CA Intermediate (New Syllabus)
Cost & Management Accounting (Paper 3)
May, 2023 Exam - Suggested Answers

Question No. 1 is compulsory.
Answer any **four** questions out of the remaining **five** questions.
Working notes should form part of the answer.

Question 1(a) : [5 Marks]

TSK Limited manufactures a variety of products. The annual demand for one of its products – Product 'X' is estimated as 1,35,000 units. Product 'X' is to be manufactured in batches. Set up cost of each batch is ₹ 3,375 and inventory holding cost is ₹ 5 per unit. It is expected that demand of Product 'X' would be uniform throughout the year.

Required :

(i) Calculate the Economic Batch Quantity (EBQ) for Product 'X'.

(ii) Assuming that the company has a policy of manufacturing 7,500 units of Product 'X' per batch, calculate the additional cost incurred as compared to the cost incurred as per Economic Batch Quantity (EBQ) as computed in (i) above.

Answer 1(a) :
(i) Calculation of EBQ :

$$EBQ = \sqrt{\frac{2 \times \text{Annual demand} \times \text{Set up cost per batch}}{\text{Carrying cost per unit p.a.}}}$$

$$EBQ = \sqrt{\frac{2 \times 1,35,000 \text{ units} \times \text{Rs. 3,375 per batch}}{\text{Rs. 5 per unit p.a.}}}$$

$$= 13,500 \text{ units.}$$

(ii) Calculation of additional cost as compared to EBQ :

Particulars		EBQ System	Present Policy
(a) Order size (units)		13,500	7,500
(b) No. of batches p.a. (1,35,000 / a)		10	18
(c) Set up cost p.a. [b x 3,375]	(Rs.)	33,750	60,750
(d) Carrying cost p.a. [a / 2 x 5]	(Rs.)	33,750	18,750
(e) Total cost p.a. [c + d]	(Rs.)	67,500	79,500
(f) Additional cost over EBQ	(Rs.)	---	12,000

Question 1(b) : [5 Marks]

SMC Company Limited is producing a particular design of toys under the following existing incentive system :

Normal working hours in the week	48 hours
Late Shift hours in the week	12 hours
Rate of payment	Normal working : ₹ 150 per hour
	Late shift : ₹ 300 per hour

Average output per operator for 60 hours per week (including late shift hours) : 80 toys.

The company's management has now decided to implement a system of labour cost payment with either the Rowan Premium Plan or the Halsey Premium Plan in order to increase output, eliminate late shift overtime, and reduce the labour cost.

The following information is obtained :

The standard time allotted for ten toys is seven and half hours.

Time rate : ₹ 150 per hour (as usual).

Assuming that the operator works for 48 hours in a week and produces 100 toys, you are required to calculate the weekly earnings for one operator under -

(i) The existing Time Rate,

(ii) Rowan Premium Plan and,

(iii) Halsey Premium Plan (50%).

Answer 1(b) :

(i) Existing Time Rate System :

Wages = Hours worked x Rate per hour

= (48 hours x ₹ 150) + (12 hours x ₹ 300)

= ₹ 7,200 + ₹ 3,600 = ₹ 10,800 (for 80 toys).

(ii) Rowan Premium Plan :

Total wages = (Hour worked x Rate / hr.) +

$$\left[\frac{\text{Time Saved}}{\text{Time Allowed}} \times (\text{Hour worked} \times \text{Rate/hr}) \right]$$

Standard time allowed for actual output $= \dfrac{100 \text{ toys} \times 7.5 \text{ hours}}{10 \text{ toys}}$ = 75 Hours

Actual time taken to produce 100 toys = 48 hours (given in the question)

∴ Time saved = 75 – 48 = 27 hours

Wages $= (48 \times 150) + \left[\dfrac{27}{75} \times 48 \times 150 \right]$

= 7,200 + 2,592 = ₹ 9,792 (for 100 toys).

