50 per piece
Piece Rate Wages = No. of pieces produced × Piece Rate
= 200 units × ₹ 4.50 = ₹ 900

(C) Halsey Premium Plan:

Time allowed = (200 units × 18 minutes) ÷ 60 minutes = 60 hours Time saved = 60 - 48 hours = 12 hours Wages = (Hours worked × Rate per hour) + 50% of (Time Saved × Rate per hour) = (48 hours × 15) + 50% of (12 hours × 15) = ₹ 720 + 90 = ₹ 810

(D) Rowan Premium Plan:

Wages = Basic Wages + [TS ÷ TA × Basic wages] = **EXAMS GUIDE** = ₹ 720 + [12 ÷ 60 × ₹ 720] = ₹ 720 + 144 = ₹ 864

(ii) Suggestion about Bonus Plan:

As the company aims to reduce its labour cost, Halsey Premium Plan should be followed.

Question 18

A machine shop cost centre contains three machines of equal capacities. To operate these three machines, nine operators are required i.e. three operators on each machine. Operators are paid ₹ 20 per hour. The factory works for forty-eight hours in a week which includes 4 hours set-up time. The work is jointly done by operators. The operators are paid fully for the forty-eight hours. In addition, they are paid a bonus of 10 per cent of



productive time. Costs are reported for this company on the basis of thirteen four-weekly periods.

The company, for the purpose of computing machine hour rate, includes the direct wages of the operator and also recoups the factory overheads allocated to the machines. The following details of factory overheads applicable to the cost centre are available:

- Depreciation: 10% per annum on the original cost of the machine. Original cost of each machine is ₹ 52,000.
- Maintenance and repairs: ₹ 60 per week per machine.
- Consumable stores: ₹ 75 per week per machine.
- Power: 20 units per hour per machine at the rate of 80 paise per unit. No power is used during the set-up hours.
- Apportionment to the cost centre:
 - Rent per annum: ₹ 5,400
 - o Heat and Light per annum: ₹ 9,720
 - o Foreman's salary per annum: ₹ 12,960
 - o Other miscellaneous expenditure per annum: ₹ 18,000

Required:

CALCULATE the cost of running one machine for a four-week period.

[(8 Marks) May 2015]

Answer

Effective Machine hour for four-week period

- = Total working hours unproductive set-up time
- $= \{(48 \text{ hours} \times 4 \text{ weeks}) (4 \text{ hours} \times 4 \text{ weeks})\}$
- = (192 16 hours) = 176 hours.

(i) Computation of cost of running one machine for a four-week period

Particulars	₹	₹
(A) Standing charges (per annum)		
Rent	5,400	
Heat and light	9,720	



Foreman's salary	12,960	
Other miscellaneous expenditure	18,000	
Standing charges (per annum)	46,080	
Total expenses for one machine for four-week period		1,181.54
Wages (48 hours × 4 weeks × ₹ 20 × 3 operators)		11,520.00
Bonus {(176 hours × ₹ 20 × 3 operators) × 10%}		1,056.00
Total standing charges		13,757.54
(B) Machine Expenses		
Depreciation		400.00
Repairs and maintenance (₹ 60 × 4 weeks)		240.00
Consumable stores (₹ 75 × 4 weeks)		300.00
Power (176 hours × 20 units × ₹ 0.80)		2,816.00
Total machine expenses		3,756.00
(C) Total expenses (A) + (B)		17,513.54

(ii) Machine hour rate

= ₹ 17,513.54 ÷ 176 hours = ₹ 99.51

Question 19

APP Limited is a manufacturing concern and recovers overheads at a predetermined rate of ₹ 30 per man-day.

The following additional information of a period are also available for you:

Particulars	Amount/Units
Total factory overheads incurred	₹ 51,00,000
Man-days actually worked	1,50,000
Sales (in units)	50,000
Stock at the end of the period:	

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Completed units	5,000
Incompleted units (50% completed)	10,000

There was no opening stock of finished goods and works in progress.

On analyzing the situation, it was discovered that 60% of the unabsorbed overheads were due to defective planning, and the balance was attributable to an increase in overhead costs.

How would you treat unabsorbed overheads in cost accounts?

[(8 Marks) Nov 2017]

Answer

Particulars	Amount (₹)
Total factory overheads incurred	51,00,000
Less: Absorbed factory overheads (₹ 30 × 1,50,000)	(45,00,000)
Under-absorption of Overheads	6,00,000

60% of ₹ 6,00,000 i.e. ₹ 3,60,000 would be transferred to the Costing P/L Account.

40% of ₹ 6,00,000 i.e. ₹ 2,40,000 would be apportioned over sales units and stock by using the supplementary overheads rate.

Supplementary overheads Rate: ₹ 2,40,000 ÷ (50,000 + 5,000 + 5,000) = ₹ 4

Particulars	Amount (₹)
On Sales (50,000 units × ₹ 4)	2,00,000
On Finished Goods (5,000 units × ₹ 4)	20,000
On Work in Progress (10,000 × 50% × ₹ 4)	20,000
Total	2,40,000

Question 20

Delta Ltd. is a manufacturing concern having two production departments P1 and P2 and two service departments S1 and S2. After making a primary distribution of factory overheads, the total overheads of all departments are as under:



Department	Overheads (₹)
P1	4,02,000
P2	2,93,000
S1	3,52,000
S2	33,000

Overheads of service departments are reapportioned as below:

Service Department	P1 (%)	P2 (%)	S1 (%)	S2 (%)
S1	40	50	-	10
S2	50	40	10	-

A product Z passes through all the two production departments – P1 and P2, and each unit of product remains there in process for 2 and 3 hours respectively. The material and labour cost of one unit of product Z is ₹500 and ₹350 respectively.

The company runs for all the 365 days of the year and 16 hours per day.

You are required:

(i) To make a secondary distribution of overheads of service departments by applying the Simultaneous Equation method

(ii) Determine the total cost of one unit of product Z.

[(8 Marks) May 2018]

Answer

(i)

Overheads of service cost centres Let S1 be the overhead of service cost centre S1 and S2 be the overhead of service cost centre S2.

S1 = 3,52,000 + 0.10 S2

S2 = 33,000 + 0.10 S1

Substituting the value of S2 in S1 we get: S1 = 3,52,000 + 0.10 (33,000 + 0.10 S1) S1 = 3,52,000 + 3,300 + 0.01 S1 0.99 S1 = 3,55,300S1 = ₹ 3,58,889



S2 = 33,000 + 0.10 × 3,58,889 = ₹ 68,889

Secondary Distribution Summary

Particulars	Total (₹)	P1 (₹)	P2 (₹)
Allocated and Apportioned overheads as per primary distribution	6,95,000	4,02,000	2,93,000
S1	3,58,889	1,43,556	1,79,445
S2	68,889	34,445	27,556
Total		5,80,001	5,00,001

(ii) Working for Overhead rate per hour

	P1	P2
Total overheads cost (₹)	5,80,001	5,00,001
Production hours worked	5,840	5,840
Rate per hour (₹)	99.32	85.62

Calculation of per unit Total Cost of Product Z

Particulars	¥
Direct material	500.00
Direct labour	350.00
Prime cost	850.00
Production on overheads	
P1 - 2 hours × ₹ 99.32 =	198.64
P2 - 3 hours × ₹ 85.62 =	256.86
Total cost	1,305.50



Question 21

RSJ produces a single product and absorbs production overheads at a predetermined rate. Information relating to a period is as under:

Particulars	Amount
Production overheads actually incurred	₹ 4,84,250
Overhead recovery rate at production	₹ 1.45 per hour
Actual hours worked	2,65,000 hours
Production:	
Finished goods	17,500 units
Works-in-progress (50% complete in all respect)	5,000 units
Sales of finished go <mark>ods</mark>	12,500 units

At the end of the period, it was discovered that the actual production overheads incurred included ₹ 40,000 on account of 'written off obsolete stores' and wages paid for the strike period under an award.

It was also found that 30% of the under absorption of production overheads was due to factory inefficiency and the rest was attributable to normal increase in costs.

Required to calculate:

(i) The amount of under absorbed production overheads during the period.(ii) Show the accounting treatment of under absorption of production overheads and pass journal entry.

[(8 Marks) Nov 2018]

Answer

(i) Amount of under absorption of production overheads during the period:



Particulars	Amount (₹)	Amount (₹)
Total production overheads actually incurred during the period		4,84,250
Less: Expenses on account of obsolete store and wages paid for the strike period		40,000
Net production overheads actually incurred		4,44,250
Less: Production overheads absorbed as per machine hour rate (2,65,000 hours × ₹1.45)		3,84,250
Amount of under absorbed production overheads		60,000

(ii) Accounting treatment of under absorbed production overheads:

As 30% of the under absorbed overheads were due to factory inefficiency, this being abnormal, hence should be debited to Costing Profit and Loss Account.

Amount to be debited to Costing Profit and Loss Account = (60,000 × 30%) = ₹ 18,000.

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

Amount to be distributed = (60,000 × 70%) = ₹ 42,000. EXAMS GUIDE

Supplementary rate = ₹ 42,000 ÷ 20,000 units = ₹ 2.10

(17,500 units + 1/2 of 5000 units)

Apportionment of under absorbed production overheads over WIP, Finished goods and Cost of sales:

Particulars	Equivalent completed units	Amount (₹)
Work-in-Progress (5,000 units × 50% × 2.10)	2,500	5,250
Finished goods (5,000 units × 2.10)	5,000	10,500
Cost of sales (12,500 units × 2.10)	12,500	26,250
Total	20,000	42,000


Journal Entry:

Particulars	Dr. (₹)	Cr. (₹)
WIP Control A/C	5,250	
Finished Goods Control A/C	10,500	
Cost of Sales A/C	26,250	
Costing P/L A/C	18,000	
To Overhead Control A/C		60,000

Question 22

M/s. NOP Limited has its own power plant and generates its own power. Information regarding power requirements and power used are as follows:

	Production Dept.		Service	Dept.
	Α	В	X	Y
	(Horse power hours)			
Needed capacity production	20,000	25,000	15,000	10,000
Used during the quarter ended September 2018	16,000	20,000	12,000	8,000

During the quarter ended September 2018, costs for generating power amounted to ₹ 12.60 lakhs out of which ₹ 4.20 lakhs was considered as fixed cost.

Service department X renders services to departments A, B, and Y in the ratio of 6:4:2 whereas department Y renders services to department A and B in the ratio of 4:1. The direct labour hours of department A and B are 67,500 hours and 48,750 hours respectively.

Required:

- 1. Prepare overheads distribution sheet.
- 2. Calculate factory overhead per labour hour for the dept. A and dept. B.

[(5 Marks) Nov 2018]



Answer

(1) Overheads Distribution Sheet

ltem	Basis	Total Amount (₹)	Production Departments		Service Departn	nents
			A (₹)	B (₹)	X (₹)	Y (₹)
Variable overheads (₹ 12.60 lakhs - ₹ 4.20 lakhs)	Horse Power hours used	8,40,000	2,40,000	3,00,000	1,80,000	1,20,000
Fixed Overheads	Horse power for Capacity productio n	4,20,000	1,20,000	1,50,000	90,000	60,000
Total		12,60,000	3,60,000	4,50,000	2,70,000	1,80,000
Overheads						
Service dept X allocated to A, B & Y	As per the ratio given 6:4:2	(₹ 2,70,000)	1,35,000	90,000	S	45,000
Service	As per	(₹ 1,80,000 +	1,80,000	45,000		
dept Y allocated to A & B	the ratio of 4:1	4,5000 = ₹ 2,25,000)	IPLETE	EXAN	is gui	DE
Total Overheads of Production Departmen ts:			6,75,000	5,85,000		

(2) Calculation of Factory Overhead Per Labour Hour

Item	Production Departments			
	A (₹)	B (₹)		
Total overheads	6,75,000	5,85,000		
Direct labour hours	67,500	48,750		
Factory overheads per hour	10	12		

Question 23



M/s. Zaina Private Limited has purchased a machine costing ₹ 29,14,800 and it is expected to have a salvage value of ₹ 1,50,000 at the end of its effective life of 15 years. Ordinarily, the machine is expected to run for 4,500 hours per annum but it is estimated that 300 hours per annum will be lost for normal repairs & maintenance. The other details in respect of the machine are as follows:

Details	Amount
(i) Repair & Maintenance during the whole life of the machine are expected to be	₹ 5,40,000
(ii) Insurance premium (per annum) 2% of the cost of the machine	
(iii) Oil and Lubricants required for operating the machine (per annum)	₹ 87,384
(iv) Power consumption: 10 units per hour @ ₹ 7 per unit. No power consumption during repair and maintenance.	
(v) Salary to operator per month ₹ 24,000. The operator devotes one-third of his time to the machine.	

You are required to calculate the comprehensive machine hour rate. [(5 Marks) May 2019]

Answer

Effective machine hours p.a. = 4,500 – 300 = 4,200 hours p.a.

Calculation of Comprehensive Machine Hour Rate

	Amt. (₹) p.a.
Particulars	
Repairs and Maintenance (₹ 5,40,000 ÷ 15 years)	36,000
Insurance (₹ 29,14,800 × 2%)	58,296
Oil and Lubricant	87,384
Power (4,200 hours × 10 units/hr. × ₹ 7)	2,94,000
Salary to Operator [(₹ 24,000 p.m. × 12 months) ÷ 3]	96,000
Depreciation (₹ 29,14,800 – ₹ 1,50,000 ÷ 15 years)	1,84,320
Total Cost p.a.	7,56,000
Comprehensive Machine Hour Rate [₹ 7,56,000 ÷ 4,200]	180

Question 24

ABS Enterprises produces a product and adopts the policy to recover factory overheads applying blanket rate based on machine hours. The cost records of the concern reveal the following information:

Details	Amount (₹)
Budgeted production overheads	10,35,000
Budgeted machine hours	90,000
Actual machine hours worked	45,000
Actual production overheads	8,80,000

Production overheads (actual) include:

- Paid to worker as per court's award: ₹ 50,000
- Wages paid for strike period: ₹ 38,000
- Stores written off: ₹ 22,000
- Expenses of previous year booked in current year: ₹ 18,500

Production:

- Finished goods: 30,000 units
- Sale of finished goods: 27,000 units

The analysis of cost information reveals that 1/3 of the under absorption of overheads was due to defective production planning and the balance was attributable to an increase in costs.

You are required:

(i) To find out the amount of under absorbed production overheads.

- (ii) To give the ways of treating it in Cost Accounts.
- (iii) To apportion the under absorbed overheads over the items.

Answer

(a) Working Note:

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

Particula	Α	В	С	D	E
r					
Cases sold: (a)	9,360	14,200	62,000	38,000	9,800
Revenues (at listed price) (₹): (b) {{a × ₹ 54}}	5,05,440	7,66,800	33,48,000	20,52,000	5,29,200
Discount (₹): (c) {{a ×	-	8,520	3,10,000	1,44,400	52,920

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[(10 Marks) Nov 2019]



Discount					
per case}}					
Cost of goods sold (₹): (d) {{a × ₹ 45}}	4,21,200	6,39,000	27,90,000	17,10,000	4,41,000

Customer-Level Operating Activities Costs:

Particular	Α	В	С	D	E
Order taking costs (₹): (No. of purchase × ₹ 200)	6,000	10,000	12,000	10,000	12,000
Customer visits costs (₹): (No. of customer visits × ₹ 300)	1,200	1,800	3,600	1,200	1,800
Delivery vehicles travel costs (₹): (Kms travelled × ₹ 4 per km)	3,200	2,880	4,800	6,400	9,600
Product handling costs (₹): {{a × ₹ 2}}	18,720	28,400	1,24,000	76,000	19,600
Cost of expediting deliveries (₹): (No. of expedited					200
deliveries × ₹ 100)	71.15		STE EV	ALAS /	
Total cost of customer-level operating activities (₹)	29,120	43,080	1,44,400	93,600	43,200

(i) Computation of Customer Level Operating Income:

Particular	Α	В	С	D	E
Revenues (At list price)	5,05,440	7,66,800	33,48,000	20,52,000	5,29,200
Less: Discount	-	8,520	3,10,000	1,44,400	52,920
Revenue (At actual price)	5,05,440	7,58,280	30,38,000	19,07,600	4,76,280
Less: Cost of goods sold	4,21,200	6,39,000	27,90,000	17,10,000	4,41,000
Gross	84,240	1,19,280	2,48,000	1,97,600	35,280



margin					
Less: Customer- level operating activities costs	29,120	43,080	1,44,400	93,600	43,200
Customer- level operating income	55,120	76,200	1,03,600	1,04,000	(7,920)

(ii) Comments:

Customer D in comparison with Customer C:

Operating income of Customer D is more than that of Customer C, despite having only 61.29% (38,000 units) of the units volume sold in comparison to Customer C (62,000 units). Customer C receives a higher percentage of discount i.e. 9.26% (₹ 5), while Customer D receives a discount of 7.04% (₹ 3.80). Though the gross margin of Customer C (₹ 2,48,000) is more than Customer D (₹ 1,97,600), the total cost of customer-level operating activities of Customer C (₹ 1,44,400) is higher compared to Customer D (₹ 93,600). As a result, operating income is higher for Customer D.

Customer E in comparison with Customer A:

Customer E is not profitable, while Customer A is profitable. Customer E receives a discount of 10% (₹ 5.40), whereas Customer A doesn't receive any discount. Sales volumes of Customer A and E are almost the same. However, the total cost of customer-level operating activities of Customer E is far higher (₹ 43,200) in comparison to Customer A (₹ 29,120). This has resulted in a loss in the case of Customer E.

Question 25

Following details are provided by M/s ZIA Private Limited for the quarter ended 30th September, 2018:

Details	Amount (₹)
Direct Expenses	1,80,000
Direct Wages (being 175% of Factory Overheads)	2,57,250
Cost of Goods Sold	18,75,000
Selling and Distribution Overheads	60,000
Sales	22,10,000
Administration Overheads (10% of Factory Overheads)	-



Stock details as per Stock register:

Stock	30.06.2018 (₹)	30.09.2018 (₹)
Raw Materials	2,45,600	2,08,000
Work-in-progress	1,70,800	1,90,000
Finished Goods	3,10,000	2,75,000

You are required to prepare a Cost Sheet showing:

- 1. Raw Material Consumed
- 2. Prime Cost
- 3. Factory Cost
- 4. Cost of Goods Sold
- 5. Cost of Sales and Profit

[(10 Marks) Nov 2018]

Answer

Cost Sheet

Particulars	Amount (₹)	
Raw Materials Purchased (W.N.)	12,22,650	
Add: Opening Stock of Raw Materials	<mark>2,45,</mark> 600	
Less: Closing Stock of Raw Materials	🦰 (<mark>2,08</mark> ,000) 🖌	
Materials Consumed	12, <mark>60</mark> ,2 <mark>50</mark>	
Direct Wages	2,57,250	
Direct Expenses	1,80,000	
Prime Cost	16,97,500	N2 GUI
Factory Overheads (2,57,250 ÷ 175%)	1,47,000	
Add: Opening Work-in-progress	1,70,800	
Less: Closing Work-in-progress	(1,90,000)	
Factory Cost	18,25,300	
Administrative Overheads (10% of 1,47,000)	14,700	
Add: Opening Finished Goods	3,10,000	
Less: Closing Finished Goods	(2,75,000)	
Cost of Goods Sold	18,75,000	
Selling and Distribution Overheads	60,000	
Cost of Sales	19,35,000	
Profit (b.f.)	2,75,000	
Sales	22,10,000	

Working Note

Statement Showing Material Purchased

Particulars	Amount (₹)
Cost of Goods Sold	18,75,000



Add: Closing Finished Goods	2,75,000
Less: Opening Finished Goods	(3,10,000)
Cost of Production	18,40,000
Less: Administrative Overheads	(14,700)
Factory Cost	18,25,300
Add: Closing WIP	1,90,000
Less: Opening WIP	(1,70,800)
Gross Factory Cost	18,44,500
Less: Factory Overheads	(1,47,000)
Prime Cost	16,97,500
Less: Direct Expenses	(1,80,000)
Less: Direct Wages	(2,57,250)
Raw Material Consumed	12,60,250
Add: Closing Raw Materials	2,08,000
Less: Opening Raw Materials	(2,45,600)
Raw Materials Purchased	12,22,650

Question 26

M/s. Areeba Private Limited has a normal production capacity of 36,000 units of toys per annum.

The estimated cost of production is as under:

- 1. Direct Material: Rs. 40 per unit
- 2. Direct Labour:

Rs. 30 per unit (subject to a minimum of Rs. 48,000 p.m.)

- 3. Factory Overheads:
 - (a) Fixed: Rs. 3,60,000 per annum
 - (b) Variable: Rs. 10 per unit

(c) Semi-variable: Rs. 1,08,000 per annum up to 50% capacity and additional Rs. 46,800 for every 20% increase in capacity or any part thereof.

- 4. Administrative Overheads: Rs. 5,18,400 per annum (fixed)
- 5. Selling Overheads: Rs. 8 per unit
- 6. Scrap:

Each unit of raw material yields scrap which is sold at the rate of Rs. 5 per unit.

- 7. Capacity Utilization (2019):
 - 50% capacity for the first three months
 - 80% capacity for the remaining nine months
- 8. Selling Price for First Three Months: Rs. 145 per unit



You are required to:

(i) Prepare a Cost Sheet showing:

- Prime Cost
- Works Cost
- Cost of Production
- Cost of Sales

(ii) Calculate the selling price per unit for the remaining nine months to achieve the total annual profit of Rs. 8,76,600.

[(10 Marks) May 2019]

Answer

(i) Cost Sheet of M/s. Areeba Pvt. Ltd. for the year 2019

Particulars	3 Months (50%)	9 Months (80%)	Total
Capacity utilisation	50%	80%	
Production in Units	[36,000 ×	<mark>[36,</mark> 000 × 80%	<mark>26,10</mark> 0
	50% × 3/12]	× 9/12] =	
	= 4,500	21,600	
Direct Material @ ₹ 40	1,80,000	8,64,000	10,44,000
per unit		TT TVANA	
Less: Scrap @ ₹ 5 per I II unit	(22,500)	E II (1,08,000) M €	(1,30,500)
∴ Net Materials	1,57,500	7,56,000	9,13,500
Consumed			
Direct Wages @ ₹ 40 per	1,44,000	6,48,000	7,92,000
unit or ₹ 48,000 p.m.,			
whichever is higher			
∴ Prime Cost	3,01,500	14,04,000	17,05,500
Factory Overheads:			
- Fixed	90,000	2,70,000	3,60,000
- Variable @ ₹ 10 per unit	45,000	2,16,000	2,61,000
- Semi-variable (see note	27,000	1,51,200	1,78,200
Works Cost	4 63 500	20 41 200	25.04.700
Add: Administrativo	4,03,500	20,41,200	5 19 400
Overheads	1,29,000	3,00,000	5,16,400
: Cost of Production	5,93,100	24,30,000	30,23,100
Selling Overheads @ ₹ 8	36,000	1,72,800	2,08,800
per unit			
∴ Cost of Sales	6,29,100	26,02,800	32,31,900



Working Notes / Assumptions:

- 1. Calculation of Semi Variable Overheads:
 - For 50% Capacity = 1,08,000 per annum Hence, for first 3 months = (1,08,000 × 3/12) = ₹ 27,000
 - For 80% Capacity = (1,08,000 + 46,800 + 46,800) = 2,01,600 per annum

Hence, for last 9 months = (2,01,600 × 9/12) = ₹ 1,51,200

- 2. Alternatively, scrap of raw material can also be reduced from works cost.
- 3. Administrative overhead may alternatively be treated as a part of general overheads. In that case, Works Cost as well as Cost of Production will be same and Administrative overheads will be added along with Selling overheads. However, cost of sales will remain the same.

(ii) Calculation of Selling Price for Nine Months Period

Particulars	Amount (₹)
Total Cost of Sales from Cost Sheet	32,31,900
Add: Desired annual profit (given)	8,76,600
Total Sales Value	41,08,500
Less: Sales value fo <mark>r firs</mark> t three months (₹ 145 × 4,500 units)	(6,52,500)
∴ Sales Value to be realised in next nine months	34,56,000
Selling price per unit (₹ 34,56,000 ÷ 21,600 units)	160

Question 27

XYZ, a manufacturing firm, has revealed the following information for September, 2019:

Particulars	1st September (₹)	30th September (₹)
Raw Materials	2,42,000	2,92,000
Works-in-progress	2,00,000	5,00,000

The firm incurred the following expenses for a target production of 1,00,000 units during the month:

Particulars	Amount (₹)
Consumable Stores and spares of factory	3,50,000
Research and development cost for process improvements	2,50,000
Quality control cost	2,00,000
Packing cost (secondary) per unit of goods sold	2
Lease rent of production asset	2,00,000
Administrative Expenses (General)	2,24,000



Selling and distribution Expenses	4,13,000
Finished goods (opening)	Nil
Finished goods (closing)	5000 units
Defective output (4% of targeted production), realizes ₹ 61	-
per unit	

- Closing stock is valued at cost of production (excluding administrative expenses).
- Cost of goods sold, excluding administrative expenses amounts to ₹ 78,26,000.
- Direct employees' cost is 1/2 of the cost of material consumed.
- Selling price of the output is ₹ 110 per unit.

You are required to:

(i) Calculate the value of material purchased.

(ii) Prepare a cost sheet showing the profit earned by the firm.

[(10 Marks) Nov 2019]

Answer

Cost Sheet of XYZ for the month of September: [Bottom to Top Approach]

Particulars	Amount (₹)	Amount (₹)
Direct Material Consumed		
Raw materials purchased (Bal. Fig.)	52,50,000	
Add: Opening stock	2,42,000	
Less: Closing stock	(2,92,000)	52,00,000
Wages paid [78,00,000 × 0.50 / 1.50] (see working below)		26,00,000
PRIME COST		78,00,000
Add: Factory Overheads		
Consumable Stores and spares of factory	3,50,000	
Lease rent of production asset	2,00,000	5,50,000
GROSS FACTORY COST		83,50,000
Add: Opening value of W-I-P	2,00,000	
Less: Closing value of W-I-P	(5,00,000)	
NET FACTORY COST OF FG		80,50,000
Quality control cost		2,00,000
Research & development cost		2,50,000
Less: Amount realised by selling defective output		(2,44,000)
[1,00,000 units × 4% × ₹ 61 per unit]		
COST OF PRODUCTION		82,56,000
Add: Opening stock of Finished goods	NIL	
Less: Closing stock of Finished goods		(4,30,000)
[78,26,000 / 91,000 units × 5,000 units]		
COST OF GOODS SOLD (Given)		78,26,000



Add: Selling & Distribution expenses	/ 13 000
Add. Selling & Distribution expenses	4,13,000
Add: Administrative expenses (General)	2,24,000
Add: Secondary packing [91,000 units × ₹ 2]	1,82,000
	8,19,000
COST OF SALES	86,45,000
Sales Revenue [91,000 units × ₹ 110]	1,00,10,000
PROFIT (Balancing Figure)	13,65,000
Morting Notoo	

Working Notes

1. Calculation of No. of units sold:

Particulars	Units
Target Production	1,00,000
Less: Defective production @ 4% of 1,00,000	(4,000)
∴ Good units of FG produced	96,000
Add: Opening stock of FG	NIL
Less: Closing stock of FG	(5,000)
∴ Finished goods sold during the month	91,000

2. Procedure to solve this question:

- First prepare the blank format of cost sheet with relevant items.
- Write down the figures already given in the question.
- Start with COGS figure given in the question.
- Do the forward working from COGS and you will reach up to profits.
- Now do the reverse working from COGS. While doing the reverse calculations, the items originally added in the cost sheet will get deducted, and the items deducted in the cost sheet will get added. By this way, you will reach up to Prime Cost.
- Prime cost of ₹ 78,00,000 consists of Material + Labour. Let's assume material consumed as ₹ X and Wages as ₹ 0.5X. Hence, 1.5X = 78,00,000 and X = 52,00,000 and 0.5X = 26,00,000.
- Once we get the cost of material consumed, then again we do the reverse calculations to get the cost of material purchased as a balancing figure.

Question 28

X Ltd. manufactures two types of pens 'Super Pen' and 'Normal Pen'. The cost data for the year ended 30th September, 2019 is as follows:

Particulars	(₹)
Direct Materials	8,00,000
Direct Wages	4,48,000
Production Overhead	1,92,000
Total	14,40,000

It is further ascertained that:



- 1. Direct materials cost in Super Pen was twice as much of direct material in Normal Pen.
- 2. Direct wages for Normal Pen were 60% of those for Super Pen.
- 3. Production overhead per unit was at the same rate for both the types.
- 4. Administration overhead was 200% of direct labour for each.
- 5. Selling cost was ₹ 1 per Super Pen.
- 6. Production and sales during the year were as follows:

Particulars	Production (No. of units)	Sales (No. of units)
Super Pen	40,000	36,000
Normal Pen	1,20,000	

7. Selling price was ₹ 30 per unit for Super Pen.

Prepare a Cost Sheet for 'Super Pen' showing:

(i) Cost per unit and Total Cost

(ii) Profit per unit and Total Profit

[(10 Marks) Nov 2020]

Answer

(a) Preparation of Cost Sheet for Super Pen No. of units produced = 40,000 units No. of units sold = 36,000 units

Per unit (₹)	Total (₹)
8.00	3,20,000
4.00	1,60,000
12.00	4,80,000
1.20	48,000
13.20	5,28,000
8.00	3,20,000
21.20	8,48,000
-	(84,800)
21.20	7,63,200
1.00	36,000
22.20	7,99,200
7.80	2,80,800
30.00	10,80,000
	Per unit (₹) 8.00 4.00 12.00 1.20 13.20 8.00 21.20 - 21.20 1.00 22.20 7.80 30.00

Working Notes

(i) Direct material cost per unit of Normal pen = M Direct material cost per unit of Super pen = 2M Total Direct Material cost:
= 2M × 40,000 units + M × 1,20,000 units Or, ₹ 8,00,000 = 80,000 M + 1,20,000 M



Or, M = ₹ 8,00,000 / 2,00,000 = ₹ 4 Therefore, Direct material Cost per unit of Super pen = 2 × ₹ 4 = **₹ 8**

(ii) Direct wages per unit for Super pen = W
Direct wages per unit for Normal Pen = 0.6W
So, (W × 40,000) + (0.6W × 1,20,000) = ₹ 4,48,000
W = ₹ 4 per unit
(iii) Production overhead per unit:
= ₹ 1,92,000 ÷ (40,000 + 1,20,000)
= ₹ 1.20
Production overhead for Super pen:
= ₹ 1.20 × 40,000 units = ₹ 48,000

Note:

- Administration overhead is specific to the product as it is directly related to direct labour as mentioned in the question and hence to be considered in cost of production only.
- **Assumption**: It is assumed that in point (1) and (2) of the Question, direct materials cost and direct wages respectively are related to per unit only.
- Note: Direct Material and Direct wages can be calculated in alternative ways.

Question 29

The following data are available from the books and records of Q Ltd. for the month of April 2020:

- Direct Labour Cost = ₹ 1,20,000 (120% of Factory Overheads)
- Cost of Sales = ₹ 4,00,000
- Sales = ₹ 5,00,000 THE COMPLETE EXAMS GUID

Accounts show the following figures:

Particulars	1st April, 2020 (₹)	30th April, 2020 (₹)
Inventory:		
Raw Material	20,000	25,000
Work-in-progress	20,000	30,000
Finished Goods	50,000	60,000
Other details:		
Selling Expenses		22,000
General & Admin. Expenses		18,000

You are required to prepare a cost sheet for the month of April 2020 showing:

- 1. Prime Cost
- 2. Works Cost
- 3. Cost of Production
- 4. Cost of Goods Sold
- 5. Cost of Sales and Profit earned

[(10 Marks) Jan 2021]

Answer

CALEXAMS THE COMPLETE EXAMS GUID

Q Ltd.

Cost Sheet for the month of April, 2020

					· · · · · · · · · · · · · · · · · · ·		
(to	be	solved	using	bottom	to top i.e	. reverse	approach)

Particulars	Amount (Rs.)	
Opening stock of raw material	20,000	
Add: Purchases (Bal. fig.)	1,65,000	
Less: Closing stock of raw material	(25,000)	
Raw Material Consumed	1,60,000	
Add: Direct Labour (Given)	1,20,000	
Prime Cost	2,80,000	
Add: Factory Overheads (1,20,000 / 120%)	1,00,000	
Gross Factory Cost / Work Cost	3,80,000	
Add: Opening Work-in-Progress	20,000	
Less: Closing Work-in-Progress	(30,000)	
Net Factory cost / Cost of Production	<mark>3,70,0</mark> 00	
Add: Opening stock of Finished Goods	50,000	
Less: Closing stock of Finished Goods	(60,000)	
Cost of Goods Sold	3,60,000	13 GUIDE
Add: Selling expenses	22,000	
Add: General & Admin. expenses	18,000	
Cost of Sales [starting point] - Given	4,00,000	
Sales	5,00,000	
Profit (Bal. fig.)	1,00,000	

Working Note

1. Computation of the raw material consumed

Particulars	₹
Cost of Sales	4,00,000
Less: General and administration expenses	(18,000)
Less: Selling expenses	(22,000)
Cost of goods sold	3,60,000
Add: Closing stock of finished goods	60,000
Less: Opening stock of finished goods	(50,000)



Cost of production/Gross works cost	3,70,000
Add: Closing stock of work-in-progress	30,000
Less: Opening stock of work-in-progress	(20,000)
Works cost	3,80,000
Less: Factory overheads (₹ 1,20,000 / 120 × 100)	(1,00,000)
Prime cost	2,80,000
Less: Direct labour	(1,20,000)
Raw material consumed	1,60,000

2. Computation of the raw material purchased

Particulars	₹
Closing stock of Raw Material	25,000
Add: Raw Material consumed	1,60,000
Less: Opening stock of Raw Material	(20,000)
Raw Material purchased	1,65,000

Question 30

DFG Ltd. manufactures leather bags for office and school purpose. The following information is related with the production of leather bags for the month of September 2019.

(i) Leather sheets and cotton cloths are the main inputs, and the estimated requirement per bag is two meters of leather sheets and one meter of cotton cloth. 2,000 meter of leather sheets and 1,000 meter of cotton cloths are purchased at ₹3,20,000 and ₹15,000 respectively. Freight paid on purchases is ₹8,500.

(ii) Stitching and finishing need 2,000 man hours at ₹80 per hour.

(iii) Other direct cost of ₹10 per labour hour is incurred.

(iv) DFG has 4 machines at a total cost of ₹22,00,000. Machine has a life of 10 years with a scrape value of 10% of the original cost. Depreciation is charged on straight line method.

(v) The monthly cost of administrative and sales office staffs are ₹45,000 and ₹72,000 respectively. DFG pays ₹1,20,000 per month as rent for a 2400 sq.feet factory premises. The administrative and sales office occupies 240 sq. feet and 200 sq. feet respectively of factory space.

(vi) Freight paid on delivery of finished bags is ₹18,000.

(vii) During the month 35 kg. of leather and cotton cuttings are sold at ₹150 per kg.

(viii) There is no opening and closing stocks for input materials. There is 100 bags in stock at the end of the month.

Required:

PREPARE a cost sheet following functional classification for the month of September 2019.



