

CA Intermediate (New Syllabus) Cost & Management Accounting (Paper 3) July 2021 - 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]

Reference : Chapter 2 - Material Cost - ABC Analysis

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.

Answer 1(a) :

- (i) **Statement of Total Inventory Cost and Ranking of items :**

Item code No.	Units	Unit cost (₹)	Total Inventory cost (₹)	% of Total Inventory Cost	Ranking
101	25	50	1,250	16.67	2
102	300	1	300	4.00	6
103	50	80	4,000	53.33	1
104	75	8	600	8.00	4
105	225	2	450	6.00	5
106	75	12	900	12.00	3
	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	Item code No.	Total Inventory cost (₹)	% of Total Inventory Cost	Category
1	103	4,000	53.33	A
2	101	1,250	16.67	
Total A		5,250	70.00	
3	106	900	12.00	B
4	104	600	8.00	
Total B		1,500	20.00	
5	105	450	6.00	C
6	102	300	4.00	
Total C		750	10.00	
Grand Total		7,500	100.00	

Question 1(b) : [5 Marks]

Reference : Chapter 4 - Overhead Cost

SNS Trading Company has Three Main Departments and two Service Departments. The data for each department is given below :

Departments	Expenses (in ₹)	Area in (Sq.Mtr.)	Number of Employees
Main Department :			
Purchase Department	5,00,000	12	800
Packing Department	8,00,000	15	1700
Distribution Department	3,50,000	7	700
Service Departments :			
Maintenance Department	6,40,000	4	200
Personnel Department	3,20,000	6	250

The cost of Maintenance Department and Personnel Department is distributed on the basis of 'Area in Square Metres' and 'Number of Employees' respectively.

You are required to :

- Prepare a Statement showing the distribution of expenses of Service Departments to the Main Departments using the "Step Ladder Method" of Overhead Distribution.
- Compute the Rate per hour of each Main Department, given that, the Purchase Department, Packing Department and Distribution Department works for 12 hours a day, 24 hours a day and 8 hours a day respectively. Assume that there are 365 days in a year and there are no holidays.

Answer 1(b) :

Student Note :

It is assumed that the expenses given in the question are for 1 year and hence, we need to calculate hours for 365 days i.e. for a year.

For step ladder method, it is assumed that Maintenance Dept. expenses will be distributed first and then Personnel Dept.

Schedule Showing the Distribution of Expenses of Service Departments using Step ladder method and Calculation of Rate per Hour :

Particulars	Basis for apportionment	Purchase (₹)	Packing (₹)	Distribution (₹)	Maintenance (₹)	Personnel (₹)
Expenses	Given	5,00,000	8,00,000	3,50,000	6,40,000	3,20,000
Maintenance Department	12:15:7:6	1,92,000	2,40,000	1,12,000	(6,40,000)	96,000
Personnel Department	8 : 17 : 7	1,04,000	2,21,000	91,000	---	(4,16,000)
Total (a)		7,96,000	12,61,000	5,53,000	NIL	NIL
Total Hours (b)		4,380 [12 x 365]	8,760 [24 x 365]	2,920 [8 x 365]		
Rate per hour	(a) / (b)	181.74	143.95	189.38		

Question 1(c) : [5 Marks]

Reference : Chapter 7 - Batch Costing - EBQ

AUX Ltd. has an Annual demand from a single customer for 60,000 Covid-19 vaccines. The customer prefers to order in the lot of 15,000 vaccines per order. The production cost of vaccine is ₹ 5,000 per vaccine. The set-up cost per production run of Covid-19 vaccines is ₹ 4,800. The carrying cost is ₹ 12 per vaccine per month.

You are required to :

- (i) Find the most Economical Production Run.
- (ii) Calculate the extra cost that company incurs due to production of 15,000 vaccines in a batch.

Answer 1(c) :

(i) Calculation of most Economical Production Run

$$\sqrt{\frac{2 \times 60,000 \times ₹ 4,800}{12 \times 12}} = 2,000 \text{ Vaccines}$$

(ii) Calculation of Extra Cost due to processing of 15,000 vaccines in a batch :

Particulars	When run size is 2,000 vaccines	When run size is 15,000 vaccines
(a) Total set up cost	[60,000 / 2,000 x 4,800] = ₹ 1,44,000	[60,000 / 15,000 x 4,800] = ₹ 19,200
(b) Total Carrying cost	$\frac{1}{2} \times 2,000 \times ₹ 144$ = ₹ 1,44,000	$\frac{1}{2} \times 15,000 \times ₹ 144$ = ₹ 10,80,000
(c) Total Cost [a + b]	₹ 2,88,000	₹ 10,99,200