(iii) Halsey Premium Plan :

Total wages = (Hours worked x Rate / hr) + 50% (Time saved x Rate / hr)

∴ Wages = (48 hrs x 150) + [50% x (27 hrs x 150)]

= 7,200 + 2,025 = ₹ 9,225 (for 100 toys).

Question 1(c) : [5 Marks]

The following information pertains to ZB Limited for the year :

Profit volume ratio	30%
Margin of Safety (as % of total sales)	25%
Fixed Cost	₹ 12,60,000

You are required to calculate :

(i)   Break even sales value (₹)

(ii)   Total sales value (₹) at present.

(iii) Proposed sales value (₹) if company wants to earn the present profit after reduction of 10% in fixed cost.

(iv) Sales in value (₹) to be made to earn a profit of 20% on sales assuming fixed cost remains unchanged.

(v)   New Margin of Safety if the sales value at present as computed in (ii) decreased by 12.5%.

Answer 1(c) :

(i) Calculation of Break even sales value (₹) :

BEP   = Fixed Cost / Profit Volume Ratio

= ₹ 12,60,000 / 30%   = ₹ 42,00,000

(ii) Calculation of total sales value (₹) at present :

MOS Ratio   = 25% of total sales

Hence BEP Ratio = 75% of total sales

∴ Total Sales   = BEP Sales / 75%

= ₹ 42,00,000 / 75%

= ₹ 56,00,000

(iii) Calculation of proposed sale value with 10% reduction in fixed cost :

Present profit   = (Total sales x PVR) - Fixed Cost

= (₹ 56,00,000 x 30%) - 12,60,000

= ₹ 4,20,000

Revised Fixed Cost = 12,60,000 - 10%

= ₹ 11,34,000

Desired Sales   = (Desired Profit + Fixed Cost) / P V Ratio

= (4,20,000 + 11,34,000) / 30%

= ₹ 51,80,000

(iv) Calculation of sale value to earn 20% profit on sales :

Let us assume Sale Value = ₹ X

Desired Profit = 20% of ₹ X = ₹ 0.2X

Desired Sales   = (Desired Profit + Fixed Cost) / P V Ratio

X   = (0.2X + 12,60,000) / 30%

0.3 X   = 0.2X + 12,60,000

0.1 X   = 12,60,000   Hence, X = ₹ 1,26,00,000 (i.e. 126 lakhs)

(v) Calculation of New margin of safety :

Revised sales value = ₹ 56,00,000 - 12.5% = ₹ 49,00,000

New margin of safety = Total sale value - BEP sale value

= ₹ 49,00,000 - ₹ 42,00,000 = ₹ 7,00,000

Question 1(d) : [5 Marks]

RST Toll Plaza Limited built an 80 kilometer 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 operating 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 options (i) remains the same.

Answer 1(d) :

(i) Let's assume the toll rate charged from light weight vehicle = ₹ X (without concession)

Hence, toll rate for medium weight vehicle shall be = ₹ 2.5X and

Toll rate for heavy weight vehicle shall be = ₹ 5X

Let's calculate the total toll collected during a month in terms of X as -

Light weight = 50,000 x X x 90% = 45,000X

Medium weight = 12,000 x 2.5X = 30,000X

Heavy weight = 10,000 x 5X = 50,000X

The total for outward journey = 1,25,000X

Hence, for outward plus return journey = 1,25,000X x 2 = 2,50,000X

Total toll revenue = Cost + 10% profit on total cost

= 59,09,090 + 10% = ₹ 65,00,000 (approx)

Hence, 2,50,000X = ₹ 65,00,000 Hence, X = ₹ 26

The final answer shall be -

Toll rate for light weight vehicle = ₹ 26 per one way trip

Toll rate for medium weight vehicle = ₹ 65 per one way trip (26 x 2.5)

Toll rate for heavy weight vehicle = ₹ 130 per one way trip (65 x 2)

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(ii)   Toll rate for light weight vehicle if the return journey concession facility is available

   = ₹ 26 per one way trip x 2 x 75% (i.e. 25% concession)

   = ₹ 39 for a two way journey (i.e. to & fro journey)

   Note : I have assumed revenue per vehicle calculated in (i) above to remain same.