[(10 Marks) Dec 2021]

Answer

No. of bags manufactured = 1,000 units

Cost sheet for the month of September 2019

Particulars	Total Cost (₹)	Cost per unit (₹)
1. Direct materials consumed:		
- Leather sheets	3,20,000	320.00
- Cotton cloths	15,000	15.00
Add: Freight paid on purchase	8,500	8.50
2. Direct wages (₹80 × 2,000 hours)	1,60,000	160.00
3. Direct expenses (₹10 × 2,000 hours)	20,000	20.00
4. Prime Cost	5,23,500	523.50
5. Factory Overheads:		
Depreciation on machines	16,500	16.50
(₹22,00,000×90%) ÷ 120 months		
Apportioned cost of factory rent	98,000	98.00
6. Works/Factory Cost	6,38,000	638.00
Less: Realisable value of cuttings (₹150×35	(5,250)	(5.25)
kg.)		
7. Cost of Production	<mark>- 6,32,</mark> 75 <mark>0 /</mark>	632.75
Add: Opening stock of bags	0	0
Less: Closing stock of bags (100 bags ×	(63,275)	(63.28)
₹632.75)	ETE EYAL	IS CLUDE
8. Cost of Goods Sold	5,69,475	632.75
9. Add: Administrative Overheads:		
Staff salary	45,000	45.00
Apportioned rent for administrative office	12,000	12.00
10. Add: Selling and Distribution		
Overheads:		
Staff salary	72,000	80.00
Apportioned rent for sales office	10,000	11.11
Freight paid on delivery of bags	18,000	20.00
11. Cost of Sales	7.26.475	800.86

Apportionment of Factory Rent:

To factory building: ((₹1,20,000 ÷ 2400 sq. feet) × 1,960 sq. feet) = ₹98,000 To administrative office: ((₹1,20,000 ÷ 2400 sq. feet) × 240 sq. feet) = ₹12,000 To sales office: ((₹1,20,000 ÷ 2400 sq. feet) × 200 sq. feet) = ₹10,000

Question 31

PNME Ltd. manufactures two types of masks - 'Disposable Masks' and 'Cloth Masks'.



The cost data for the year ended 31st March, 2022 is as follows:

Particulars	₹
Direct Materials	12,50,000
Direct Wages	7,00,000
Production Overhead	4,00,000
Total	23,50,000

It is further ascertained that:

- Direct material cost per unit of Cloth Mask was twice as much of Direct material cost per unit of Disposable Mask.
- Direct wages per unit for Disposable Mask were 60% of those for Cloth Mask.
- Production overhead per unit was at the same rate for both the types of the masks.
- Administration overhead was 50% of Production overhead for each type of mask.
- Selling cost was ₹ 2 per Cloth Mask.
- Selling Price was ₹ 35 per unit of Cloth Mask.
- No. of units of Cloth Masks sold: 45,000
- No. of units of production:
 - Cloth Masks: 50,000
 - Disposable Masks: 1,50,000

You are required to prepare a cost sheet for Cloth Masks showing: (i) Cost per unit and Total Cost

(ii) Profit per unit and Total Profit

[(10 Marks) Nov 2022]

Answer

Preparation of Cost Sheet for Cloth Masks

No. of units produced = 50,000 units No. of units sold = 45,000 units

Particulars	Per unit (₹)	Total (₹)
Direct materials (Working note- (i))	10.00	5,00,000
Direct wages (Working note- (ii))	5.00	2,50,000
Prime cost	15.00	7,50,000
Production overhead (Working note- (iii))	2.00	1,00,000
Factory Cost	17.00	8,50,000
Administration Overhead* (50% of Production	1.00	50,000
OH)		



Cost of production	18.00	9,00,000
Less: Closing stock (50,000 units – 45,000 units)	-	(90,000)
Cost of goods sold i.e. 45,000 units	18.00	8,10,000
Selling cost	2.00	90,000
Cost of sales/ Total cost	20.00	9,00,000
Profit	15.00	6,75,000
Sales value (₹ 35 × 45,000 units)	35.00	15,75,000

Working Notes:

(i) Direct material cost per unit of Disposable Mask = M Direct material cost per unit of Cloth Mask = 2M Total Direct Material cost = 2M × 50,000 units + M × 1,50,000 units Or, ₹ 12,50,000 = 1,00,000 M + 1,50,000 M Or, M = ₹ 12,50,000 ÷ 2,50,000 = ₹ 5 Therefore, Direct material Cost per unit of Cloth Mask = 2 × ₹ 5 = ₹ 10 (ii) Direct wages per unit for Cloth Mask = W Direct wages per unit for Disposable Mask = 0.6W So, (W × 50,000) + (0.6W × 1,50,000) = ₹ 7,00,000 W = ₹ 5 per unit Therefore, Direct material Cost per unit of Cloth Mask = ₹ 5

(iii) Production overhead per unit = $\gtrless 4,00,000 \div (50,000+1,50,000) = \end{Bmatrix} 2$ Production overhead for Cloth Mask = $\gtrless 2 \times 50,000$ units = $\gtrless 1,00,000$

Administration overhead is related to production overhead in the question and hence to be considered in cost of production only.

Question 32

The following information is available from SN Manufacturing Limited's for the month of April 2023.

Opening and closing inventories data:	April 1	April 30
Stock of finished goods	2,500 units	?
Stock of raw materials	₹42,500	₹38,600
Work-in-progress	₹42,500	₹42,800

Other data are:

- Raw materials Purchased: ₹6,95,000
- Carriage inward: ₹36,200
- Direct wages paid: ₹3,22,800
- Royalty paid for production: ₹35,800
- Purchases of special designs, moulds and patterns (estimated life 12 Production cycles): ₹1,53,600
- Power, fuel and haulage (factory): ₹70,600
- Research and development costs for improving the production process (amortized): ₹31,680
- Primary packing cost (necessary to maintain quality): ₹6,920



- Administrative Overhead: ₹46,765
- Salary and wages for supervisor and foremen: ₹28,000

Other information:

- Opening stock of finished goods is to be valued at ₹8.05 per unit.
- During the month of April, 1,52,000 units were produced and 1,52,600 units were sold. The closing stock of finished goods is to be valued at the relevant month's cost of production. The company follows the FIFO method.
- Selling and distribution expenses are to be charged at 20 paisa per unit.
- Assume that one production cycle is completed in one month.

Required:

- 1. Prepare a cost sheet for the month ended on April 30, 2023, showing the various elements of cost (raw material consumed, prime cost, factory cost, cost of production, cost of goods sold, and cost of sales).
- 2. Calculate the selling price per unit if profit is charged at 20 percent on sales.

[(10 Marks) May 2023]

Answer

Cost Sheet for the month of April 2023

Particulars	Amount (₹)	Amount (₹)
Raw materials consumed:		
Raw materials purchased	6,95,000	
Add: Carriage inward	36,200	GUIDE
Add: Value of opening stock of raw materials	42,500	
Less: Value of closing stock of raw materials	(38,600)	7,35,100
Direct wages paid		3,22,800
Royalty paid for production		35,800
Amortised cost of special designs, moulds, and patterns (₹1.53.600 ÷ 12)		12,800
Power, fuel, and haulage (factory)*		70,600
Prime Cost*		11,77,100
Salary and wages of supervisor and foremen		28,000
Gross Works Cost		12,05,100
Add: Opening stock of WIP		42,500
Less: Closing stock of WIP		(42,800)
Factory/Works Cost		12,04,800
Research and development cost	31,680	
Primary packing cost	6,920	
Cost of Production		12,43,400
Add: Opening stock of finished goods (₹8.05 × 2,500 units)		20,125
Less: Value of closing stock [(2,500+152,000 -		(15,542)



1,52,600) × (12,43,400 ÷ 152,000)]	
Cost of Goods Sold	12,47,983
Add: Administrative overheads	46,765
Add: Selling and distribution expenses (₹0.20 ×	30,520
1,52,600)	
Cost of Sales	13,25,268
Add: Profit (20% on Sales or 25% on cost of	3,31,317
sales)	
Sales value	16,56,585
Selling price per unit (₹16,56,585 ÷ 1,52,600 units)	10.86

Notes:

1. May be taken as part of Factory/Works cost; however, Total Factory Cost will remain the same. If taken as part of factory cost, then Prime Cost will be ₹ 11,06,500.

Question 33

XYZ Ltd. has obtained an order to supply 48,000 bearings per year from a concern. On a steady basis, it is estimated that it costs ₹ 0.20 as inventory holding cost per bearing per month and the set-up cost per run of bearing manufacture is ₹ 384.

You are required to:

- 1. Compute the optimum run size and number of runs for bearing manufacture.
- 2. Compute the interval between two consecutive runs.
- 3. Find out the extra costs to be incurred, if the company adopts a policy to manufacture 8,000 bearings per run as compared to optimum run size.
- 4. Give your opinion regarding run size of bearing manufacture. Assume 365 days in a year.

[(10 Marks) Nov 2018]

Answer

(a)

(i) Optimum batch size or Economic Batch Quantity (EBQ): EBQ = $\sqrt{(2DS / C)} = \sqrt{(2 \times 48,000 \times 384 / 2.4)} = 3919.18$ or 3,920 units Number of Optimum runs = 48,000 ÷ 3,920 = 12.245 or **13 run**

(ii) Interval between 2 runs (in days) = $365 \text{ days} \div 13 = 28 \text{ days}$ Or $365 \div 12.24 = 29.82 \text{ days}$

(iii) If 8,000 bearings are manufactured in a run: Total cost = Set-up cost + Inventory holding cost = $384 \times (48,000 \div 8,000) + (8,000 \div 2) \times 2.4$ = 2304 + 9,600 = 11,904



Extra cost = (11,904 – 9,406) = ₹ 2,498/-

OR

Extra cost = (11,904 – 9,696) = **₹ 2,208/-**

Minimum Inventory Cost = Average Inventory × Inventory Carrying Cost per unit per annum

- Average Inventory = 3,920 units ÷ 2 = 1,960 units
- Carrying Cost per unit per annum = ₹ 0.2 × 12 months = ₹ 2.4
- Minimum Inventory Holding Costs = 1,960 units × ₹ 2.4 = ₹ 4,704

Total cost = Set-up cost + Inventory holding cost

= (12.245 × 384) + 4704 = **₹ 9,406** (approx.)

OR

Total cost = Set-up cost + Inventory holding cost = (13 × 384) + 4704 = **₹ 9,696** (approx.)

(iv) To save cost the company should run at optimum batch size i.e. **3,920 Units.** It saves ₹ 2,498 or 2208. Run size should match with the Economic production run of bearing manufacture. When managers of a manufacturing operation make decisions about the number of units to produce for each production run, they must consider the costs related to setting up the production process and the costs of holding inventory.

Question 34

The following data is presented by the supervisor of	of a factory for	a Job:
	₹ per unit	
Direct Material	120 5	GUID
Direct Wages @ ₹4 per hour		
(Departments A-4 hrs, B-7 hrs, C-2 hrs & D-2 hrs)	60	
Chargeable Expenses	20	
Total	200	

Analysis of the Profit and Loss Account for the year ended 31st March, 2019

Material	2,00,000	Sales	4,30,000
Direct Wages			
Dept. A	12,000		
Dept. B	8,000		
Dept. C	10,000		
Dept. D	20,000		
Special Store items	6,000		
Overheads			
Dept. A	12,000		
Dept. B	6,000		
Dept. C	9,000		



Dept. D	17,000		
	44,000		
Gross Profit c/d	1,30,000		
Total	4,30,000		4,30,000
		Gross Profit b/d	1,30,000
Selling Expenses	90,000		
Net Profit	40,000		
	1,30,000		1,30,000

It is also to be noted that average hourly rates for all the four departments are similar.

Required:

(i) Prepare a Job Cost Sheet.

(ii) Calculate the entire revised cost using the above figures as the base.
 (iii) Add 20% profit on selling price to determine the selling price.
 [(5 Marks) Nov 2019]

Answer

Job Cost Sheet	
Customer Details	Job No
Date of commencement	Date of completion

Particulars	Amount
THE COMPLETE EXAMS	(₹)
Direct materials	120
Direct wages:	
Deptt. A ₹ 4.00 × 4 hrs.	₹ 16.00
Deptt. B ₹ 4.00 × 7 hrs.	₹ 28.00
Deptt. C ₹ 4.00 × 2 hrs.	₹ 8.00
Deptt. D ₹ 4.00 × 2 hrs.	₹ 8.00
Chargeable expenses	20
Prime cost	200
Overheads	
Deptt. A = ₹ 12,000 / ₹ 12,000 × 100 = 100% of ₹ 16	₹ 16.00
Deptt. B = ₹ 6,000 / ₹ 8,000 × 100 = 75% of ₹ 28	₹ 21.00
Deptt. C = ₹ 9,000 / ₹ 10,000 × 100 = 90% of ₹ 8	₹ 7.20
Deptt. D = ₹ 17,000 / ₹ 20,000 × 100 = 85% of ₹ 8	₹ 6.80
Total Overheads	51.00
Works cost	251.00
Selling expenses = ₹ 90,000 / ₹ 3,00,000 × 100 = 30% of works cost	75.30
Total cost	326.30
Profit (20% profit on selling price = 25% of total cost)	81.58



Selling price

407.88

Question 35

In a manufacturing company, the overhead is recovered as follows: Factory Overheads: a fixed percentage basis on direct wages and Administrative overheads: a fixed percentage basis on factory cost. The company has furnished the following data relating to two jobs undertaken by it in a period.

	Job 1 (₹)	Job 2 (₹)
Direct materials	1,08,000	75,000
Direct wages	84,000	60,000
Selling price	3,33,312	2,52,000
Profit percentage on total cost	12%	20%

You are required to:

(i) Compute the percentage recovery rates of factory overheads and administrative overheads.

(ii) Calculate the amount of factory overheads, administrative overheads and profit for each of the two jobs.

(iii) Using the above recovery rates, determine the selling price to be quoted for job 3. Additional data pertaining to Job 3 is as follows:

	Job 3 (₹)
Direct materials	68,750
Direct wages	22,500
Profit percentage on selling price	15%

[(10 Marks) May 2022]

Answer

(i) Computation of percentage recovery rates of factory overheads and administrative overheads.

Let the factory overhead recovery rate as percentage of direct wages be **F** and administrative overheads recovery rate as percentage of factory cost be **A**. **Factory Cost of Jobs:**

Direct materials + Direct wages + Factory overhead For Job 1 = ₹ 1,08,000 + ₹ 84,000 + ₹ 84,000F



Factory cost + Administrative overhead For Job 1 = (₹ 1,92,000 + ₹ 84,000F) + (₹ 1,92,000 + ₹ 84,000F) A = ₹ 2,97,600 For Job-2 = (₹ 1,35,000 + ₹ 60,000F) + (₹ 1,35,000 + ₹ 60,000F) A = ₹ 2,10,000 The value of **F** & **A** can be found using following equations: 1,92,000 + 84,000F + 1,92,000A + 84,000AF = ₹ 2,97,600eqn (i) 1,35,000 + 60,000F + 1,35,000A + 60,000AF = ₹ 2,10,000eqn (ii) Multiply equation (i) by 5 and equation (ii) by 7: 9,60,000 + 4,20,000F + 9,60,000A + 4,20,000AF = ₹ 14,88,000 ...eqn (iii) 9,45,000 + 4,20,000F + 9,45,000A + 4,20,000AF = ₹ 14,70,000 ...eqn (iv) Subtracting equations: 15,000 + 15,000A = ₹ 18,000 15,000 A = 18,000 - 15,000A = 0.20Now putting the value of A in equation (i) to find the value of F: 1,92,000 + 84,000F + (1,92,000 × 0.20) + (84,000 F × 0.20) = ₹ 2,97,600 Or 1,92,000 + 84,000F + 38,400 + 16,800 F = ₹ 2,97,600 1,00,800 F = 67,200F = 0.667On solving the above relations: F = 0.667 and A = 0.20 Hence, percentage recovery rates of: Factory overheads = 66.7% or 2/3 of wages Administrative overheads = 20% of factory cost Working note: Total Cost = Selling price / (100% + Percentage of profit)

I otal Cost = Selling price / (100% + Percentage of pr For Job 1 = ₹ 3.33.312 / (100% + 12%) = ₹ 2.97.600

For Job 2 = ₹ 2,52,000 / (100% + 20%) = ₹ 2,10,000

(ii) Statement of jobs, showing amount of factory overheads, administrative overheads and profit:

	Job 1 (₹)	Job 2 (₹)
Direct materials	1,08,000	75,000
Direct wages	84,000	60,000
Prime cost	1,92,000	1,35,000
Factory overheads	56,000	40,000
2/3 of direct wages		
Factory cost	2,48,000	1,75,000
Administrative overheads	49,600	35,000
20% of factory cost		
Total cost	2,97,600	2,10,000
Profit (12% & 20%)	35,712	42,000
Selling price	3,33,312	2,52,000

(iii) Selling price of Job 3



	(₹)
Direct materials	68,750
Direct wages	22,500
Prime cost	91,250
Factory overheads (2/3 of Direct Wages)	15,000
Factory cost	1,06,250
Administrative overheads (20% of factory cost)	21,250
Total cost	1,27,500
Profit margin <i>(balancing figure)</i>	22,500
Selling price	1,50,000

Question 36

PQR Pens Ltd. manufactures two products - 'Gel Pen' and 'Ball Pen'. It furnishes the following data for the year 2017:

Product	Annual Output	Total Machine	Total number of Purchase	Total number of
	(Units)	Hours	orders	set-ups
Gol Pon	5 500	24 000	2/0	30
Gerren	3,300	24,000	240	50
Ball	24,00 0	54,000	448	56
Pen				

The annual overheads are as under:

Particulars	₽
Volume related activity costs	4,75,020
Set up related costs	5,79,988
Purchase related costs	5,04,992

Calculate the overhead cost per unit of each Product - Gel Pen and Ball Pen on the basis of:

(i) Traditional method of charging overheads

(ii) Activity based costing method and

(iii) Find out the difference in cost per unit between both the methods.

[(10 Marks) May 2018]

Answer

(i)

Statement Showing Overhead Cost per unit "Traditional Method"

	Gel Pen (₹)	Ball Pen (₹)
Units	5,500	24,000
Overheads (₹)	4,80,000	10,80,000
(Refer to W.N.)	(20 x 24,000 hrs.)	(20 x 54,000 hrs.)
Overhead Rate per	87.27 (₹ 4,80,000 /	45 (₹ 10,80,000 /
unit (₹)	5,500 units)	24,000 units)

Working Notes:

EXAM

Overhead Rate per Machine Hour

- = Total Overhead incurred by the Company / Total Machine Hours
- = ₹ 4,75,020 + 5,79,988 + 5,04,992 / 24,000 hours + 54,000 hours
- = ₹ 15,60,000 / 78,000 hours
- = ₹ 20 per machine hour

(ii) Statement Showing "Activity Based Overhead Cost"

Activity Cost Pool	Cost Driver	Ratio	Total Amoun t (₹)	Gel Pen (₹)	Ball Pen (₹)
Volume Related Activity Costs	Machine hours	24:54	4,75,02 0	1,46,16 0	3,28,860
Setup Related Costs	No. of Setups	30:56	5,79,98 8	2,02,32 1	3,77,667
Purchase Related Costs	No. of Purchas e Orders	240:44 8	5,04,99 2	1,76,16 0	3,2 <mark>8</mark> ,832
Total Cost				<mark>5,24</mark> ,64 1	10, <mark>35,3</mark> 5 9
Output (units)	TH	E COM	PLETE	5,500	24,000
Unit Cost (Overheads)				95.39	43.13

(iii)

	Gel Pen (₹)	Ball Pen (₹)
Overheads Cost per unit (₹) (Traditional Method)	87.27	45.00
Overheads Cost per unit (₹) (ABC)	95.39	43.13
Difference per unit	-8.12	+1.87

(Volume related activity cost, set up related costs and purchase related cost can also be calculated under Activity Base Costing using Cost driver rate. However, there will be no changes in the final answer.)

Question 37



M/s. HMB Limited is producing a product in 10 batches each of 15000 units in a year and incurring following overheads their on:

	Amount (₹)
Material procurement	22,50,000
Maintenance	17,30,000
Set-up	6,84,500
Quality control	5,14,800

The prime costs for the year amounted to ₹ 3,01,39,000.

The company is using currently the method of absorbing overheads on the basis of prime cost. Now it wants to shift to activity-based costing. Information relevant to Activity drivers for a year are as under:

Activity Driver	Activity Volume
No. of purchase orders	1500
Maintenance hours	9080
No. of set-ups	2250
No. of inspections	2710

The company has produced a batch of 15000 units and has incurred ₹ 26,38,700 and ₹ 3,75,200 on materials and wages respectively. The usage of activities of the said batch are as follows:

Materials orders	4 <mark>8 orde</mark> rs
Maintenance hours	810 hours
No. of set-ups	40
No. of inspections	25

You are required to:

(i) find out cost of product per unit on absorption costing basis for the said batch.

(ii) determine cost driver rate, total cost and cost per unit of output of the said batch on the basis of activity based costing.

[(10 Marks) Nov 2018]

Answer

Working Note:

Overhead Absorption Rate = (51,79,300 ÷ 3,01,39,000) × 100 = 17.18%

(i) Cost of Product Under Absorption Costing

Item of Cost	Amount (₹)
Material	26,38,700
Wages	3,75,200
Prime Cost	30,13,900



Overheads: (51,79,300 ÷ 3,01,39,000) × 30,13,900	5,17,930
Total Cost	35,31,830
Units	15,000
Cost per unit	235.46

(ii) Cost driver rate, total cost and cost per unit on the basis of activitybased costing method Absorption Costing

Calculation of Cost Driver rate:

Activity	₹.	Activity	Cost Driver
		Volume	Rate
Material	22,50,000	1500	1500
Procurement			
Maintenance	17,30,000	9080	190.53
Setup	6,84,500	2250	304.22
Quality Control	5,14,800	2710	189.96

Calculation of total Cost and cost per unit:

Item of Cost	Amount (₹)	
Material	26,38,700	
Wages	3,75,200	
Prime Cost	30,13,900	
Material Purchase (22,50,000 ÷ 1,500 × 48)	72,000	
Maintenance (17,30,000 ÷ 9,080 × 810)	1,5 <mark>4,3</mark> 28	
Setup (6,84,500 ÷ 2,2 <mark>50 × 40)</mark>	12, <mark>16</mark> 9	
Quality Control (5,14,800 ÷ 2,710 × 25)	4,749	
Total Cost	32,57,146	MS GUIDE
Unit	15,000	
Cost per unit	217.14	

Question 38

MNO Ltd. manufactures two types of equipment A and B and absorbs overheads on the basis of direct labour hours. The budgeted overheads and direct labour hours for the month of March 2019 are ₹ 15,00,000 and 25,000 hours respectively. The information about the company's products is as follows:

	Equipment		
	Α	В	
Budgeted Production Volume	3,200 units	3,850 units	
Direct Material Cost	₹ 350 per unit	₹ 400 per unit	
Direct Labour Cost			
A: 3 hours @ ₹ 120 per hour	₹ 360		
B: 4 hours @ ₹ 120 per hour		₹ 480	

Overheads of ₹ 15,00,000 can be identified with the following three major



activities:

- Order Processing: ₹ 3,00,000
- Machine Processing: ₹ 10,00,000
- Product Inspection: ₹ 2,00,000

These activities are driven by the number of orders processed, machine hours worked and inspection hours respectively. The data relevant to these activities is as follows:

	Orders	Machine Hours	Inspection
	Processed	Worked	Hours
Α	400	22,500	5,000
В	200	27,500	15,000
Total	600	50,000	20,000

Required:

(i) Prepare a statement showing the manufacturing cost per unit of each product using the absorption costing method assuming the budgeted manufacturing volume is attained.

(ii) Determine cost driver rates and prepare a statement showing the manufacturing cost per unit of each product using activity based costing, assuming the budgeted manufacturing volume is attained.

(iii) MNO Ltd.'s selling prices are based heavily on cost. By using direct labour hours as an application base, calculate the amount of cost distortion (under costed or over costed) for each equipment.

[(10 Marks) May 2019]

Answer

(i) Overheads application base: Direct labour hours

	Equipment A (₹)	Equipment B (₹)
Direct material cost	350	400
Direct labour cost	360	480
Overheads	180	240
	890	1120

Pre-determined rate =

Budgeted overheads = ₹ 15,00,000 / Budgeted direct labour hours 25,000 hours = ₹ 60

(ii) Estimation of Cost-Driver rate

Activity	Overhead cost (₹)	Cost-driver level	Cost driver rate (₹)
Order processing	3,00,000	600 Orders processed	500



Machine processing	Machine 10,00,000 processing		20
Inspection	2,00,000	15,000 Inspectior hours	n 10
		Equipment A (₹)	Equipment B (₹)
Direct material cost		350	400
Direct labour cost		360	480
Prime Cost (A)		710	880
Overhead Cost			
Order processing 400: 200		2,00,000	1,00,000
Machine processing 22,500: 27,500		4,50,000	5,50,000
Inspection 5,000: 15,000		50,000	1,50,000
Total overhead co	ost	7,00,000	8,00,000

(Overheads cost per unit for each overhead can also be calculated)

	A (₹)	B (₹)
Per unit cost		
7,00,000 / 3,200 (B)-A	218.75	
8,00,000 / 3,850 (B)-B		207.79
Unit manufacturing cost (A+B)	928.75	1, <mark>087.7</mark> 9

(iii) Calculation of Cost Distortion

	Equipment A (₹)	Equipment B (₹)
Unit manufacturing cost–using direct labour hours as an application base	890.00	1,120.00
Unit manufacturing cost-using activity based costing	928.75	1,087.79
Cost distortion	-38.75	32.21

Question 39

PQR Ltd has decided to analyse the profitability of its five new customers. It buys soft drink bottles in cases at ₹ 45 per case and sells them to retail customers at a list price of ₹ 54 per case. The data pertaining to five customers are given below:

Particulars	Α	В	С	D	E
Number of Cases Sold	9,360	14,200	62,000	38,000	9,800
List Selling Price (₹)	54	54	54	54	54
Actual Selling Price (₹)	54	53.40	49	50.20	48.60
Number of Purchase Orders	30	50	60	50	60



Number of Customers visits	4	6	12	4	6
Number of Deliveries	20	60	120	80	40
Kilometers travelled per delivery	40	12	10	20	60
Number of expedite Deliveries	0	0	0	0	2

Its five activities and their cost drivers are:

Activity	Cost Driver
Order taking	₹ 200 per purchase order
Customer visits	₹ 300 per each visit
Deliveries	₹ 4.00 per delivery km travelled
Product Handling	₹ 2.00 per case sold
Expedited deliveries	₹ 100 per such delivery

You are required to:

- 1. Compute the customer level operating income of each of five retail customers by using the Cost Driver rates.
- 2. Examine the results to give your comments on Customer 'D' in comparison with Customer 'C' and on Customer 'E' in comparison with Customer 'A'.

[(10 Marks) Nov 2019]

Answer

Working note:

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

Particular		Customers					
	Α	В	С	D	E		
Cases sold: (a)	9,360	14,200	62,000	38,000	9,800		
Revenues (at listed price) (₹): (b) {(a) × ₹ 54}	5,05,440	7,66,800	33,48,000	20,52,000	5,29,200		
Discount (₹): (c) {(a) × Discount per case}	-	8,520	3,10,000	1,44,400	52,920		
		(14,200 ×	(62,000 ×	(38,000 ×	(9,800 ×		



		₹ 0.6)	₹5)	₹ 3.80)	₹ 5.40)
Cost of goods sold (₹): (d) {(a) × ₹ 45}	4,21,200	6,39,000	27,90,000	17,10,000	4,41,000

Customer level operating activities costs

Particular	Α	В	С	D	E
Order taking costs	6,000	10,000	12,000	10,000	12,000
(₹): (NO. OT					
purchase × ₹ 200)					
Customer visits	1,200	1,800	3,600	1,200	1,800
costs (₹) (No. of					
customer visits ×					
₹ 300)					
Delivery vehicles	3,200	2,880	4,800	6,400	9,600
travel costs (₹)					
(Kms travelled by					
delivery vehicles ×					
₹ 4 per km.)					
Product handling	18,720	28,400	_1, <mark>24,0</mark> 00	76 <mark>,00</mark> 0	1 <mark>9,60</mark> 0
costs (₹) {(a) × ₹ 2}					
Cost of expediting	-	-	-	-	200
deliveries (₹) {(No.			ETE EV		
of expedited					JUIDE
deliveries × ₹					
100)}					
Total cost of	29,120	43,080	1,44,400	93,600	43,200
customer level					
operating					
activities (₹)					

(i) Computation of Customer level operating income

Particular	A (₹)	B (₹)	C (₹)	D (₹)	E (₹)
Revenues (At list price) (Refer to working note)	5,05,440	7,66,800	33,48,000	20,52,000	5,29,200
Less: Discount (Refer to	-	8,520	3,10,000	1,44,400	52,920



working note)					
Revenue (At actual price)	5,05,440	7,58,280	30,38,000	19,07,600	4,76,280
Less: Cost of goods sold (Refer to working note)	4,21,200	6,39,000	27,90,000	17,10,000	4,41,000
Gross margin	84,240	1,19,280	2,48,000	1,97,600	35,280
Less: Customer level operating activities costs (Refer to working	29,120	43,080	1,44,400	93,600	43,200
note) Customer	55,12 <mark>0</mark>	76,200	1,03,600	1,04,000	(7,920)
level operating income					

(ii) Comments

Customer D in comparison with Customer C:

Operating income of Customer D is more than of Customer C, despite having only 61.29% (38,000 units) of the units volume sold in comparison to Customer C (62,000 units). Customer C receives a higher percent of discount i.e. 9.26% (₹ 5) while Customer D receives a discount of 7.04% (₹ 3.80). Though the gross margin of customer C (₹ 2,48,000) is more than Customer D (₹ 1,97,600) but total cost of customer level operating activities of C (₹ 1,44,400) is more in comparison to Customer D (₹ 93,600). As a result, operating income is more in case of Customer D.

Customer E in comparison with Customer A:

Customer E is not profitable while Customer A is profitable. Customer E receives a discount of 10% (₹ 5.4) while Customer A doesn't receive any discount. Sales Volume of Customer A and E is almost same. However, total cost of customer level operating activities of E is far more (₹ 43,200) in comparison to Customer A (₹ 29,120). This has resulted in occurrence of loss in case of Customer E.

Question 40



ABC Ltd. manufactures three products X, Y, and Z using the same plant and resources. It has given the following information for the year ended on 31st March, 2020:

Particulars	X	Y	Z
Production Quantity (units)	1,200	1,440	1,968
Cost per unit:			
Direct Material (₹)	90	84	176
Direct Labour (₹)	18	20	30

Budgeted direct labour rate was ₹ 4 per hour and the production overheads, shown in table below, were absorbed to products using direct labour hour rate. Company followed Absorption Costing Method. However, the company is now considering adopting Activity Based Costing Method.

Activity	Budgeted OH (₹)	Cost Driver	Remarks
Material Procurement	50,000	No. of Orders	Order size was 25 units for each product.
Set-up	40,000	No. of Production Runs	All the three products are produced in production runs of 48 units
Quality Control	2 <mark>8,2</mark> 40	No. of Inspections	Done for each production Run.
Maintenance	1,28,000	Maintenance Hours	Total maintenance hours were 6,400 and was allocated in the ratio of 1:1:2 between X, Y & Z.

Required:

- 1. Calculate the total cost per unit of each product using the Absorption Costing Method.
- Calculate the total cost per unit of each product using Activity Based Costing Method. [(10 Marks) Jan 2021]

Answer

(1) Calculate of cost per unit using the Absorption Costing Method: Calculation of Overhead Recovery Rate per Hour:

Particulars	Х	Y	Ζ	Total
(a) Production Quantity (units)	1,200	1,440	1,968	
(b) Direct Labour cost per unit (₹)	18	20	30	



(c) Labour hours per unit [b / 4]	4.5	5	7.5	
(d) Total labour hours [a x c]	5,400	7,200	14,760	27,360
(e) Budgeted overheads (₹)				2,46,240
(f) OH recovery rate per hr. [e / d]				9.00

Calculation of total cost per unit:

Particulars	Х	Y	Z
(a) Direct Material per unit (₹)	90	84	176
(b) Direct Labour cost per unit (₹)	18	20	30
(c) Prime Cost per unit (₹) [a + b]	108	104	206
(d) Labour hours per unit [b / 4]	4.5	5	7.5
(e) OH cost per unit [d x 9]	40.50	45	67.50
(f) Total cost per unit (₹) [c + e]	148.50	149.00	273.50

(2) Calculate of cost per unit using the Activity Based Costing Method:

Calculation of Cost Drivers:

Total	Z	Y	X	Particulars
	1,968	<mark>1,4</mark> 40	1,200	(a) Production Quantity (units)
185	79	58	48	(b) No. of orders [a / 2 <mark>5]</mark> round <mark>ed</mark> off
96	41	30	25	(c) No. of production runs [a / 48]
96	41	- 30	25	(d) No. of inspections [same as (c)]
9 9	41 41	30 30	25 25	(c) No. of production runs [a / 48] (d) No. of inspections [same as (c)]

Calculation of total cost per unit:

Particulars	Bud. OH (₹)	Cost Driver	X	Y	Z
Material	50,000	No. of	12,973	15,676	21,351
Procurement		Orders [48 :			
		58 : 79]			
Set-up	40,000	No. of	10,417	12,500	17,083
		Production			
		Runs [25 :			
		30 : 41]			
Quality	28,240	No. of	7,354	8,825	12,061
control		Inspections			
		[25 : 30 : 41]			
Maintenance	1,28,000	Maintenance	32,000	32,000	64,000
		Hours [1 : 1 :			
		2]			
Total OH	2,46,240	(a)	62,744	69,001	1,14,495
Production		(b)	1,200	1,440	1,968


Quantity (units)				
OH cost per unit	(a) / (b)	52.29	47.92	58.18
Prime cost	WN (1)	108.00	104.00	206.00
p.u.				
Total cost	OH + Prime	160.29	151.92	264.18
p.u.	cost			

Student Note: For calculating no. of orders, we actually need the data related to input raw material quantity purchased. However, in absence of such information, it is calculated based on the production quantity.

Question 41

A Drug Store is presently selling three types of drugs namely 'Drug A', 'Drug B' and 'Drug C'. Due to some constraints, it has decided to go for only one product line of drugs. It has provided the following data for year 2020-21 for each product line:

	Drugs Types			
	A	В	С	
Revenues (in ₹)	74,50,000	1,11,75,000	1,86, <mark>25</mark> ,000	
Cost of goods sold (in ₹)	41 <mark>,44,50</mark> 0	<mark>68</mark> ,16,750	1,20,63,750	
Number of purchase orders	560	810	630	
placed (in nos.)				
Number of deliveries	950	1,000	850	
received				
Hours of shelf-stocking time	900	1,250	2,350	
Units sold (in Nos.)	1,75,200	1,50,300	1,44,500	

Following additional information is also provided:

Activity	Description of activity	Total Cost (₹)	Cost-allocation base
Drug Licence fee	Drug Licence fee	5,00,000	To be distributed in ratio 2:3:5 between A, B and C
Ordering	Placing of orders for purchases	8,30,000	2,000 purchase orders
Delivery	Physical delivery and receipt of goods	18,20,000	2,800 deliveries
Shelf stocking	Stocking of goods	32,40,000	4,500 hours of shelf- stocking time
Customer Support	Assistance provided to customers	28,20,000	4,70,000 units sold



You are required to:

(i) Calculate the operating income and operating income as a percentage (%) of revenue of each product line if:

(a) All the support costs (Other than cost of goods sold) are allocated in the ratio of cost of goods sold.