Thus, extra cost = ₹ 10,99,220 - ₹ 2,88,000 = ₹ **8,11,200**

Question 1(d) : [5 Marks]

Reference : Chapter 13 - Marginal Costing - Cost BEP

LR Ltd. is considering two alternative methods to manufacture a new product it intends to market. The two methods have a maximum output of 50,000 units each and produce identical items with a selling price of ₹ 25 each. The costs are :

Particulars	Method - 1 Semi-Automatic (₹)	Method - 2 Fully-Automatic (₹)
Variable cost per unit	15	10
Fixed costs	1,00,000	3,00,000

You are required to calculate :

- (1) Cost Indifference Point in units. Interpret your results.
- (2) The Break-even Point of each method in terms of units.

Answer 1(d) :**(i) Cost Indifference Point :**

$$= \frac{\text{Difference in Fixed cost}}{\text{Difference in Variable cost per unit}}$$

$$= \frac{(3,00,000 - 1,00,000)}{(15 - 10)} = 40,000 \text{ units}$$

Interpretation of Results

At activity level below the indifference points, the alternative with lower fixed costs should be used. At activity level above the indifference point, alternative with lower variable costs should be used.

Range of no. of units	Alternative to be chosen
No. of units \leq 40,000	Method - 1, Semi - Automatic
No. of units \geq 40,000	Method - 2, Fully - Automatic

(ii) Break Even point (in units) :

Particulars	Method - 1	Method - 2
(a) Selling price per unit	25	25
(b) Variable cost per unit	15	10
(c) Contribution per unit [a - b]	10	15
(d) Fixed costs	1,00,000	3,00,000
(e) BEP in units [d / c]	10,000	20,000

Question 2(a) : [10 Marks]

Reference : Chapter 6 - Cost Sheet

The following data relates to manufacturing of a standard product during the month of March, 2021 :

Particulars	Amount (₹)
Stock of Raw material as on 01-03-2021	80,000
Work in Progress as on 01-03-2021	50,000
Purchase of Raw material	2,00,000
Carriage Inwards	20,000
Direct Wages	1,20,000
Cost of special drawing	30,000
Hire charges paid for Plant	24,000
Return of Raw Material	40,000
Carriage on return	6,000
Expenses for participation in Industrial exhibition	8,000
Legal charges	2,500
Salary to office staff	25,000
Maintenance of office building	2,000
Depreciation on Delivery van	6,000
Warehousing charges	1,500
Stock of Raw material as on 31-03-2021	30,000
Stock of Work in Progress as on 31-03-2021	24,000

- Store overheads on materials are 10% of material consumed.
- Factory overheads are 20% of the Prime cost.
- 10% of the output was rejected and a sum of ₹ 5,000 was realized on sale of scrap.
- 10% of the finished product was found to be defective and the defective products were rectified at an additional expenditure which is equivalent to 20% of proportionate direct wages.
- The total output was 8,000 units during the month.

You are required to prepare a Cost Sheet for the above period showing :

- Cost of Raw Material consumed
- Prime Cost
- Works Cost
- Cost of Production
- Cost of Sales

Answer 2(a) :

Student Note : ICAI has given 2 answers for this question. In one answer, ICAI treated 'Hire charges paid for Plant' as Direct Expenses and in another answer, it was treated as 'Indirect Expenses'. It means, ICAI itself is not sure about it. However, ICAI gave marks to both the sets of answers. In my personal opinion, it is an indirect expense, unless it is given for a specific product. The answer given below has treated hire charges for plant as indirect cost.

Statement of Cost for the month of March, 2021

Particulars	(₹)	(₹)
Cost of Raw Material Consumed :		
Raw materials purchased after returns (₹ 2,00,000 - ₹ 40,000)	1,60,000	
Add :Carriage inwards	20,000	
Add : Opening stock of raw materials	80,000	
Less : Closing stock of raw materials	(30,000)	2,30,000
Direct Wages		1,20,000
Direct expenses :		
Cost of special drawing	30,000	30,000
Prime Cost		3,80,000
Hire charges paid for Plant	24,000	
Carriage on return	6,000	
Store overheads (10% of material consumed)	23,000	
Factory overheads (20% of Prime cost)	76,000	
Additional expenditure for rectification of defective products (refer working note)	2,160	1,31,160
Gross factory cost		5,11,160
Add : Opening value of W-I-P		50,000
Less : Closing value of W-I-P		(24,000)
Works / Factory Cost		5,37,160
Less : Realisable value on sale of scrap		(5,000)
Cost of Production		5,32,160
Add : Opening stock of finished goods		-
Less : Closing stock of finished goods		-
Cost of Goods Sold		5,32,160
Administrative overheads (General) :		
Maintenance of office building	2,000	
Salary paid to Office staff	25,000	
Legal Charges	2,500	29,500
Selling overheads :		
Expenses for participation in Industrial exhibition	8,000	8,000
Distribution overheads :		
Depreciation on delivery van	6,000	
Warehousing charges (assumed on finished goods)	1,500	7,500
Cost of Sales		5,77,160