Question 2(a) : [10 Marks]

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 (% by weights to total of 4 months)	21%	26%	30%	23%
Purchase price of raw material (per kg.)	₹ 10	₹ 12	₹ 13	₹ 11

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 2(a) :

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 working day	50	55	60	52	
(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 (21%)	5,408 (26%)	6,240 (30%)	4,784 (23%)	20,800 (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

2. Stores Ledger (FIFO Method) :

Month	Particulars	Receipts			Issues			Balance		
		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 (consumed)				5,000	10.5	52,500	1,020	10.5	10,710
								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 (consumed)				1,020	10.5	10,710	108	10.0	1,080
					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 (consumed)				108	10.0	1,080			
					5,408	12.0	64,896			
					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
								4,784	11.0	52,624
	Issues (consumed)				5,200	13.0	67,600	316	13.0	4,108
								4,784	11.0	52,624
	Totals	20800		242320	21720		248798			

Question 2(b) : [10 Marks]

B Limited has taken a contract for ₹ 70,00,000 and furnishes the following information :

Particulars	1st Year (₹)	2nd Year (₹)
Material	12,50,000	13,65,000
Wages	12,50,000	11,44,000
Direct Expenses	4,20,000	3,80,000
Indirect Expenses	2,70,000	2,60,000
Work Certified	32,00,000	70,00,000
Work Uncertified	2,19,000	-

Other Information :

- Plant costing ₹ 3,40,000 was bought at the commencement of the contract.

- Depreciation of ₹ 85,000 per annum is charged on the plant on Straight Line Method (SLM) basis.

- There is a provision for escalation clause in the contract for increase in the material rate and wage rate in the second year only.

  Standard material for the first and second year was 12,000 units each year @ ₹ 90 per unit, whereas the actual consumption was 12,500 @ ₹ 100 per unit in the first year and 13,000 units @ ₹ 105 per unit in the 2nd year. Standard labour hours for first year were 10,000 hours and for the second year it was 9,000 hours. Standard wage rate was ₹ 120 per hour. The firm has paid for 10,000 hours @ ₹ 125 per hour in the first year and 8,800 hours @ ₹ 130 per hour in the second year.

Required :
(i) Prepare Contract Account for both years without considering escalation clause.
(ii) Compute the total value of contract by considering the escalation clause.
(iii) Compute the total increase / (decrease) in the cost of material and wages for both the years.

Answer 2(b) :

(i) Contract Account for the 1st year :

Particulars	₹	Particulars	₹
To Material	12,50,000		
To Wages	12,50,000	By Work certified	32,00,000
To Direct Expenses	4,20,000		
To Indirect Expenses	2,70,000	By Work uncertified	2,19,000
To Depreciation of Plant	85,000		
To Notional Profit (Bal. fig.)	1,44,000		
Total	34,19,000	Total	34,19,000

Contract Account for the 2nd year :

Particulars	₹	Particulars	₹
To Opening Balances :			
Work Certified	32,00,000		
Work Uncertified	2,19,000		
To Material	13,65,000	By Work certified	70,00,000
To Wages	11,44,000		
To Direct Expenses	3,80,000		
To Indirect Expenses	2,60,000		
To Depreciation of Plant	85,000		
To Actual Profit (Bal. fig.)	3,47,000		
Total	70,00,000	Total	70,00,000

(ii) Calculation of total value of contract after Escalation Clause :

Note : The escalation clause is applicable for second year only. At the same time, Contractee is not responsible for the efficiency or inefficiency of Contractor. Hence, we have to consider only the changes in rates of material & wages with respect to standard quantity of material and standard hours, ignoring actual quantity and actual hours.