(b) All the support costs (Other than cost of goods sold) are allocated using activity-based costing system.

(ii) Give your opinion about choosing the product line on the basis of operating income as a percentage (%) of revenue of each product line under both the situations as above

[(10 Marks) Dec 2021]

Answer

(i) (a)

Statement of Operating income and Operating income as a percentage of revenues for each product line

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

	Drug A (₹)	Drug B (₹)	Drug C (₹)	Total (₹)
Revenues: (A)	74,50,000	1,11,75,000	1,86,25,000	3,72,5 <mark>0,000</mark>
Cost of Goods	41 <mark>,44,500</mark>	68,16,750	1,20,63,750	2,30,25,000
sold (COGS): (B)	THE	COMPLE		S GUIDE
Support cost	16,57,800	27,26,700	48,25,500	92,10,000
(40% of COGS): (C)				
Total cost: (D)	58,02,300	95,43,450	1,68,89,250	3,22,35,000
= {(B) + (C)}	10.17 700	40.04.550	(= = = = = = =	50 (5 000
Operating	16,47,700	16,31,550	17,35,750	50,15,000
Income: E =				
{(A)-(D)}				
Operating	22.12%	14.60%	9.32%	13.46%
income as a %				
of revenues:				
(E/A) × 100				

Working notes:

1. Total support cost:

	₹
Drug Licence Fee	5,00,000
Ordering	8,30,000



Delivery	18,20,000
Shelf stocking	32,40,000
Customer support	28,20,000
Total support cost	92,10,000

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

Total support cost = (Total support cost / Total cost of goods sold) × 100 = (₹ 92,10,000 / ₹ 2,30,25,000) × 100 = 40%

3. Cost for each activity cost driver:

Activity	Total cost (₹)	Cost allocation base	Cost driver rate (₹)
Ordering	8,30,000	2,000 purchase orders	₹ 415 per purchase order
Delivery	18,20,000	2,800 deliveries	₹ 650 per delivery
Shelf-stocking	32,40,000	4,500 hours	₹ 720 per stocking hour
Customer	28,20,000	4,70,000 units	₹ 6 per unit sold
support		sold	

(b) Statement of Operating income and Operating income as a percentage of revenues for each product line

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

	Drug A (₹)	Drug B (₹)	Drug C (₹)	Total (₹)
Revenues: (A)	74,50,000	1,11,75,000	1,86,25,000	3,72,50,000
Cost & Goods sold	41,44,500	68,16,750	1,20,63,750	2,30,25,000
Drug Licence Fee	1,00,000	1,50,000	2,50,000	5,00,000
Ordering cost*	2,32,400	3,36,150	2,61,450	8,30,000
(560:810:630)				
Delivery cost*	6,17,500	6,50,000	5,52,500	18,20,000
(950:1000:850)				
Shelf stocking cost*	6,48,000	9,00,000	16,92,000	32,40,000
(900:1250:2350)				
Customer Support cost*	10,51,200	9,01,800	8,67,000	28,20,000
(175200:150300:144500)				
Total cost: (B)	67,93,600	97,54,700	1,56,86,700	3,22,35,000
Operating income C: {(A)	6,56,400	14,20,300	29,38,300	50,15,000
- (B)}				
Operating income as a %	8.81%	12.71%	15.78%	13.46%
of revenues				

(ii) Comparison on the basis of operating income as per the percentage (%)



of revenue:

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

	Drug A	Drug B	Drug C	Total
	(₹)	(₹)	(₹)	(₹)
Operating income as a % of revenues	22.12%	14.60%	9.32%	13.46%

On comparing the operating income as a % of revenue of each product, Drug A is the most profitable product line, though its revenue is least but with highest units sold.

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

	Drug A	Drug B	Drug C	Total
	(₹)	(₹)	(₹)	(₹)
Operating income as a % of revenues	8.81%	12.71%	15.78%	13.46%

On comparing the operating income as a % of revenue of each product, Drug C is the most profitable product line, though its unit sold is least but with highest revenue.

Question 42

Star Limited manufacture three products using the same production methods. A conventional product costing system is being used currently. Details of the three products for a typical period are :

Product	Labour Hrs. Per unit	Machine Hrs. Per unit	Materials per Unit (₹)	Volume in Units
AX	1.00	2.00	35	7,500
BX	0.90	1.50	25	12,500
СХ	1.50	2.50	45	25,000

Direct Labour costs ₹ 20 per hour and production overheads are absorbed on a machine hour basis. The overhead absorption rate for the period is ₹ 30 per machine hour.

Management is considering using Activity Based Costing system to ascertain the cost of the products. Further analysis shows that the total production overheads can be divided as follows :

Particulars	%
Cost relating to set-ups	40



Cost relating to machinery	10
Cost relating to material handling	30
Cost relating to inspection	20
Total production overhead	100

The following activity volumes are associated with the product line for the period as a whole. Total activities for the period :

Product	No. of set- ups	No. of movements of Materials	No. of Inspections
AX	350	200	200
BX	450	280	400
CX	740	675	900
Total	1,540	1,155	1,500

Required :

(i) Calculate the cost per unit for each product using the conventional method.

(ii) Calculate the cost per unit for each product using activity based costing method.

[(10 Marks) May 2022]

Answer

Working Notes : WN1 - Key Details :

Particulars	AX	BX	CX	Total
(a) Volume in Units	7,500	12,500	25,000	GOIDE
(b) Machine Hours per unit	2.00	1.50	2.50	
(c) Total machine hours [a x b	15,000	18,750	62,500	96,250
]				
(d) Total overheads (₹) [28,87,500
96,250 x 30]				

WN2 - Activity wise details of overheads :

Particulars	%	Amount (₹)
Cost relating to set-ups	40	11,55,000
Cost relating to machinery	10	2,88,750
Cost relating to material handling	30	8,66,250
Cost relating to inspection	20	5,77,500
Total production overhead	100	28,87,500

(i) Calculation of the cost per unit for each product using the conventional method :



Particulars	AX	BX	СХ
(a) Materials per unit (₹)	35	25	45
(b) Labour Hours per unit	1.00	0.90	1.50
(c) Labour cost per unit [b x 20] (₹)	20	18	30
(d) Machine Hours per unit	2.00	1.50	2.50
(e) Overheads per unit [d x 30] (₹)	60	45	75
(f) Product cost per unit [a + c + e] (₹)	115	88	150

(ii) Calculation of the cost per unit for each product using ABC method :

Particulars	Total	AX	BX	CX
(a) Cost relating to set- ups apportioned using no. of set-ups in the ratio 350 : 450 : 740	11,55,000	2,62,500	3,37,500	5,55,000
(b) Cost relating to machinery apportioned using total machine hours in the ratio 15000 : 18750 : 62500	2,88,750	45,000	56,250	1,87,500
(c) Cost relating to material handling apportioned using no. of material movements as 200 : 280 : 675	8,66,250	1,50,000	2,10,000	5,06,250
(d) Cost relating to	5,77,500	77,000	1,54,000	3,46,500
inspection apportioned using no. of inspections as 200 : 400 : 900	HE CON		EXAMS	GUIDE
(e) Total overheads [a to d]	28,87,500	5,34,500	7,57,750	15,95,250
(f) Volume in Units		7,500	12,500	25,000
(g) Overheads per unit [e / f]		71.27	60.62	63.81
(h) Materials per unit (₹)		35	25	45
(i) Labour cost per unit [b x 20] (₹)		20	18	30
(f) Total cost per unit [g + h + i] (₹)		126.27	103.62	138.81

Question 43

Beta Limited produces 50,000 Units, 45,000 Units and 62,000 Units of product 'A', 'B' and 'C' respectively. At present the company follows absorption costing method and absorbs overhead on the basis of direct



labour hours. Now, the company wants to adopt Activity Based Costing. The information provided by Beta Limited is follows:

	Product A	Product B	Product C
Floor Space Occupied	5,000 Sq.Ft.	4,500 Sq.Ft.	6,200 Sq.Ft.
Direct Labour Hours	7,500 Hours	7,200 Hours	7,800 Hours
Direct Machine Hours	6,000 Hours	4,500 Hours	4,650 Hours
Power consumption	32%	28%	40%

Overhead for year are as follows:

Overhead	₹
Rent & Taxes	8,63,500
Electricity Expenses	10,66,475
Indirect labour	13,16,250
Repair & Maintenance	1,28,775
	33,75,000

Required:

(i) Calculate the overhead rate per labour hour under Absorption Costing.
(ii) Prepare a cost statement showing overhead cost per unit for each product - 'A', 'B' and 'C' as per Activity based Costing.
[(5 Marks) May 2023]

Answer

(i) Calculation of Overhead rate per hour Total Overheads Total hours 33,75,000 ÷ 22,500 = ₹ 150 per hour

(ii) Statement showing overhead cost per unit as per Activity Based Costing

Overheads	Cost Driver	Total	Product	Product	Product
			A	B	C
Rent & Taxes	Floor space	8,63,500	2,75,000	2,47,500	3,41,000
	(50:45:62)				
Electricity	Power	10,66,475	3,41,272	2,98,613	4,26,590
-	Consumption				
	(32:28:40)				
Indirect labour	Labour hours	13,16,250	4,38,750	4,21,200	4,56,300
	(75:72:78)				
Repair &	Machine hours	1,28,775	51,000	38,250	39,525
Maintenance	(600:450:465)				
Total Cost		33,75,000	11,06,022	10,05,563	12,63,415
Units			50,000	45,000	62,000
Cost per Unit			22.12	22.35	20.38



Question 44

The following information relates to a bus operator:

Description	Amount
Cost of the bus	₹ 18,00,000
Insurance charges	3% p.a.
Manager-cum accountant's salary	₹ 8,000 p.m.
Annual Tax	₹ 50,000
Garage Rent	₹ 2,500 p.m.
Annual repair & maintenance	₹ 1,50,000
Expected life of the bus	15 years
Scrap value at the end of 15 years	₹ 1,20,000
Driver's salary	₹ 15,000 p.m.
Conductor's salary	₹ 12,000 p.m.
Stationery	₹ 500 p.m.
Engine oil, lubricants (for 1200 kms.)	₹ 2,500
Diesel and oil (for 10 kms.)	₹ 52
Commission to driver and conductor	10% of collections

Route distance: 20 km long

The bus will make 3 round trips for carrying on the average 40 passengers in each trip. Assume 15% profit on collections. The bus will work on the average 25 days in a month.

Calculate fare for passenger-km.

Answer

Statement of Operating Costs & Revenues per month

Particulars	Computation	₹	₹
Standing Charge			
Depreciation	((18,00,000 – 1,20,000)/15) × 1/12	9,333.33	
Insurance	18,00,000 × 3% × 1/12	4,500	
Manager cum	given	8,000	
Accountants Salary			
Road tax	50,000 × 1/12	4,166.67	



Garage rent	given	2,500	
		Total	28,500
Maintenance Charge			
Repairs & Maintenance	1,50,000/12	12,500	12,500

Running Cost

Particulars	Computation	₹
Drivers salary	given	15,000
Conductors salary	given	12,000
Stationery	given	500
Engine oil, lubricants	3,000 km / 1,200 km = ₹ 2,500	6,250
Diesel oil	3,000 km / 10 km = ₹ 52	15,600
		49,350

Total operating cost (excluding commission) = 90,350 **Add: commission** (10% on collection) = 12,047 **Total cost** = **1,02,397 Add: Profit** = **.15%** = 18,070 **Total takings** = **1,20,467**

Working Note:

No. of passengers = 40 (given) No. of km. per month = 1 Bus × 3 Trips × 2 ways × 20 km. × 25 days = 3,000 km p.m. Passenger km. p.m. = 40 × 3,000 = 1,20,000 It is given that profit = 15% of takings & Commission = 10% of takings.

Hence,

Total Operating Costs = 100% - 15% - 10% = 75% of total taking. Total Takings = 90,350/75% = 1,20,467. Now, Commission & Profits are taken at 10% & 15% respectively on total takings. Fare per Passenger Km. = $1,20,467 / 1,20,000 = \gtrless 1.00$

Question 45

A mini-bus, having a capacity of 32 passengers, operates between two places - 'A' and 'B'. The distance between the place 'A' and place 'B' is 30 km. The bus makes 10 round trips in a day for 25 days in a month. On an average, the occupancy ratio is 70% and is expected throughout the year. The details of other expenses are as under:

Expense	Amount (₹)
Insurance	15,600 Per annum



Garage Rent	2,400 Per quarter
Road Tax	5,000 Per annum
Repairs	4,800 Per quarter
Salary of operating staff	7,200 Per month
Tyres and Tubes	3,600 Per quarter
Diesel: (one litre is consumed for every 5 km)	13 Per litre
Oil and Sundries	22 Per 100 km run
Depreciation	68,000 Per annum

Passenger tax @ 22% on total taking is to be levied and bus operator requires a profit of 25% on total taking.

Prepare operating cost statement on the annual basis and find out the cost per passenger kilometer and one way fare per passenger.

Answer

Operating Cost Statement

Particulars	Total Cost Per annum (₹)
A. Fixed Charges:	
Insurance	15,600
Garage rent (₹ 2,4 <mark>00 × 4</mark> quar <mark>ter</mark> s)	9,600
Road Tax	5,000
Salary of operating staff (₹ 7,200 × 12 months)	86,400
Depreciation	68,000
Total (A)	1,84,600
B. Variable Charges:	E EXAMS CLIDE
Repairs (₹ 4,800 × 4 quarters)	19,200
Tyres and Tubes (₹ 3,600 × 4 quarters)	14,400
Diesel (₹ 1,80,000 km ÷ 5 km × 13)	4,68,000
Oil and Sundries (₹ 1,80,000 km ÷ 100 km × 22)	39,600
Total (B)	5,41,200
Total Operating Cost (A+B)	7,25,800
Add: Passenger tax (Refer to WN-1)	3,01,275
Add: Profit (Refer to WN-1)	3,42,359
Total takings	13,69,434

Calculation of Cost per passenger kilometre and one way fare per passenger

Cost per Passenger-Km.

Cost per Passenger-Km = Total Operating Cost ÷ Total Passenger-Km = 7,25,800 ÷ 40,32,000 Passenger-Km = 0.18

One way fare per passenger

One way fare per passenger = Total Takings ÷ Total Passenger-Km × 30 Km = 13,69,434 ÷ 40,32,000 Passenger-Km × 30 Km



= 10.20

Working Notes

1. Let total takings be X, then Passenger tax and profit will be as follows: X = 7,25,800 + 0.22X + 0.25X X - 0.47X = 7,25,800 $X = 7,25,800 \div 0.53 = 13,69,434$ Passenger tax = 13,69,434 × 0.22 = 3,01,275 Profit = 13,69,434 × 0.25 = 3,42,359

2. Total Kilometres to be run during the year

= 30 km × 2 sides × 10 trips × 25 days × 12 months

= 1,80,000 Kilometres

3. Total passenger Kilometres

= 1,80,000 km × 32 passengers × 70% = 40.32,000 Passenger-Km

Question 46

'RP' Resorts (P) Ltd. offers three types of rooms to its guests, viz deluxe room, super deluxe room, and luxury suite. You are required to COMPUTE the tariff to be charged to the customers for different types of rooms on the basis of the following information:

Types of Room	Number of Rooms	Occupancy
Deluxe Room	100	90%
Super Deluxe Room	60	75%
Luxury Suite	40	60%

Rent of 'super deluxe' room is to be fixed at 2 times of 'deluxe room' and that of 'luxury suite' is 3 times of 'deluxe room'. Annual expenses are as follows:

Particulars	Amount (₹ lakhs)
Staff salaries	680.00
Lighting, Heating, and Power	300.00
Repairs, Maintenance, and Renovation	180.00
Linen	30.00
Laundry charges	24.00
Interior decoration	75.00
Sundries	30.28

An attendant for each room was provided when the room was occupied, and he was paid ₹ 500 per day towards wages. Further, depreciation is to be provided on building @ 5% on ₹ 900 lakhs, furniture and fixtures @ 10% on ₹ 90 lakhs, and air conditioners @ 10% on ₹ 75 lakhs.



Profit is to be provided @ 25% on total taking, and assume 360 days in a year.

Answer

Operating cost statement of 'RP' Resort (P) Limited

Particulars	Cost per annum (₹ in lakhs)
Staff Salaries	680.00
Room Attendant's Wages (refer W.N-3)	286.20
Lighting, Heating & Power	300.00
Repairs, Maintenance & Renovation	180.00
Linen	30.00
Laundry charges	24.00
Interior Decoration	75.00
Sundries	30.28
Depreciation (refer W.N-4):	
- Building	45.00
- Furniture & Fixture	9.00
- Air Conditioners	7.50
Total cost for the year	1,666.98

Computation of profit:

Let $\overline{\mathbf{x}}$ x be the rent for deluxe room. Equivalent deluxe room days are **90,720** (refer W.N-2). **Total takings = \overline{\mathbf{x}} 90,720x** Profit is 25% of total takings. **Profit = 25% of \overline{\mathbf{x}} 90,720x = \overline{\mathbf{x}} 22,680x Total takings = Total Cost + Profit \overline{\mathbf{x}} 90,720x = \overline{\mathbf{x}} 16,66,98,000 + \overline{\mathbf{x}} 22,680x \overline{\mathbf{x}} 90,720x - \overline{\mathbf{x}} 22,680x = \overline{\mathbf{x}} 16,66,98,000 \overline{\mathbf{x}} 68,040x = \overline{\mathbf{x}} 16,66,98,000 X = \overline{\mathbf{x}} 16,66,98,000 / \overline{\mathbf{x}} 68,040 = \overline{\mathbf{x}} 2,450**

Rent to be charged for Deluxe room	₹ 2,450
Rent to be charged for Super deluxe room	₹ 4,900
Rent of deluxe room × 2 = ₹ 2,450 × 2	
Rent to be charged for Luxury suite	₹ 7,350
Rent of Super Deluxe room × 1.5 = ₹ 4,900 × 1.5	

Working Notes:



Type of Room	No. of rooms × no. of days × occupancy %	Room days
Deluxe Room	100 rooms × 360 days × 90% occupancy	32,400
Super Deluxe Room	60 rooms × 360 days × 75% occupancy	16,200
Luxury Suite	40 × 360 days × 60% occupancy	8,640
Total		57,240

1. Computation of Room Occupancy

2. Computation of equivalent deluxe room days:

Rent of 'super deluxe' room is to be fixed at **2 times** of 'deluxe room' and luxury suite is **3 times** of 'deluxe room'. Therefore equivalent room days would be:

Type of Room	Room days	Equivalent deluxe room days
Deluxe Room	32,400 × 1	32,400
Super Deluxe Room	16,200 × 2	32,400
Luxury Suite	8,640 × 3	25,920
Total		90,720

3. Computation of room attendant's wages: Room occupancy days × ₹ 500 per day = 57,240 days × ₹ 500 = ₹ 286.20 lakhs

4. Computation of Depreciation per annum:

Particulars	Cost (₹)	Rate of Depreciation	Depreciation (₹)
Building	900,00,000	5%	45,00,000
Furniture & Fixtures	90,00,000	10%	9,00,000
Air Conditioners	75,00,000	10%	7,50,000

Question 47

Royal Transport Company has been given a 50 kilometre long route to run 6 buses. The cost of each bus is ₹ 7,50,000. The buses will make 3 round trips per day carrying on an average 75% passengers of their seating capacity. The seating capacity of each bus is 48 passengers. The Buses will run on an average 25 days in a month. The other information for a year 2016–2017 is given below:

Expense Details	Amount	Frequency
Garage Rent	₹ 6,000	per month
Annual Repairs and Maintenance	₹ 24,000	each bus



Salaries of 6 Drivers	₹ 4,000	each per
		month
Wages of 6 Conductors	₹ 1,600	each per
		month
Wages of 6 Cleaners	₹ 1,000	each per
		month
Manager's Salary	₹ 10,000	per month
Road Tax, Permit Fee, etc.	₹ 6,000	for a quarter
Office Expenses	₹ 2,500	per month
Cost of Diesel per litre	₹ 66	-
Kilometres run per litre for each bus	6	-
	kilometres	
Annual Depreciation	20% of cost	-
Annual Insurance	4% of cost	-
Engine Oils & Lubricants (for 1000	₹ 2,000	-
km)		
Wages of 6 Cleaners	₹ 1,000	each per
-		month

Calculate the Bus Fare to be charged from each Passenger per Kilometre (up to four decimal points), if the Company wants to earn profit of 33.33% on Takings (Total Receipts from Passengers).

Answer

1. Number of Passengers Number of Passengers = 48 × 75% = 36 Number of Kilometres p.a. = 6 buses × 3 trips × 2 ways × 50 kms × 25 days × 12 months = 5,40,000 Total Number of Passenger-Kms p.a. = 36 × 5,40,000 = 1,94,40,000

2. Statement of Operating Costs and Revenues p.a.

Particulars	Computation	₹
Garage Rent	6,000 per month × 12 months	72,000
Repairs &	24,000 p.a. per bus × 6 buses	1,44,000
Maintenance		
Drivers' Salary	4,000 per month × 6 Drivers × 12 months	2,88,000
Conductors' Wages	1,600 per month × 6 Conductors ×	1,15,200
	12 months	
Cleaners' Wages	1,000 per month × 6 Cleaners × 12	72,000
	months	
Managers' Salary	10,000 per month × 12 months	1,20,000
Road Tax, Permit Fee,	6,000 per quarter × 4 quarters	24,000
etc.		
Office Expenses	2,500 per month × 12 months	30,000



Diesel	5,40,000 km ÷ 6 km × ₹ 66 per litre	59,40,000
Depreciation	7,50,000 × 6 buses × 20%	9,00,000
Insurance	7,50,000 × 6 buses × 4%	1,80,000
Engine Oil and	5,40,000 km × ₹ 2,000 ÷ 1,000 km	10,80,000
Lubricants		
Total Operating		₹ 89,65,200
Costs		
Add: Profit Margin	33.33% of Takings	₹ 44,82,600
Total Takings		₹
_		1,34,47,800

3. Fare per Passenger-Km

Fare per Passenger-Km = ₹ 1,34,47,800 ÷ 1,94,40,000 = **₹ 0.6918** So, One-Way Fare per Passenger = 50 km × ₹ 0.6918 = **₹ 34.59**

Question 48

A group of 'Health Care Service' has decided to establish a Critical Care Unit in a metro city with an investment of Rs. 85 lakhs in hospital equipments. The unit's capacity shall be of 50 beds and 10 more beds, if required, can be added.

Other information for a year are as under:

	Rs.
Building Rent	2,25,000 per month
Manager's Salary	50,000 per month to each one
(Number of Managers – 03)	
Nurses' Salary	18,000 per month to each Nurse
(Number of Nurses – 24)	
Word boy's Salary	9000 per month per person
(Number of word boys -24)	
Doctor's Payment	5,50,000 per month
(Paid on the basis number of patients attended and time spent by them)	
Food and laundry services (Variable)	39,53,000 per year
Medicines to patients (Variable)	22,75,000 per year
Administrative Overheads	28,00,000 per year
Depreciation on equipment's	15% per annum on original cost

It was reported that for 200 days in a year 50 beds were occupied, for 105 days 30 beds were occupied and for 60 days 20 beds were occupied. The hospital hired 250 beds at a charge of Rs. 950 per bed to accommodate



the flow of patients. However, this never exceeded the normal capacity of 50 beds on any day.

Find out:

i. Profit per patient day, if hospital charges on an average Rs. 2,500 per day from each patient.

ii. Break even point per patient day (Make calculation on annual basis)

Answer

(i) Total equivalent single room suites

Nature of suite	Occupancy (Room days)	Equivalent single room suites (Room – days)
Single room suites	36,000	36,000
	(100 rooms × 360 days × 100%)	(36,000 × 1)
Double rooms suites	14,400	36,000
	(50 rooms × 360 days × 80%)	(14,400 × 2.5)
Triple rooms suites	6,480	32,400
	(30 rooms × 360 days × 60%)	(6,480 × 5)
		1,04,400

(ii) Statement of total cost:

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	(Rs.)
Staff salaries	14,25,00,000
Room attendant's wages	4,50,00,000
Lighting, heating and power	2,15,00,000
Repairs and renovation	1,23,50,000
Laundry charges	80,50,000
Interior decoration	74,00,000
Sundries	1,53,00,000
Building rent	
{ (Rs. 10,00,000 × 12 months) + 5% on	1,20,00,000 + 5% on total
total taking}	takings
Total cost	26,41,00,000 + 5% on total
	takings

Profit is 20% of total takings.

∴ **Total takings** = Rs. 26, 41, 00,000 + 25% (5% + 20%) of total takings Let x be rent for single rooms suite. Then **1**, **04,400** x = 26, 41, 00,000 + 0.25×1 , 04,400 x. Or, 1, 04,400x = 26, 41, 00,000 + 26,100x



Or, 78,300x = 26, 41, 00,000 Or, x = **3,373**

(iii) Rent to be charged for single room suite = Rs. 3,373Rent for double rooms suites = Rs. $3,373 \times 2.5$ = Rs. 8,432.5Rent for triple rooms suites = Rs. $3,373 \times 5$ = Rs. 16,865

Question 49

M/s XY Travels has been given a 25 km. long route to run an air-conditioned Mini Bus.

The cost of bus is ₹20,00,000. It has been insured @3% premium per annum while annual

road tax amounts to ₹36,000. Annual repairs will be ₹50,000 and the bus is likely to last

for 5 years. The driver's salary will be ₹2,40,000 per annum and the conductor's salary will

be ₹1,80,000 per annum in addition to 10% of the takings as commission (to be shared

by the driver and the conductor equally). Office and administration overheads will be

₹18,000 per annum. Diesel and oil will be ₹1,500 per 100 km. The bus will make 4 round trips carrying on an average 40 passengers on each trip.

Assuming 25% profit on takings and considering that the bus will run on an average 25 days in a month, you are required to:

(i) prepare operating cost sheet (for the month). EXAMS GUDE

(ii) calculate fare to be charged per passenger km.

Answer

(i) Statement showing the Operating Cost per Passenger-km.

	Yearly (₹.)	Monthly (₹.)
(A) Standing Charges:		
Insurance Charge ₹. 20,00,000 × 3%	60,000	5,000
Road Tax	36,000	3,000
Depreciation (20,00,000/5)	4,00,000	33,333.33
Total	4,96,000	41,333.33
(B) Maintenance Charges:		
Annual Repairs	50,000	4,166.67
Office and administration overheads	3,18,000	26,500
Total	3,68,000	30,666.67
(C) Running Cost/Charges:		
Driver's Salary	2,40,000	20,000



Conductor's Salary	1,80,000	15,000
Diesel & Oil(60,000 × 1,500 ÷ 100)	9,00,000	75,000
Total	13,20,000	1,10,000
Total (A+B+C) Cost before commission and	21,84,000	1,82,000
profit		
Commission (33,60,000 × 10%) (working note	3,36,000	28,000
2)		
Profit (33,60,000 × 25%) (working note 2)	8,40,000	70,000
Takings (working note 1)	33,60,000	2,80,000

(ii) Fare per Passenger-km.

Fare per Passenger-km. = Total Collection/Takings ÷ Total Passenger-km (Working note 3)

= 33,60,000 ÷ 24,00,000 = ₹. 1.40

OR

Fare per Passenger-km. (monthly) = 2,80,000 ÷ 2,00,000 = ₹. 1.40

Working note:

- 1. Cost before commission (10%) and profit (25%) is 21,84,000 which is 65% of total takings.
 - So total takings is (21,84,000 ÷ 65) × 100 = ₹ 33,60,000.
- Commission is 10% of ₹ 33,60,000 = ₹ 3,36,000 and Profit is 25% of ₹ 33,60,000 = ₹ 8,40,000.
- 3. Total Km is 4 Round Trips × Days in a month × Month = $(4 \times 2 \times 25 \times 25 \times 12) = 60,000$ km.

Passenger Km = 60,000 km × 40 passenger = 24,00,000.

Question 50

A hotel is being run in a Hill station with 200 single rooms. The hotel offers concessional rates during six off-season months in a year. During this period, half of the full room rent is charged. The management's profit margin is targeted at 20% of the room rent. The following are the cost estimates and other details for the year ending 31st March, 2019:

(i) Occupancy during the season is 80% while in the off-season it is 40%.

(ii) Total investment in the hotel is ₹ 300 lakhs of which 80% relates to Buildings and the balance to Furniture and other Equipment.

(iii) Room attendants are paid ₹ 15 per room per day on the basis of occupancy of rooms in a month.

(iv) Expenses:

- Staff salary (excluding that of room attendants) ₹ 8,00,000
- Repairs to Buildings ₹ 3,00,000
- Laundry Charges ₹ 1,40,000
- Interior Charges ₹ 2,50,000



• Miscellaneous Expenses ₹ 2,00,200

(v) Annual Depreciation is to be provided on Buildings @ 5% and 15% on Furniture and other Equipments on straight line method.

(vi) Monthly lighting charges are ₹ 110, except in four months in winter when it is ₹ 30 per room and this cost is on the basis of full occupancy for a month.

You are required to work out the room rent chargeable per day both during the season and the off-season months using the foregoing information. (Assume a month to be of 30 days and winter season to be considered as part of off-season).

Answer

Important workings :

Particulars	Full	Off Season	Total
1. Calculation of Room Days	Ceason	Ocason	
Occupied :			
(a) No. of rooms in the hotel	200	200	
(b) No. of days [6 m <mark>ont</mark> hs x 30	180	180	
days]			
(c) Occupancy Ratio	80%	40%	
(d) Room days occupied [a x b	28,800	14,400	
xc] HE C	OMPLEI	<u>= EXAM:</u>	GUIDE
(e) Weightage for rent	100%	50%	
(f) Equivalent room days [d x e]	28,800	7,200	36,000
2. Room Attendant's Salary :			
[WN 1(d) x ₹ 15 per room per	4,32,000	2,16,000	6,48,000
day]			
3. Lighting Charges :	Full	Off	Off
	Season	Season	Season
	Non-winter	Non-	Winter
		winter	
(a) Winter / Non-winter	6	2	4
(b) No. of Months	6	2	4
(c) No. of Rooms	200	200	200
(d) Occupancy Ratio	80%	40%	40%
(e) No. of room months occupied	960	160	320
[b x c x d]			
(f) Rate per room per month if	₹ 110	₹ 110	₹ 30
occupied			
(g) Lighting charges [e x f]	1,05,600	17,600	9,600



Cost Sheet for the Year :

Particulars	₹
Room attendants salary [WN 2 above]	6,48,000
Lighting charges [WN 3(g) above] [1,05,600 + 17,600 + 9,600]	1,32,800
Staff salary (excluding that of room attendants)	8,00,000
Repairs to Buildings	3,00,000
Laundry Charges	1,40,000
Interior Charges	2,50,000
Miscellaneous Expenses	2,00,200
Depreciation on Building [300 lakhs x 80% x 5%]	12,00,000
Depreciation on Furniture & Equipment [300 lakhs x 20% x 15%	9,00,000
]	
∴ Total cost per annum	45,71,000
Add : Profit @ 20% of room rent i.e. 25% of cost	11,42,750
∴ Total room rent i.e. revenue per annum	57,13,750

Calculation of Room Rent Chargeable Per Day :

Rent per equivalent room day = Total Revenue / Equivalent Room Days = 57,13,750 / 36,000 = ₹ 158.72 (approx)

Rent per room per day for full season period = ₹ 158.72 x 100% = ₹ 158.72 (approx)

Rent per room per day for off season period = ₹ 158.72 x 50% = ₹ 79.36 (approx)

Question 51

SEZ Ltd. built a 120 km. long highway and now operates a toll road to collect tolls. The company has invested ₹ 900 crore to build the road and has estimated that a total of 120 crore vehicles will be using the highway during the 10 years toll collection tenure. The other costs for the month of *"June 2020"* are as follows:

(i) Salary:

- Collection personnel (3 shifts and 5 persons per shift) ₹ 200 per day per person.
- Supervisor (3 shifts and 2 persons per shift) ₹ 350 per day per person.
- Security personnel (2 shifts and 2 persons per shift) ₹ 200 per day per person.
- Toll Booth Manager (3 shifts and 1 person per shift) ₹ 500 per day per person.
- (ii) Electricity ₹ 1,50,000
- (iii) Telephone ₹ 1,00,000
- (iv) Maintenance cost ₹ 50 lakhs
- (v) The company needs 30% profit over total cost.

Required:



- 1. Calculate cost per kilometre.
- 2. Calculate the toll rate per vehicle.

Answer

(a) Statement of Cost

Particulars		(₹)
A. Apportionment of	(₹ 900 crore × 1 / 10 years × 1 /	7,50,00,000
capital cost	12 months)	
B. Other Costs		
Salary to Collection	(3 Shifts × 5 persons per shift ×	90,000
Personnel	30 days × ₹ 200 per day)	
Salary to Supervisor	(3 Shifts × 2 persons per shift ×	63,000
	30 days × ₹ 350 per day)	
Salary to Security	(2 Shifts × 2 persons per shift ×	24,000
Personnel	30 days × ₹ 200 per day)	
Salary to Toll Booth	(3 Shifts × 1 person per shift ×	45,00 <mark>0</mark>
Manager	<mark>30</mark> da <mark>ys × ₹ 50</mark> 0 pe <mark>r day</mark>)	
Electricity		1,50,000
Telephone		1,00,000
C. Maintenance cost		50,00,000
Total (A + B + C)	E CONDI ETE EYAN	8,04,72,000

(1) Calculation of cost per kilometre:

Total Cost = ₹ 8,04,72,000 / Total km. = 8,04,72,000 / 120 km. = ₹ 6,70,600

(2) Calculation of toll rate per vehicle:

Total Cost + 25% profit = ₹ 8,04,72,000 + ₹ 2,41,41,600 / Vehicles per month = ₹ 10.46

Working:

Vehicles per month = Total estimated vehicles / 10 years × 1 month / 12 months = 120 crore / 10 years × 1 month / 12 months = 1 Crore vehicles

Question 52

ABC Health care runs an Intensive Medical Care Unit. For this purpose, it has hired a building at a rent of ₹ 50,000 per month with the agreement to bear the repairs and maintenance charges also.

The unit consists of 100 beds and 5 more beds can comfortably be



accommodated when the situation demands. Though the unit is open for patients all the 365 days in a year, scrutiny of accounts for the year 2020 reveals that only for 120 days in the year, the unit had the full capacity of 100 patients per day and for another 80 days, it had, on an average only 40 beds occupied per day. But, there were occasions when the beds were full and extra beds were hired at a charge of ₹ 50 per bed per day. This did not come to more than 5 beds above the normal capacity on any one day. The total hire charges for the extra beds incurred for the whole year amounted to ₹ 20,000.

The unit engaged expert doctors from outside to attend on the patients and the fees were paid on the basis of the number of patients attended and time spent by them which on an average worked out to ₹ 30,000 per month in the year 2020.

The permanent staff expenses and other expenses of the unit were as follows :

Particulars	₹
2 Supervisors each at a per month salary of	5,000
4 Nurses each at a per month salary of	3,000
2 Ward boys each at a per month salary of	<mark>1,5</mark> 00
Other Expenses for the year were as under :	
Repairs and Maintenance	<mark>28,0</mark> 00
Food supplied to patients	4,4 <mark>0,00</mark> 0
Caretaker and other services for patients	1,25,000
Laundry charges for bed linen	1,40,000
Medicines supplied	2,80,000
Cost of Oxygen etc. other than directly borne for treatment of patients	75,000
General Administration Charges allocated to the unit	71,000

Required :

(i) What is the profit per patient day made by the unit in the year 2020, if the unit recovered an overall amount of ₹ 200 per day on an average from each patient.