Working Notes :**1. Number of Rectified units**

Total Output	8,000 units
Less : Rejected 10%	<u>800 units</u>
Finished product	<u>7,200 units</u>

Defective units rectified (10% of finished product) 720 units

2. Proportionate additional expenditure on 720 units rectified

- = 20% of proportionate direct wages
- = $0.20 \times (\text{₹ } 1,20,000 / 8,000 \text{ units} \times 720 \text{ units})$
- = ₹ 2,160

Question 2(b) : [5 Marks]

Reference : Chapter 11 - Joint Product - Further processing decision

OPR Ltd. purchases crude vegetable oil. It does refining of the same. The refining process results in four products at the split-off point i.e. S, P, N and A. Product 'A' is fully processed at the split-off point. Product S, P and N can be individually further refining 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 Cost (₹)	Sales at split-off Point (₹)	Sales after further processing (₹)
S	80,000	20,000	1,20,000
P	32,000	12,000	40,000
N	36,000	28,000	48,000
A	-	20,000	-

You are required to identify the products which can be further processed for maximizing profits and make suitable suggestions.

Answer 2(b) :

Decision for further processing of Product S, P and N (using incremental approach) :

Particulars	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
∴ Incremental Profit / (Loss)	20,000	(4,000)	(16,000)

Suggestion : On observing the figures of Incremental Profit / (Loss) one can say that OPR Ltd. is earning additional profit 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 2(c) : [5 Marks]

Reference : Chapter 3 - Labour Cost - Labour Turnover Ratio

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

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.

Answer 2(c) :

(i) Employee Turnover rate

Using Separation method :

$$= \frac{\text{Number of employees Separated during the period}}{\text{Average number of employees during the period on roll}} \times 100$$

$$= \frac{25}{500} \times 100 = \mathbf{5\% \text{ (for 2 months)}}$$

Using Flux method :

$$= \frac{(\text{Number of employees Separated} + \text{Number of employees Replaced during the period})}{\text{Average number of employees during the period on roll}} \times 100$$

$$= \frac{(50 + 25)}{500} \times 100 = \mathbf{15\% \text{ (for 2 months)}}$$

(ii) Equivalent Employee Turnover rate per annum :

$$\text{Using Separate method} = \frac{5\%}{2 \text{ months}} \times 12 \text{ months} = \mathbf{30\%}$$

$$\text{Using Flux method} = \frac{15\%}{2 \text{ months}} \times 12 \text{ months} = \mathbf{90\%}$$

Student Note : There is a logical error in the above question i.e. No. of workers replaced are more than the number of workers left & discharged. It is assumed that no. of workers replaced and joined are same.

Question 3(a) : [10 Marks]

Reference : Chapter 12 - Cost Ledger - Reconciliation of Profit

The Profit and Loss account of ABC Ltd. for the year ended 31st March, 2021 is given below :

Profit and Loss Account
(for the year ended 31st March, 2021)

Particulars	₹	Particulars	₹
To Direct Material	6,50,000	By Sales	15,00,000
To Direct Wages	3,50,000	(15,000 units)	
To Factory overheads	2,60,000	By Dividend received	9,000
To Administrative overheads	1,05,000		
To Selling overheads	85,000		
To Loss on sale of investments	2,000		
To Net Profit	57,000		
	15,09,000		15,09,000

- Factory overheads are 50% fixed and 50% variable.
- Administrative overheads are 100% fixed.
- Selling overheads are completely variable.
- Normal production capacity of ABC Ltd. is 20,000 units
- Indirect expenses are absorbed in the cost accounts on the basis of normal production capacity.
- Notional rent of own premises charged in Cost Accounts is amounting to ₹ 12,000.

You are required to :

- (i) Prepare a Cost Sheet and ascertain the Profit as per Cost Records for the year ended 31st March, 2021.
- (ii) Reconcile the Profit as per Financial Records with Profit as per Cost Records.