Particulars	₹
Increase in Material Price for 2nd year only	1,80,000
[12,000 units x (105 - 90)]	
Increase in Labour Rate for 2nd year only	90,000
[9,000 hours x (130 - 120)]	
Add : Original Contract Price	70,00,000
Revised total contract price after escalation	72,70,000

(iii) Calculation of increase / (decrease) in the cost of material and wages :

For Year 1 :	Standard	Actual	Difference
Material Cost	10,80,000 (12,000 x 90)	12,50,000 (12,500 x 100)	1,70,000
Labour Cost	12,00,000 (10,000 x 120)	12,50,000 (10,000 x 125)	50,000
Total for year 1	Net increase		2,20,000
For Year 2 :	Standard	Actual	Difference
Material Cost	10,80,000 (12,000 x 90)	13,65,000 (13,000 x 105)	2,85,000
Labour Cost	10,80,000 (9,000 x 120)	11,44,000 (8,800 x 130)	64,000
Total for year 2	Net increase		3,49,000

Question 3(a) : [10 Marks]

PQR Limited manufactures three products – Product X, Product Y and Product Z. The output for the current year is 2,50,000 units of Product X, 2,80,0000 units of Product Y and 3,20,000 units of Product Z respectively.

Selling price of Product X is 1.25 times of Product Z whereas Product Y can be sold at double the price at which product Z can be sold. Product Z can be sold at a profit of 20% on its marginal cost.

Other information are as follows :

Particulars	Product X	Product Y	Product Z
Direct Material Cost (per unit)	₹ 20	₹ 20	₹ 20
Direct Wages Cost (per unit)	₹ 16	₹ 24	₹ 16

Raw material used for manufacturing all the three products is the same. Direct Wages are paid @ ₹ 4 per labour hour.

Total overhead cost of the company is ₹ 52,80,000 for the year, out of which ₹ 1 per labour hour is variable and the rest is fixed.

In the next year it is expected that sales of product X and product Z will increase by 12% and 15% respectively and sale of product Y will decline by 5%. The total overhead cost of the company for the next year is estimated at ₹ 55,08,000. The variable cost of ₹ 1 per labour hour remains unchanged.

It is anticipated that all other costs will remain same for the next year and there is no opening and closing stock.

Selling price per unit of each product will remain unchanged in the next year.

Required :

Prepare a budget showing the current position and the position for the next year clearly indicating the total product-wise contribution and profit for the company as a whole.

Answer 3(a) :   **PQR Ltd.**

(1) Position for the current year :

Particulars	Product X	Product Y	Product Z	Total
(a) Direct Material Cost (₹/unit)	20	20	20	
(b) Direct Wages Cost (₹/unit)	16	24	16	
(c) Labour hours per unit [b/4]	4	6	4	
(d) Variable OH (₹/unit) [1 x c]	4	6	4	
(e) Total marginal cost [a + b + d]	40	50	40	
(f) Sales Price (₹/unit) [using price of Z as base]	60 [48 x 1.25]	96 [48 x 2]	48 [40 + 20%]	
(g) Contribution (₹/unit) [f - e]	20	46	8	
(h) Output (in units)	2,50,000	2,80,000	3,20,000	
(i) Total contribution (₹) [g x h]	50,00,000	1,28,80,000	25,60,000	2,04,40,000
(j) Total variable OH (₹) [d x h]	10,00,000	16,80,000	12,80,000	39,60,000
(k) Fixed OH (₹) [52,80,000 - 39,60,000]				13,20,000
(l) Profit (₹) [i - k]				1,91,20,000

(2) Position for the next year :

Particulars	Product X	Product Y	Product Z	Total
(a) Current output (in units)	2,50,000	2,80,000	3,20,000	
(b) Increase / (decrease) in sales	12%	(5%)	15%	
(c) Expected sales (in units)	2,80,000	2,66,000	3,68,000	
(d) Contribution (₹/unit) [WN1g]	20	46	8	
(e) Total contribution (₹) [c x d]	56,00,000	1,22,36,000	29,44,000	2,07,80,000
(f) Variable OH (₹/unit) [WN1d]	4	6	4	
(g) Total variable OH (₹) [c x f]	11,20,000	15,96,000	14,72,000	41,88,000

(h) Fixed OH (₹) [WN 1k] or [55,08,000 - 41,88,000]			13,20,000
(i) Profit (₹) [e - h]			1,94,60,000

Question 3(b) : [10 Marks]

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

Particulars	April 1	April 30
Opening and closing inventories data:		
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 :

(i)   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).