(ii) The unit wants to work on a budget for the year 2021, but the number of patients requiring medical care is a very uncertain factor. Assuming that same revenue and expenses prevail in the year 2021 in the first instance, work out the number of patient days required by the unit to break even.

Answer

Working Note:

Calculation of No. of Patient Days p.a.:



Particulars	Patient days
120 days x 100 patients	12,000
80 days x 40 patients	3,200
Extra beds [20,000 / 50]	400
Total patient days p.a.	15,600

(i) Profitability Statement: [For 15,600 Patient Days]

Particulars	Total p.a. (₹)	Per patient day (₹)
(a) Revenue [15,600 x ₹ 200]	31,20,000	200.00
(b) Variable Costs:		
Doctors fees [30,000 p.m. x 12 months]	3,60,000	
Food supplied to patients	4,40,000	
Caretaker and other services for patients	1,25,000	
Laundry charges for bed linen	1,40,000	
Medicines supplied	2,80,000	
Hire charges for extra beds	20,000	
Sub-total (b)	13,65,000	87 <mark>.50</mark>
(c) Contribution [a - b]	17, <mark>5</mark> 5,000	11 <mark>2.5</mark> 0
(d) Fixed Costs:		
Rent [50,000 p.m. x 12 months]	6,00,000	
Supervisors salary [5,000 p.m. x 12 x	1,20,000	
2]	DLETE EX	AMS GUIDE
Nurses salary [3,000 p.m. x 12 x 4]	1,44,000	
Ward boys salary [1,500 p.m. x 12 x 2]	36,000	
Repairs and Maintenance	28,000	
Cost of Oxygen etc.	75,000	
General Administration Charges	71,000	
Sub-total (d)	10,74,000	68.85
(e) Profit [c - d]	6,81,000	43.65

(ii) Calculation of Break Even Point (BEP):

BEP = Total Fixed Cost / Contribution per patient day = 10,74,000 / 112.50 = 9,547 patient days (approx)

Question 53

Paras Travels provides mini buses to an IT company for carrying its employees from home to office and dropping back after office hours. It runs



a fleet of 8 mini buses for this purpose. The buses are parked in a garage adjoining the company's premises. Company is operating in two shifts (one shift in the morning and one shift in the afternoon). The distance travelled by each mini bus one way is 30 kms. The company works for 20 days in a month.

The seating capacity of each mini bus is 30 persons. The seating capacity is normally 80% occupied during the year. The details of expenses incurred for a year are as under:

Particulars	
Driver's salary	₹ 20,000 per driver per month
Lady attendant's salary (mandatorily required for each mini bus)	₹ 10,000 per attendant per month
Cleaner's salary (One cleaner for 2 mini buses)	₹ 15,000 per cleaner per month
Diesel (Avg. 8 kms per litre)	₹ 80 per litre
Insurance charges (per annum)	2% of Purchase Price
License fees and taxes	₹ 5,080 per mini bus per month
Garage rent paid	₹ 24,000 per month
Repair & maintenance including engine oil and lubricants (for every 5,760 kms)	₹ 2,856 per mini bus
Purchase Price of mini bus	₹15,00 <mark>,00</mark> 0 each
Residual life of mini bus	8 Years
Scrap value per mini bus at the end of residual	₹ 3,00,000
life THE OWNETE	EVANG CHIDE

Paras Travels charges two types of fare from the employees. Employees coming from a distance of beyond 15 kms away from the office are charged double the fare which is charged from employees coming from a distance of up-to 15 kms. away from the office. 50% of employees travelling in each trip are coming from a distance beyond 15 kms. from the office. The charges are to be based on average cost.

You are required to:

(i) Prepare a statement showing expenses of operating a single mini bus for a year.

(ii) Calculate the average cost per employee per month in respect of:

(a) Employees coming from a distance up to 15 kms. from the office.

(b) Employees coming from a distance beyond 15 kms. from the office.

Answer

(a) (i) Statement of Expenses of operating a mini bus in a year

Particulars	Rate (₹)	Per Bus per



		annum (₹)
(A) Standing Charges:		
Driver's salary	20,000	2,40,000
	p.m	
Lady attendant's salary	10,000	1,20,000
	p.m	
Average Cleaner's salary (50%)	15,000	90,000
	p.m	
Insurance charge	30,000	30,000
	p.a	
License fee, taxes etc.	5,080 p.m	60,960
Average Garage Rent	24,000	36,000
	p.m	
Depreciation {(15,00,000 – 3,00,000) ÷ 8}	1,50,000	1,50,000
	p.a	
(B) Maintenance Charges:		
Repairs & maintenance including engine oil	28,560	28,560
and lubricants (Working Note 1)	p.a	
(C) Operating Charges:		
Diesel (Working Note 2)		5,76,000
Total Cost (A + B + C)		13,31,520
Cost per month		1 <mark>,1</mark> 0,960

(ii) Average cost per employee per month:

A. Employee coming from distance of up to 15 km Cost per menth = $\overline{3}$ 1 541 11

Cost per month = ₹ 1,541.11

B. Employee coming from a distance beyond 15 km XAMS GUIDE Cost = ₹ 3,082.22

* Considering half fare employees as a base: Full fare employees $(12 \times 2) = 24$ employees

Add: Half fare employees (Working Note 3) = 12 employees

Total Equivalent number of employees per month = **36 employees** Total Equivalent number of employees per month (morning + afternoon shift of company) = **72 employees**

Working Notes

- Calculation of Repairs and maintenance cost of a bus: Distance travelled in a year: (4 trips × 2 shifts × 30 km × 20 days × 12 months) Distance travelled per annum: 57,600 km Repairs and maintenance cost per Bus per annum: ₹ 28,560
- Calculation of diesel cost per bus per annum: Distance travelled in a year = 57,600 km Diesel cost per Bus per annum = ₹ 5,76,000
- 3. Calculation of equivalent number of employees per bus:
 - Seating capacity of a bus = **30 employees**



- Occupancy (80% of capacity) = **24 employees**
- Half fare employees (50% of 24 employees) = **12 employees**
- Full fare employees (50% of 24 employees) = **12 employees**

[Note: Total Equivalent number of employees per month (morning + afternoon shift of company) can also be calculated considering full fare employees as a base. In that case, the number will be 36. Then fare for employees coming from distance beyond 15 km will be ₹ 3,082.22 and employees coming from distance up to 15 km will be ₹ 1,541.11.]

Question 54

ABC Bank is having a branch which is engaged in processing of 'Vehicle Loan' and 'Education Loan' applications in addition to other services to customers. 30% of the overhead costs for the branch are estimated to be applicable to the processing of 'Vehicle Loan' applications and 'Education Loan' applications each.

Branch is having four employees at a monthly salary of ₹ 50,000 each, exclusively for processing of Vehicle Loan applications and two employees at a monthly salary of ₹ 70,000 each, exclusively for processing of Education Loan applications.

In addition to above, following expense are incurred by the Branch:

- Branch Manager who supervises all the activities of branch, is paid at ₹ 90,000 per month.
- Legal charges, Printing & stationery and Advertising Expenses are incurred at ₹ 30,000, ₹ 12,000 and ₹ 18,000 respectively for a month.
- Other expenses are ₹ 10,000 per month.

You are required to:

(i) Compute the cost of processing a Vehicle Loan application on the assumption that 496 Vehicle Loan applications are processed each month.

(ii) Find out the number of Education Loan Applications processed, if the total processing cost per Education Loan Application is same as in the Vehicle Loan Application as computed in (i) above.

Answer

Particulars	Vehicle Ioan Applications (₹)	Education loan Application (₹)	Total (₹)
Employee Cost	2,00,000	1,40,000	3,40,000
	(₹ 50,000 × 4)	(₹ 70,000 × 2)	
Apportionment of Branch manager's	27,000	27,000	54,000



salary			
Legal charges, Printing	18,000	18,000	36,000
& stationery and			
Advertising expenses			
Other expenses	3,000	3,000	6,000
Total cost	2,48,000	1,88,000	4,36,000

(i) Computation of cost of processing a vehicle loan application:

Total Cost ÷ No. of applications ₹ 2,48,000 ÷ 496 = ₹ 500

(ii) Computation of no. of Education loan Processed

Total Cost = No. of applications × Processing cost per application ₹ 1,88,000 = No. of applications × ₹ 500 No. of education loan applications = ₹ 1,88,000 ÷ ₹ 500 = **376 applications**

Question 55

RST Toll Plaza Limited built an 80-kilometre-long highway between two cities and operates a toll plaza to collect tolls from passing vehicles using the highway. The company has estimated that 50,000 light weight, 12,000 medium weight and 10,000 heavy weight vehicles will be using the highway in one month in outward journey and the same number for return journey.

As per government notification, vehicles used for medical emergencies, Members of Parliament, and essential services are exempt from toll charges. It is estimated that 10% of light weight vehicles will pass the highway for such use.

It is the policy of the company that if vehicles return within 24 hours of their outward journey, the toll fare will be reduced by 25 percent automatically. It is estimated that 30% of chargeable light weight vehicles return within the specified time frame.

The toll charges for medium weight vehicles is to be fixed as 2.5 times of the light weight vehicles and that of heavy weight vehicles as 2 times of the medium weight vehicles.

The toll and maintenance cost for a month is ₹ 59,09,090. The company requires a profit of 10% over the total cost to cover interest and other costs.

Required:

(i) Calculate the toll rate for each type of vehicle if concession facilities are not available on the return journey.

(ii) Calculate the toll rate that will be charged from light weight vehicles if a return journey concession facility is available, assuming that the revenue



earned from light weight vehicles calculated in option (i) remains the same.

Answer

Working Notes

(1) Calculation of equivalent numbers of Light weight vehicles (when no concession is provided on return journey)

Type of vehicle	Monthly traffic (A)	Return traffic (B)	Ratio (C)	Equivalent light weight [(A + B) × C]
Light weight	45,000*	45,000	1	90,000
Medium weight	12,000	12,000	2.5	60,000
Heavy weight	10,000	10,000	5	1,00,000
				2,50,000

*50,000 light vehicles less 10% exempted vehicles

(2) Calculation of equivalent numbers of Light weight vehicles (when concession is provided on return journey)

Type of vehicle	Monthly traffic (A)	Return traffic (B)	Ratio (C)	Equivalent light weight [(A + B) × C]
Light weight	45,000*	41,625 [45,000 - (45,000 × 30% × 25%)]	1	86,625
Medium weight	12,000	12,000	2.5	60,000
Heavy weight	10,000	10,000	5	1,00,000
				2,46,625

(i) Calculation of toll rate for each type of vehicle: Total cost to cover ÷ Equivalent type of vehicles (₹ 59,09,090 + 10% of ₹ 59,09,090) ÷ 2,50,000 equivalent vehicles (Refer working note 1) = 65,00,000 ÷ 2,50,000 = ₹ 26 Toll rate for:



- Light weight vehicle = ₹ 26
- Medium weight vehicle = ₹ 26 × 2.5 = ₹ 65
- Heavy weight vehicle = ₹ 26 × 5 = ₹ 130

(ii) Calculation of toll rate for each type of vehicle: Revenue earned from Light weight vehicle in (i) above = 90,000 vehicles × ₹ 26 = ₹ 23,40,000 New toll rate to maintain the same revenue from Light weight vehicle = ₹ 23,40,000 ÷ 86,625 (Refer working note-2) = ₹ 27.01 Light weight vehicle = ₹ 27.01 Rate to be charged from 13,500 light weight vehicles = 27.01 × 0.75 = 20.26

Alternative presentation

(ii) Toll rate to be charged from light weight vehicles if concession applicable

Revenue share in light vehicles = 90,000 × 26 = ₹ 23,40,000

Suppose rate is x, then outward journey 45,000 x; return journey (45,000 - 30% of 45,000) + 13,500 (x - 0.25)

45,000x + 31,500x + 13,500 (0.75x) = ₹ 23,40,000

Toll rate to be charged from light weight vehicles : 86,625x = ₹ 23,40,000 = ₹ 27.01

- Rate to be charged from 76,500 light weight vehicles @ 27.01; revenue will be ₹ 20,66,494
- Rate to be charged from 13,500 light weight vehicles = 27.01 × 0.75 = 20.26

Revenue will be ₹ 2,73,506

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Question 55(a)

M J Pvt. Ltd. produces a product "SKY" which passes through two processes, viz. Process-A and Process-B. The details for the year ending 31st March, 2014 are as follows:

Particulars	Process A	Process - B
40,000 Units introduced at a cost of	3,60,000	-
Material Consumed	2,42,000	2,25,000
Direct Wages	2,58,000	1,90,000
Manufacturing Expenses	1,96,000	1,23,720
Output in Units	37,000	27,000
Normal Wastage of Input	5%	10%
Scrap Value (per unit)	15	20
Selling Price (per unit)	37	61

Additional Information

(a) 80% of the output of Process-A was passed on to the next process and the balance was sold. The entire output of Process-B was sold.



(b) Indirect expenses for the year was 4,48,080.

(c) It is assumed that Process-A and Process-B are not responsibility centres.

Required:

(i) Prepare Process-A and Process-B Account.(ii) Prepare Profit & Loss Account showing the net profit / net loss for the year.

Answer

Particulars	Units	Amount (₹)	Particula rs	Units	Amount (₹)
To Input	40,000	3,60,000	By Normal wastage (2,000 units × ₹ 15)	2,000	30,000
To Material		2,42,000	By Abnormal loss A/c (1,000 units × ₹ 27)	1,000	27,000
To Direct wages	TH	2,58,000	By Process-B (29,600 units × ₹ 27)	29,600	7,99,200
To Manufacturin g Exp.		1,96,000	By Profit & Loss A/c (7,400 units × ₹ 27)	7,400	1,99,800
	40,000	10,56,000	÷	40,000	10,56,000

Process-A Account

Cost per unit

= (10,56,000 - 30,000) ÷ (40,000 units - 2,000 units) = 27 per unit **Normal wastage** = 40,000 units × 5% = 2,000 units **Abnormal loss** = 40,000 units - (37,000 units + 2,000 units) = 1,000 units **Transfer to Process-B** = 37,000 units × 80% = 29,600 units **Sale**



= 37,000 units × 20% = 7,400 units

Particulars	Units	Amount	Particular	Units	Amount	
		(₹)	S		(₹)	
To Process-	29,600	7,99,200	By Normal	2,960	59,200	
A A/c			wastage			
			(2,960			
			units × ₹			
			20)			
To Material		2,25,000	By Profit &	27,000	12,96,000	
			Loss A/c			
			(27,000			
			units × ₹			
			48)			
To Direct		1,90,000				
Wages						
То		<mark>1,23</mark> ,72 <mark>0</mark>				
Manufacturin						
g Exp.						
To Abnormal	360	17,280				
Gain A/c			ETE EV			
(360 units x	1.11	E COMPI		M2 G		
48)						
	29,960	13,55,200		29,960	13,55,200	

Cost per unit

= (13,37,920 – 59,200) ÷ (29,600 units – 2,960 units)

= 48 per unit

Normal wastage

= 29,600 units × 10% = 2,960 units

Abnormal gain

= (27,000 units + 2,960 units) – 29,600 units = 360 units

Profit & Loss Account

Particulars	Amount (₹)	Particulars	Amount (₹)		
To Process-A A/c	1,99,800	By Sales:			
To Process-B A/c	12,96,000	- Process-A (7,400 units × ₹ 37)	2,73,800		
To Abnormal loss A/c	12,000	- Process-B (27,000 units × ₹ 61)	16,47,000		



To Indirect Expenses	4,48,080	By Abnormal gain	10,080
		By Net loss	25,000
	19,55,880		19,55,880

Working Notes

Normal Wastage (Loss) Account					
Particulars	Units	Amount (₹)	Particulars	Units	Amount (₹)
To Process- A A/c	2,000	30,000	By Abnormal Gain A/c (360 units × ₹ 20)	360	7,200
To Process- B A/c	2,960	59,200	By Bank (Sales)	4,600	82,000
	4,960	89,200		4,960	89,200

Abnormal Loss Account

Particulars	Units	Amount (₹)	Particulars	Units	Amount (₹)
To Process- A A/c	1,000	27,000	By Bank A/c (1,000 units × ₹ 15)	1,000	15,000
			By Profit & Loss A/c		12,000
	1,000	27,000	MPLETE E)	1,000	27,000

Abnormal Gain Account

Particulars	Units	Amount (₹)	Particulars	Units	Amount (₹)
To Normal loss A/c (360 units × ₹ 20)	360	7,200	By Process- B A/c	360	17,280
To Profit & Loss A/c		10,080			
	360	17,280		360	17,280

Question 55(b)

The following information relates to Process A:

Details	Values
(i) Opening Work-in-Progress	8,000 units at ₹ 75,000
Degree of Completion:	
Material	100%



Labour and Overhead	60%
(ii) Input	1,82,000 units at ₹ 7,37,500
(iii) Wages Paid	₹ 3,40,600
(iv) Overheads Paid	₹ 1,70,300
(v) Units Scrapped	14,000 units
Degree of Completion (Scrapped):	
Material	100%
Wages and Overheads	80%
(vi) Closing Work-in-Progress	18,000 units
Degree of Completion (Closing	
WIP):	
Material	100%
Wages and Overheads	70%
(vii) Units Completed and	1,58,000 units
Transferred	
(viii) Normal Loss	5% of total input (including WIP)
(ix) Scrap Value	₹ 5 per unit (adjusted in material cost)

Requirements (FIFO Basis): 1. Equivalent Production

- 2. Cost Per Unit
- 3. Value of Units Transferred to Next Process

Answer

(i)

Statement of Equivalent Production (Under FIFO Method)

Input Output			Equivalent Production		uction		
Particulars	Units	Particulars Units		Materials		Labour & Overheads	
				(%)	Units	(%)	Units
Opening WIP	8,000	Transfer to next Process:					
Introduced	1,82,000	Opening WIP completed	8,000	-	-	40	3,200
		Introduced & completed	1,50,000	100	1,50,000	100	1,50,000
		Normal loss 5%					
		(8,000 +1,82,000)	9,500	-	-	-	-
		Abnormal loss	4,500	100	4,500	80	3,600
		Closing WIP	18,000	100	18,000	70	12,600
	1,90,000		1,90,000		1,72,500		1,69,400

(ii) Computation of Cost per Unit

Particulars	Materials	Labour	Overheads
	(₹)	(₹)	(₹)
· · · · · · · · · · · · · · · · · · ·			



Cost Per Unit	4.0000	2.0106	1.0053		
Equivalent Units	1,72,500	1,69,400	1,69,400		
Net cost	6,90,000	3,40,600	1,70,300		
units × ₹ 5)					
Less: Sale of Scrap (9,500	(47,500)	-	-		
Total	7,37,500	3,40,600	1,70,300		
Expenses	-	3,40,600	1,70,300		
Input of Materials	7,37,500	-	-		

Total cost per unit = ₹ (4.0000 + 2.0106 + 1.0053) = ₹ 7.0159

(iii) Value of Units Transferred to Next Process

Particulars	Amount (₹)	Amount (₹)
Opening W-I-P	75,000	
Add: Labour (3,200 units × ₹ 2.0106)	6,434	
Overhead (3,200 units × ₹ 1.0053)	3,217	84,651
New introduced (1,50,000 units × ₹ 7.0159)		10,52,385
		11,37,036

Question 55(c)

The following information is furnished by ABC Company for Process - II of its manufacturing activity for the month of April 2023:

- (i) Opening Work-in-Progress Nil
- (ii) Units transferred from Process I 55,000 units at ₹ 3,27,800
- (iii) Expenditure debited to Process II:

Consumables	₹ 1,57,200
Labour	₹ 1,04,000
Overhead	₹ 52,000
a transformed to D	FARRADA III FA

(iv) Units transferred to Process III – 51,000 units

(v) Closing WIP – 2,000 units (Degree of completion):

Consumables	80%
Labour	60%
Overhead	60%

(vi) Units scrapped - 2,000 units, scrapped units were sold at ₹ 5 per unit

(vii) Normal loss – 4% of units introduced

You are required to:

(i) Prepare a Statement of Equivalent Production.

(ii) Determine the cost per unit

(iii) Determine the value of Work-in-Process and units transferred to Process – III



Answer

(i) Statement of Equivalent Production

Input Details	Units	Output Particula rs	Units	Equivale nt Producti on	Materia I- A*		Consumabl es		Labour & Overhea ds
				%	Units	%	Units	%	Units
Units transferr ed from Process- I	55,00 0	Units transferre d to Process- III	51,00 0	100	51,000	10 0	51,000	10 0	51,000
		Normal loss (4% of 55,000)	2,200		-	-		-	
		Closing W-I-P	2,0 <mark>00</mark>	100	2,000	80	1,6 <mark>00</mark>	60	1,200
		Abnormal Gain	(200)	100	(200)	10 0	(200)	10 0	(200)
	55,00 0		55,00 0	COM	52,800		52,400	G	52,000

*Material A represent transferred-in units from process-I

(ii) Determination of Cost per Unit

Particulars	Amount (₹)	Units	Per Unit (₹)
(i) Direct Material (Consumables):			
Value of units transferred from	3,27,800		
Process-I			
Less: Value of normal loss			
(2,200 units × ₹ 5)	(11,000)		
	3,16,800	52,800	6.00
(ii) Consumables added in Process-	1,57,200	52,400	3.00
ÎÎ.			
(iii) Labour	1,04,000	52,000	2.00
(iii) Overhead	52,000	52,000	1.00
Total Cost per equivalent unit			12.00

(iii) Determination of value of Work-in-Process and units transferred to



Process-III

Particulars	Units	Rate (₹)	Amount (₹)
Value of Closing W-I-P:			
Material from Process-I	2,000	6.00	12,000
Consumables	1,600	3.00	4,800
Labour	1,200	2.00	2,400
Overhead	1,200	1.00	1,200
			20,400
Value of units transferred to Process-	51,000	12.00	6,12,000

Question 55(d)

KMR Ltd. produces product AY, which passes through three processes 'XM', 'YM', and 'ZM'. The output of process 'XM' and 'YM' is transferred to the next process at cost plus 20 percent each on transfer price and the output of process 'ZM' is transferred to finished stock at a profit of 25 percent on transfer price. The following information are available in respect of the year ending 31st March, 2017:

	Process- XM (₹)	Process- YM (₹)	Process- ZM (₹)	Finished Stock (₹)
Opening Stock	30,000	54,000	80,000	90,000
Material	1,60,000	1,30,000	1,00,000	
Wages	2,50,000	2,16,000	1,84,000	
Manufacturing Overheads	1,92,000	1,44,000	1,33,000	-
Closing Stock	40,000	64,000	78,000	1,00,000
Inter process profit included in Opening Stock	Nil	8,000	20,000	40,000

Stock in processes is valued at prime cost. The finished stock is valued at the price at which it is received from process 'ZM'. Sales of the finished stock during the period was ₹ 28,00,000.

You are required to prepare:

- (i) All process accounts and
- (ii) Finished stock account showing profit element at each stage.

Answer

(i) Process 'XM' Account


Dr.	Cost (₹)	Profit	Total (₹)	Cr.	Cost (₹)	Profit (≇)	Total (₹)
To Opening Stock	30,000	-	30,000	By Process 'YM' A/c (Transfer)	5,92,000	1,48,000	7,40,000
To Material	1,60,000	_	1,60,000				
To Wages	2,50,000	_	2,50,000				
Total	4,40,000	_	4,40,000				
Less: Closing Stock	40,000	-	40,000				
Prime Cost	4,00,000	_	4,00,000				
To Manufacturing Overheads	1,92,000		1,92,000				
Total Cost	5,92,0 <mark>00</mark>	_	5,9 <mark>2,000</mark>				
To Costing Profit and	-	1,48,000	1,48,000				
Loss A/c (20% on transfer price or 25% on cost)		THE C	OMPL	ete e >	(AMS	GUIDE	
	5,92,000	1,48,000	7,40,000		5,92,000	1,48,000	7,40,000

Process 'YM' Account

Dr.	Cost (₹)	Profit (₹)	Total (₹)	Cr.	Cost (₹)	Profit (₹)	Total (₹)
To Opening Stock	46,000	8,000	54,000	By Proce ss 'ZM' A/c (Trans fer)	10,72,758	4,52,24 2	15,25,0 00
To Process 'XM' A/c	5,92,000	1,48,000	7,40,000				
To Material	1,30,000	_	1,30,000				



To Wages	2,16,000	-	2,16,000			
Total	9,84,000	1,56,000	11,40,000			
Less:	55,242	8,758	64,000			
Closing						
Stock						
Prime	9,28,758	1,47,242	10,76,000			
Cost						
То	1,44,000	-	1,44,000			
Manufactur						
ing						
Overheads						
Total Cost	10,72,758	1,47,242	12,20,000			
To Costing	-	3,05,000	3,05,000			
Profit and						
Loss A/c						
(20% on						
transfer						
price or						
25% on						
cost)						
	10,72,7 <mark>5</mark> 8	4,52,242	15,25,000	10,72,758	<mark>4,52,2</mark> 4	15,25,0
					2	00
		(ii) <mark>Finish</mark> e	ed Stock Acco	ount		

Dr.	Cost (₹)	Pro <mark>fit</mark> (₹)	Total (₹)	Cr.	Cost (₹)	Profit (₹)	Total (₹)
To Openin g Stock	50,000	40,000	90,000	By Costing P&L A/c (Transf er)	14,83,7 25	13,16,2 75	28,00,0 00
To Process 'ZM' A/c	14,91,2 58	11,00,7 42	25,92,0 00				
Total	15,41,2 58	11,40,7 42	26,82,0 00				
Less: Closing Stock	57,533	42,467	1,00,00 0				
	14,83,7 25	10,98,2 75	25,82,0 00				
To Costing Profit and Loss	_	2,18,00 0	2,18,00 0				



A/c (Profit, Balanci ng Figure)						
	14,83,7 25	13,16,2 75	28,00,0 00	14,83,7 25	13,16,2 75	28,00,0 00

Calculation of Unrealized Profit on Closing Stock

- Process 'XM' = Nil
- **Process 'YM'** = ₹1,56,000 × ₹64,000 / ₹11,40,000 = ₹8,758
- **Process 'ZM'** = ₹4,72,242 × ₹78,000 / ₹18,89,000 = ₹19,500
- **Finished Stock** = ₹11,00,742 × ₹1,00,000 / ₹25,92,000 = ₹42,467

Note: Unrealized profit on closing finished stock can also be calculated on the basis of Average cost.

Question 55(e)

ABC Ltd. produces an item which is completed in three processes - X, Y, and Z. The following information is furnished for process X for the month of March, 2018:

Opening work-in-progress (5,000 units):

Materials	₹ 35, <mark>00</mark> 0
Labour	₹ 13,0 <mark>0</mark> 0
Overheads	₹ 25,000

Units introduced into process X (55,000 units):

Materials	₹ 20,20,000		
Labour	₹ 8,00,000		
Overheads	₹ 13,30,000		

Units scrapped: 5,000 units Degree of completion:

Materials	Labour & Overheads			
100%	60%			

Closing work-in-progress (5,000 units): Degree of completion:

Materials	Labour & Overheads
100%	60%

Units finished and transferred to Process Y: 50,000 units



Normal loss: 5% of total input (including opening works-in-progress). Scrapped units fetch ₹ 20 per unit.

Presuming that average method of inventory is used, prepare: (i) Statement of Equivalent production (ii) Statement of Cost for each element (iii) Statement of distribution of cost (iv) Abnormal loss account Answer

(i) Statement of Equivalent Production

Input	Units	Output	Units	Equivale nt productio n			
				Material (%)	Units	Labour & Overhead s (%)	Units
Opening WIP	5,000	Complete d and transferre d to Process 'Y'	50,000	100	50,000	100	50,000
Units introduce d	55,000	Normal loss (5% of 60,000 units)	3,000	LETE E	XAMS	GUIDE	
		Abnormal loss	2,000	100	2,000	60	1,200
		Closing WIP	5,000	100	5,000	60	3,000
			60,000		57,000		54,200

(ii) Statement of Cost

Details	Cost at the beginning of process (₹)	Cost added (₹)	Total cost (₹)	Equivalent Units	Cost per unit (₹)
Material	35,000	20,20,000	20,55,000		
Less: Value of normal loss	(3,000 units × ₹ 20)				
			(60,000)		
			19,95,000	57,000	35



Labour	13,000	8,00,000	8,13,000	54,200	15
Overheads	25,000	13,30,000	13,55,000	54,200	25
Total	73,000	41,50,000	41,63,000		75

(iii) Statement of Distribution of Cost

Details	(₹)
Completed and transferred to Process-Y (50,000 units × ₹ 75)	37,50,000
Abnormal Loss:	
Materials (2,000 units × ₹ 35)	70,000
Wages (1,200 units × ₹ 15)	18,000.00
Overheads (1,200 units × ₹ 25)	30,000.00
	1,18,000
Closing WIP:	
Materials (5,000 units × ₹ 35)	1,75,000
Wages (3,000 units × ₹ 15)	45,000
Overheads (3,000 units × ₹ 25)	75,000
	2,95,000

(iv) Abnormal Loss Account

Particulars	Units	Amount	Particulars	Units	Amount
To Process-	2,000	1,18,000	By Cost	2,000	40,000
X A/c			Ledger		GOIDE
			Control A/c		
			By Costing	-	78,000
			Profit & Loss		
			A/c		
	2,000	1,18,000		2,000	1,18,000

Question 56

A Company manufacturing chemical solution that passes through a number of processes uses FIFO method to value Work-in-Process and Finished Goods. At the end of month of September, a fire occurred in the factory and some papers containing records of the process operations for the month were destroyed. The Company desires to prepare process accounts for the month during which the fire occurred. Some information could be gathered as to operating activities as under:

• Opening Work-in-Process at the beginning of the month of 1,100 litres -



40% complete for labour and 60% complete for Overheads. Opening Work-in-Process was valued at ₹ 48,260.

- Closing Work-in-Process at the end of the month was 220 litres, 40% complete for Labour and 30% complete for Overheads.
- Normal loss is 10% of input and total losses during the month were 2,200 litres partly due to firm damage. Assume degree of completion of abnormal losses is 100%.
- Output sent to Finished Goods Warehouse was 5,900 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 (litre) is ₹ 53 for the month consisting:

	₹
Raw Material	35
Labour	8
Overheads	10
Total	53

Requirements:

(i) Calculate the quantity (in litres) of Raw Material input during the month.

(ii) Calculate the quantity (in litres) of Normal Loss and Abnormal loss/Gain experienced in the month.

(iii) Calculate the values of Raw Materials, Labour and Overheads added to the process during the month.

(iv) Prepare the Process Account for the month.

Answer

(i) Calculation of Raw Material inputs during the month: AMS GUIDE

Quantities Process Entering	Litres	Quantities Process Leaving	Litres
Opening WIP	1,100	Transfer to Finished Goods	5,900
Raw material input (balancing figure)	7,220	Process Losses	2,200
		Closing WIP	220
	8,320		8,320

(a) (ii) Calculation of Normal Loss and Abnormal Loss/Gain

	Litres
Total process losses for month	2,200
Normal Loss (10% input)	722
Abnormal Loss (balancing figure)	1,478

(a) (iii) Calculation of values of Raw Material, Labour and Overheads added to the process:



	Material	Labour	Overheads
Cost per equivalent unit	₹ 35	₹8	₹ 10
Equivalent units (litre)	6,498	7,026	6,784
Cost of equivalent units	₹ 2,27,430	₹ 56,208	₹ 67,840
Add: Scrap value of normal loss (722 units × ₹ 20)	₹ 14,440		
Total value added	₹ 2,41,870	₹ 56,208	₹ 67,840

Statement of Equivalent Units (litre):

Input Details	Units	Output Details	Units	Equival ent Product ion	Mater ial	(%)	Labo ur	(%)	Overhe ads	(%)
Openin g WIP	1,100	Units complet ed:								
		- Op <mark>enin</mark> g WIP	1,100				660	60	440	40
Units introdu ced	7,220	- Fre <mark>sh</mark> inputs (balanci	4,800		4,800	100	4,800	100	4,800	100
		ng figure)	HE C	OMPL	ETE	E)	(AMS	6 Gl	JIDE	
		Normal Loss	722							
		Abnorm al Loss	1,478		1,478	100	1,478	100	1,478	100
		Closing WIP	220		220	100	88	40	66	30
			8,320		6,498		7,026		6,784	

Calculation of Closing WIP:

- Material: 220 × 35 = ₹ 7,700
- **Labour**: 220 × 40% × 8 = ₹ 704
- **Overheads**: 220 × 30% × 10 = ₹ 660
- Total: ₹ 9,064

(iv) Process Account

Particulars	Litres	Amount (₹)	Particulars	Litres	Amount (₹)
To Opening WIP	1,100	₹ 48,260	By Finished	5,900	₹ 3,12,700



			goods		
To Raw Materials	7,220	₹ 2,41,870	By Normal	722	₹ 14,440
			loss		
To Wages		₹ 56,208	By Abnormal	1,478	₹ 78,334
			loss		
To Overheads		₹ 67,840	By Closing	220	₹ 9,064
			WIP		
To Other Expenses		₹ 360			
(balancing figure)					
Total	8,320	₹ 4,14,538	Total	8,320	₹ 4,14,538

Question 57

A company manufactures one main product (M_1) and two by-products B_1 and B_2 . For the month of January 2013, following details are available: Total Cost up to separation Point Rs. 2,12,400

M1	B ₁	B ₂
-	Rs.	Rs.
	35,000	24,000
4,000	1,800	3,000
Rs.	Rs. 40	Rs. 30
100		
-	20%	30%
20%	15%	15%
	EXAMO	GUIDE
	M ₁ - 4,000 Rs. 100 - 20%	M1 B1 - Rs. 35,000 4,000 1,800 Rs. Rs. 40 100 - 20% 15%

There are no beginning or closing inventories.

Prepare statement showing:

(i) Allocation of joint cost; and

(ii) Product-wise and overall profitability of the company for January 2013.