Answer 3(a) :

Student Note :

ICAI should have clearly mentioned in the question that **Fixed OH** are charged on the basis of normal production capacity. Because, in the actual solution, only fixed overheads are charged on the basis of normal capacity and variable overheads are charged at actuals. We have a similar question in our classroom notes also.

Working Note :

Calculation of Fixed OH Recovery Rates :

$$\begin{aligned} \text{(a) For Factory Overheads} &= \text{Fixed Factory OH} / \text{Normal Production Capacity} \\ &= (50\% \times 2,60,000) / 20,000 \text{ units} \\ &= ₹ 1,30,000 / 20,000 \text{ units} = ₹ 6.50 \text{ per unit} \end{aligned}$$

$$\begin{aligned} \text{(b) For Administration Overheads} \\ &= ₹ 1,05,000 / 20,000 \text{ units} = ₹ 5.25 \text{ per unit} \end{aligned}$$

(i) 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		14,03,250
Profit (Balancing figure)		96,750
Sales revenue		15,00,000

(ii) Statement of Reconciliation :

Particulars	Add	Less	Total
Profit as per Financial Accounts			57,000
Under absorption of Factory OH in cost accounts [2,60,000 - 2,27,500]	32,500		
Under absorption of Admin. OH in cost accounts [1,05,000 - 78,750]	26,250		
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

Question 3(b) : [10 Marks]

Reference : Chapter 5 - Activity Based Costing

PQR Ltd. is engaged in the production of three products, P, Q and R. The company calculates Activity Cost Rates on the basis of Cost Driver capacity which is provided as below :

Activity	Cost Driver	Cost Driver Capacity	Cost (₹)
Direct Labour hours	Labour hours	30,000 Labour hours	3,00,000
Production runs	No. of Production runs	600 Production runs	1,80,000
Quality Inspections	No. of Inspections	8,000 Inspections	2,40,000

The consumption of activities during the period is as under :

Activity / Products	P	Q	R
Direct Labour hours	10,000	8,000	6,000
Production runs	200	180	160
Quality Inspection	3,000	2,500	1,500

You are required to :

- (i) Compute the costs allocated to each Product from each Activity.
- (ii) Calculate the cost of unused capacity for each Activity.
- (iii) A potential customer has approached the company for supply of 12,000 units of a new product 'S' to be delivered in lots of 1,500 units per quarter. This will involve an initial design cost of ₹ 30,000 and per quarter production will involve the following :

Direct Material	₹ 18,000
Direct Labour hours	1,500 hours
No. of Production runs	15
No. of Quality Inspections	250

Prepare cost sheet segregating Direct and Indirect costs and compute the Sale value per quarter of product 'S' using ABC system considering a mark up of 20% on cost.

Answer 3(b) :

Working notes :

Rate per unit of cost driver :

Direct Labour hours	(₹ 3,00,000/30,000 Labour hours)	₹ 10 per Labour hour
Production runs	(₹ 1,80,000/600 Production runs)	₹ 300 per Production run
Quality Inspection	(₹ 2,40,000/8,000 Inspections)	₹ 30 per Inspection

Unused Capacity

= Total Cost Driver capacity given - Capacity used i.e. consumption of activities

(i) Statement of cost allocation to each product from each activity :

Particulars	P (₹)	Q (₹)	R (₹)	Total (₹)
Direct Labour hours	1,00,000 (10,000 Labour hours x ₹10)	80,000 (8,000 Labour hours x ₹10)	60,000 (6,000 Labour hours x ₹10)	2,40,000
Production runs	60,000 (200 Production runs x ₹ 300)	54,000 (180 Production runs x ₹ 300)	48,000 (160 Production runs x ₹ 300)	1,62,000
Quality Inspections	90,000 (3,000 Insp. x ₹ 30)	75,000 (2,500 Insp. x ₹ 30)	45,000 (1,500 Insp. x ₹ 30)	2,10,000

(ii) Computation of cost of unused capacity for each activity :

Particulars	₹
Direct Labour hours (₹ 3,00,000 - ₹ 2,40,000)	60,000
Production runs (₹ 1,80,000 - ₹ 1,62,000)	18,000
Quality Inspection (₹ 2,40,000 - ₹ 2,10,000)	30,000
Total cost of unused capacity	1,08,000

(iii) Cost sheet and Computation of Sales value per quarter of product 'S' :