(ii) Calculate the selling price per unit if profit is charged at 20 percent on sales.

Answer 3(b) :

Working Notes / Assumptions :

1. Closing stock of FG = Opening stock + Production - FG Sold

    = 2,500 + 1,52,000 - 1,52,600 = 1,900 units

2. In absence of specific information regarding administrative overheads, it is assumed to be related to production of finished goods.

Cost Sheet for the month of April, 2023 :

(Production = 1,52,000 units & Sales = 1,52,600 units)

Particulars	(₹)	(₹)
<u>Direct Material Consumed</u> :		
Opening stock of raw material	42,500	
Add : Raw material purchased	6,95,000	
Add : Carriage inwards (Purchase Exp.)	36,200	
Less : Closing stock of raw material	(38,600)	
∴ **Direct material consumed**		**7,35,100**
Add : Direct Wages		3,22,800
Add : <u>Direct Expenses</u> :		
Royalty paid for production	35,800	
Special design, moulds & patterns amortised	12,800	
[1,53,600 / 12]		
Power, fuel and haulage	70,600	1,19,200
∴ **Prime Cost**		**11,77,100**
Add : Factory OH i.e. salary & wages of supervisor		28,000
∴ **Gross Factory Cost**		12,05,100
Add : Opening work in progress		42,500
Less : Closing work in progress		(42,800)
∴ **Net Factory Cost of FG**		**12,04,800**
Add : Research and development cost		31,680
Primary packing cost		6,920
Administrative overheads		46,765
(assumed related to production)		
∴ **Cost of Production of FG (1,52,000 units)**		**12,90,165**
Add : Opening stock of finished goods		20,125
[2,500 units x 8.05]		
Less : Closing stock of finished goods (FIFO)		(16,127)
[12,90,165 / 1,52,000 units x 1,900 units]		
∴ **Cost of goods sold (1,52,600 units)**		**12,94,163**
Add : Selling & Distrn. Exp. [1,52,600 x 0.20]		30,520
∴ **Cost of sales**		**13,24,683**
Add : Profit @ 20% of sales [13,24,683 x 20/80]		3,31,171
∴ **Sales [1,52,600 units]**		16,55,854
∴ **Sales Price per unit** [16,55,854 / 1,52,600]		**10.85**

Note : If ICAI treats administrative overheads as general overheads, then it will get added along with selling overheads. Then the above answers will get slightly modified.

Question 4(a) : [10 Marks]

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 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
T	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 4(a) :

Hint / Working : In this question, the quantity of input raw material is missing. Hence, we cannot calculate joint cost untill we know the quantity of raw material consumed. We have to calculate the raw material quantity mathematically in a reverse gear as follows :

Output of Product 'X' = 14,580 kgs (given)

Hence, output of by-product 'Z' = [14,580 x 20/80] = 3,645 kgs.

Total output of Process T = [14,580 + 3,645] = 18,225 kgs.

Hence, total input of Process T = [18,225 x 100/90] = 20,250 kgs. i.e. output of Process S.

Hence, total input of Process S = [20,250 x 100/90] = 22,500 kgs. i.e. output of Process R.

Hence, total input of Process R = [22,500 x 100/90] = 25,000 kgs.

Raw material J, K & L are the inputs in Process R in the ratio of 40 : 40 : 20.

Hence, Input Material J = 25,000 x 40% = 10,000 kgs.