Answer

(i) Statement showing allocation of Joint Cost

Particulars	B ₁	B ₂
No. of units Produced	1,800	3,000
Selling Price Per unit (Rs.)	40	30
Sales Value (Rs.)	72,000	90,000
Less: Estimated Profit (B_1 -20% & B_2 -30%)	(14,400)	(27,000)
Cost of Sales	57,600	63,000
Less: Estimated Selling Expenses (B ₁ -15% & B ₂ -	(10,800)	(13,500)
15%)		
Cost of Production	46,800	49,500



Less: Cost after separation	(35,000)	(24,000)
Joint Cost allocated	11,800	25,500

(ii) Statement of Profitability

Particulars	M ₁ (Rs.)	B ₁ (Rs.)	B ₂ (Rs.)
Sales Value (A)	4,00,000 (4,000 × Rs. 100)	72,000	90,000
Less:- Joint Cost	1,75,100 (2,12,400 - 11,800 - 25,500)	11,800	25,500
 Cost after separation 	-	35,000	24,000
- Selling Expenses (M ₁ - 20%, B ₁ -15% & B ₂ -15%)	80,000	10,800	13,500
(B)	2,55,100	57,600	63,000
Profit (A – B)	1,44,900	14,400	<mark>27</mark> ,000

Overall Profit = Rs. 1,44,900 + Rs. 14,400 + Rs. 27,000 = Rs. 1,86,300

Question 58

SV chemicals Limited processes 9,00,000 kgs. of raw material in a month purchased at ₹ 95 per kg in department X. The input output ratio of department X is 100 : 90. Processing of the material results in two joint products being produced 'P₁' and 'P₂' in the ratio of 60 : 40. Product 'P₁' can be sold at split off stage or can be further processed in department Y and sold as a new product 'YP₁'. The input output ratio of department Y is 100 : 95. Department Y is utilized only for further processing of product 'P₁' to product 'YP₁'. Individual departmental expenses are as follows:

	Dept. X (₹ lakhs)	Dept. Y (₹ lakhs)
Direct Materials	95.00	14.00
Direct Wages	80.00	27.00
Variable Overheads	100.00	35.00
Fixed Overheads	75.00	52.00
Total	350.00	128.00

Further, selling expenses to be incurred on three products are:

Particulars	Amount (₹ in lakhs)
Product 'P ₁ '	28.38
Product 'P ₂ '	25.00



Product 'YP₁' 19.00

Selling price of the products 'P₁' and 'P₂' at split off point is ₹ 110 per kg and ₹ 325 per kg respectively. Selling price of new product 'YP₁' is ₹ 150 per kg.

You are required to:

(i) PREPARE a statement showing apportionment of joint costs, in the ratio of value of sales, net of selling expenses.

(ii) PREPARE a Statement showing profitability at split off point.

(iii) PREPARE a Statement of profitability of 'YP₁'.

(iv) DETERMINE that would you recommend further processing of P₁?

Answer

Working Notes:

Input output ratio of material processed in Department X = 100:90

Particulars	Quantity (Kg)
Material input	9,00,000
Less: Loss of material in process @ 10% of 9,00,000 kgs	(90,000)
Output	8,10,000

Output of department X is product ' P_1 ' and ' P_2 ' in the ratio of 60 : 40. Output $P_1 = 60 \times 8,10,000/100=4,86,000$ kgs.

Output P₂ = 40×8,10,000100=3,24,000 kgs.

Statement showing ratio of net sales

Product	P ₁	P ₂	Total
Quantity (kgs)	4,86,000	3,24,000	8,10,000
Selling price per kg (₹)	110.00	325.00	
Sales Value (₹ in lakhs)	534.60	1,053.00	1,587.60
Less: Selling Expenses (₹ in lakhs)	(28.38)	(25.00)	(53.38)
Net Sales (₹ in lakhs)	506.22	1,028.00	1,534.22
Ratio	33%	67%	100.00

Computation of Joint Costs

Particulars	Amount (₹ Lakhs)
Raw Material input 9,00,000 kgs @ ₹ 95 per kg	855.00
Direct Materials	95.00
Direct Wages	80.00
Variable Overheads	100.00
Fixed Overheads	75.00
Total	1,205.00

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(i) Statement showing apportionment of joint costs in the ratio of net sales

Particulars	Amount (₹ in lakhs)
Joint cost of P ₁ – 33% of ₹ 1,205 lakhs	397.65
Joint cost of P₂ – 67% of ₹ 1,205 lakhs	807.35
Total	1,205.00

(ii) Statement showing profitability at split off point

Product	P ₁	P ₂	Total
Net Sales Value (₹ in lakhs) – [A]	506.22	1,028.00	1,534.22
Less: Joint costs (₹ in lakhs)	(397.65)	(807.35)	(1,205.00)
Profit (₹ in lakhs) [A] – [B]	108.57	220.65	329.22

Alternative Presentation

Product	P ₁	P ₂	Total
Sales Value (₹ in lakhs) – [A]	534.60	1,053.00	1,587.60
Less: Joint costs (₹ in lakhs)	397.65	807.35	1,205.00
Selling Expenses	28.38	25.00	53.38
Total Cost [B]	426.03	832.35	1,258.38
Profit (₹ in lakhs) [<mark>A] –</mark> [B]	108.57	220. <mark>65</mark>	329.22

(iii) Statement of profitability of product 'YP1'

Particulars	YP ₁
Sales Value (₹ in lakhs) (Refer working note) [A]	629.55
Less: Cost of P ₁	397.65
Cost of Department Y	128.00
Selling Expenses of Product 'YP ₁ '	19.00
Total Costs [B]	544.65
Profit (₹ in lakhs) [A] – [B]	84.90

Working Note:

Computation of product 'YP₁'

- Quantity of product P_1 input used = 4,86,000 kgs
- Input output ratio of material processed in Department Y = 100 : 95

Particulars	Quantity (Kg)
Material input	4,86,000
Less: Loss of material in process @ 5% of 4,86,000	(24,300)
Output	4,61,700
Salaa Valua of VB = 4 61 700 kma @ ₹ 150 mar k	~ - ₹ 600 EE lakha

Sales Value of YP₁ = 4,61,700 kgs @ ₹ 150 per kg = ₹ 692.55 lakhs

(iv) Determination of profitability after further processing of product P₁ into



product YP₁

Particulars	(₹ in lakhs)
Profit of Product 'P ₁ ' {refer (ii) above}	108.57
Profit of Product 'YP ₁ ' {refer (iii) above}	84.90
Decrease in profit after further processing	23.67

Based on the above profitability statement, further processing of product P_1 into YP_1 should not be recommended.

Question 59

A factory producing article A also produces a by-product B which is further processed into finished product. The joint cost of manufacture is given below:

Material	₹ 5.000
Labour	₹ 2,000
	€ 3,000
Overhead	₹ 2,000
Total	₹ 10,000

Subsequent cost in ₹ are given below:

	Α	В	
Material	3,000	1,500	
Labour	1,400	1,000	
Overhead	600	500	
Total	5,000	3,000	

Selling prices are A ₹ 16,000 B ₹ 8,000 Estimated profit or

Estimated profit on selling prices is 25% for A and 20% for B. Assume that selling and distribution expenses are in proportion of sales prices. Show how you would apportion joint costs of manufacture and prepare a statement showing cost of production of A and B.

Answer

Apportionment of Joint Costs

A (₹)	B (₹)
16,000	8,000
4,000	1,600
(25% of ₹16,000)	(20% of ₹8,000)
12,000	6,400
	A (₹) 16,000 4,000 (25% of ₹16,000) 12,000



Less: Selling & Distribution exp.	267	133
(Refer working note)	(₹ 400 × 2/3)	(₹ 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 A & B in the ratio of **6733 : 3267**

Statement showing Cost of Production of A and B

Elements of cost	Joint	t Cost Subsequent Cost		Total Cost		
	Α	В	Α	В	Α	В
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		oduction	11,733	6,267	

Statement showing Cost of Production of A and B

Working Note: Calculation of Selling and Distribution Expenses

(₹)
24,000
(5,600)
18,400
(10,000)
(8,000)
400

Question 60

A Ltd. produces 'M' as a main product and gets two by-products - 'P' and 'Q' in the course of processing.

Following information are available for the month of October, 2017:

	Μ	Р	Q
Cost after separation	-	₹ 60,000	₹ 30,000
No. of units produced	4500	2500	1500
Selling price (per unit)	₹ 170	₹ 80	₹ 50
Estimated Net profit to sales	-	30%	25%



The joint cost of manufacture up to separation point amounts to ₹ 2,50,000. Selling expenses amounting to ₹ 85,000 are to be apportioned to the three products in the ratio of sales units.

There is no opening and closing stock.

Prepare the statement showing:

(i) Allocation of joint cost.

(ii) Product wise overall profitability and

(iii) Advise the company regarding results if the by product 'P' is not further processed and is sold at the point of separation at \gtrless 60 per unit without incurring selling expenses.

Answer

(i) Statement showing allocation of Joint Cost

Particulars	Р	Q
No. of units Produced	2,500	1,500
Selling Price Per unit (₹)	80	50
Sales Value (₹)	2,00,000	75,000
Less: Estimated Profit (P-30% & Q-25%)	(60,000)	(18,750)
Cost of Sales	1,40,000	56,250
Less: Selling Expenses (Refer Working note-1)	(25,000)	(15,000)
Cost of Production	1,15,000	41,250
Less: Cost after separation	(60, <mark>000)</mark>	(30,000)
Joint Cost allocated	55,000	11,250

(ii) Statement of Profitability COMPLETE EXAMS GUIDE

Particulars	M (₹)	P (₹)	Q (₹)
Sales Value (A)	7,65,000	2,00,000	75,000
	(4,500 × ₹170)		
Less: Joint Cost	1,83,750	55,000	11,250
Less: Cost after separation	-	60,000	30,000
Less: Selling Expenses	45,000	25,000	15,000
Net Profit (B)	2,28,750	1,40,000	56,250
Profit (A - B)	5,36,250	60,000	18,750

Overall Profit = ₹ 5,36,250 + ₹ 60,000 + ₹ 18,750 = **₹ 6,15,000**

(iii) If the by-product P is not further processed and is sold at the point of separation

Particulars	Amount (₹)
Sales value at the point of separation	1,50,000
(2,500 units × ₹ 60)	
Less: Joint cost	55,000



Profit	95,000
Profit after further processing	60,000
Incremental Profit	35,000

Conclusion: If the by-product P is sold at the point of separation, it will give an additional profit of \gtrless 35,000 to the company. Hence, the company should sell by-product P without further processing.

Working Note

1. Apportionment of Selling Expenses among M, P, and Q

Product/By-product	Selling Expenses Calculation	Amount (₹)
Product M	₹ 85,000 ÷ 17 × 9	45,000
By-product P	₹ 85,000 ÷ 17 × 5	25,000
By-product Q	₹ 85,000 ÷ 17 × 3	15,000

Question 61

A Factory is engaged in the production of chemical Bomex and in the course of its manufacture a by-product Cromex is produced which after further processing has a commercial value. For the month of April 2019 the following are the summarised cost data:

	Joint Expenses (₹)	Separate Expenses (₹)	
		Bomex	Cromex
Materials	1,00,000	6,000	4,000
Labour	50,000	20,000	18,000
Overheads	30,000	10,000	6,000
Selling Price per unit		100	40
Estimated profit per unit on			5
sale of Cromex			
Number of units produced		2,000	2,000

The factory uses net realisable value method for apportionment of joint cost to by-products.

You are required to prepare statements showing:

- (i) Joint cost allocable to Cromex
- (ii) Product wise and overall profitability of the factory for April 2019.

Answer

(i) Statement Showing Joint Cost Allocation to 'Cromex'



Particulars	Cromex (₹)
Sales (₹ 40 × 2,000 units)	80,000
Less: Post Split Off Costs (4,000+18,000+6,000)	(28,000)
Less: Estimated Profit (₹ 5 × 2,000 units)	(10,000)
Joint cost allocable	42,000

(ii) Statement Showing Product Wise and Overall Profitability

Particulars	Bomex (₹)	Cromex (₹)	Total (₹)
Sales	2,00,000	80,000	2,80,000
Less: Share in Joint Expenses	(1,38,000)*	(42,000)	(1,80,000)
Less: Post Split Off Costs	(36,000)	(28,000)	(64,000)
Profit	26,000	10,000	36,000

(*) 1,80,000 - 42,000

Question 62

A Factory produces two products, 'A' and 'B' from a single process. The joint processing costs during a particular month are:

Direct Material ₹30,000 Direct Labour ₹9,600 Variable Overheads ₹12,000 Fixed Overheads ₹32,000 Sales: A - 100 units @ ₹600 per unit; B - 120 units @ ₹200 per unit.

I. Apportion joint costs on the basis of:

(i) Physical Quantity of each product.

(ii) Contribution Margin method, and

II. Determine Profit or Loss under both the methods.

Answer

Total Joint Cost

	Amount (₹)
Direct Material	30,000
Direct Labour	9,600
Variable Overheads	12,000
Total Variable Cost	51,600
Fixed Overheads	32,000
Total joint cost	83,600

Apportionment of Joint Costs:



	Product-A	Product-B
l.		
(i) Apportionment of Joint Cost on the basis of 'Physical Quantity'	₹ 38,000	₹ 45,600
	(₹ 83,600 / (100 + 120 units) × 100)	(₹ 83,600 / (100 + 120 units) × 120)
(ii) Apportionment of Joint Cost on the basis of 'Contribution Margin Method':		
 Variable Costs (on basis of physical units) 	₹ 23,455	₹ 28,145
	(₹ 51,600 / (100 + 120 units) × 100)	(₹ 51,600 / (100 + 120 units) × 120)
Contribution Margin	36,545	-4,145
	(₹600 × 100 – 23,455)	(₹200 × 120 – 28,145)
Fixed Costs*	32,000	
Total apportioned cost	₹ 55,455	₹ 28,145

II. (iii) Profit or Loss:

When Joint cost apportioned on basis of physical units

	Product- A	Product- B
A. Sales Value	₹ 60,000	₹ 24,000
B. Apportioned joint cost on basis of 'Physical	₹ 38,000	₹ 45,600
Quantity'		
A-B Profit or (Loss)	22,000	(21,600)

When Joint cost apportioned on basis of 'Contribution Margin Method'

	Product- A	Product- B
C. Apportioned joint cost on basis of 'Contribution Margin Method'	₹ 55,455	₹ 28,145
A-C Profit or (Loss)	₹ 4,545	₹ (4,145)

Note:

• The fixed cost of ₹ 32,000 is to be apportioned over the joint products A and B in the ratio of their contribution margin but contribution margin of Product B is Negative so fixed cost will be charged to Product A only.



Question 63

A company's plant processes 6,750 units of a raw material in a month to produce two products 'M' and 'N'.

The process yield is as under:Product M80%Product N12%Process Loss8%

The cost of raw material is ₹ 80 per unit.

Processing cost is ₹ 2,25,000 of which labour cost is accounted for 66%. Labour is chargeable to products 'M' and 'N' in the ratio of 100:80. Prepare a Comprehensive Cost Statement for each product showing:

- (i) Apportionment of joint cost among products 'M' and 'N' and
- (ii) Total cost of the products 'M' and 'N'.

Answer

Comprehensive Cost Statement

Particulars	Total Cost (₹)	Product-M (₹)	Product-N (₹)
No. of units produced		5,400 units	810 units
Cost of raw material (₹ 80 × 6,750 units)	5,40,000		
Processing cost:			
- Labour cost (₹ 2,25,000 × 66%)	1,48,500		
- Other costs (₹ 2,25,000 - 1,48,500)	76,500		
Total joint cost	7,65,000		

(i) Apportionment of Joint Costs Between the Joint Products

Labour Cost in the Ratio of 100:80



Particulars	Product-M (₹)	Product-N (₹)
Labour cost (1,48,500 × 100 / 180)	82,500	
Labour cost (1,48,500 × 80 / 180)		66,000

Other Joint Costs (Including Material) in the Ratio of Output (5,400:810)

Particulars	Product-M (₹)	Product-N (₹)
Other costs (6,16,500 × 5,400 / 6,210)	5,36,087	
Other costs (6,16,500 × 810 / 6,210)		80,413

(ii) Total Product Cost

Particulars	Product-M (₹)	Product-N (₹)
Total joint cost	6,18,587	1,46,413

Notes:

1. No. of units produced of Product M: 6,750 units × 80% = 5,400 units

2. No. of units produced of Product N: 6,750 units × 12% = 810 units

Question 64

Mayura Chemicals Ltd buys a particular raw material at ₹ 8 per litre. At the end of the processing in Department-1, this raw material splits-off into products X, Y, and Z. Product X is sold at the split-off point, with no further processing. Products Y and Z require further processing before they can be sold. Product Y is processed in Department-2, and Product Z is processed in Department-3. Following is a summary of the costs and other related data for the year 2019-20:

Particulars	Department			
	1 2			3
Cost of Raw Material	₹ 4,80,000 -			-
Direct Labour	₹ 70,000	₹ 70,000 ₹ 4,50,000		₹ 6,50,000
Manufacturing Overhead	₹ 48,000 ₹ 2,10,000		0,000	₹ 4,50,000
	Products			
	X	Y	Z	



Sales (litres)	10,000	15,000	22,500
Closing inventory (litres)	5,000	-	7,500
Sale price per litre (₹)	30	64	50

There were no opening and closing inventories of basic raw materials at the beginning as well as at the end of the year. All finished goods inventory in litres was complete as to processing. The company uses the Net-realizable value method of allocating joint costs.

You are required to prepare:

(i) Schedule showing the allocation of joint costs.

(ii) Calculate the Cost of goods sold of each product and the cost of each item in Inventory.

(iii) A comparative statement of Gross profit.

Answer

(i) Statement of Joint Cost Allocation of Inventories of X, Y, and Z

Products	X (₹)	Y (₹)	Z (₹)	Total (₹)
Final sales value of total production (Working Note 1)	<mark>4,50,000</mark> (15,000 x ₹ 30)	9,60,000 (15,000 x ₹ 64)	15,00,000 (30,000 x ₹ 50)	29,10,000 GUIDE
Less: Additional cost		6,60,000	11,00,000	17,60,000
Net Realisable Value	4,50,000	3,00,000	4,00,000	11,50,000
Joint cost allocated	2,34,000	1,56,000	2,08,000	5,98,000

(ii) Calculation of Cost of Goods Sold and Closing Inventory

Products	X (₹)	Y (₹)	Z (₹)	Total (₹)
Allocated joint cost	2,34,000	1,56,000	2,08,000	5,98,000



Add: Additional costs		6,60,000	11,00,000	17,60,000
Cost of Goods Sold (COGS)	2,34,000	8,16,000	13,08,000	23,58,000
Less: Cost of closing inventory	78,000 (COGS x 100/3%)		3,27,000 (COGS x 25%)	4,05,000
Cost of Goods Sold	1,56,000	8,16,000	9,81,000	19,53,000

(iii) Comparative Statement of Gross Profit

Products	X (₹)	Y (₹)	Z (₹)	Total (₹)
Sales revenue	3,00,000 (10,000 x ₹ 30)	9,60,000 (15,000 x ₹ 64)	11,25,000 (22,500 x ₹ 50)	23,85,000
Less: Cost of goods sold	1,56,000	8,16,000	9,81,000	19,53,000
Gross Profit	1,44,000	1,44,000	1,44,000	4,32,000

Working Notes

1. Total Production of Three Products for the Year 2019-2020

Products	Quantity Sold in Litres	Quantity of Closing Inventory in Litres	Total Production (4) = (2) + (3)	Closing Inventory Percentage (%) = (3)/(4)
Х	10,000	5,000	15,000	100/3
Y	15,000		15,000	
Z	22,500	7,500	30,000	25

2. Joint Cost Apportioned to Each Product

Joint cost apportioned = Total Joint Cost / Total Net Realisable Value x Net Realisable Value of Each Product



- Joint Cost of Product X 5,98,000 / 11,50,000 x 4,50,000 = 2,34,000
- Joint Cost of Product Y 5,98,000 / 11,50,000 x 3,00,000 = 1,56,000
- Joint Cost of Product Z 5,98,000 / 11,50,000 x 4,00,000 = 2,08,000

Question 65

OPR Ltd. purchases crude vegetable oil. It does refining of the same. The refining process results in four products at the split-off point - S, P, N, and A. Product 'A' is fully processed at the split-off point. Product S, P, and N can be individually further refined into SK, PM, and NL respectively. The joint cost of purchasing the crude vegetable oil and processing it were ₹ 40,000. Other details are as follows:

Product	Further processing costs (₹)	Sales at split- off point (₹)	Sales after further processing (₹)
S	80,000	20,000	1,20,000
Р	32,000	12,000	40,000
N	36,000	28,000	48,000
Α		20,000	

You are required to identify the products which can be further processed for maximizing profits and make suitable suggestions.

Answer

Statement of Comparison of Profits before and after further processing

	S (₹)	P (₹)	N (₹)	A (₹)	Total (₹)
A. Sales at split off point	20,000	12,000	28,000	20,000	80,000
B. Apportioned Joint Costs (Refer Working Note)	10,000	6,000	14,000	10,000	40,000
C. Profit at split- off point	10,000	6,000	14,000	10,000	40,000



D. Sales after further processing	1,20,000	40,000	48,000	-	2,08,000
E. Further processing cost	80,000	32,000	36,000	-	1,48,000
F . Apportioned Joint Costs (Refer Working Note)	10,000	6,000	14,000	-	-
G. Profit if further processing (D – E + F)	30,000	2,000	(-) 2,000	-	-
H. Increase/ decrease in profit after further processing (G – C)	20,000	-4,000	- 16,000	-	-

Suggested Product to be further processed for maximising profits:

On comparing the figures of "Profit if no further processing" and "Profits if further processing," one observes that OPR Ltd. is earning more after further processing of **Product S only** i.e., ₹ 20,000. Hence, for maximizing profits, only Product S should be further processed, and Product P, N, and A should be sold at split-off point.

Working Note

Apportionment of joint costs on the basis of Sales Value at split-off point:

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Apportioned joint cost =
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(Total joint cost \div Total Sales value at split-off point) \times Sales value of each product

Where:

Total Joint cost = ₹ 40,000 Total sales at split off point (S, P, N, and A) = 20,000 + 12,000 + 28,000 + 20,000 = ₹ 80,000

- Share of S in joint cost = ₹ 40,000 ÷ ₹ 80,000 × ₹ 20,000 = ₹ 10,000
- Share of P in joint cost = ₹ 40,000 ÷ ₹ 80,000 × ₹ 12,000 = ₹ 6,000



- Share of N in joint cost = ₹ 40,000 ÷ ₹ 80,000 × ₹ 28,000 = ₹ 14,000
- Share of A in joint cost = ₹ 40,000 ÷ ₹ 80,000 × ₹ 20,000 = ₹ 10,000

Alternative Solution

Decision for further processing of Product S, P, and N

Products	S (₹)	P (₹)	N (₹)
Sales revenue after further processing	1,20,000	40,000	48,000
Less: sales value at split-off point	20,000	12,000	28,000
Incremental Sales Revenue	1,00,000	28,000	20,000
Less: Further Processing cost	80,000	32,000	36,000
Profit/ loss arising due to further processing	20,000	(-) 4,000	(-) 16,000

Suggested Product to be further processed for maximising profits:

On comparing the figures of "Profit if no further processing" and "Profits if further processing," one observes that OPR Ltd. is earning more after further processing of **Product S only** i.e., ₹ 20,000. Hence, for maximizing profits, only Product S should be further processed, and Product P, N, and A should be sold at split-off point.

Question 66

ABC Company produces a Product 'X' that passes through three processes: R, S and T.

Three types of raw materials, viz., J, K, and L are used in the ratio of 40:40:20 in process

R. The output of each process is transferred to the next process. Process loss is 10% of total

input in each process. At the stage of output in process T, a by-product 'Z' is emerging and

the ratio of the main product 'X' to the by-product 'Z' is 80:20. The selling price of product

'X' is ₹60 per kg.

The company produced 14,580 kgs of product 'X'.



Material price: Material J @ ₹15 per kg; Material K @ ₹9 per kg. Material L @ ₹7 per kg. Process costs are as follows:

Process	Variable cost per kg (₹)	Fixed cost of Input (₹)
R	5.00	42,000
S	4.50	5,000
Т	3.40	4,800

The by-product 'Z' cannot be processed further and can be sold at ₹30 per kg at the split-

off stage. There is no realizable value of process losses at any stage.

Required:

Present a statement showing the apportionment of joint costs on the basis of the sales

value of product 'X' and by-product 'Z' at the split-off point and the profitability of product

'X' and by-product 'Z'.

Answer

Working Notes:

1. Calculation of Input of Raw Material

Let assume total raw material in Process R be 100% ∴ Output of Process T will be equal to:

Input R	100%
- 10% Normal Loss	₹10
Input S	₹ 90%
- 10% Normal loss	₹9
Input T	81%
- 10% Normal loss	₹ 8.1
Output of T	72.9%

Actual output of X = 14,580 units Which is 80% of the total output

∴ Output of Process T: 14580 / 80% = 18,225

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∴ Input of Process R: 18225 / 72.9% = 25,000 kgs

Alternative presentation for Calculation of Input in Process R, S, and T Working Notes:

Process T (Kg.)

To Input (Transfer from process S)	20,250	By Normal loss	2,025
		By Output Product X	14,580
		By output of by- product Z	3,645
	20,250		20,250

Process S (Kg.)

To Input (Transfer from process R)	22,500	By Normal loss (10%)	2,250
THE	COMPI	By Transfer to process T	20,250
	22,500		22,500

Process R (Kg.)

To Input	25,000	By Normal loss (10%)	2,500
		By Transfer to process S	22,500
	25,000		25,000

2. Calculation of Joint Cost

Process	Inputs	Variable cost per kg	Variable cost (₹)	Fixed Cost (₹)	Total Cost (₹)
R	25,000	5	1,25,000	42,000	1,67,000
S	22,500	4.5	1,01,250	5,000	1,06,250



Total	,	••••	2,75,000	51,800	3,46,900
				-	

Raw Material Cost

Material	Calculation	Cost (₹)
J	10,000 x 15	1,50,000
K	10,000 x 9	90,000
L	5,000 x 7	35,000
Total		2,75,000

Add: Processing cost (as above) = **3,46,900**

Total Joint Cost = 6,21,900

(i) Statement showing apportionment of Joint Cost

Particulars	Product X	By-Product Z	Total
Units	14, <mark>58</mark> 0	<mark>3,645</mark>	
Selling price (₹)	60	30	
Sales Value (₹)	8,74,800	1,09,350	9,84,150
Apportioned Joint Cost (₹ 6,21,900)	5,52,800	69,100	6,21,900

(ii) Statement of Profitability

Particulars	Product X	By-Product Z	Total
Sales Value	8,74,800	1,09,350	9,84,150
Joint Cost (Apportioned)	(5,52,800)	(69,100)	(6,21,900)
Profit	3,22,000	40,250	3,62,250

Question 67

X Y Z Limited is drawing a production plan for its two products—Product 'xml' and Product 'yml' for the year 2015-16. The company's policy is to



maintain closing stock of finished goods at 25% of the anticipated volume of sales of the succeeding month.

The following are the estimated data for the two products:

	xml	yml
Budgeted Production (in units)	2,00,000	1,50,000
Direct Material (per unit)	₹ 220	₹ 280
Direct Labour (per unit)	₹ 130	₹ 120
Direct Manufacturing Expenses	₹ 4,00,000	₹ 5,00,000

The estimated units to be sold in the first four months of the year 2015-16 are as under:

	April	Мау	June	July
xml	8,000	10,000	12,000	16,000
yml	6,000	8,000	9,000	14,000

Prepare:

(i) Production Budget (Month wise)

(ii) Production cost Budget (for first quarter of the year)

Answer

(i) Production Budget of Product 'xml' and 'yml' (monthwise in units)

Particulars	April		Мау		June		Total	
	xml	yml	xml	yml	xml	yml	xml	yml
Sales	8,000	6,000	10,000	8,000	12,000	9,000	30,000	23,000
Add: Closing Stock	2,500	2,000	3,000	2,250	4,000	3,500	9,500	7,750
(25% of next month's sale)								
Less: Opening Stock	2,000*	1,500*	2,500	2,000	3,000	2,250	7,500	5,750
Production Units	8,500	6,500	10,500	8,250	13,000	10,250	32,000	25,000



Opening stock of April is the closing stock of March, which is as per company's policy 25% of next month's sale.

Elements	Rate (₹)	Amount (₹)	Amount (₹)
Direct Material	220	70,40,000	
	280		70,00,000
Direct Labour	130	41,60,000	
	120		30,00,000
Manufacturing Overhead		64,000	
(₹ 4,00,000 ÷ 2,00,000 × 32,000)			
(₹ 5,00,000 ÷ 1,50,000 × 25,000)			83,333
	Total	1,12,64,000	1,00,83,333

(ii) Production Cost Budget (for first quarter of the year)

Question 68

XY Co. Ltd. manufactures two products, viz. X and Y and sells them through two divisions, East and West. For the purpose of Sales Budget to the Budget Committee, following information has been made available for the year 2014–2015:

Product	Budgeted		Actual	
	East	West	East	West
	Division	Division	Division	Division
X	400 units at	600 units at	500 units at	700 units at
	₹9	₹9	₹9	₹9
Y	300 units at	500 units at	200 units at	400 units at
	₹ 21	₹ 21	₹ 21	₹ 21

Adequate market studies reveal that Product X is popular but under priced. It is expected that if the Price of X is increased by \gtrless 1, it will find a ready market. On the other hand, Y is overpriced and if the Price of Y is reduced by \gtrless 1, it will have more demand in the market. The Company Management has agreed for the aforesaid price changes. On the basis of these price



changes and the reports of salesmen, following estimates have been prepared by the Divisional Managers:

Percentage Increase in Sales over Budgeted Sales

Product	East Division	West Division
X	+ 10%	+5%
Y	+ 20%	+ 10%

With the help of intensive Advertisement Campaign, following additional sales (over and above the above mentioned estimated sales by Divisional Managers) are possible:

Product	East Division	West Division
x	60 units	70 units
Y	40 units	50 units

You are required to prepare Sales Budget for 2015–2016 after incorporating above estimates and also show the Budgeted Sales and Actual Sales of 2014–2015.

Answer

1. Sales Budget for Year 2015-2016

Particulars	East Division	West Division	Total
Product X			
Budgeted Quantity of 2015– 2016 (Note -1)	500	700	1,200
Price for 2015–2016 (9+1)	₹ 10	₹10	
Budgeted Sales Value for 2015–2016	₹ 5,000	₹ 7,000	₹ 12,000
Product Y			
Budgeted Quantity of 2015– 2016 (Note -2)	400	600	1,000



Price for 2015–2016 (21–1)	₹20	₹ 20	
Budgeted Sales Value for 2015–2016	₹ 8,000	₹ 12,000	₹ 20,000

2. Budgeted and Actual Sales for FY 2014-2015

Particulars			Eas	st Division	West Division			Total		
		Qty.	Price	Amount	Qty.	Price	Amount	Qty.	Price	Amount
Budgeted Sales	X	400	9	₹ 3,600	600	9	₹ 5,400	1,000	9	₹9,000
	Y	300	21	₹ 6,300	500	21	₹ 10,500	800	21	₹ 16,800
	Total	700	-	₹ 9,900	1,100	-	₹ 15,900	1,800	-	₹25,800
Actual Sales	Х	500	9	₹ 4,500	700	9	₹ 6,300	1,200	9	₹10,800
	Y	200	21	₹ 4,200	400	21	₹ 8,400	600	21	₹ 12,600
	Total	700	_	₹ 8,700	1,100	_	₹ 14,700	1,800	-	₹23,400

Note: 1 Budgeted Sales Quantity (X)

	East	West	
Budgeted Quantity of 2014-2015	400	600	
Add: Increase due to price change (10% & 5%)	40	30	
Add: Increase due to Advertisement	60	70	
Total	500	700	
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Note: 2 Budgeted Sales Quantity (Y)

	East	West
Budgeted Quantity of 2014-2015	300	500
Add: Increase due to price change (20% & 10%)	60	50
Add: Increase due to Advertisement	40	50
Total	400	600

Question 69

You are given the following data of a manufacturing concern:

Variable Expenses (at 50% capacity):	₹
Materials	48,00,000



Labour	51,20,000
Others	7,60,000
Semi-variable expenses (at 50% capacity):	₹
Maintenance and Repairs	5,00,000
Indirect Labour	19,80,000
Sales Dept. Salaries	5,80,000
Sundry Administrative Expenses	5,20,000
Fixed Expenses:	₹
Wages & Salaries	16,80,000
Rent, Rates and Taxes	11,20,000
Depreciation	14,00,000
Sundry Administrative Exp.	17,80,000

The fixed expenses remain constant for all levels of production. Semivariable expenses remain constant between 45% and 65% of capacity, whereas it increases by 10% between 65% and 80% capacity and by 20% between 80% and 100% capacity.

Sales at various levels are as under: PLETE EXAMS GUIDE

Capacity	Sales (₹)
75%	2,40,00,000
100%	3,20,00,000

Prepare a flexible budget at 75% and 100% capacity.

Answer

Preparation of Flexible Budget

	50% (₹)	75% (₹)	100% (₹)
A. Sales	Given	2,40,00,000	3,20,00,000



B. Costs:			
(i) Variable Expenses:			
Materials	48,00,000	72,00,000	96,00,000
Labour	51,20,000	76,80,000	1,02,40,000
Others	7,60,000	11,40,000	15,20,000
	1,06,80,000	1,60,20,000	2,13,60,000
(ii) Semi-Variable Expenses:			
Maintenance and Repairs	5,00,000	5,50,000	6,00,000
Indirect Labours	19,80,000	21,78,000	23,76,000
Sales Dept. salaries	5,80,000	6,38,000	6,96,000
Sundry Administrative Expenses	5,20,000	5,72,000	6,24,000
	35,80,000	39,38,000	42,9 <mark>6,0</mark> 00
(iii) Fixed Expense <mark>s:</mark>			
Wages & Salaries	16,80,000	16,80,000	16,80,000
Rent, Rates and Taxes	11,20,000	11,20,000	11,20,000
Depreciation	14,00,000	14,00,000	14,00,000
Sundry Administrative Expenses	17,80,000	17,80,000	17,80,000
	59,80,000	59,80,000	59,80,000
Total Cost {(i) + (ii) + (iii)}	2,02,40,000	2,59,38,000	3,16,36,000
C. Profit/ (Loss) {(A) – (B)}		(19,38,000)	3,64,000

Note: At 75% and 100% capacity level, the semi-variable costs increased by 10% and 20% respectively.

Question 70

AB manufacturing Company manufactures two products A and B. Both Products use a common Raw Material "C". The Raw Material "C" is purchased at the rate of ₹ 45 per kg. from the Market. The Company has



made estimates for the year ended *31st March, 2018* (the budget period) as under:

	Products	
	Α	В
Sales in Units	36,000	16,700
Finished Goods Stock Increase by year-end (in Units)	860	400
Post-production Rejection Rate (%)	3	5
Material "C" per completed Unit, net of wastage	4 kg	5 kg
Material "C" wastage in %	5	4

Additional information available is as under:

- Usage of Raw Material "C" is expected to be at a constant rate over the period.
- Annual cost of holding one unit of Raw Material "C" in Stock is 9% of the Material Cost.
- The cost of placing an order is ₹ 250 per order.

You are required to:

(i) Prepare Functional Budgets for the year ended *31st March, 2018* under the following categories:

- (A) Production Budget for Products A and B in Units.
- (B) Purchase Budget for Raw Material "C" in kg and value.
- (ii) Calculate the Economic Order Quantity (EOQ) in kg for Raw Material "C".

Answer

(i) (A) Production Budget (in units) for the year ended 31st March 2018

	Product A	Product B
Budgeted sales (units)	36,000	16,700
Add: Increase in closing stock	860	400



No. of good units to be produced	36,860	17,100
Post production rejection rate	3%	5%
No. of units to be produced	38,000	18,000
	(36,860 ÷ 0.97)	(17,100 ÷ 0.95)

(B) Purchase budget (in kgs and value) for Material C

	Product A	Product B
No. of units to be produced	38,000	18,000
Usage of Material C per unit	4 kg	5 kg
Material needed for production	1,52,000 kg	90,000 kg

Materials to be purchased

1,60,000 kg	93,750 kg		
(1,52,000 ÷ 0.95)	<mark>(9</mark> 0,000 ÷ 0.96)		

Total quantity to be purchased: 2,53,750 kg Rate per kg of Material C: ₹45 Total purchase price: ₹1,14,18,750

(ii) Calculation of Economic Order Quantity for Material C

EOQ = √(2 × 2,53,750 × ₹250 ÷ 45 × 9%) EOQ = √(12,68,75,000 ÷ 4.05) EOQ = **5,597 kg (Approx.)**

Question 71

An electronic gadget manufacturer has prepared sales budget for the next few months. In this respect, following figures are available:

Months	Electronic gadgets' sales
January	5000 units
February	6000 units

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March	7000 units
April	7500 units
Мау	8000 units

To manufacture an electronic gadget, a standard cost of ₹ 1,500 is incurred and it is sold through dealers at an uniform price of ₹ 2,000 per gadget to customers. Dealers are given a discount of 15% on selling price.