Particulars	₹
For 1,500 units of product 'S' to be delivered per quarter :	
Direct Material Cost	18,000
Direct Labour Cost (1,500 Labour hours x ₹ 10)	15,000
Initial design cost per quarter [₹ 30,000 / 12,000 x 1,500 units]	3,750
Direct Costs (A)	36,750
Set up Cost (15 Production runs x ₹ 300)	4,500
Inspection Cost (250 Inspections x ₹ 30)	7,500
Indirect Costs (B)	12,000
Total Cost (A + B)	48,750
Add : Mark-up (20% on cost)	9,750
Sale Value for 1,500 units per quarter	58,500
Selling Price per unit 'S' (₹ 58,500 / 1500 units)	39.00

Question 4(a) : [10 Marks]

Reference : Chapter 10 - Process Costing

A Manufacturing unit manufactures a product 'XYZ' which passes through three distinct Processes – X, Y and Z. The following data is given :

Particulars	Process X	Process Y	Process Z
Material consumed (in ₹)	2,600	2,250	2,000
Direct wages (in ₹)	4,000	3,500	3,000

- The total Production Overheads of ₹ 15,750 was recovered @ 150% of Direct Wages.
- 15,000 units at ₹ 2 each were introduced to Process 'X' .
- The output of each process passes to the next process and finally, 12,000 units were transferred to Finished Stock Account from Process 'Z'.
- No stock of materials or work in progress was left at the end.

The following additional information is given :

Process	% of wastage to normal input	Value of Scrap per unit (₹)
X	6%	1.10
Y	?	2.00
Z	5%	1.00

You are required to :

- Find out the percentage of wastage in process 'Y', given that the output of Process 'Y' is transferred to Process 'Z' at ₹ 4 per unit.
- Prepare Process accounts for all the three processes X, Y and Z.

Answer 4(a) :

Comments : It was a tricky question with some errors in framing the question itself. Actual output of each process is not given in the question. Hence, we have to assume normal loss as actual loss. However, to tally the final output of 12,000 units at the end of Process 'Z', we have to assume a figure of Abnormal Gain units as a balancing figure.

Advise : Stay away from such questions in the exam. It is a speed breaker question.

Process X Account

Particulars	Units	Rate	(₹)	Particulars	Units	Rate	(₹)
To Material Introduced	15,000	2.00	30,000	By Normal Loss A/c [6% x 15,000 units]	900	1.10	990
To Additional material	---		2,600	By Process-Y A/c [Bal. Figure]	14,100		41,610
To Direct wages			4,000				
To Production OH @ 150% DL			6,000				
	15,000		42,600		15,000		42,600

Process Y Account

Particulars	Units	Rate	(₹)	Particulars	Units	Rate	(₹)
To Process X	14,100		41,610	By Normal Loss A/c [see working below]	1,895	2.00	3,790
To Additional material			2,250	By Process Z A/c	12,205	4.00	48,820
To Direct wages			3,500				
To Production OH @ 150% DL			5,250				
	14,100		52,610		14,100		52,610

Calculation for % of wastage in process 'Y' :

Let's consider number of units lost under process 'Y' = A

Total cost – Realisable value from normal loss

Now, $\frac{\text{Total cost – Realisable value from normal loss}}{\text{Inputs units – Normal loss units}} = ₹ 4 \text{ (given)}$

Inputs units – Normal loss units

₹ 52,610 - ₹ 2A

----- = ₹ 4

14,100 units - A

on solving this equation, we will get -

$4 \times (14,100 \text{ units} - A) = 52,610 - 2A$

$56,400 - 4A = 52,610 - 2A$

$56,400 - 52,610 = 4A - 2A$

$\therefore 2A = 3,790$

Hence A = 1,895 units (i.e. normal loss units)

1,895 units

% of wastage = $\frac{1,895 \text{ units}}{14,100 \text{ units}} \times 100 = 13.44\% \text{ of input}$

Process Z Account

Particulars	Units	Rate	(₹)	Particulars	Units	Rate	(₹)
To Process-Y	12,205	4.00	48,820	By Normal Loss A/c [5% x 12,205 units]	610	1.00	610
To Additional material			2,000	By Process Z A/c [see working below]	12,000	4.9771	59,726
To Direct wages			3,000				
To Production OH @ 150%			4,500				
To Abnormal gain (wn below)	405	4.9771	2,016				
	12,610		60,336		12,610		60,336

Cost per unit of completed units from Process Z :

$$\frac{\text{Total Cost} - \text{Realisable value from normal loss}}{\text{Inputs units} - \text{Normal loss units}} = \frac{₹ 58,320 - ₹ 610}{12,205 - 610 \text{ units}} = ₹ 4.9771 \text{ (approx)}$$