      Input Material K = 25,000 x 40% = 10,000 kgs.

      Input Material L = 25,000 x 20% = 5,000 kgs.

Calculation of Joint Cost :

Particulars	₹	₹
Raw Material Cost :		
J [10,000 kg x ₹ 15 per kg]	1,50,000	
K [10,000 kg x ₹ 9 per kg]	90,000	
L [5,000 kg x ₹ 7 per kg]	35,000	2,75,000
Variable cost of processing :		
Process R [25,000 kg x ₹ 5 per kg]	1,25,000	
Process S [22,500 kg x ₹ 4.5 per kg]	1,01,250	
Process T [20,250 kg x ₹ 3.4 per kg]	68,850	2,95,100
Fixed cost of processing :		
Process R	42,000	
Process S	5,000	
Process T	4,800	51,800
Total joint cost		6,21,900

Apportionment of Joint cost on sale value basis :

Particulars	X	Z	Total
(a) Output (kgs.)	14,580	3,645	
(b) Selling price at split off (₹/kg)	60	30	
(c) Sale value at split off point [a x b]	8,74,800	1,09,350	9,84,150
(d) Joint cost apportioned in the ratio of (c)	5,52,800	69,100	6,21,900
(e) Profitability [c - d]	3,22,000	40,250	3,62,250

Question 4(b) : [5 Marks]

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 as follows :

Particulars	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 :	₹
Rent & Taxes	8,63,500
Electricity Expenses	10,66,475
Indirect labour	13,16,250
Repair & Maintenance	1,28,775
Total	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.

Answer 4(b) :

(i) Overhead Rate per Labour Hour under Absorption Costing :

$$= \frac{\text{Total Overheads}}{\text{Total Labour Hours}}$$

$$= \frac{\text{Rs. } 33,75,000}{[\,7,500 + 7,200 + 7,800\,]} = ₹ 150 \text{ per labour hour}$$

(ii) Statement of cost and overhead cost per unit using ABC :

Particulars	Total OH	Cost Driver	A	B	C
	₹		₹	₹	₹
(a) Rent & Taxes	8,63,500	Floor Space [50 : 45 : 62]	2,75,000	2,47,500	3,41,000
(b) Electricity Exp.	10,66,475	Power consump. [32 : 28 : 40]	3,41,272	2,98,613	4,26,590
(c) Indirect labour	13,16,250	D. Labour Hrs. [75 : 72 : 78]	4,38,750	4,21,200	4,56,300
(d) Repair & Maint.	1,28,775	D. Machine Hrs. [600 : 450 : 465]	51,000	38,250	39,525
(e) Total overheads		[a to d]	11,06,022	10,05,563	12,63,415
(f) Output (units)		Given	50,000	45,000	62,000
(g) OH cost per unit		[d / e]	22.1204	22.3458	20.3777

Question 4(c) : [5 Marks]

MNP Company Limited produces two products 'A' and 'B'. The relevant cost and sales data per unit of output is as follows :

Particulars	Product A (₹)	Product B (₹)
Direct material	55	60
Direct labour	35	45
Variable factory overheads	40	20
Selling price	180	175

The availability of machine hours is limited to 55,000 hours for the month. The monthly demand for product 'A' and product 'B' is 5,000 units and 6,000 units, respectively. The fixed expenses of the company are ₹ 1,40,000 per month. Variable factory overheads are ₹ 4 per machine hour. The company can produce both products according to the market demand.

Required :

Calculate the product mix that generates maximum profit for the company in the given situation and also calculate profit of the company.