Apart from other materials, two units of batteries are required to manufacture a gadget. The company wants to hold stock of batteries at the end of each month to cover 30% of next month's production and to hold stock of manufactured gadgets to cover 25% of the next month's sale.

3250 units of batteries and 1200 units of manufactured gadgets were in stock on 1st January.

Required:

- 1. (i) Prepare production budget (in units) for the month of January, February, March, and April.
- 2. (ii) Prepare purchase budget for batteries (in units) for the month of January, February, and March and calculate profit for the quarter ending on March.

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Answer

(i) Preparation of Production Budget (in Units)

	January	February	March	April	Мау
Sales	5,000	6,000	7,000	7,500	8,000
Add: Closing stock (25% of next month's sales)	1,500	1,750	1,875	2,000	
Less: Opening Stock	(1,200)	(1,500)	(1,750)	(1,875)	
Production of electronic Gadgets	5,300	6,250	7,125	7,625	


(ii) Preparation of Purchase Budget

Consumption/production of Batteries (@ 2 per Gadget)	January	February	March	April
Production of Batteries	10,600	12,500	14,250	15,250
Add: Closing Stock (30% of next month's production)	3,750	4,275	4,575	
Less: Opening Stock	3,250	3,750	4,275	
Purchase of Batteries	11,100	13,025	14,550	

Statement Showing Profit

	Jan.	Feb.	March	Total
Sales (A)	5,000	6,000	7,000	18,000
Selling Price per unit*	₹. 2,000	₹. 2,000	₹. 2,000	₹. 2,000
Less: Discount @15% of selling price	300	300	30 <mark>0</mark>	300
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Less: Standard cost of Manufacturing per gadget Cost	1,500	1,500	1,500	1,500
Profit (B) (selling Price-discount- cost)	200	200	200	200
Total Profit (A × B)	₹. 10,00,000	₹. 12,00,000	₹. 14,00,000	₹. 36,00,000

Question 72

PSV Ltd. manufactures and sells a single product and estimated the following related information for the period November, 2020 to March, 2021.

ParticularsNov.Dec.2020	Jan.	Feb.	March
	21	21	21



Opening Stock of Finished Goods (in Units)	7,500	3,000	9,000	8,000	6,000
Sales (in Units)	30,000	35,000	38,000	25,000	40,000
Selling Price per unit (in ₹)	10	12	15	15	20

Additional Information:

- Closing stock of finished goods at the end of March, 2021 is 10,000 • units.
- Each unit of finished output requires 2 kg of Raw Material 'A' and 3 kg of Raw Material 'B'.

You are required to prepare the following budgets for the period November, 2020 to March, 2021 on monthly basis:

- 1. Sales Budget (in ₹)
- 2. Production budget (in units) and
- 3. Raw material Budget for Raw material 'A' and 'B' separately (in units)

Answer

(i) Sales Budget :

Particulars	Nov. 20	Dec. 20	Jan. 21	Feb. 21	Mar. 21
Sales (in units)	30,000	35,000	38,000	25,000	40,000
Selling Price (₹ p.u.)	10	12	15	15	20
Total Sales (₹)	3,00,000	4,20,000	5,70,000	3,75,000	8,00,000

(ii) Production Budget (in units) :

Particulars	Nov.	Dec.	Jan.	Feb.	Mar.
	20	20	21	21	21
Sales (units)	30,000	35,000	38,000	25,000	40,000



Add : Closing stock of FG	3,000	9,000	8,000	6,000	10,000
Less : Opening stock of FG	(7,500)	(3,000)	(9,000)	(8,000)	(6,000)
∴ Production (units)	25,500	41,000	37,000	23,000	44,000

(iii) Raw Material Consumption Budget (in units) :

Particulars	Nov. 20	Dec. 20	Jan. 21	Feb. 21	Mar. 21
(a) Production of FG (units)	25,500	41,000	37,000	23,000	44,000
(b) Consumption of RM 'A' (kg.)	51,000	82,000	74,000	46,000	88,000
[(a) x 2 kg.]					
(c) Consumption of RM 'B' (kg.)	<mark>76,</mark> 500	1,23,000	1,11,000	69,000	1,32,000
[(a) x 3 kg.]	THE	E COMF	LETE E	XAMS	GUIDE

Question 73

The Accountant of KPMR Ltd. has prepared the following budget for the coming year 2022 for its two products 'AYE' and 'ZYE':

Particulars	Product 'AYE'	Product 'ZYE'
Production and Sales (in Units)	4,000	3,000
Selling Price per unit	200	180
Direct Material per unit	80	70
Direct Labour per unit	40	35
Variable Overhead per unit	20	25
Fixed Overhead per unit	19	10



After reviewing the above budget, the management has called the marketing team for suggesting some measures for increasing the sales. The marketing team has suggested that by promoting the products on social media, the sales quantity of both the products can be increased by 5%. Also, the selling price per unit will go up by 10%. But this will result in an increase in expenditure on variable overhead and fixed overhead by 20% and 5% respectively for both the products.

You are required to prepare a flexible budget for both the products:

- 1. Before promotion on social media.
- 2. After promotion on social media.

Answer

(i) Flexible Budget (before promotion):

Particulars	Product 'AYE'	Product 'ZYE'	Total
Production & Sales (units)	4,000	3,000	\mathbb{S}
	Amount (₹)	Amount (₹)	Amount (₹)
A. Sales Value	8,00,000	5,40,000	13,40,000
	(₹ 200 x 4,000)	(₹ 180 x 3,000)	
B. Direct Materials	3,20,000	2,10,000	5,30,000
	(₹ 80 x 4,000)	(₹ 70 x 3,000)	
C. Direct Labour	1,60,000	1,05,000	2,65,000
	(₹ 40 x 4,000)	(₹ 35 x 3,000)	
D. Variable Overheads	80,000	75,000	1,55,000
	(₹ 20 x 4,000)	(₹ 25 x 3,000)	
E. Total Variable Cost	5,60,000	3,90,000	9,50,000
(B + C + D)			
F. Contribution (A - E)	2,40,000	1,50,000	3,90,000



G. Fixed Overheads	40,000	30,000	70,000
	(₹ 10 x 4,000)	(₹ 10 x 3,000)	
H. Profit (F - G)	2,00,000	1,20,000	3,20,000
I. Profit per unit (H / Qty.)	50	40	

(ii) Flexible Budget (after promotion):

Particulars	Product 'AYE'	Product 'ZYE'	Total
Production & Sales (units)	(after 5% increase)		
	4,200	3,150	
	Amount (₹)	Amount (₹)	Amount (₹)
A. Sales Value	9,24,000	6,23,700	15,4 <mark>7,</mark> 700
	(₹ 220 x 4,200)	(<mark>₹ 1</mark> 98 x 3,1 <mark>5</mark> 0)	5
B. Direct Materials	3,36,000	2,20,500	5,56,500
	(₹ 80 x 4,200)	(₹ 70 x 3,150)	SUDE
C. Direct Labour	1,68,000	1,10,250	2,78,250
	(₹ 40 x 4,200)	(₹ 35 x 3,150)	
D. Variable Overheads	1,00,800	94,500	1,95,300
	(after 20% price rise)		
	(₹ 24 x 4,200)	(₹ 30 x 3,150)	
E. Total Variable Cost	6,04,800	4,25,250	10,30,050
(B + C + D)			
F. Contribution (A - E)	3,19,200	1,98,450	5,17,650



G. Fixed Overheads	42,000	31,500	73,500
	(after 5% increase)		
	(40,000 x 105%)	(30,000 x 105%)	
H. Profit (F - G)	2,77,200	1,66,950	4,44,150
I. Profit per unit (H / Qty.)	66	53	

Question 74

SR Ltd. is a manufacturer of Garments. For the first three months of financial year 2022-23 commencing on *1st April 2022*, production will be constrained by direct labour. It is estimated that only 12,000 hours of direct labour hours will be available in each month.

For market reasons, production of either of the two garments must be at least 25% of the production of the other. Estimated cost and revenue per garment are as follows:

	Shirt (₹)	Short (₹)	
Sales price	60	44	
Raw Materials	COMPLI		AMS GUIDE
Fabric @12 per metre	24	12	
Dyes and cotton	6	4	
Direct labour @ 8 per hour	8	4	
Fixed Overhead @ 4 per hour	4	2	
Profit	18	22	

From the month of July 2022 direct labour will no longer be a constraint. The company expects to be able to sell 15,000 shirts and 20,000 shorts in July, 2022. There will be no opening stock at the beginning of July 2022.

Sales volumes are expected to grow at 10% per month cumulatively thereafter throughout the year. Following additional information is available:

• The company intends to carry stock of finished garments sufficient to meet 40% of the next month's sale from July 2022 onwards.



• The estimated selling price will be same as above.

Required:

I. Calculate the number of shirts and shorts to be produced per month in the first quarter of financial year 2022-2023 to maximize company's profit.

II. Prepare the following budgets on a monthly basis for July, August and September 2022:

(i) Sales budget showing sales units and sales revenue for each product.(ii) Production budget (in units) for each product.

Answer

I. Calculation of number of shirts & shorts to be produced per month:

Contribution per labour hour:

		Shirts (₹)	Shorts (₹)	
Α	Sales Price per unit	60	44	
В	Variable Cost:			
	- Raw materials	30	16	
	- Direct labour	8	4	
С	Contribution per unit [A-B]	22	24 S G	JIC
D	Labour hour per unit	1 hour	0.5 hour	
E	Contribution per labour hour [C+D]	22	48	

Production plan for the first three months:

Since Shorts has the higher Contribution per labour hour, it will be made first. Shirts will be 25% of Shorts. The quantity will be determined as below:

Let the Quantity of Shorts be X and Shirts will be 0.25X, then

(Qty. of Shorts × labour hour per unit) + (Qty. of Shirts × labour hour per unit) = Total labour hours available

Or, (X × 0.5 hour) + (0.25X × 1 hour) = 12,000 hours

Or, 0.5X + 0.25X = 12,000

Or, 0.75X = 12,000

Or, X = 12,000 ÷ 0.75



= 16,000 units of Shorts

Therefore, for Shirts = 25% of 16,000 units

= 4,000 units

Production per month for the first quarter will be:

Shorts- 16,000 units & Shirts- 4,000 units

II. (i) Sales Budget for the month of July, August & September 2022:

		July 2022		Augus	t 2022	September 2022		
		Shirts	Shorts	Shirts	Shorts	Shirts	Shorts	
Α	Sales demand	15,000	20,000	16,500	22,000	18,150	24,200	
В	Selling price per unit (₹)	60	44	60	44	60	44	
С	Sales Revenue (₹)	9,00,000	8,80,000	9,90,000	9,68,000	10,89,000	10,64,800	

(ii) Production budget for the month of July, August & September 2022:

		July 2022		August 2022		September 2022		October 2022	
		Shirts	Shorts	Shirts	Shorts	Shirts	Shorts	Shirts	Shorts
Α	Opening stock	0	0	6,600	8,800	7,260	9,680		
В	Sales demand	15,000	20,000	16,500	22,000	18,150	24,200	19,965	26,620
С	Closing stock	6,600	8,800	7,260	9,680	7,986	10,648		
D	Production [B+C-A]	21,600	28,800	17,160	22,880	18,876	25,168		

Question 75

A Limited has furnished the following information for the months from 1st January to 30th April, 2023 :

Particulars	January	February	March	April
Number of Working days	25	24	26	25
Production (in units) per working day	50	55	60	52
Raw Material Purchases	21%	26%	30%	23%
(% by weights to total of 4 months)				



Purchase price of raw material	₹10	₹ 12	₹ 13	₹11
(per kg.)				

Quantity of raw material per unit of product : 4 kg.

Opening Stock of raw material on 1st January : 6,020 kg. (Cost ₹ 63,210) Closing stock of raw material on 30th April : 5,100 kg.

All the purchases of material are made at the start of each month.

Required :

(i) Calculate the consumption of raw materials (in kgs) month-by-month and in total.

(ii) Calculate the month-wise quantity and value of raw materials purchased.

(iii) Prepare the priced stores ledger for each month using the FIFO method.

Answer

Working Notes:

1. Calculation of Consumption & Purchase of Raw Material:

Particulars	January	February	March	April	Total
(a) Number of Working days	25	24	26	25	
(b) Production (in units) per	50	55	60	52	
working day	COM	PLETE	EXA	MS G	JUIDE
(c) Total production [a x b]	1,250	1,320	1,560	1,300	5,430
(d) Consumption (kgs) [c x 4]	5,000	5,280	6,240	5,200	21,720
(e) Closing stock (kgs) 30.04.23					5,100
(f) Opening stock (kgs) 01.01.23					6,020
(g) Purchases (kgs) [d + e - f] [shared in the ratio of weights]	4,368	5,408	6,240	4,784	20,800
	(21%)	(26%)	(30%)	(23%)	(100%)
(h) Purchase price of raw material (per kg.)	₹10	₹ 12	₹13	₹11	
(i) Purchase value (₹) [g x h]	43,680	64,896	81,120	52,624	2,42,320



Month	Particulars	I	Receipts			Issues			Balanc	e
		Qty	Rate	Amt	Qty	Rate	Amt	Qty	Rate	Amt
Jan.	Op. stock							6,020	10.5	63,210
	Purchase	4,368	10.0	43,680				6,020	10.5	63,210
								4,368	10.0	43,680
	Issues				5,000	10.5	52,500	1,020	10.5	10,710
	(consumed)							4,368	10.0	43,680
Feb.	Purchase	5,408	12.0	64,896				1,020	10.5	10,710
								4,368	10.0	43,680
								5,408	12.0	64,896
	Issues				1,020	10.5	10,710	108	10.0	1,080
	(consumed)				4,260	10.0	42,600	5,408	12.0	64,896
Mar.	Purchase	6,240	13.0	81,120				108	10.0	1,080
								5,408	12.0	64,896
								6,240	13.0	81,120
	Issues				108	10.0	1,080			
	(consumed)				5,408	12.0	64,896			
				1	724	13.0	9,412	5,516	13.0	71,708
Aprl.	Purchase	4,784	11.0	52,624				5,516	13.0	71,708
				1				4,784	11.0	52,624
	Issues				5,200	13.0	67,600	316	13.0	4,108
	(consumed)			D '				4,784	11.0	52,624
	Totals	20800		242320	21720		248798			

2. Stores Ledger (FIFO Method) :

Question 76

SJ Ltd. has furnished the following information:

Standard overhead absorption rate per unit	₹ 20
Standard rate per hour	₹4
Budgeted production	12,000 units
Actual production	15,560 units

Actual overheads were ₹ 2,95,000 out of which ₹ 62,500 fixed.



Actual hours 74,000 Overheads are based on the following flexible budget:

Production (units)	8,000	10,000	14,000
Total Overheads (₹)	1,80,000	2,10,000	2,70,000

You are required to calculate the following overhead variances (on hour's basis) with appropriate workings:

(*i*) Variable overhead efficiency and expenditure variance (*ii*) Fixed overhead efficiency and capacity variance.

Answer

Workings:

(a) Variable overhead rate per unit

= Difference in total overheads at two levels / Difference in output at two levels

= (2,70,000 - 2,10,000) / (14,000 - 10,000)

= 60,000 / 4,000 = Rs. 15 per unit

(b) Fixed overhead

= 2,70,000 - (14,000 × 15) = Rs. 60,000

(c) Standard Fixed Overhead Rate per hour = 4 - 3 = 1

(d) Standard Hour Per unit

= Standard hours rate per unit / Standard overhead rate per hour S GUDE = 20 / 4 = 5 hours

(e) Actual variable overhead

= 2,95,000 - 62,500 = 2,32,000

(f) Actual variable Overhead Per hour

= 2,32,500 / 74,000 = 3,14,19

(g) Budgeted hours

= 15,000 × 5 = 75,000 hours

(h) Standard variable overhead rate per hours

- = Variable overhead / budgeted hours
- = 15,000 × 15 / 75,000 = Rs. 3.00 per hours

(i) Standard Hours for Actual Production

= 15,560 × 5 = 77,800 hours

(i) Variable Overhead efficiency and expenditure variance:



Variable overhead efficiency variance

= Standard Rate per hour (Std Hour – Actual Hour) = 3 (77,800 – 74,000) = 11,400 (F)

Variable overhead expenditure variance

= Actual Hours (Std Rate per Hour – Actual Rate per Hour) = 74,000 (3 - 3.1419) = 10,500 (A)

(ii) Fixed Overhead efficiency and Expenditure variance:

Fixed Overhead efficiency variance

= Std Rate per hour (Std Hours – Actual Hours) = 1 (77,800 – 74,000) = 3,800 (F)

Fixed Overheads Capacity variance

= Std Rate per Hour (Actual Hours – Budgeted Hours) = 1 (74,000 – 75,000) = 74,000 – 75,000 = 1,000 (A)

Standard Fixed overhead rate per hour

= Fixed overheads / budgeted hours

= 60,000 / 75,000 = Rs. 0.80 per hour

(iii) Fixed Overhead efficiency and capacity variance

Fixed overhead efficiency variance

- = Std Rate per hour (Std hours Actual hours)
- = Rs. 0.80 (15,560 × 5 74,000)
- = Rs. 3,040 (F)

Fixed Overhead capacity variance

= Std Rate per hour (Actual hours – Budgeted hours)

= Rs. 0.80 (74,000 – 15,000 × 5)

= Rs. 800 (A)

Question 77

The following information has been provided by a company:

Number of units produced and sold	6,000
Standard labour rate per hour	₹8
Standard hours required for 6,000 units	-



Actual hours required	17,094 hours
Labour efficiency	105.3%
Labour rate variance	₹ 68,376 (A)

You are required to calculate:

- (i) Actual labour rate per hour
- (ii) Standard hours required for 6,000 units
- (iii) Labour Efficiency variance
- (iv) Standard labour cost per unit
- (v) Actual labour cost per unit

Answer

- SR Standard labour Rate per Hour
- AR Actual labour rate per hour
- SH Standard Hours

AH – Actual hours

(i) Actual labour rate per hour: Labour rate Variance = AH (SR – AR) = 17,094 (₹8 – AR) = 68,376 (A) = -68,376 = ₹8 – AR = -4 Or, AR = ₹12

(ii) Standard hour required for 6,000 units: Labour Efficiency = SH / AH × 100 = 105.3 = SH = AH × 105.3 / 100 = 17,094 hours × 105.3 / 100 = 17,999.982 or, SH = 18,000 hours

(iii) Labour Efficiency Variance = SR (SH – AH) = ₹8 (18,000 – 17,094) = 8 × 906 = ₹7,248 (F)

(iv) Standard Labour Cost per Unit = 18,000 hours × ₹8 / 6,000 units = ₹24

(v) Actual Labour Cost per Unit = 17,094 hours × ₹12 / 6,000 units = ₹34.19

Question 78

The following information is available from the cost records of a Company for the month of July 2016:



Materials Purchased: 22,000 pieces	₹ 90,000
Materials Consumed: 21,000 pieces	
Actual Wages paid for 5,150 hours	₹ 25,750
Fixed Factory Overheads Incurred	₹ 46,000
Fixed Factory Overheads Budgeted	₹ 42,000

Units Produced: 1,900 units Standard Rates and Prices are:

- Direct Material: ₹ 4.50 per piece. •
- Standard Input: 10 pieces per unit •
- Direct Labour Rate: ₹ 6 per hour. •
- Standard Requirement: 2.5 hours per unit ٠
- Overheads: ₹ 8 per Labour Hour. •

You are required to calculate the following variances:

- (a) Material Price Variance
- (b) Material Usage Variance
- (c) Labour Rate Variance
- (d) Labour Efficiency Variance
- (e) Fixed Overhead Expenditure Variance PLETE EXAMS GUIDE
- (f) Fixed Overhead Efficiency Variance
- (g) Fixed Overhead Capacity Variance

Answer

(i) Material price variance (on the basis of Single plan):

- = Actual Quantity Purchased × (Std. Price Actual Price)
- = 22,000 pcs
- = (Rs. 45 Rs. 9,00,000 / 22,000 pcs) = Rs. 90,000 (Favourable)

OR

Material price variance (on the basis of Partial plan):

- = Actual Quantity Consumed × (Std. Price Actual Price)
- = 21,000 pcs
- = (Rs. 45 Rs. 9,00,000 / 21,000 pcs) = Rs. 85,909 (Favourable)

(Figure may slightly differ due to rounding off the actual price per unit)



(ii) Material usage variance:

= Std. Price per piece × (Std. Quantity – Actual Quantity Consumed)

- = Rs. 45 × (1,900 units × 10 21,000)
- = Rs. 90,000 (Adverse)

(iii) Labour rate variance:

= Actual Hours Paid × (Std. Rate – Actual Rate)

- = 5,150 hours × (Rs. 60 Rs. 2,57,500 / 5,150 hours)
- = Rs. 51,500 (Favourable)

(iv) Labour efficiency variance:

- = Std. Rate per Hour × (Std. Hours Actual Quantity Worked)
- = Rs. 60 × (1,900 units × 2.5 hours 5,150 hours)
- = Rs. 24,000 (Adverse)

(v) Fixed overhead expenditure variance:

= Budgeted Overhead – Actual Overhead

- = Rs. 4,20,000 Rs. 4,60,000
- = Rs. 40,000 (Adverse)

(vi) Fixed overhead efficiency variance:

- = Std. Rate × (Std. Hours Actual Hours Worked)
- = Rs. 80 × (1,900 units × 2.5 hours 5,150 hours)
- = Rs. 32,000 (Adverse)

OR

Fixed overhead efficiency variance on basis of units:

- = Std. Rate per Unit × (Actual Output Standard Output for Actual Hours)
- = Rs. 200 × (1,900 units 5,150 / 2.5 hours)
- = Rs. 32,000 (Adverse)

(vii) Fixed overhead capacity variance:

- = Std. Rate × (Actual Hours Worked Budgeted Hours)
- = Rs. 80 × (5,150 hours 4,20,000 / 80)
- = Rs. 8,000 (Adverse)

OR

Fixed overhead capacity variance on basis of units:

= Std. Rate per Unit × (Standard Output for Actual Hours – Budgeted Output)



= Rs. 200 × (2,060 units – 4,20,000 / 200) = Rs. 8,000 (Adverse)

Question 79

ZX Ltd. has furnished the following information:

	Budgeted	Actual March 2020
Number of working days	25	27
	20,000	22,000
Production (in units)		
Fixed Overheads	₹ 3,00,000	₹ 3,10,000

Budgeted fixed overhead rate is ₹ 10.00 per hour. In March 2020, the actual hours worked were 31,500. In relation to fixed overheads, CALCULATE:

- (i) Efficiency Variance
- (ii) Capacity Variance
- (iii) Calendar Variance
- (iv) Volume Variance
- (v) Expenditure Variance

Answer

Working:

(1) Budgeted Hours = Rs. 3,00,000 / Rs. 10 per hour = **30,000 hours**

(2) Standard Fixed Overhead rate per hour (Standard Rate);

Budgeted fixed overheads / Budgeted Hours = Rs. 3,00,000 / 30,000 hours = ₹10.00

(3) Standard hour per unit of output = **30,000 hours / 20,000 units = 1.5 hours**

(4) Standard hours for Actual Output = 22,000 units × 1.5 hours = 33,000 Hours

(5) Budgeted Overhead per day for budgeted days = ₹3,00,000 / 25 days = ₹12,000

(6) Budgeted Overhead for actual days worked = ₹12,000 × 27 days = ₹3,24,000

(7) Budgeted Hours for Actual days worked = **30,000 hours / 25 days × 27 days** = **32,400 hours**

Computation of Variances in relation to Fixed Overheads:



(i) Efficiency Variance

= Standard Rate × (Standard hours for actual output – Actual hours worked)

= ₹10 (33,000 hours – 31,500 hours) = ₹15,000 (Favourable)

(ii) Capacity Variance

= Standard Rate × (Actual Hours – Budgeted Hours for actual days worked)
 = ₹10 (31,500 hours – 32,400 hours) = ₹9,000 (Adverse)

(iii) Calendar Variance

= Standard/Budgeted Fixed Overhead Rate per day × (Actual Working days – Budgeted working days)

= ₹12,000 (27 days – 25 days) = ₹24,000 (Favourable)

(iv) Volume Variance

= Standard Rate × (Standard hours – Budgeted hours)

= ₹10 (33,000 hours – 30,000 hours) = ₹30,000 (Favourable)

(v) Expenditure Variance

= Budgeted Overheads – Actual Overheads

= ₹3,00,000 – ₹3,10,000 = ₹10,000 (Adverse)

Note: Overhead Variances may also be calculated based on output.

Question 80

XYZ Limited produces an article and uses a mixture of material X and Y. The standard quantity and price of materials for one unit of output is as under:

Material	Quantity	Price (₹)
X	2000 KG	1.00 per kg.
Y	800 KG	1.50 per kg.

During a period, 1500 units were produced. The actual consumption of materials and prices are given below:

Material	Quantity	Price (₹)
X	31,00,000 kg	1.10 per kg.
Y	12,50,000 kg	1.60 per kg.

Calculate:

(i) Standard cost for actual output

(ii) Material cost variance



- (iii) Material Price variance
- (iv) Material usage variance

Answer

(i) Standard cost for Actual output:

Material X = 1,500 units × 2,000 kg. × ₹ 1 = 30,00,000 Material Y = 1,500 units × 800 kg. × ₹ 1.50 = **18,00,000** ₹ 48,00,000

(ii) Material Cost Variance:

= Standard Cost for actual output – Actual Cost = (SQ × SP) – (AQ × AP)

Material X = {30,00,000 - (31,00,000 kg. × ₹ 1.10)} = 30,00,000 - 34,10,000 = 4,10,000 (A)

Material Y = {18,00,000 - (12,50,000 kg. × ₹ 1.60)} = 18,00,000 - 20,00,000 = 2,00,000 (A)

6,10,000 (A)

(iii) Material Price Variance: = AQ (SP – AP)

Material X = 31,00,000 kg. (₹ 1.00 – ₹ 1.10) = 3,10,000 (A)

Material Y = 12,50,000 kg. (₹ 1.50 – ₹ 1.60) = 1,25,000 (A)

4,35,000 (A)

(iv) Material Usage Variance:

= SP (SQ - AQ)

Material X = ₹ 1.00 {(1,500 × 2,000) - 31,00,000} = 30,00,000 - 31,00,000 = 1,00,000 (A)

Material Y = ₹ 1.50 {(1,500 × 800) – 12,50,000} = ₹ 1.50 (12,00,000 – 12,50,000) = 75,000 (A)

1,75,000 (A)



Question 81

A company planned to produce 2,000 units of a product in a week of 40 hours by employing 65 skilled workers. Other relevant information are as follows:

- Standard wages rate : ₹ 45 per hour
- Actual production : 1800 units
- Actual number of worker employed: 50 workers in a week of 40 hours
- Actual wages rate : ₹ 50 per hour
- Abnormal time loss due to machinery breakdown : 100 hours.

You are required to calculate:

(i) Labour cost, rate, idle time and efficiency variances.

(ii) Reconcile the variances.

Answer

(i) Labour cost variance (SH x Std. Rate) – (AH paid x AR)

(₹40 x ₹65 / ₹2,000 x 1,800) x ₹45 – (₹50 x ₹40 x ₹50)

= (₹ 1,05,300 - ₹ 1,00,000)

Labour Rate Variance = AH paid (SR – AR) = ₹ 2,000 (45 – 50) = ₹ 10,000 (A)

Labour efficiency variance = SR (SH – AH worked) = ₹ 45 (2,340 – 1,900) = ₹ 19,800 (F)

Idle time variance = SR x Idle time = ₹ 45 x ₹ 100 = ₹ 4,500 (A)

(ii) Reconciliation

Labour Cost Variance = Labour Rate Variance + Labour efficiency variance + Idle time variance

Or

₹ 10,000 (A) + ₹ 19,800 (F) + ₹ 4,500 (A) = ₹ 5,300 (F)



Question 82

Beta Ltd. is manufacturing Product N. This is manufactured by mixing two materials namely Material P and Material Q. The Standard Cost of Mixture is as under:

Material P 150 ltrs. @ ₹ 40 per ltr. Material Q 100 ltrs. @ ₹ 60 per ltr.

Standard loss @ 20 of total input is expected during production.

The cost records for the period exhibit following consumption:

Material P 140 ltrs. @ ₹ 42 per ltr, Material Q 110 ltrs. @ ₹ 56 per ltr,

Quantity produced was 195 ltrs.

Calculate:

(i) Material Cost Variance.
(ii) Material Usage Variance.
(iii) Material Price Variance.

Answer

Workings

Take the good output of **195 liters**. The standard quantity of material required for 195 liters of output is:



195 / 80 × 100 = 243.75 liters

Material	Standard Cost			A	Actual Co	ost
	Quantity	Rate	Amount	Quantity	Rate	Amount
	[SQ] (Kg.)	[SP] (₹)	[SQ × SP] (₹)	[AQ] (Kg.)	[AP] (₹)	[AQ × AP] (₹)
A (60% of 243.75 ltr.)	146.25	40	5,850.00	140	42	5,880
B (40% of. 243.75 Kg.)	97.50	60	5,850.00	110	56	6,160
	243.75		11,700.00	200		12,040

Statement showing computation of Standard Cost/Actual Cost/ Revised Actual Quantity

Note:

SQ = Standard Quantity = Expected Consumption for Actual Output

AQ = Actual Quantity of Material Consumed

SP = Standard Price Per Unit

AP = Actual Price Per Unit

Computation of Variances

Material Cost Variance

Material Cost Variance = SQ × SP - AQ × AP

A = 146.25 Kg × 40 - 140 Kg × 42 = 30.00 (A) B = 97.50 Kg × 60 - 110 Kg × 56 = 310.00 (A)

Total = 30.00 (A) + 310.00 (A) = **340.00 (A)**

Material Usage Variance

Material Usage Variance = $SP \times (SQ - AQ)$

 $A = 40 \times (146.25 - 140) = 250.00 (F)$ $B = 60 \times (97.50 - 110) = 750.00 (A)$

Total = 250.00 (F) + 750.00 (A) = 500.00 (A)



Material Price Variance

Material Price Variance = $AQ \times (SP - AP)$

A = 140 Kg × (40 - 42) = 280.00 (A) B = 110 Kg × (60 - 56) = 440.00 (F)

Total = 280.00 (A) + 440.00 (F) = **160.00 (F)**

Question 83

Following data is available for ABC Ltd.:

Standard working hours	8 hours per day of 5 days per week
Maximum Capacity	60 employees
Actual working	50 employees
Actual hours expected to be worked per four week	8,000 hours
Standard hours expected to be earned per four week	9,600 hours
Actual hours worked in the four week period	7,500 hours
Standard hours earned in the four week period	8,800 hours S GODE

The related period is of four weeks. Calculate the following Ratios:

- (i) Efficiency Ratio
- (ii) Activity Ratio
- (iii) Standard Capacity Usage Ratio
- (iv) Actual Capacity Usage Ratio
- (v) Actual Usage of Budgeted Capacity Ratio

Answer

(i) Efficiency Ratio:

- = Standard Hrs / Actual Hrs × 100
- = 8,800 hours / 7,500 hours × 100
- = 117.33%



(ii) Activity Ratio:

- = Standard Hrs / Budgeted Hrs × 100
- = 8,800 hours / 8,000 hours × 100
- = 110%

(iii) Standard Capacity Usage Ratio:

- = Budgeted Hours / Max. possible hours in the budgeted period × 100
- = 8,000 hours / 9,600 hours × 100
- = 83.33%

(iv) Actual Capacity Usage Ratio:

- = Actual Hours worked / Max. possible working hours in a period × 100
- = 7,500 hours / 9,600 hours × 100
- = 78.125%

(v) Actual Usage of Budgeted Capacity Ratio:

- = Actual working Hours / Budgeted Hours × 100
- = 7,500 hours / 8,000 hours × 100
- = 93.75%

Working Notes:

- 1. Maximum Capacity in a budget period
 - = 60 Employees × 8 Hrs. × 5 Days × 4 Weeks = **9,600 Hrs.**
- 2. Budgeted Hours (Hrs)
 = 50 Employees × 8 Hrs. × 5 Days × 4 Weeks
 = 8,000 Hrs.
- 3. Actual Hrs. = 7,500 Hrs. (given)
- 4. Standard Hrs. for Actual Output = 8,800 Hrs.

Question 84



The standard cost of a chemical mixture is as follows: 60% of Material A @ ₹50 per kg 40% Material B @ ₹60 per kg

A standard loss of 25% on output is expected in production. The cost records for a period has shown the following usage. 540 kg of Material A @ ₹60 per kg 260 kg of Material B @ ₹50 per kg

The quantity processed was 680 kilograms of good product.

From the above given information Calculate:

- (i) Material Cost Variance
- (ii) Material Price Variance
- (iii) Material Usage Variance
- (iv) Material Mix Variance
- (v) Material Yield Variance.

Answer

Basic Calculation						
Material	Standa	rd for 640	kg. output	Actu	al for 680	kg. output
	Qty.	Rate	Amount	Qty	Rate	Amount
	Kg.	(₹)	(₹)	Kg.	(₹)	(₹)
Α	480	50	24,000	540	60	32,400
В	320	60	19,200	260	50	13,000
Total	800		43,200	800		45,400
Less: Loss	160	_	—	120	-	-
	640		43,200	680		45,400

Std. cost of actual output = ₹ 43,200 × 680 / 640 = ₹ 45,900

Calculation of Variances

(i) Material Cost Variance Material Cost Variance = (Std. cost of actual output – Actual cost) = (45,900 – 45,400) = ₹ 500 (F)

(ii) Material Price Variance

Material Price Variance = $(SP - AP) \times AQ$



Material A: = (50 - 60) × 540 = ₹ 5,400 (A) Material B: = (60 - 50) × 260 = ₹ 2,600 (F)

MPV = ₹ 2,800 (A)

(iii) Material Usage Variance (MUV)

Material Usage Variance = (Std. Quantity for actual output – Actual Quantity) × Std. Price

Material A: = (480 × 680 / 640 – 540) × 50 = ₹ 1,500 (A)

Material B: = (320 × 680 / 640 – 260) × 60 = ₹ 4,800 (F)

MUV = ₹ 3,300 (F)

(iv) Material Mix Variance

Material Mix Variance = SP × (RAQ – AQ) EXAMS GUIDE

A:

= ₹ 50 × (480 Kg – 540 Kg) = ₹ 3,000 (A)

B:

= ₹ 60 × (320 Kg – 260 Kg) = ₹ 3,600 (F)

Total = ₹ 3,000 (A) + ₹ 3,600 (F) = ₹ 600 (F)

(v) Material Yield VarianceMaterial Yield Variance = SP × (SQ – RAQ)A:

A. = ₹ 50 × (510 Kg – 480 Kg) = ₹ 1,500 (F)



B: = ₹ 60 × (340 Kg - 320 Kg) = ₹ 1,200 (F) Total = ₹ 1,500 (F) + ₹ 1,200 (F) = ₹ 2,700 (F)

Question 85

ABC Ltd. has furnished the following information regarding the overheads for the month of June 2020 :

(i)	Fixed Overhead Cost Variance	₹ 2,800 (Adverse)
(ii)	Fixed Overhead Volume Variance	₹ 2,000 (Adverse)
(iii)	Budgeted Hours for June, 2020	2,400 hours
(iv)	Budgeted Overheads for June, 2020	₹ 12,000
(v)	Actual rate of recovery of overheads	₹ 8 Per Hour

From the above given information Calculate:

- 1. Fixed Overhead Expenditure Variance
- 2. Actual Overheads Incurred
- 3. Actual Hours for Actual Production
- 4. Fixed Overhead Capacity Variance
- 5. Standard hours for Actual Production
- 6. Fixed Overhead Efficiency Variance

Answer

- (1) Fixed Overhead Expenditure Variance
- = Budgeted Fixed Overheads Actual Fixed Overheads
- = ₹ 12,000 ₹ 12,800 (as calculated below) = ₹ 800 (A)



(2) Fixed Overhead Cost Variance = Absorbed Fixed Overheads – Actual Fixed Overheads
 2,800 (A) = ₹ 10,000 – Actual Overheads
 Actual Overheads = ₹ 12,800

(3) Actual Hours for Actual Production = ₹ 12,800 / ₹ 8 = 1,600 hrs.