Abnormal Gain (Bal. Fig.) = (610 + 12,000 units) - 12,205 units = 405 units

Question 4(b) : [5 Marks]

Reference : Chapter 9 - Service Costing

MRSL Healthcare Ltd. has incurred the following expenditure during the last year for its newly launched 'COVID-19' Insurance policy :

Office administration cost	48,00,000
Claim management cost	3,80,000
Employee cost	16,20,000
Postage and logistics	32,40,000
Policy issuance cost	29,50,000
Facilities cost	46,75,000
Cost of marketing of the policy	1,38,90,000
Policy development cost	35,00,000
Policy servicing cost	96,45,000
Sales support expenses	32,00,000
I.T. Cost	?

Number of Policy sold : 2,800

Total insured value of policies = ₹ 3,500 Crores

Cost per rupee of insured value = ₹ 0.002

You are required to :

- (i) Calculate Total Cost for "COVID-19" Insurance policy segregating the costs into four main activities namely : (a) Marketing and Sales support (b) Operations (c) I.T. Cost and (d) Support functions.
- (ii) Calculate Cost Per Policy.

Student Note :

You have to first calculate total cost as = (total insured value x cost per rupee of insured value) i.e. 7 crores. Then you will get IT Cost as balancing figure.

Answer 4(b) :

(i) Calculation of total cost for 'COVID-19' Insurance policy :

	Particulars	Amount (₹)	Amount (₹)
a.	Marketing and Sales support :		
	- Policy development cost	35,00,000	
	- Cost of marketing of the policy	1,38,90,000	
	- Sales support expenses	32,00,000	2,05,90,000
b.	Operations :		
	- Policy issuance cost	29,50,000	
	- Policy servicing cost	96,45,000	
	- Claim management cost	3,80,000	1,29,75,000
c.	IT Cost *(Bal. Fig.)		2,21,00,000
d.	Support functions :		
	- Postage and logistics	32,40,000	
	- Facilities cost	46,75,000	
	- Employees cost	16,20,000	
	- Office administration cost	48,00,000	1,43,35,000
	Total Cost (₹ 3,500 crores x 0.002)		7,00,00,000

(ii) Calculation of cost per policy = $\frac{\text{Total cost ₹ 7,00,00,000}}{\text{No. of policies 2,800}} = ₹ 25,000$

Question 4(c) : [5 Marks]

Reference : Chapter 8 - Contract Costing

Brick Constructions Ltd. commenced a contract on April 1, 2020. The contract was for ₹ 10,00,000. The following information relates to the Contract as on 31st March, 2021 :

- The value of work completed up to Feb. 28, 2021 was certified by the architect and as a matter of policy, the Contractee has retained ₹ 1,30,000 as retention money which is 20% of the certified work and paid the balance amount.
- The cost of work completed subsequent to the architect's certificate was of ₹ 30,000.
- The expenditure incurred related to material purchase, wages and other chargeable expenses were ₹ 5,10,000.
- Materials of the value of ₹ 20,000 were lying on the site.
- A special plant was purchased specifically for this contract at ₹ 40,000 and after use on this contract till 31st March, 2021, it was valued at ₹ 25,000.

You are required to compute the value of Work Certified, Cash received for certified work and Notional profit of the contract for the year ended on 31st March, 2021.

Answer 4(c) :

1. Value of Work Certified

₹ 1,30,000

$$= \frac{\text{-----}}{20\%} = ₹ 6,50,000$$

2. Cash Received

= Value of Work certified – Retention Money

$$= 6,50,000 - 1,30,000 = ₹ 5,20,000$$

3. Notional Profit

= (Value of Work certified + Cost of work uncertified) – Total cost incurred

$$= (6,50,000 + 30,000) - [5,10,000 + (40,000 - 25,000) - 20,000]$$

$$= 6,80,000 - 5,05,000$$

$$= ₹ 1,75,000$$

Question 5(a) : [10 Marks]

Reference : Chapter 14 - Standard Costing

The standard output of a Product 'DJ' is 25 units per hour in manufacturing department of a Company employing 100 workers. In a 40 hours week, the department produced 960 units of product 'DJ' despite 5% of the time paid was lost due to an abnormal reason. The hourly wage rates actually paid were ₹ 6.20, ₹ 6.00 and ₹ 5.70 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 ₹ 240 (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 5(a) :

Student Note :

- Three variance method is used. Efficiency variance is calculated using Actual Hours **Worked** and not Paid.
- Labour Yield Variance = Sub-efficiency variance like sub-usage variance.
- Labour Cost Variance = Rate + Efficiency + Idle Time variance and
- Efficiency Variance = Gang + Yield variance (based on actual hours worked).
- All 100 workers together working in a team will produce 25 units in 1 gang hour.
- Convert gang hours in to labour hours before calculation of variances.
- Standard wage rate is missing and has to be calculated using Efficiency Variance. You will get Std. wage rate as ₹ 6 per hour. Calculate this answer first and then you will get the remaining answers.