Answer 4(c) :

1.   Statement of Contribution and Ranking :

Particulars	Product A (₹)	Product B (₹)
(a) Direct material p.u.	55	60
(b) Direct labour p.u.	35	45
(c) Variable factory overheads p.u.	40	20
(d) Total variable cost per unit [a + b + c]	130	125
(e) Selling price per unit	180	175
(f) Contribution per unit [e – d]	50	50
(g) Machine hours p.u. [c / 4]	10	5
(h) Contribution per machine hour [f / g]	5	10
(i) Ranking for production	II	I

2.   Statement of Optimum Product Mix :

Particulars	No. of units	M/c Hrs. p.u.	Total M/c Hrs.
Total available hours per month			55,000
Less : Used for Product 'B'	6,000	5	(30,000)
Balance hours used for 'A'	2,500	10	25,000

3. **Statement of Profit :**

Particulars	(₹)
Contribution earned from :	
Product A [2,500 units x 50]	1,25,000
Product B [6,000 units x 50]	3,00,000
∴ Total contribution per month	4,25,000
Less : Fixed cost per month	1,40,000
∴ Maximum Profit per month	2,85,000

Question 5(a) : [10 Marks]

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 ₹ 1,800 (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 5(a) : [It was a tricky question]

i) **Calculation of Standard Price of Material** :

Material Price Variance = Actual Qty. x (Std. price - Actual price)

∴ 12,500 (F) = 25,000 kgs. x (Std. Price – 3,12,500/25,000)

∴ 12,500 / 25,000 = Std. Price – 12.50

Hence, Std. Price = ₹ 13.00 per kg.

ii) **Calculation of Material Usage Variance :**

Material Usage Variance = Cost Variance – Price Variance

= 1,800 (A) – 12,500 (F)

= 14,300 (A)

iii) **Calculation of Standard Quantity of Material :**

Material Usage Variance = Std. price x (Std. Qty. - Actual Qty.)

∴ 14,300 (A) = 13 x (Std. Qty. – 25,000)

∴ – 14,300 / 13 = Std. Qty. – 25,000

∴ – 1,100 = Std. Qty. – 25,000

Hence, Std. Qty. = 23,900 kg.

iv) **Calculation of Actual Output :**

This vital information is missing in the question. Without this information, we cannot proceed further. Hence, let's calculate actual output of product 'X'.

Std. Output is 8 units of 'X' from 1 kg of raw material. We can use the above information of Std. Qty. of raw material 23,900 kg. required for actual output to get –

Actual Output = 23,900 kg x 8 unit per kg. = 1,91,200 units of 'X'

v) **Calculation of Labour Cost Variance** :

Std. Time is 15 minutes for a batch of 10 units of output

Hence, standard time required for actual output = 1,91,200 /10 x 15

= 2,86,800 minutes i.e. 4,780 hours

Standard labour cost = Std. Hours x Std. Wage rate

= 4,780 hours x ₹ 50 per hour = ₹ 2,39,000

Actual labour hours = 125 workers x 40 hours per week = 5,000 hours

Skilled labour hours = 5,000 hours x 60% = 3,000 hours and

Semi-skilled labour hours = 5,000 hours x 40% = 2,000 hours

Actual labour cost = Actual hours x Actual wage rate

= (3,000 hrs. x 50) + (2,000 hrs. x 40) = ₹ 2,30,000

Labour Cost Variance = Standard cost – Actual cost

= ₹ 2,39,000 - ₹ 2,30,000 = ₹ 9,000 (F)

vi) **Calculation of Labour Efficiency Variance** :

= Std. Rate x (Std. Hours – Actual hours)

= ₹ 50 per hour x (4,780 – 5,000)

= ₹ 11,000 (A)

vii) **Calculation of Fixed OH Expenditure Variance** :

Note : An information relating to budgeted output during the week is not given in the question. Without this information, we won't be able to calculate the Std. OH Recovery Rate. Hence, I have assumed Standard Output expected in actual hours as Budgeted Output and calculated the following answer :

Standard output in actual hours = 5,000 hours x 60 minutes x 10/15

= 2,00,000 units (i.e. budgeted output)

In reality, budgeted output is different from standard output. However, to solve this question I have assumed both to be the same. Let's see what ICAI assumes.