(4) Fixed Overhead Capacity Variance

= Budgeted Fixed Overheads for Actual Hours – Budgeted Fixed Overheads = ₹ 5 × 1600 hrs. – ₹ 12,000 = **₹ 4,000 (A)**

(5) Standard Hours for Actual Production

= Absorbed Overheads / Std. Rate = ₹ 10,000 / ₹ 5 = **2,000 hrs.**

(6) Fixed Overhead Efficiency Variance

= Absorbed Fixed Overheads – Budgeted Fixed Overheads for Actual Hours = ₹ 10,000 – ₹ 5 × 1,600 hrs. = **₹ 2,000 (F)**

Working Note:

(i) Fixed Overhead Volume Variance = Absorbed Fixed Overheads – Budgeted Fixed Overheads 2,000 (A) = Absorbed Fixed Overheads – ₹ 12,000

Absorbed Fixed Overheads = ₹ 10,000

(ii) Standard Rate/Hour = ₹ 5 (₹ 12,000 / 2,400 hrs.)

Question 86

Premier Industries has a small factory where 52 workers are employed on an average for 25 days a month and they work 8 hours per day. The normal down time is 15%. The firm has introduced standard costing for cost control. Its monthly budget for November, 2020 shows that the budgeted variable and fixed overhead are ₹ 1,06,080 and ₹ 2,21,000 respectively.

The firm reports the following details of actual performance for November, 2020, after the end of the month:

Actual hours worked	8,100 hrs.
Actual production expressed in standard hours	8,800 hrs.
Actual Variable Overheads	₹ 1,02,000
Actual Fixed Overheads	₹ 2,00,000

You are required to calculate:



- (i) Variable Overhead Variances:
- (a) Variable overhead expenditure variance.
- (b) Variable overhead efficiency variance.
- (ii) Fixed Overhead Variances:
- (a) Fixed overhead budget variance.
- (b) Fixed overhead capacity variance.
- (c) Fixed overhead efficiency variance.
- (iii) Control Ratios:
- (a) Capacity ratio.
- (b) Efficiency ratio.
- (c) Activity ratio.

Answer

Workings:

Calculation of budgeted hours Budgeted hours = $(52 \times 25 \times 8) \times 85\% = 8,840$ hours

(i) Variable overheads variance

(a) Variable overhead expenditure variance = Std. overhead for Actual hours – Actual variable Overhead = (₹ 1,06,080 ÷ 8,840 × 8,100) - ₹ 1,02,000 = 4800 A

(b) Variable overhead efficiency variance

Std. rate per hour × (Std. hours for actual production – Actual hours) = (₹ 1,06,080 ÷ 8,840) × (8,800 hours – 8,100 hours) = 8400 F

(ii) Fixed overhead variances

(a) Fixed overhead budget variance

= Budgeted overhead – Actual overhead
 = ₹ 2,21,000 – ₹ 2,00,000
 = 21,000 F

(b) Fixed overhead capacity variance

- = Std rate × (Actual hours budgeted hours)
- = (₹2,21,000 ÷ 8,840) × (8,100 8,840)

= 18,500 A

(c) Fixed overhead efficiency variance

= Std rate × (Std hours for actual production – Actual hours)



= (₹ 2,21,000 ÷ 8,840) × (8,800 – 8,100) = 17,500 F

(iii) Control Ratios

(a) Capacity Ratio

= (Actual hours ÷ Budgeted hours) × 100 = (8,100 ÷ 8,840) × 100 = 91.63%

(b) Efficiency Ratio

= (Standard hours ÷ Actual hours) × 100 = (8,800 ÷ 8,100) × 100 = 108.64%

(c) Activity Ratio

= (Standard hours ÷ Budgeted hours) × 100 = (8,800 ÷ 8,840) × 100 = 99.55%

Question 87

The standard output of a Product 'D' is 50 units per hour in manufacturing department of a Company employing 100 workers. In a 40 hours week, the department produced 1,920 units of product 'D' despite 5% of the time paid was lost due to an abnormal reason. The hourly wage rates actually paid were ₹ 12.40, ₹ 12.00 and ₹ 11.40 respectively to Group 'A' consisting 10 workers, Group 'B' consisting 30 workers and Group 'C' consisting 60 workers. The standard wage rate per labour is same for all the workers. Labour Efficiency Variance is given ₹ 480 (F).

You are required to COMPUTE:

(i) Total Labour Cost Variance.

- (ii) Total Labour Rate Variance.
- (iii) Total Labour Gang Variance.

(iv) Total Labour Yield Variance, and

(v) Total Labour Idle Time Variance.

Answer

Working Notes:

1. Calculation of Standard Man hours

When 100 workers work for 1 hour, the standard output is 50 units.

Standard man hours per unit = 100 hours / 50 units = 2 hours per unit



2. Calculation of standard man hours for actual output:

= 1,920 units x 2 hours = **3,840 hours**

3. Calculation of actual cost

Type of Workers	No of Workers	Actual Hours Paid	Rate (₹)	Amount (₹)	Idle Hours (5% of hours paid)	Actual Hours Worked
Group 'A'	10	400	12.40	4,960	20	380
Group 'B'	30	1,200	12	14,400	60	1,140
Group 'C'	60	2,400	11.40	27,360	120	2,280
Total	100	4,000		46,720	200	3,800

4. Calculation of Standard wage Rate:

Labour Efficiency Variance

(Standard hours for Actual production – Actual Hours) x SR = (3,840 – 3,800) x SR

= 480

Standard Rate (SR) = ₹ 12 per hour

(i) Total Labour Cost Variance

= (Standard hours x Standard Rate) – (Actual Hours x Actual rate)

= (3,840 x 12) - 46,720 = **640A**

(ii) Total Labour Rate Variance

= (Standard Rate – Actual Rate) x Actual Hours

- Group 'A' = (12 12.40) 400 = **160A**
- Group 'B' = (12 12) 1,200 = **0**
- Group 'C' = (12 11.40) 2,400 = **1,440F**

Total = 1,280F

(iii) Total Labour Gang Variance

= Total Actual Time Worked (hours) x {Average Standard Rate per hour of



Standard Gang – Average Standard Rate per hour of Actual Gang@} @ on the basis of hours worked

= 3,800 x (12 - (3,840 x 12 / 3,800)) = 0

[Note: As the number of workers in standard and actual is the same, there is no difference in mix ratio, so labour gang variance will be NIL]

(iv) Total Labour Yield Variance

= Average Standard Rate per hour of Standard Gang x {Total Standard Time (hours) – Total Actual Time worked (hours)}
= 12 x (3,840 – 3,800)
= 480F

(v) Total Labour idle time variance

- = Total Idle hours x standard rate per hour
- = 200 hours x 12
- = 2,400A

Question 88

In a manufacturing company the standard units of production for the year were fixed at 1,20,000 units and overhead expenditures were estimated to be as follows:

Particulars	Amount (₹)
Fixed	12,00,000
Semi-variable (60% expenses are of fixed nature and 40% are of variable nature)	1,80,000
Variable	6,00,000

Actual production during the month of April, 2021 was 8,000 units. Each month has 20 working days. During the month there was one public holiday. The actual overheads were as follows:

Particulars	Amount (₹)
-------------	---------------



Fixed	1,10,000
Semi-variable (60% expenses are of fixed nature and 40% are of variable nature)	19,200
Variable	48,000

You are required to calculate the following variances for the month of April, 2021:

- i. Overhead Cost variance
- ii. Fixed Overhead Cost variance
- iii. Variable Overhead Cost variance
- iv. Fixed Overhead Volume variance
- v. Fixed Overhead Expenditure Variance
- vi. Calendar Variance

Answer

Working Notes :

- Budgeted Fixed Overheads p.a. = ₹ 12,00,000 + (60% x 1,80,000) = ₹ 13,08,000
- Budgeted Fixed Overheads per month = ₹ 13,08,000 / 12 months = ₹ 1,09,000
- Budgeted Output per month = 1,20,000 units / 12 months = 10,000 units
- Budgeted Variable Overheads p.a. = ₹ 6,00,000 + (40% x 1,80,000) = ₹ 6,72,000
- Budgeted Variable Overheads per month = ₹ 6,72,000 / 12 months = ₹ 56,000
- SRR/Unit for Fixed OH = Bud. OH per month / Bud. Output per month = ₹ 1,09,000 / 10,000 units = ₹ 10.90 per unit
- SRR/Unit for Variable OH = ₹ 56,000 / 10,000 units = ₹ 5.60 per unit
- SRR/Day for Fixed OH = Bud. OH per month / Bud. Working Days per month = ₹ 1,09,000 / 20 days = ₹ 5,450 per day
- Actual Fixed Overheads p.m. = ₹ 1,10,000 + (60% x 19,200) = ₹ 1,21,520
- Actual Variable Overheads p.m. = ₹ 48,000 + (40% x 19,200) = ₹ 55,680

(i) Overhead Cost Variance (i.e. total overhead cost variance):



= (SRR/unit x Actual Output) – Actual Overheads
= [(10.90 x 8,000) + (5.60 x 8,000)] – [1,21,520 + 55,680]
= [1,32,000 – 1,77,200] = ₹ 45,200 (A)
Note: Alternatively, we can also calculate it as Fixed OH Cost Variance + Variable OH Cost Variance.

(ii) Fixed OH Cost Variance

= (SRR/unit x Actual Output) – Actual Overheads = (10.90 x 8,000) – 1,21,520 = ₹ 34,320 (A)

(iii) Variable OH Cost Variance = (SRR/unit x Actual Output) – Actual Overheads = (5.60 x 8,000) – 55,680 = ₹ 10,880 (A)

(iv) Fixed OH Volume Variance = SRR/unit x [Budgeted Output – Actual Output] = 10.90 x (10,000 – 8,000) = ₹ 21,800 (A)

(v) Fixed OH Expenditure Variance

= Budgeted Overheads – Actual Overheads

= ₹ 1,09,000 – ₹ 1,21,520 = ₹ 12,520 (A)

(vi) Calendar Variance (it is calculated for Fixed OH only)

= SRR/day x [Budgeted working days – Actual working days]

= ₹ 5,450 per day x (20 – 19) = ₹ 5,450 (A) [i.e. one day worked less]

Question 89

Y Ltd. manufactures "Product M" which requires three types of raw materials – "A", "B" & "C".

Following information related to 1st quarter of the F.Y. 2022-23 has been collected from its books of accounts. The standard material input required for 1,000 kg of finished product 'M' as under:

Material	Quantity (Kg.)	Std. Rate per Kg. (₹)
Α	500	25
В	350	45



C	250	55
Total input	1100	
Less : Standard Loss	100	
Standard Output	1000	

During the period, the company produced 20,000 kg of product 'M' for which the actual quantity

of materials consumed and purchase prices are as under:

Material	Quantity (Kg.)	Purchase price per Kg. (₹)
Α	11,000	23
В	7,500	48
С	4,500	60

You are required to calculate:

(i) Material Cost Variance

(ii) Material Price Variance for each raw material and Product 'M'

(iii) Material Usage Variance for each raw material and Product 'M'

(iv) Material Yield Variance.

(Note : Indicate the nature of variance i.e. Favourable or Adverse).

Answer

i) Material Cost Variance :

Std. Qty. of input required for actual output

Material A = 500 Kgs. x 20,000/1,000 = **10,000 Kgs.** Material B = 350 Kgs. x 20,000/1,000 = **7,000 Kgs.** Material C = 250 Kgs. x 20,000/1,000 = **5,000 Kgs.**

Material Cost Variance = (SQ x SP) - (AQ x AP) A : (10,000 kg. x Rs. 25) - (11,000 kg. x Rs. 23) = 3,000 (A) B : (7,000 kg. x Rs. 45) - (7,500 kg. x Rs. 48) = 45,000 (A) C : (5,000 kg. x Rs. 55) - (4,500 kg. x Rs. 60) = 5,000 (F) Total for output 'M' = 43,000 (A)

ii) Material Price Variance : = AQ x (Std. price - Actual price) A : 11,000 kgs. x (Rs. 25 - Rs. 23) = **22,000 (F)**



B : 7,500 kgs. x (Rs. 45 - Rs. 48) = **22,500 (A)** C : 4,500 kgs. x (Rs. 55 - Rs. 60) = **22,500 (A)** Total for output 'M' = **23,000 (A)**

iii) Material Usage Variance = Std. price x (Std. Qty. - Actual Qty.) A : Rs. $25 \times (10,000 \text{ kg.} - 11,000 \text{ kg}) = 25,000 \text{ (A)}$ B : Rs. $45 \times (7,000 \text{ kg} - 7,500 \text{ kg}) = 22,500 \text{ (A)}$ C : Rs. $55 \times (5,000 \text{ kg} - 4,500 \text{ kg}) = 27,500 \text{ (F)}$ Total for output 'M' = 20,000 (A)

iv) Material Yield Variance (i.e. Sub-usage Variance): = Std. price x (Std. Qty. - Std. Mix) Std. Mix = Actual Qty. consumed revised in standard proportion i.e. Total 23,000 kg. consumed revised in 50 : 35 : 25 proportion

A : Rs. 25 x (10,000 kg. - 10,455 kg) = **11,375 (A)** B : Rs. 45 x (7,000 kg - 7,318 kg) = **14,310 (A)** C : Rs. 55 x (5,000 kg. - 5,227 kg) = **12,485 (A)** Total for output 'M' = **38,170 (A)**

Question 90

NC Limited uses a standard costing system for the manufacturing of its product 'X'. The following information is available for the last week of the month:

- 25,000 kg of raw material were actually purchased for ₹ 3,12,500. The expected output is 8 units of product 'X' from each one kg of raw material. There is no opening and closing inventories. The material price variance and material cost variance, as per cost records, are ₹ 12,500 (F) and ₹ 1800 (A), respectively.
- The standard time to produce a batch of 10 units of product 'X' is 15 minutes. The standard wage rate per labour hour is 50. The company employs 125 workers in two categories, skilled and semi-skilled, in a ratio of 60:40. The hourly wages actually paid were ₹ 50 per hour for skilled workers and ₹ 40 per hour for semi-skilled workers. The weekly working hours are 40 hours per worker. Standard wage rate is the same for skilled and semi-skilled workers.
- The monthly fixed overheads are budgeted at ₹ 76,480 Overheads are evenly distributed throughout the month and assume 4 weeks in a



month. In the last week of the month, the actual fixed overhead expenses were ₹ 19,500.

Required:

(i) Calculate the standard price per kg and the standard quantity of raw material.

(ii) Calculate the material usage variance, labour cost variance, and labour efficiency variance.

(iii) Calculate the fixed overhead cost variance, the fixed overhead expenditure variance and the fixed overhead volume variance.

Note: Indicate the nature of variance i.e Favourable or Adverse.

Answer

(i) Calculation of Standard price per kg and the standard quantity of raw material:

Standard Price

(a) Material Price Variance = Standard Cost of Actual Quantity – Actual Cost 12,500 (F) = (SP × AQ) – ₹ 3,12,500 12,500 (F) = (SP × 25,000) – ₹ 3,12,500

SP = **₹ 13**

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Standard Quantity (b) Material Cost Variance = Standard Cost – Actual Cost 1,800 (A) = SQ × ₹13 – ₹ 3,12,500

SQ = 23,900 kg.

(ii) Calculation of Material Usage Variance, Labour Cost Variance and Labour Efficiency Variance

(a) Material Usage Variance

Standard Cost of Standard Quantity for Actual Output – Standard Cost of Actual Quantity
SQ × SP – AQ × SP
Or
SP × (SQ – AQ)
₹ 13 × (23,900 kg. – 25,000 kg.)

= ₹ 14,300 (A)


(b) Labour Cost Variance

= Standard Cost – Actual Cost = (SH × SR) – (AH × AR) = ₹ 2,39,000 – ₹ 2,30,000

= ₹ 9,000 (F)

(c) Labour Efficiency Variance

Standard Cost of Standard Time for Actual Production – Standard Cost of Actual Time
(SH × SR) – (AH × SR)
Or
(SH – AH) × SR
₹ 50 × [4,780 hrs. – 5,000 hrs.]

= ₹ 11,000 (A)

(iii) Calculation of Fixed Overhead Cost Variance, Fixed Overhead Expenditure Variance and Fixed Overhead Volume Variance:

(a) Fixed overhead cost variance

= Standard Fixed Overheads – Actual Fixed Overheads

= 18,279 - 19,500

= ₹ 1,221 (A)

(b) Fixed Overhead Expenditure Variance

= Budgeted Fixed Overheads – Actual Fixed Overheads

- = ₹ 19,120 ₹ 19,500
- = ₹ 380 (A)

(c) Fixed overhead volume variance

- = (Budgeted output Actual Output) × Budgeted rate per unit
- = (2,00,000 1,91,200) × 0.0956
- = ₹ 8,800 × 0.0956
- = ₹ 841 (A)

Alternative presentation to part (iii) (a) and (b)

(i) Fixed Overhead Cost Variance:

= Overhead absorbed for actual production – Actual overhead incurred = ₹19,120 / 2,00,000 × 1,91,200 – 19,500 = ₹ 1,221 (A)

(iii) Fixed Overhead Volume Variance:

- = Absorbed overhead Budgeted overhead
- = ₹19,120 / 2,00,000 × 1,91,200 19,120 = **₹ 841 (A)**



Working Notes:

1. Standard time to produce 10 units of product X is 15 minutes. Therefore, we can manufacture 40 units in an hour.

Hours available in a week: 125 Workers × 40 Hours = 5,000 hours

Therefore budgeted output = 5,000 × 40 units per hour = 2,00,000 units

Alternatively

Budgeted time per unit = 15 units / 10 units = 1.5 minutes

So, Budgeted output = (5,000 Hours × 60 Minutes) / 1.5 Minutes = 2,00,000 units

Actual output = 23,900 × 8 units = 1,91,200 units

Standard hour for actual output = 1,91,200 × 0.25 Hrs / 10 units = 4,780 Hrs

2.

Labour									
Budget Revised standard				andard		Actua	al		
Hours	Rate	₹	Hours	Rate	₹		Hours	Rate	₹
5,000	50	2,50,000	4,780	50	2,39,000	Skilled	3000	50	1,50,000
						Semi- Skilled	2000	40	80,000
							5000		2,30,000

3.

	Budget	Actual
Units	2,00,000	1,91,200
Fixed Overheads	19,120	19,500

4. Standard Fixed Overheads:

₹19,120 / 2,00,000 × 1,91,200 = **₹18,279**

Budgeted rate per unit: ₹19,120 / 2,00,000 = **₹ 0.0956**

Question 91



SHA Limited provides the following trading results:

Year	Sale	Profit
2012-13	₹ 25,00,000	10% of Sale
2013-14	₹ 20,00,000	8% of Sale

You are required to calculate:

(i) Fixed Cost

(ii) Break Even Point

(iii) Amount of profit, if sale is 30,00,000

(iv) Sale, when desired profit is 4,75,000

(v) Margin of Safety at a profit of ₹ 2,70,000

Answer

Workings:

Profit in year 2012-13 = 25,00,000 × 10% = 2,50,000 Profit in year 2013-14 = 20,00,000 × 8% = 1,60,000

So, P/V Ratio = Change in Profit / Change in Sales × 100

= (2,50,000 - 1,60,000) / (25,00,000 - 20,00,000) × 100 = 90,000 / 5,00,000 × 100 = 18%

(i) Fixed Cost

Fixed Cost = Contribution (in year 2012-13) – Profit (in year 2012-13)

= (Sales × P/V Ratio) – Profit = (25,00,000 × 18%) – 2,50,000 = 4,50,000 – 2,50,000 = 2,00,000

(ii) Break-even Point (in Sales)

Break-even Point = Fixed Cost / P/V Ratio

= 2,00,000 / 18% = 11,11,111 (Approx)



(iii) Calculation of profit, if sale is 30,00,000

Profit = Contribution – Fixed Cost

- = (Sales × P/V Ratio) Fixed Cost = (30,00,000 × 18%) – 2,00,000
- = 5,40,000 2,00,000

= 3,40,000

So profit is 3,40,000, if Sale is 30,00,000.

(iv) Calculation of Sale, when desired Profit is 4,75,000

Contribution Required = Desired Profit + Fixed Cost

= 4,75,000 + 2,00,000 = 6,75,000

Sales = Contribution / P/V Ratio

= 6,75,000 / 18% = 37,50,000

Sales is 37,50,000 when desired profit is 4,75,000.

(v) Margin of Safety

Margin of Safety = Profit / P/V Ratio

= 2,70,000 / 18% = 15,00,000

So Margin of Safety is 15,00,000 at a profit of 2,70,000.

Question 92

SK Ltd. engaged in the manufacture of tyres. Analysis of income statement indicated a profit of ₹150 lakhs on a sales volume of 50,000 units. The fixed cost is ₹850 lakhs which appears to be high. Existing selling price is ₹3,400 per unit. The company is considering to revise the profit target to ₹350 lakhs. You are required to COMPUTE –

(i) Break-even point at existing levels in units and in rupees.

(ii) The number of units required to be sold to earn the target profit.

(iii) Profit with 15% increase in selling price and drop in sales volume by 10%.



(iv) Volume to be achieved to earn target profit at the revised selling price as calculated in (ii) above, if a reduction of 8% in the variable costs and ₹85 lakhs in the fixed cost is envisaged.

Answer

Sales Volume 50,000 Units Computation of existing contribution

Table of Particulars

Particulars	Per unit (₹)	Total (₹ in lakhs)
Sales	3,400	1,700
Fixed Cost	1,700	850
Profit	300	150
Contribution	2,000	1,000
Variable Cost	1,400	700

(i) Break even sales in units

Break even sales in units = Fixed Cost / Contribution per unit COST / CONTRIBUTION PER UNIT

- = 8,50,00,000 / 2,000
- = 42,500 units

Break even sales in rupees = 42,500 units × ₹ 3,400 = ₹ 1,445 lakhs

OR

P/V Ratio = (2,000 / 3,400) × 100 = 58.82%

B.E.P (in rupees) = Fixed Cost / P/V Ratio = 8,50,00,000 / 58.82%

= ₹ 1,445 lakhs (approx.)

(ii) Number of units sold to achieve a target profit of ₹ 350 lakhs:

Desired Contribution = Fixed Cost + Target Profit

= 850 lakhs + 350 lakhs

= 1,200 lakhs



Number of units to be sold = Desired Contribution / Contribution per unit = 12,00,00,000 / 2,000 = 60,000 units

(iii) Profit if selling price is increased by 15% and sales volume drops by 10%

Existing Selling Price per unit = ₹ 3,400 Revised selling price per unit = ₹ 3,400 × 115% = ₹ 3,910

Existing Sales Volume = 50,000 units Revised sales volume = 50,000 units – 10% of 50,000 = 45,000 units

Statement of profit at sales volume of 45,000 units @ ₹ 3,910 per unit:

Particulars	Per unit (₹)	Total (₹ in lakhs)	
Sales	3,910.00	1,759.50	
Less: Variable Cos <mark>ts</mark>	(1,400.00)	(630.00)	
Contribution	2,510.00	1,129.50	
Less: Fixed Cost		(850.00)	
Profit		279.50	

(iv) Volume to be achieved to earn target profit of ₹ 350 lakhs with revised selling price and reduction of 8% in variable costs and ₹ 85 lakhs in fixed cost.

Revised Variable Costs:

Reduction of 8% in variable costs = ₹ 1,400 – 8% of 1,400 = ₹ 1,400 – ₹ 112 = ₹ 1,288

Revised Fixed Cost:

Total Fixed Cost (existing) = ₹ 850 lakhs Reduction in fixed cost = ₹ 85 lakhs Revised fixed cost = ₹ 850 lakhs – ₹ 85 lakhs = ₹ 765 lakhs

Revised Contribution (per unit):

Revised Contribution per unit = Revised selling price – Revised Variable Costs

= ₹ 3,910 – ₹ 1,288

=₹2,622



Desired Contribution:

Desired Contribution = Revised Fixed Cost + Target Profit = ₹ 765 lakhs + ₹ 350 lakhs = ₹ 1,115 lakhs

Number of units to be sold:

Number of units to be sold = Desired Contribution / Contribution per unit = ₹ 1,115 lakh / ₹ 2,622 = 42,525 units

Question 93

A Company gives the following information:

Margin of	₹	Margin of Safety	15,000
Safety	3,75,000	(Quantity)	units
Total Cost	₹ <mark>3,8</mark> 7,500	Break Even Sales in Units	5,000 units

Calculate –

(i) Selling Price per unit,

(ii) Profit,

(iii) Profit / Volume Ratio,

(iv) Break Even Sales (in Rupees), and

(v) Fixed Cost.

Answer

- Sale Price p.u. = MOS Amount / MOS Quantity = ₹ 3,75,000 / 1,500 Units = ₹ 25 pu
- 2. Profit = Total Sales (-) Total Cost [Note: Total Sales = BES + MOS = 15,000 + 5,000 = 20,000 units]
 = (15,000 + 5,000) units × ₹ 25 3,87,500 = ₹ 1,12,500
- Also, Profit = MOS Quantity × Contribution p.u. On substitution, 1,12,500 = 15,000 units × Contribution p.u. So, Contribution p.u. = ₹ 7.50

Hence PVR = Contribution p.u. / Sale Price p.u = 7.5 / 25 = 30%



- 4. BES in ₹ = BES Quantity × Sale Price p.u. = 5,000 units × ₹ 25 = ₹ 1,25,000
- At BEP, Total Contribution = Fixed Cost. Total Contribution at BEP = 5,000 units × ₹ 7.50 p.u. So, Fixed Cost = ₹ 37,500

Question 94

A dairy product company manufacturing baby food with a shelf life of one year furnishes the following information:

(i) On 1st April, 2023, the company has an opening stock of 20,000 packets whose variable cost is ₹ 180 per packet.

(ii) In 2022-23, production was 1,20,000 packets and the expected production in 2023-24 is 1,50,000 packets. Expected sales for 2023-24 is 1,60,000 packets.

(iii) In 2022-23, fixed cost per unit was ₹ 60 and it is expected to increase by 10% in 2023-24. The variable cost is expected to increase by 25%. Selling price for 2023-24 has been fixed at ₹ 300 per packet.

You are required to calculate the Break-even volume in units for 2023-24.

Answer

Working Notes:

Particulars	2022-23 (₹)	2023-24 (₹)
Fixed Cost	72,00,000	79,20,000
	(₹ 60 × 1,20,000 units)	(110% of ₹ 72,00,000)
Variable Cost	180	225
		(125% of ₹ 180)

Calculation of Break-even Point (in units):

Since, shelf life of the product is one year only, hence, opening stock is to be sold first.

	(₹)
Total Contribution required to recover total fixed cost in 2023-24 and to reach break-even volume.	79,20,000



Less: Contribution from opening stock {20,000 units × (₹ 300 – ₹ 180)}	24,00,000
Balance Contribution to be recovered	55,20,000
Units to be produced to get balance contribution = ₹ 55,20,000 ÷ (₹ 300 – ₹ 225)	

= 73,600 packets.

Break-even volume in units for 2023-24

	Packets
From 2023-24 production	73,600
Add: Opening stock from 2022-23	20,000
	93,600

Question 95

The M-Tech Manufacturing Company is presently evaluating two possible processes for the manufacture of a toy. The following information is available:

Particulars	Process A (₹)	Process B (₹)
Variable cost per unit	12	14
Sales price per unit	20	20
Total fixed costs per year	30,00,000	21,00,000
Capacity (in units)	4,30,000	5,00,000
Anticipated sales (Next year, in units)	4,00,000	4,00,000

Suggest:

- 1. Identify the process which gives more profit.
- Would you change your answer as given above, if you were informed that the capacities of the two processes are as follows: A - 6,00,000 units; B - 5,00,000 units?



Answer

(1) Comparative Profitability Statements

Particulars	Process - A (₹)	Process - B (₹)
Selling Price per unit	20.00	20.00
Less: Variable Cost per unit	12.00	14.00
Contribution per unit	8.00	6.00
Capacity (units)	4,00,000	4,00,000
Total Contribution	32,00,000	24,00,000
	(₹ 8 × 4,00,000)	(₹ 6 × 4,00,000)
Less: Total fixed costs	30,00,000	21,00,000
Profit	2,00,000	3,00,000

Particulars	Process - A (₹)	Process - B (₹)
Capacity (units)	4,30,000	5,00,000
Total Contribution at full capacity	34,40,000	30,00,000
THE C	(₹ 8 × 4,30,000)	(₹ 6 × 5,00,000)
Fixed Cost	30,00,000	21,00,000
Profit	4,40,000	9,00,000

Process - B gives more profit.

(2)

Particulars	Process - A (₹)	Process - B (₹)
Capacity (units)	6,00,000	5,00,000
Total Contribution	48,00,000	30,00,000
	(₹8×6,00,000)	(₹ 6 × 5,00,000)
Fixed Cost	30,00,000	21,00,000
Profit	18,00,000	9,00,000



Process - A be chosen.

Note: It is assumed that capacity produced equals sales.

Question 96

A Company has introduced a new product and marketed 20,000 units. Variable Cost of the product is ₹ 20 per unit and Fixed Overheads are ₹ 3,20,000. You are required to:

(a) Calculate Selling Price per unit to earn a profit of 10% on Sales Value, BEP and Margin of Safety.

(b) If the Selling Price is reduced by the Company by 10%, demand is expected to increase by 5000 units, then what will be its impact on Profit, BEP and Margin of Safety?

(c) Calculate Margin of Safety if Profit is ₹ 64,000.

Answer

1. Present Sale Price, BEP and MOS: Let Selling Price per unit = 'P'. So, Sales Value = 20,000 units × P = **20,000 P** So, Profit at 10% = 20,000 P × 10% = **2,000 P**

Contribution per unit = Sale Price (–) Variable Cost = (P - 20)

The equation is: **Total Contribution = Fixed Cost + Profit** On substitution, we have: **20,000 units × (P – 20) = 3,20,000 + 2,000 P**

On simplification, we have: 20,000P - 4,00,000 = 3,20,000 + 2,000 P

On solving, **18,000P = 7,20,000**, or **P = 40**.



Hence, Sales Value = 20,000 units × ₹ 40 = ₹ 8,00,000.

Profit = 10% on Sales = ₹ 80,000

Break-Even Quantity (BEQ): BEQ = Fixed Costs / Contribution per Unit = 3,20,000 / (40 – 20) = 16,000 units.

Break-Even Sales (BES): BES (₹) = BEQ × Selling Price = 16,000 units × ₹ 40 = ₹ 6,40,000

Margin of Safety (MOS): MOS (Qty) = Total Sales – BEQ = 20,000 – 16,000 = 4,000 units.

MOS (₹) = MOS Quantity × Selling Price = 4,000 units × ₹ 40 = ₹ 1,60,000

2. Impact of Price Reduction on Profit, BEP and MOS: New Sale Price = ₹ 40 less 10% = ₹ 36 pu

Profit = Total Contribution (–) Fixed Costs = 25,000 units × (36 – 20) – 3,20,000 = ₹ 80,000

BEQ = Fixed Costs / Contribution per Unit = 3,20,000 / (36 – 20) = **20,000 units**. BES (₹) = 20,000 units × ₹ 36 pu = **₹ 7,20,000**

MOS (Qty) = Total Sales – BEQ = 25,000 – 20,000 = **5,000 units**. MOS (₹) = 5,000 units × ₹ 36 pu = **₹ 1,80,000**

3. MOS when Profit is ₹ 64,000:

Particulars	Situation 1: Using Original Sale Price ₹ 40 pu	Situation 2: Using Revised Sale Price ₹ 36 pu
MOS Quantity = Profit	64,000 / (40 – 20) =	64,000 / (36 – 20) =
/ Contribution p.u.	3.200 units	4.000 units
MOS Sale Value =	3,200 units × ₹ 40 pu =	4,000 units × ₹ 36 pu =
MOS Quantity × Price	₹ 1,28,000	₹ 1,44,000

Question 97



The following information has been obtained from the records of a manufacturing unit:

	Rs.	Rs.
Sales 80,000 units @ Rs. 50		40,00,000
Material consumed	16,00,000	
Variable Overheads	4,00,000	
Labour Charges	8,00,000	
Fixed Overheads	7,20,000	
	35,20,000	
Net Profit	4,80,000	

CALCULATE:

(i) The number of units by selling which the company will neither lose nor gain anything.

(ii) The sales needed to earn a profit of 20% on sales.

(iii) The extra units which should be sold to obtain the present profit if it is proposed to reduce the selling price by 20% and 25%.

The selling price to be fixed to bring down its Break-even Point to 10,000 units under present conditions.

Answer

Workings:

(1) Contribution per unit = Selling price per unit – Variable cost per unit = Rs. 50 – {Rs. (16,00,000 + 4,00,000 + 8,00,000) ÷ 80,000 units} = Rs. 50 – Rs. 35 = Rs. 15

(2) Profit-Volume (P/V) Ratio = Contribution per unit/Selling Price per Unit × 100 = Rs. 15 / Rs.50 × 100 = 30%

Calculations:

(i) The number of units to be sold for neither loss nor gain i.e. Break-even units:
 = Fixed Overheads / Contribution per unit
 = Rs.7,20,000 / Rs.15 = 48,000 Units

(ii) The sales needed to earn a profit of 20% on sales:As we know S = V + F + P



(S = Sales; V = Variable Cost; F = Fixed Cost; P = Profit) Suppose Sales units are x then

Rs. 50x = Rs. 35x + Rs. 7,20,000 + Rs. 10x Rs. 50x - Rs. 45x = Rs. 7,20,000 Or, X = Rs.7,20,000 / Rs.5 = 1,44,000 units

Therefore, Sales needed = 1,44,000 units × Rs. 50 = Rs. 72,00,000 to earn a profit of 20% on sales.