Working Notes :**1. Calculation of Standard Man hours for actual output**

100 workers are expected to produce 25 units in 1 hour i.e. std. output per gang hour.

Hence, for actual output of 960 units, we need -

$$960 \text{ units} / 25 \text{ units per hour} = 38.4 \text{ std. gang hours}$$

Hence, standard man hours shall be = $38.4 \times 100 \text{ workers} = 3,840 \text{ hours}$

2. Calculation of actual labour hours and actual cost :

The workers have worked for one week of 40 hours. Hence, each worker in the gang will be paid for 40 hours. The calculation of actual cost is shown in the table below :

Type of Workers	No. of Workers	Actual Hours Paid	Rate/hr. (₹)	Amount Paid (₹)	Abnormal idle time hours	Actual Hours Worked
	a	b = a x 40	c	d = b x c	e = b x 5%	f = b - e
Group 'A'	10	400	6.2	2,480	20	380
Group 'B'	30	1,200	6.0	7,200	60	1,140
Group 'C'	60	2,400	5.7	13,680	120	2,280
Totals	100	4,000		23,360	200	3,800

3. Calculation of Standard wage Rate :

$$\text{Labour Efficiency Variance} = 240 \text{ (F)}$$

$$\text{SR} \times (\text{Standard hours} - \text{Actual Hours Worked}) = 240 \text{ (F)}$$

$$\text{SR} \times (3,840 - 3,800) = 240$$

$$\text{Standard Rate (SR)} = 240 / 40 = ₹ 6 \text{ per hour}$$

(i) Total Labour Cost Variance

$$= (\text{Standard hours} \times \text{Standard Rate}) - (\text{Actual Hours Paid} \times \text{Actual rate})$$

$$= (3,840 \times 6) - 23,360 \text{ (WN 2)} = ₹ 320 \text{ (A)}$$

(ii) Total Labour Rate Variance

$$= (\text{Standard Rate} - \text{Actual Rate}) \times \text{Actual Hours paid}$$

$$\text{Group 'A'} = (6 - 6.2) \times 400 = 80 \text{ (A)}$$

$$\text{Group 'B'} = (6 - 6) \times 1,200 = \text{NIL}$$

$$\text{Group 'C'} = (6 - 5.7) \times 2,400 = 720 \text{ (F)}$$

$$640 \text{ (F)}$$

(iii) Total Labour Gang Variance (i.e. Mix Variance)

$$= \text{Std. Rate} \times (\text{Std. Mix} - \text{Actual Mix})$$

Note : In the given question, the standard wage rate for all the types of workers is same, hence there is no question of any variance.

Hence, Gang Variance = NIL

ICAI has given the same answer in a complicated manner.

(iv) Total Labour Yield Variance (i.e. sub-efficiency variance)

As Gang Variance is NIL, Labour Yield Variance = Labour Efficiency Variance
 = Standard Rate x [Standard Hours – Actual Hours Worked]
 = 6 x (3,840 – 3,800) = ₹ 240 (F)

(v) Total Labour idle time variance

= Total Idle hours x Standard rate per hour
 = 200 hours x 6 = ₹ 1,200 (A)

Question 5(b) : [10 Marks]

Reference : Chapter 15 - Budgetary Control

PSV Ltd. manufactures and sells a single product and estimated the following related information for the period November, 2020 to March, 2021.

Particulars	Nov. 20	Dec. 20	Jan. 21	Feb. 21	March 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 :

- Sales Budget (in ₹)
- Production budget (in units) and
- Raw material Budget for Raw material 'A' and 'B' separately (in units)

Answer 5(b) :

Student Notes :

- Opening stock of FG of next month = Closing stock of FG of the previous month
- Part (iii) of the question says 'Raw Material Budget'. It is not mentioned whether it is a 'Consumption Budget' or 'Purchase Budget'. Considering the information available in the question, it is possible to prepare only Raw Material consumption Budget.