Budgeted Fixed OH per week   = 76,480 p.m. / 4 weeks = ₹ 19,120

Fixed OH Expenditure Variance = Budgeted OH – Actual OH

                             = 19,120 – 19,500   = ₹ 380 (A)

viii) Calculation of Fixed OH Volume Variance :

           = SRR/unit x (Bud. Output – Acutal ouput)

           = 19,120 / 2,00,000 x (2,00,000 – 1,91,200)

           = 0.0956 x (2,00,000 – 1,91,200)

           = ₹ 841.28 (A) because actual output is lower.

ix)   Calculation of Fixed OH Cost Variance :

           = Expenditure Variance + Volume Variance

           = ₹ 380 (A) + ₹ 841.28 (A)   = ₹ 1,221.28 (A)

Question 5(b) : [5 Marks]

The following information has been obtained from financial accounting and cost accounting records.

Particulars		Financial Accounting (₹)	Cost Accounting (₹)
(i)	Factory Overhead	94,750	90,000
(ii)	Administrative Overhead	60,000	57,000
(iii)	Selling Overhead	55,000	61,500
(iv)	Opening Stock	17,500	22,500
(v)	Closing Stock	12,500	15,000

Required :

Indicate under-recovery and over-recovery and their effects on cost accounting profit.

[Note : You are not required to prepare reconciliation statement.]

Answer 5(b) :

Particulars		Under / Over recovery	Effects on Cost Accounting Profit (₹)
(i)	Factory Overhead	Under recovery	Will increase by 4,750
(ii)	Administrative Overhead	Under recovery	Will increase by 3,000
(iii)	Selling Overhead	Over recovery	Will decrease by 6,500
(iv)	Opening Stock	Over valued	Will decrease by 5,000
(v)	Closing Stock	Over valued	Will increase by 2,500

Important Note :

Under recovery / over recovery concept is generally used in costing for overheads and not for stock. For inventory, we may use the concept of over valuation / under valuation. Let's wait for ICAI answer.

Question 5(c) : [5 Marks]

How does the high employee turnover increase the cost of production? Explain.

Answer 5(c) :

Available at Page 81 – Chapter 3 – Labour Cost – Volume I – Version 4 Notes

Question 6 : Answer any **four** of the following :   **(4 x 5 = 20 Marks)**

(a)   Define cost objects and give examples of any four cost objects.

(b)   Explain what is meant by Practical capacity and Normal capacity. How is normal capacity determined?

(c)   What is meant by Activity Based Management (ABM) and discuss how Activity Based Management can be used in the business?

(d)   Suggest any one basis of re-apportionment of service department overheads over production departments in the following instances.

Cost of Service Department	Basis
(i) Maintenance and Repair Shop	
(ii) Hospital and Dispensary	
(iii) Fire Protection	
(iv) Stores Department	
(v) Transport Department	
(vi) Computer Section	
(vii) Power House (Electric Power Cost)	
(viii) Inspection	
(ix) Tool Room	
(x) Time-keeping	

(e)   How will you treat normal loss, abnormal loss and abnormal gain in process costing? Explain.

Answer 6 :

(a)   Available at Page 7 Cost Unit – Chapter 1 – Basics – Volume I – Version 4 Notes

(b)   Available at Page 117 – Chapter 4 – Overheads – Volume I – Version 4 Notes

(c)   Available at Page 165 – Chapter 5 – ABC – Volume I – Version 4 Notes

(d)   Available at Page 4.15 – Chapter Overheads – Volume I – ICAI Module

(e)   Available at Page 81 – Chapter 10 – Process Costing – Volume II – Version 4 Notes

Disclaimer

1.   There might be some difference in the way of my presentation and ICAI presentation.

2.   If the above answers do not match with ICAI suggested answers (in future), then I will give you a revised version with my comments / corrections (if any).

3.   If you come across with any calculation mistake, typing error or logical error, then you may communicate it to Rakesh Sir on his personal email : ngp.rakesh@gmail.com

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