(iii) Calculation of extra units to be sold to earn present profit of Rs. 4,80,000 under the following proposed selling price:

Particulars	When selling price is reduced by 20% (Rs.)	When selling price is reduced by 25% (Rs.)
Selling price per unit	40.00	37.50
Less: Variable Cost per unit	(Rs. 50 × 80%) = 35.00	(Rs. 50 × 75%) = 35.00
Contribution per unit	5.00	2.50
Desired Contribution		
Fixed Overheads	7,20,000	7,20,000
Desired Profit	4,80,000	4,80,000
Total Contribution	12,00,000	12,00,000
(a) Sales units for desired contribution	2,40,000 units	4,80,000 units
(b) Units presently sold	80,000 units	80,000 units
(c) Extra units to be sold {(a) – (b)}	1,60,000 units	4,00,000 units

(iv) Sales price to bring down BEP to 10,000 units:

B.E.P (Units) = Fixed Cost / Contribution per unit Contribution per unit = Rs. 7,20,000 ÷ 10,000 units = Rs. 72

Sales Price (per unit) = Variable Cost + Contribution

Sales Price (per unit) = Rs. 35 + Rs. 72 = Rs. 107



Question 98

A company, with 90% Capacity utilization, is manufacturing a product and makes a sale of ₹ 9,45,000 at ₹ 30 per unit. The cost data is as under:

Materials - ₹ 9.00 per unit Labour - ₹ 7.00 per unit

Semi variable cost (including variable cost of ₹ 4.25 per unit) - ₹ 2,10,000.

Fixed cost is ₹ 94,500 upto 90% level of output (capacity). Beyond this, an additional amount of ₹ 15,000 will be incurred.

You are required to calculate: (i) Level of output at break-even point (ii) Number of units to be sold to earn a net income of 10% of sales (iii) Level of output needed to earn a profit of ₹ 1,41,375

Answer

Answer

- (a) Working Note:
- 1. Current utilization 90% capacity and Turnover is ₹ 9,45,000 No. of units = ₹ 9,45,000 ÷ ₹ 30 = 31,500 units

₹

Variable Cost per unit:

Particulars	Amount (₹)
Material	9.00
Labour cost	7.00
Variable overheads	4.25
Total Variable Cost	20.25
Selling price	30.00
Contribution per unit	9.75

Calculation of Total Fixed Cost

Particulars



Semi-variable cost	2,10,000
Less: Variable cost (31,500 units × ₹ 4.2	5) 1,33,875
Fixed Cost	76,125
Add: Fixed cost up to 90% level	94,500
Total Fixed Cost	1,70,625

2. Present Profit:

Particulars	₹
Contribution (31,500 units × ₹ 9.75)	3,07,125
Less: Fixed cost	1,70,625
Profit	1,36,500

(i) Break-even point

Break-even point = Total Fixed Cost ÷ Contribution per unit

= 1,70,625 ÷ 9.75 = 17,500 Units

At 17,500 units, output level = 17,500 ÷ 31,500 × 90% = 50% VS GUDE

So, at 50% activity level, this company reaches at BEP.

(ii) Sales (Units):

Sales (Units) = Fixed Cost + Profit ÷ Contribution per unit

10% of sales = 10% of ₹ 30 = ₹ 3 per unit profit.

Let 'S' be the number of units to be sold. Profit will be 3S.

S = 1,70,625 + 3S ÷ 9.75

Simplifying:

9.75 S = 1,70,625 + 3S

S = 1,70,625 ÷ 6.75 = 25,278 units.

(iii) Sales (Units):



Sales (Units) = Fixed Cost + Profit ÷ Contribution per unit

Sales = 1,70,625 + 1,41,375 ÷ 9.75

= 3,12,000 ÷ 9.75 = 32,000 units

32,000 units exceed 90% activity level. Fixed cost increases by ₹ 15,000 to ₹ 3,27,000.

Sales = 3,27,000 ÷ 9.75 = 33,538 units

Activity level = 33,538 ÷ 35,000 × 100 = 95.82%

Question 99

A company is producing an identical product in two factories. The following are the details in respect of both factories:

	Factory X	Factory Y
Selling price per unit (₹)	50	50
Variable cost per unit (₹)	40	35
Fixed cost (₹)	2,00,000	3,00,000
Depreciation included in above fixed cost (₹)	40,000	30,000
Sales in units	30,000	20,000
Production capacity (units)	40,000	30,000

You are required to determine:

(i) Break Even Point (BEP) each factory individually.

(ii) Cash break even point for each factory individually.

(iii) BEP for company as a whole, assuming the present product mix is in sales ratio.

(iv) Consequence on profit and BEP if product mix is changed to 2:3 and total demand remain same.

Answer

	Factory X	Factory Y
(i) Break Even Point: Fixed Cost / Contribution	2,00,000 / (50 - 40) = 20,000 units	3,00,000 / (50 - 35) = 20,000 units
(ii) Cash Break Even Point: (Fixed Cost - Depreciation) / Contribution	(2,00,000 - 40,000) / 10 = 16,000 units	(3,00,000 - 30,000) / 15 = 18,000 units



(iii) BEP as a whole = Complete Fixed Cost / Composite Contribution

= (2,00,000 + 3,00,000) / (10 × 3/5 + 15 × 2/5)

= 5,00,000 / (6 + 6) = 41,667 units

(iv) New Sales Mix = 50,000 × 2/5 = 20,000 of X

50,000 × 3/5 = 30,000 of Y

Calculation of Composite contribution: $10 \times 2/5 + 15 \times 3/5 = 4 + 9 = \cancel{1}3$

Consequence on profit

	Existing Mix New Mix	
Contribution	50,000 × 12 = 6,00,000	50,000 × 13 = 6,50,000
Less: Fixed Cost	5,00,000	5,00,000
Profit	1,00,000	1 <mark>,50</mark> ,000

Increase in profit = 1,5<mark>0,000 - 1,0</mark>0,000 = ₹ 50,000

Consequence on BEP

New BEP as a whole = Complete Fixed Cost / Composite Contribution

= 5,00,000 / 13 = 38,462 units

So, BEP Reduced by 3,205 units (41,667 - 38,462)

Question 100

Moon Ltd. produces products 'X', 'Y' and 'Z' and has decided to analyse its production mix in respect of these three products - 'X', 'Y' and 'Z'.

You have the following information :

	X	Y	Z
Direct Materials ₹ (per unit)	160	120	80
Variable Overheads ₹ (per unit)	8	20	12



Direct Labour :

Departments:	Rate per Hour (₹)	Hours per unit X	Hours per unit Y	Hours per unit Z
Department- A	4	6	10	5
Department- B	8	6	15	11

From the current budget, further details are as below :

	X	Y	Z
Annual Production at present (in units)	10,000	12,000	20,000
Estimated Selling Price per unit (₹)	312	400	240
Sales departments estimate of possible sales in the coming year (in units)	12,000	16,000	24,000

There is a constraint on supply of labour in Department-A and its manpower cannot be increased beyond its present level.

Required:

- (i) Identify the best possible product mix of Moon Ltd.
- (ii) Calculate the total contribution from the best possible product mix.

Answer

(i) Statement Showing "Calculation of Contribution/ unit"

Particulars	X (₹)	Y (₹)	Z (₹)
Selling Price (A)	312	400	240
Variable Cost:			
Direct Material	160	120	80
Direct Labour	80	120	88
Dept. A (Rate x Hours)	24	40	20
Dept. B (Rate x Hours)	48	120	88



Variable Overheads	8	20	12
Total Variable Cost (B)	240	300	200
Contribution per unit (A - B)	72	100	40
Hours in Dept. A	6	10	5
Contribution per hour	12	10	8
Rank	I	II	

Existing Hours

10,000 x 6 hrs. + 12,000 x 10 hrs. + 20,000 x 5 hrs. = **2,80,000 hrs.**

Best possible product mix (Allocation of Hours on the basis of ranking)

- Produce 'X' = 12,000 units Hours Required = 72,000 hrs (12,000 units × 6 hrs.)
 Balance Hours Available = 2,08,000 hrs (2,80,000 hrs. – 72,000 hrs.)
- Produce 'Y' (the Next Best) = 16,000 units Hours Required = 1,60,000 hrs (16,000 units × 10 hrs.) Balance Hours Available = 48,000 hrs (2,08,000 hrs. – 1,60,000 hrs.)
- Produce 'Z' (balance) = 9,600 units
 Hours Required = 48,000 hrs (48,000 hrs. / 5 hrs.) = XAMS CUDE

Product	Units	Contribution/ Unit (₹)	Total Contribution (₹)
Х	12,000	72	8,64,000
Y	16,000	100	16,00,000
Z	9,600	40	3,84,000
			Total = 28,48,000

(ii) Statement Showing "Contribution"

Question 101

Two manufacturing companies A and B are planning to merge. The details are as follows:





Capacity utilisation (%)	90	60
Sales (₹)	63,00,000	48,00,000
Variable Cost (₹)	39,60,000	22,50,000
Fixed Cost (₹)	13,00,000	15,00,000

Assuming that the proposal is implemented, calculate:

- 1. Break-Even sales of the merged plant and the capacity utilization at that stage.
- 2. Profitability of the merged plant at 80% capacity utilization.
- 3. Sales Turnover of the merged plant to earn a profit of ₹ 60,00,000.
- 4. When the merged plant is working at a capacity to earn a profit of ₹ 60,00,000, what percentage of increase in selling price is required to sustain an increase of 5% in fixed overheads.

Answer

Workings:

1. Statement showing computation of Breakeven of merged plant and other required information

S. No.	Particulars	Plan A (Before 90%)	Plan A (After 100%)	Plant B (Before 60%)	Plant B (After 100%)	Merged Plant (100%)
(i)	Sales	₹ 63,00,000	₹ 70,00,000	₹ 48,00,000	₹ 80,00,000	₹ 1,50,00,000
(ii)	Variable cost	₹ 39,60,000	₹ 44,00,000	₹ 22,50,000	₹ 37,50,000	₹ 81,50,000
(iii)	Contribution (i - ii)	₹ 23,40,000	₹ 26,00,000	₹ 25,50,000	₹ 42,50,000	₹ 68,50,000
(iv)	Fixed Cost	₹ 13,00,000	₹ 13,00,000	₹ 15,00,000	₹ 15,00,000	₹ 28,00,000
(v)	Profit (iii - iv)	₹ 10,40,000	₹ 13,00,000	₹ 10,50,000	₹ 27,50,000	₹ 40,50,000

2. PV ratio of merged plant = Contribution / Sales × 100

= ₹ 68,50,000 / ₹ 1,50,00,000 × 100 = **45.67%**



(i) Break even sales of merged plant = Fixed Cost / P/V Ratio

= ₹ 28,00,000 / 45.67% = ₹ 61,30,939.34 (approx.)

Capacity utilisation

= ₹ 61,30,939.34 / ₹ 1,50,00,000 × 100 = **40.88%**

(ii) Profitability of the merged plant at 80% capacity utilisation

= (₹ 1,50,00,000 × 80%) × P/V ratio – fixed cost = ₹ 1,20,00,000 × 45.67% – ₹ 28,00,000 = **₹ 26,80,400**

(iii) Sales to earn a profit of ₹ 60,00,000

Desired sales = (Fixed Cost + desired profit) / P/V Ratio

= (₹ 28,00,000 + ₹ 60,00,000) / 45.67%

= ₹ 1,92,68,666 (appr<mark>ox.</mark>)

(iv) Increase in fixed cost

= ₹ 28,00,000 × 5% = **₹ 1,40,000**

Therefore, percentage increase in sales price

= ₹ 1,40,000 / ₹ 1,92,68,666 × 100 = **0.726% (approx.)**

Question 102

AZ company has prepared its budget for the production of 2,00,000 units. The variable cost per unit is ₹ 16 and fixed cost is ₹ 4 per unit. The company fixes its selling price to fetch a profit of 20% on total cost.

You are required to calculate:

(i) Present break-even sales (in ₹ and in quantity)

(ii) Present profit-volume ratio.

(iii) Revised break-even sales in ₹ and the revised profit-volume ratio, if it reduces its selling price by 10%.

(iv) What would be revised sales in quantity and the amount, if a company



desires a profit increase of 20% more than the budgeted profit and selling price is reduced by 10% as above in point (iii).

Answer

Variable Cost per Unit = ₹ 16 Fixed Cost per Unit = ₹ 4 Total Fixed Cost = 2,00,000 units x ₹ 4 = ₹ 8,00,000Total Cost per Unit = 16 + 4 = ₹ 20 Selling Price per Unit = Total Cost + Profit @ 20% = ₹ 20 + ₹ 4 = ₹ 24 Contribution per Unit = ₹ 24 - ₹ 16 = ₹ 8

(i)

Present BEP Sales (Quantity) = Total Fixed Cost / Contribution per unit = ₹ 8,00,000 / ₹ 8 = 1,00,000 units

Present BEP Sales (₹) = 1,00,000 units x ₹ 24 = ₹ 24,00,000

(ii)

Present P/V Ratio = (8 / 24) x 100 = 33.33%

(iii)

Revised Selling Price per Unit = ₹ 24 – 10% = ₹ 21.60 Revised Contribution per Unit = ₹ 21.60 – ₹ 16 = ₹ 5.60 Revised P/V Ratio = (5.60 / 21.60) x 100 = 25.926%

Revised Break-even point (₹) = Fixed Cost / P/V Ratio = ₹ 8,00,000 / 25.926% = ₹ 30,85,705 (approx)

(iv)

Present profit = Present Contribution – Fixed Cost = (₹ 8 x 2,00,000 units) – ₹ 8,00,000 = ₹ 8,00,000

Desired Profit = 120% of ₹ 8,00,000 = ₹ 9,60,000

Sales required to earn desired profit at reduced sales price = (Fixed cost + Desired profit) / Contribution per unit = (₹ 8,00,000 + ₹ 9,60,000) / ₹ 5.60 = 3,14,286 units (approx)

Revised sales (in ₹) = 3,14,286 units x ₹ 21.60 = ₹ 67,88,578 (approx)



Question 103

Top-tech, a manufacturing company, is presently evaluating two possible machines for the manufacture of superior Pen-drives. The following information is available:

Particulars	Machine A	Machine B
Selling price per unit	₹ 400.00	₹ 400.00
Variable cost per unit	₹ 240.00	₹ 260.00
Total fixed costs per year	₹ 350 lakhs	₹ 200 lakhs
Capacity (in units)	8,00,000	10,00,000

Required:

(i) Recommend which machine should be chosen?

(ii) Would you change your answer if you were informed that in the near future demand will be unlimited and the capacities of the two machines are as follows?

- Machine A 12,00,000 units
- Machine B 12,00,000 units

Why?

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Answer

	Machine-A	Machine-B	Total
A Selling price per unit (₹)	400	400	
B Variable cost per cost (₹)	240	260	
C Contribution per unit (₹) [A-B]	160	140	
D Units	8,00,000	10,00,000	
E Total contribution (₹) [C×D]	12,80,00,000	14,00,00,000	26,80,00,000
F Fixed Cost (₹)	3,50,00,000	2,00,00,000	5,50,00,000
G Profit [E-F] (₹)	9,30,00,000	12,00,00,000	21,30,00,000



H Profit per unit [G÷D] (₹)	116.25	120.00	

(i) Machine B has the higher profit of ₹2,70,00,000 than the Machine-A. Further, Machine-B's fixed cost is less than the fixed cost of Machine-A and higher capacity. Hence, **Machine B be recommended**.

Note: This question can also be solved as below:

Indifferent point = Difference in fixed cost / difference in variable cost per unit

= 1,50,00,000 / 20 = 7,50,000 units

At the level of demand 7,50,000 units both machine options equally profitable.

If demand below 7,50,000 units, select machine B (with lower FC).

If demand above 7,50,000 units, select machine A (with lower VC).

(ii) When the capacities of both the machines are same and demand for the product is unlimited, calculation of profit will be as follows:

	Machine-A	Machine-B	Total
A Contribution per unit (₹)	160	<u> </u>	
B Units	12,00,000	12,00,000	
C Total contribution (₹) [A×B]	19,20,00,000	16,80,00,000	36,00,00,000
D Fixed Cost (₹)	3,50,00,000	2,00,00,000	5,50,00,000
E Profit [C-E] (₹)	15,70,00,000	14,80,00,000	30,50,00,000
F Profit per unit [E÷B] (₹)	130.83	123.33	

Yes, the preference for the machine would change because now, Machine A is having higher contribution and higher profit, hence recommended.

Question 104

Following information have been extracted from the cost records of XYZ Pvt. Ltd.	(₹)
Stores:	
Opening balance	1,08,000



Purchases	5,76,000
Transfer from WIP	2,88,000
Issue to WIP	5,76,000
Issue for repairs	72,000
Deficiency found in stock	21,600
Work-in-process:	(₹)
Opening balance	2,16,000
Direct wages applied	2,16,000
Overheads charged	8,64,000
Closing balance	1,44,000
Finished Production:	(₹)
Entire production is sold at a profit of 15% on cost of WIP	
Wages paid	<mark>2,5</mark> 2,000
Overheads incurred	9,00,000

PREPARE Stores Ledger Control Account, Work-in-Process Control Account, Overheads Control Account and Costing Profit and Loss Account.

Answer

Stores Ledger Control A/c

Particulars	₹	Particulars	₹
To Balance b/d	1,08,000	By Work in Process A/c	5,76,000
To General Ledger		By Overhead Control A/c	72,000
Adjustment A/c	5,76,000	By Overhead Control A/c	21,600*
To Work in Process A/c	2,88,000	By Balance c/d	3,02,400
	9,72,000		9,72,000



*Deficiency assumed as normal (alternatively can be treated as abnormal loss)

Work in Process Control A/c

Particulars	₹	Particulars	₹
To Balance b/d	2,16,000	By Stores Ledger Control A/c	2,88,000
To Stores Ledger Control A/c	5,76,000	By Costing P/L A/c	14,40,000

Particulars	₹	Particulars	₹
To Wages Control A/c	2,16,000	By Balance c/d	1,44,000
To Overheads Control A/c	8,64,000		
	18,72,000		18,72,000

Overheads Control A/c

Particulars	₹	Particulars	₹
To Stores Ledger Control A/c	72,000	By Work in Process A/c	8,64,000
To Stores Ledger Control A/c	21,600	By Balance c/d <i>(Under absorption)</i>	1,65,600
To Wages Control A/c (2,52,000 – 2,16,000)	36,000		
To Gen. Ledger Adjust. A/c	9,00,000		
	10,29,600		10,29,600

Costing Profit & Loss A/c

Particulars	₹	Particulars	₹
WWW.CAEXAMS.IN			207



To Work in process	14,40,000	By Gen. ledger Adjust. A/c <i>(Sales)</i>	16,56,000
To Gen. Ledger Adjust. A/c (Profit)	2,16,000		
	16,56,000		16,56,000

Question 105

Point	Description	Amount
(a)	Opening Balance of Creditors Account	₹ 25,000
(b)	Closing Balance of Creditors Account	<mark>₹ 40,00</mark> 0
(c)	Payment made to Creditors	₹
		<mark>5,</mark> 80, <mark>00</mark> 0
(d)	Opening Balance of Stores Ledger Control	<mark>₹ 40,000</mark>
	Account THE COMPLETE EXAMS	GUIDE
(e)	Closing Balance of Stores Ledger Control	₹ 65,000
	Account	
(f)	Wages Paid (for 8,000 hours)	₹
		4,00,000
	20% relate to Indirect Workers	-
(g)	Various Indirect Expenses incurred	₹ 60,000
(h)	Opening Balance of WIP Control Account	₹ 50,000

(i) Inventory of WIP at the end of the month includes Material worth ₹ 35,000 on which 400 Labour Hours have been booked.

(j) Factory Overhead is charged to production at budgeted rate based on Direct Labour Hours.

(k) Budgeted Overhead Cost is ₹ 20,80,000, for Budgeted Direct Labour Hours of 1,04,000.



Prepare Creditors A/c, Stores Ledger Control A/c, WIP Control A/c, Wages Control A/c and Factory Overhead Control A/c.

Answer

Working Notes:

- (a) OH Rate p.u = ₹ 20,80,000 ÷ 1,04,000 hrs = ₹ 20 per hour
 (b) Wage Rate ph = ₹ 4,00,000 ÷ 8,000 hrs = ₹ 50 ph
- 2. Value of Closing WIP = Direct Material = 35,000
 - Direct Labour + (400 hrs × ₹ 50)
 - Applied POH + (400 hrs × ₹ 20)
 = ₹ 63,000

Ledger Accounts:

1. Sundry Creditors Account

Particulars	₹	Particulars	₹
To Bank (Payments)	5,80,000	By balance b/d	25,000
To balance c/d	4 <mark>0</mark> ,000	By Stores Ledger Control a/c (Purchases) (bal.fig)	5,9 <mark>5,0</mark> 00
Total	6,20,000	COMPLETE EXAMS	G 6,20,000

2. Stores Ledger Control Account

Particulars	₹	Particulars	₹
To balance b/d – given	40,000	By WIP Control – A/c Transfer (bal. fig)	5,70,000
To Creditors – Purchases	5,95,000	By balance c/d	65,000
Total	6,35,000		6,35,000

3. Wages Control Account

	Particulars₹Particulars₹	
--	--------------------------	--



To Cash / Bank	4,00,000	By WIP Control A/c – Direct Wages – (bal. fig)	3,20,000
		By POH Control – 20% Indirect Wages	80,000
Total	4,00,000		4,00,000

4. Factory OH Control Account

Particulars	₹	Particulars	₹
To Cash / Bank / – POH paid (given)	60,000	By WIP Control [8,000 hrs × ₹ 20] (WN.1 a)	1,60,000
To Wages Control A/c – Indirect Wages	80,000	– absorbed OH transfer	
To balance c/d (assumed carried fwrd)	20,000		
Total	1, <mark>60,000</mark>		1,60,000

5. WIP Control Account

Particulars	₹	Particulars	₹
To balance b/d	50,000	By Finished Goods Control – (bal.fig)	10,37,000
To Stores Ledger Control – RM Consumed	5,70,000	By balance c/d (WN 2)	63,000
To Wages Control	3,20,000		
To POH Control – Absorbed	1,60,000		
Total	11,00,000		11,00,000

Question 106

The following balances were extracted from a Company's ledger as on 30th June, 2018:



Particulars	Debit (Rs.)	Credit (Rs.)
Raw material control a/c	2,82,450	
Work-in-progress control a/c	2,38,300	
Finished stock control a/c	3,92,500	
General ledger adjustment a/c		9,13,250
Total	9,13,250	9,13,250

The following transactions took place during the quarter ended 30th September, 2018:

	Rs.
(i) Factory overheads - allocated to work-in-progress	1,36,350
(ii) Goods furnished - at cost	13,76,200
(iii) Raw materials purchased	12,43,810
(iv) Direct wages - allocated to work-in-progress	2,56,800
(v) Cost of goods sold	14 <mark>,56,</mark> 500
(vi) Raw materials - issued to production	13,60,430
(vii) Raw materials - credited by suppliers	27,200 G
(viii) Raw materials losses - inventory audit	6,000
(ix) Work-in-progress rejected (with no scrap value)	12,300
(x) Customer's returns (at cost) of finished goods	45,900

You are required to prepare:

(i) Raw material control a/c

- (ii) Work-in-progress control a/c
- (iii) Finished stock control a/c
- (iv) General ledger adjustment a/c

Answer

(i) Raw Material Control A/c

Particulars	(Rs.)	Particulars	(Rs.)



To Balance b/d	2,82,450	By General Ledger Adjustment A/c	27,200
" General Ledger Adjustment A/c	12,43,810	" Work-in-progress Control A/c	13,60,430
		Costing P & L A/c	6,000
		(Loss) (OR GLA)	
		" Balance c/d	1,32,630
	15,26,260		15,26,260

(ii) Work-in-Progress Control A/c

Particulars	(Rs.)	Particulars	(Rs.)
To Balance b/d	2,38,300	" Finished Goods Control A/c	13,76,200
" Raw Material Control A/c	13,60,430	Costing P & L A/c (OR GLA)	12,300
" Wages Control A/c	2,5 <mark>6,80</mark> 0	" Balance c/d	6,03 <mark>,3</mark> 80
" Factory OH Control A/c	1,36,350		
	19,91,880	MPLETE EXAMS	19,91,880

(iii) Finished Goods Control A/c

Particulars	(Rs.)	Particulars	(Rs.)
To Balance b/d	3,92,500	By Cost of goods sold A/c (OR GLA)	14,56,500
" General Ledger Adjustment A/c	45,900	" Balance c/d	3,58,100
" Work-in-progress Control A/c	13,76,200		
	18,14,600		18,14,600

(iv) General Ledger Adjustment A/c



Particulars	(Rs.)	Particulars	(Rs.)
To Costing P & L A/c (Sales)	25,68,910	By Balance b/d	9,13,250
" Raw Material Control A/c	27,200	" Raw Material Control A/c	12,43,810
		" Wages Control A/c	2,56,800
		" Factory OH Control A/c	1,36,350
		" Finished Goods Control A/c	45,900
	25,96,110		25,96,110

General Ledger Adjustment Account (Alternate Presentation)

Particulars	(Rs.)	Particulars	(Rs.)
To Raw Material Cont <mark>rol</mark> A/c	27,200	By Balance b/d	9,1 <mark>3,25</mark> 0
" Raw Material Control	6,000	" Raw Material Control A/c	12,43,810
" WIP Control Account (Rejection)	12,300	" Wages Control A/c	2,56,800
" Finished Stock Control Account	14,56,500	" Factory OH Control A/c	1,36,350
" Balance c/d	10,94,110	" Finished Goods Control A/c	45,900
	25,96,110		25,96,110

Factory Overhead Control A/c

Particulars	(Rs.)	Particulars	(Rs.)
To General Ledger Adjustment A/c	1,36,350	By Work-in-progress A/c	1,36,350



1 36 350	1 36 350
1,00,000	1,00,000

Question 107

A manufacturing company had disclosed net loss of ₹ 48,700/- as per their cost accounting records for the year ended 31st march 2014. However, their financial accounting records disclosed net profit of ₹ 35,400 for the same period. A scrutiny of date of both the sets of books of accounts revealed the following information:

	Particulars	(₹) Amount
(<i>i</i>)	Factory overheads under absorbed	30,500
(<i>ii</i>)	Administrative overheads over-absorbed	65,000
(iii)	Depreciation charged in financial accounts	225,000
(<i>iv</i>)	Depreciation charged in cost accounts	270,000
(<i>v</i>)	Income-tax provision	52,400
(vi)	transfer fee (credited in financial accounts)	10,200
(vii)	obsolescence loss charged in financial accounts	207000
(viii)	Notional Rent of own premises (charged in cost a/cs)	54000 GUIDE
(<i>ix</i>)	Value of opening stock:	
	(a) in cost accounts	138000
	(b) in financial accounts	115,000
(x)	Value of closing stock	
	(a) in cost accounts	122,000
	(<i>b</i>) in financial accounts	112,500

Prepare a memorandum Reconciliation Account by taking costing loss as base

Answer

Dr.

Memorandum Reconciliation Account

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Particulars	Amount (₹)	Particulars	Amount (₹)
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To Net loss as per cost a/cs	48,700	By administrative overheads over absorbed in cost a/cs	65,000
To factory overheads under absorbed in cost a/cs	30500	By Excess depreciation charged in cost a/cs (270,000 - 225,000)	45,000
To provision for income tax	52400	By transfer fee credited in financial a/cs	10,200
To obsolescence loss	20700	By Notional rent of own premises	54,000
To Overvaluation of closing stock in cost a/cs (122000 - 112500)	9500	By Over-valuation of opening stock in cost a/cs (138000 - 115,000)	23000
To Net profit (as per financial a/cs) (balancing figure)	35,400		
	197200		197200

Question 108

The Trading and Profit and Loss Account of a company for the year ended 31.03.2016 is as under:

Particulars	Amount	Particulars	Amount
To Materials	26,80,000	By Sales (50,000 units)	62,00,000
To Wages	17,80,000	By Closing stock (2,000 units)	1,50,000
To Factory expenses	9,50,000	By Dividend received	20,000
To Administrative expenses	4,80,200		
To Selling expenses	2,50,000		
To Preliminary expenses written off	50,000		
To Net Profit	1,79,800		



Total	63,70,000	Total	63,70,000

In the Cost Accounts:

(i) Factory expenses have been allocated to production at 20% of Prime Cost.

(ii) Administrative expenses absorbed at 10% of factory cost.

(iii) Selling expenses charged at `10 per unit sold.

Prepare the Costing Profit and Loss Account of the company and reconcile the Profit/Loss with the profit as shown in the Financial Accounts.

Answer

Costing Profit & Loss A/c

Particulars	Amount	Particulars	Amount
To Materials	26,80,000	By Sales (50,000 units)	62,00,000
To Wages	17,80,000	By Closing stock (2,000 units)	2,26,431
To Factory overheads	<mark>8,92</mark> ,000		
To Administration overheads	5 <mark>,3</mark> 5,200		GUIDE
To S & D Expenses (50,000 × 10)	5,00,000		OOIDE
To Net profit	39,231		
	64,26,431		64,26,431

Working Notes:

- 1. Factory overheads in costs
 - = 20% of Prime cost
 - = 20% of (26,80,000 + 17,80,000)
 - = 8,92,000

2. Administrative overheads

- = 10% of Factory cost
- = 10% of (26,80,000 + 17,80,000 + 8,92,000)
- = 5,35,200


3. Valuation of closing stock

= Cost of production × Units in Closing stock

Units produced = (26,80,000 + 17,80,000 + 8,92,000 + 5,35,200) × 2,000 ÷ 52,000 = 2,26,431

4. Units produced

- = Units sold + Closing units Opening units
- = 50,000 + 2,000 Nil
- = 52,000

Reconciliation Statement

Particulars	Amount	Amount
Profit as per Cost Accounts		39,231
Add: Administrative expenses over recovered (5,35,200 – 4,80,200)	55,000	
Selling expenses over recovered (5,00,000 – 2,50,000)	2,50,000	J
Dividend received	20,000	<mark>3,25,00</mark> 0
Less: Factory expenses under recovered (9,50,000	58,000	
	EXAMS	GUIDE
Closing stock over valued in costs (2,26,431 – 1,50,000)	76,431	
Preliminary expenses written off	50,000	(1,84,431)
Profit as per Financial Accounts		1,79,800

Question 109

GK Limited showed a net loss of 2,43,300 as per their financial accounts for the year ended 31st March, 2018. However, cost accounts disclosed a net loss of 2,48,300 for the same period. On scrutinizing both the set of books of accounts, the following information were revealed:

- (a) Works overheads over recovered 30,400
- (b) Selling overheads under recovered 20,300
- (c) Administrative overhead under recovered 27,700
- (d) Depreciation over charged in cost accounts 35,100
- (e) Bad debts w/off in financial accounts 15,000



(f) Preliminary Exp. w/off in financial accounts 5,000(g) Interest credited during the year in financial accountants 7,500

Prepare a reconciliation statement reconciling losses shown by financial and cost accounts by taking costing net loss as base.

Answer

Reconciliation Statement

Particulars	Amount	Amount
Loss as per Cost Records		(2,48,300)
Add: Factory overhead over recovered	30,400	
Depreciation over charged in cost accounts	35,100	
Interest credited during the year in financial accounts	7,500	73,000
Less: Selling overheads under recovered	20,300	
Administrative overheads under recovered	27,700	
Bad debts w/off in financial accounts	15,000	
Preliminary Exp. w/off in financial accounts	5,000	(68,000)
Profit as per Financial Books	EXAMS	(2,43,300)

Question 110

M/s Abid Private Limited disclosed a net profit of 48,408 as per cost books for the year ending 31st March 2019. However, financial accounts disclosed net loss of 15,000 for the same period.

On scrutinizing both the set of books of accounts, the following information was revealed:

Particulars	Amount (`)
Works Overheads under recovered in Cost Books	48,600
Office Overheads over recovered in Cost Books	11,500
Dividend received on Shares	17,475
Interest on Fixed Deposits	21,650
Provision for doubtful debts	17,800



Obsolescence loss not charged in Cost Accounts	17,200
Stores adjustments (debited in Financial Accounts)	35,433
Depreciation charged in financial accounts	30,000
Depreciation recovered in Cost Books	35,000

Prepare a Memorandum Reconciliation Account.

Answer

Memorandum Reconciliation Account

Particulars		Particulars	
To Works OH under recovered	48,600	By Net profit as per Costing Books	48,408
To Provision for doubtful debts	17,800	By Admin overheads over recovered	11,500
To Obsolescence loss	17,200	By Dividend received	17,475
To Stores adjustments	3 <mark>5,4</mark> 33	By Interest on fixed deposits	21,650
	THE CO	By Depreciation over recovered (35,000 - 30,000)	C ^{5,000} E
		By Net loss as per Financial Books	15,000
Total	1,19,033	Total	1,19,033

Question 111

The Profit and Loss account of ABC Ltd. for the year ended 31st March, 2021 is given below:

Profit & Loss Account (For the year ended 31st March, 2021)

To Direct Material	6,50,000	By Sales (15,000 units)	15,00,000
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To Direct Wages	3,50,000	By Dividend received	9,000
To Factory overheads	2,60,000		
To Administrative overheads	1,05,000		
To Selling overheads	85,000		
To Loss on sale of investments	2,000		
To Net profit	57,000		
Total	15,09,000	Total	15,09,000

Additional information:

(a) The factory overheads are 50% fixed and 50% variable.

(b) The administration overheads are 100% fixed.

(c) Selling overheads are completely variable.

(d) Normal production capacity of ABC Ltd. is 20,000 units.

(e) Indirect expenses are absorbed in the cost accounts on the basis of normal production capacity.

(f) Notional rent of own premises charged in Cost Accounts is amounting to `12,000.

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You are required to:

(1) Prepare a Cost Sheet and ascertain the profit as per Cost records for the year ended 31st March, 2021.

(2) Reconcile the Profit as per Financial Records with profit as per Cost Records.

Answer

Working Note

Calculation of Fixed OH Recovery Rates:

(a) **For Factory Overheads** = Fixed Factory OH / Normal Production Capacity

- = (50% x 2,60,000) / 20,000 units
- = ₹ 1,30,000 / 20,000 units
- = ₹ 6.50 per unit



(b) For Administration Overheads

= ₹ 1,05,000 / 20,000 units

= ₹ 5.25 per unit

Cost Sheet for the year ended 31st March, 2021 : (for 15,000 units)

Particulars	(₹)	(₹)
Direct material		6,50,000
Direct wages		3,50,000
Prime cost		10,00,000
Factory Overheads:		
Variable (50% of ₹ 2,60,000) actual	1,30,000	
Fixed (₹ 6.50 per unit x 15,000 units)	97,500	2,27,500
Works cost		12,27,500
Administrative OH (₹ 5.25 per unit x 15,000 units)		78,750
Notional Rent charged in cost accounts		12,000
Cost of production		13,18,250
Selling Overheads - fully variable		85,000
Cost of Sales	EXAM	14,03,250
Profit (Balancing figure)		96,750
Sales revenue		15,00,000

Statement of Reconciliation

Particulars	Add	Less	Total
Profit as per Financial Accounts			57,000
Under absorption of Factory OH in cost accounts	32,500		
[2,60,000 - 2,27,500]			
Under absorption of Admin. OH in cost accounts	26,250		
[1,05,000 - 78,750]			



Notional rent considered only in cost accounts	12,000		
Items considered only in Financial Accounts:			
Loss on sale of investments		2,000	
Dividend received		9,000	
Sub-total	60,750	21,000	39,750
Profit as per Cost Accounts			96,750