(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. 20	Dec. 20	Jan. 21	Feb. 21	Mar. 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.) [(a) x 2 kg.]	51,000	82,000	74,000	46,000	88,000
(c) Consumption of RM 'B' (kg.) [(a) x 3 kg.]	76,500	1,23,000	1,11,000	69,000	1,32,000

Question 6 : Theory Questions

Answer any four of the following : [4 Que. x 5 Marks each = 20 Marks]

- (a) Specify the types of Responsibility centres under the following situations :
- Purchase of bonds, stocks, or real estate property.
 - Ticket counter in a Railway station.
 - Decentralized branches of an organisation.
 - Maharatna, Navratna and Miniratna public sector undertaking (PSU) of Central Government.
 - Sales Department of an organization.
- (b) What is Margin of Safety? What does a large Margin of Safety indicates? How can you calculate Margin of Safety?
- (c) Rowan Premium Bonus system does not motivate a highly efficient worker as a less efficient worker and a highly efficient worker can obtain same bonus under this system. Discuss with an example?
- (d) What do you understand by Build-Operate-Transfer (BOT) approach in Service Costing? How is the toll rate computed?
- (e) Write a short note on VED analysis of Inventory Control.

Answer 6 :

(a) **Types of Responsibility Centre :**

Particulars	Types of Centre
(i) Purchase of bonds, stocks, or real estate property	Investment Centre
(ii) Ticket counter in a Railway station	Revenue Centre
(iii) Decentralized branches of an organization	Profit Centre
(iv) Maharatna, Navratna and Miniratna public sector undertaking (PSU) of Central Government	Investment Centre
(v) Sales Department of an organization	Revenue Centre

(b) **Margin of Safety :** The margin of safety can be defined as the difference between the expected level of sales and the breakeven sales.

The larger the margin of safety, the higher is the chances of making profits.

The Margin of Safety Sales can be **calculated as :**

Margin of Safety Sales = Projected or Actual sales – Breakeven sales

It also can also be calculated as :

$$\text{Margin of Safety} = \frac{\text{Profit}}{\text{P/V Ratio}}$$

(c) **Rowan Premium Plan :** According to this system a standard time allowance is fixed for the performance of a job and bonus is paid if time is saved. Under Rowan System, the bonus is the proportion of the time wages as time allowed of basic wages.

$$\text{Bonus} = \frac{\text{Time Saved}}{\text{Time Allowed}} \times (\text{Time taken} \times \text{Rate per hour})$$

Example to explain efficiency of worker and amount of bonus :

Time rate (per hour)	₹ 60
Time allowed	8 hours
Time taken by 'X'	6 hours
Time taken by 'Y'	2 hours

$$\text{Bonus} = \frac{\text{Time Saved}}{\text{Time Allowed}} \times (\text{Time taken} \times \text{Rate per hour})$$

$$\text{For 'X'} = \frac{2 \text{ hours}}{8 \text{ hours}} \times (6 \text{ hours} \times ₹ 60) = ₹ 90$$

$$\text{For 'Y'} = \frac{6 \text{ hours}}{8 \text{ hours}} \times (2 \text{ hours} \times ₹ 60) = ₹ 90$$

From the above example, it can be concluded that a highly efficient worker 'Y' will get the same amount of bonus as less efficient worker 'X' under Rowan system.

(d) Build-Operate-Transfer (BOT) Approach : In recent years a growing trend emerged among Governments in many countries to solicit investments for public projects from the private sector under BOT scheme. BOT is an option for the Government to outsource public projects to the private sector.

With BOT, the private sector designs, finances, constructs and operate the facility and eventually, after specified concession period, the ownership is transferred to the Government. Therefore, BOT can be seen as a developing technique for infrastructure projects by making them amenable to private sector participation.

Toll Rate : In general, the toll rates should have a direct relation with the benefits that the road users would gain from its improvements. The benefits to road users are likely to be in terms of fuel savings, reduction in travel time and good riding quality.

To compute the toll rate, following formula may be used

$$= \frac{\text{Total Cost + Profit}}{\text{Number of Vehicles}}$$

(e) Vital, Essential and Desirable (VED) : Under this system of inventory analysis, inventories are classified on the basis of its critically for the production function and final product. Generally, this classification is done for spare parts which are used for production.

- (i) **Vital** - Items are classified as vital when its unavailability can interrupt the production process and cause a production loss. Items under this category are strictly controlled by setting re-order level.
- (ii) **Essential** - Items under this category are essential but not vital. The unavailability may cause sub-standard performance and loss of efficiency in production process. Items under this category are reviewed periodically and get the second priority.
- (iii) **Desirable** - Items under this category are optional in nature; unavailability does not cause any production or efficiency loss.

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