Time Allowed: 3 Hours **Full Marks: 100**

The figures in the margin on the right side indicate full marks.
Where considered necessary, suitable assumptions may be made and
clearly indicated in the answer.
Answer Question No. 1 and any five from Question No. 2, 3, 4, 5, 6, 7 and 8.

SECTION - A

(Compulsory)

1. (a)

(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)	(xi)	(xii)
c	b	b	c	c	d	a	d	a	c	a	c

(b)

(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)
False	False	True	True	True	True	True

(c)

(i)	(ii)	(iii)	(iv)	(v)	(vi)
Sunk Cost	Fixed Cost	Capacity	Master budget	Cost Control	Allocation

SECTION - B

(Answer any five questions)

2. (a)

Cost Sheet

for the period of six months ending 31st December, 2023

	₹
Materials used	1,50,000
Direct wages	1,20,000
Prime Cost	2,70,000
Factory overhead expenses	24,000
Works or Factory Cost	2,94,000
Office expenses	17,640
Cost of Production	3,11,640

$$\% \text{ of factory overhead to direct wages} = \frac{\text{Factory overheads}}{\text{Direct Wages}} \times 100 = \frac{24,000}{1,20,000} \times 100 = 20\%$$

$$\% \text{ of factory overhead to factory cost} = \frac{\text{Office overheads}}{\text{Factory cost}} \times 100 = \frac{17,640}{2,94,000} \times 100 = 6\%$$

Statement showing the Quotation of price of a Machine

	₹
Materials	1,250.00
Wages	750.00
Prime Cost	2,000.00
Factory overhead (20% on wages)	150.00
Factory Cost	2,150.00
Office Overhead (6% on Factory Cost)	129.00
Total Cost or Cost of Production	2,279.00
*Profit (25% of total cost)	569.75
Selling Price	2,848.75

*Profit of 20% on selling price is equal to 25% of total cost.

(b) (i) All expenditures other than those incurred for procurement of material and labour are termed as 'expenses'. Expenses can be classified direct expense or indirect expense. This classification is based on whether the expense is traceable to cost centre or cost unit. Expenses or costs which can be allocated to a cost centre or cost unit are referred as direct expense.

(ii) Paragraph 4.4 of CAS 10 defines direct expenses as expenses relating to manufacture of a product or rendering a service, which can be identified or linked with the cost object other than direct material cost and direct employee cost. It is also important to note that Paragraph 5.1 of CAS 10 states that identification of Direct Expenses shall be based on traceability in an economically feasible manner.

(iii) Any four 'principles of measurement' as mentioned in Para 5 of CAS 10

3. (a)

(i)	Re-order quantity	=	$\sqrt{\frac{2AO}{C}} = \sqrt{\frac{2 \times 7,500 \times 12 \times 500}{60 \times 10\%}} = 3,873$ units.
(ii)	Re-order level	=	Maximum Re-order Period × Maximum Usage 8 weeks × 750 unit per week = 6,000 units

(iii)	Minimum stock level	=	Re-order Level – {Normal Usage × Normal Reorder Period} 6,000 – (500 × 6.5) = 2,750 units
(iv)	Maximum stock level	=	Re-order Level + Re-order Quantity – (Minimum Usage × Minimum Re-order Period) 6,000 + 3,873 – (250 × 5) = 8,623 units.
(v)	Average stock level	=	$\frac{1}{2}$ (Minimum Stock level + Maximum Stock Level) $\frac{1}{2}$ (2,750 + 8,623) = 5,687 units. Or Minimum Level + $\frac{1}{2}$ Re-order quantity = 2,750 + 1,937 = 4,687 units.

(b) Standard production = 1000 units per

Actual production:

Worker A = 850 units, efficiency level = 850/1000 x 100 = 85%

Worker B = 750 units, efficiency level = 750/1000 x 100 = 75%

Worker C = 950 units, efficiency level = 950/1000 x 100 = 95%

Statement showing total Remuneration of Workers

Particulars	Worker A (₹)	Worker B (₹)	Worker C (₹)
Normal piece rate wages [₹10 per unit]	850 units x ₹10 per unit 8500	750 units x ₹10 per unit 7500	950 units x ₹10 per unit 9500
Bonus	₹10 x 5 = 50	--	₹10 x 15 = 150
Dearness pay	50	50	50
Total	8600	7550	9700

*As per the example, bonus will be paid only if the efficiency exceeds 80%. For A and C the efficiency exceeds 80% and hence they will be entitled for a bonus of ₹10 per percentage exceeding 80%. B will not be entitled for any bonus as his production efficiency does not exceed 80%.

4. (a) In case the service departments in addition to rendering services to the production departments, also render services to other service departments. In other words, the service department, S1 and S2 render services to each other besides rendering services to the production departments. For example, the Canteen Department which is a service department as it caters to the employees from various production departments but the staff of the Maintenance Department (which is also a service department) also enjoys the services of the Canteen. Thus there may be reciprocal arrangements between the service departments. Hence share of overhead expenses of S1 and S2 should be charged to each other along with the production departments. The following method are used under Reciprocal Methods.

- Repeated Distribution Method: - Under this method, services rendered by services departments to the production departments and other services departments are quantified in the form of percentages. The services departments costs are reapportioned to the production departments on the basis of these percentages. The process is repeated again and again till a negligible figure is reached. This method becomes complicated for calculation if the figures are too large.
- Simultaneous Equation Method: - This is an algebraic method in which simultaneous equations are formed and amount of overhead expenses of each service department are found out, by solving the equations. The total expenses thus obtained are then directly transferred to the production departments. This is a non-iterative method and is thus suitable and more accurate.

Solution on the basis of Simultaneous Equation Method (as asked for in the sum)
Let x be the expense of Department S
and y be the expense of Department T

Then $x = ₹8.000 + \frac{1}{5}$ th of y (20% of y)

$Y = ₹3.900 + \frac{1}{10}$ th of x

Putting the value of x we get:

$y = ₹\ 13{,}900 + \frac{1}{10}$ of $(8{,}000 + \frac{1}{5}$ of y)

Or. $y = ₹\ 13.900 + ₹800 + \frac{1}{50}$ y

Or, $y = ₹14.700 + \frac{1}{50}$ y, or $50\ y = 7{,}35{,}000 + y$

Or, 50y – y = ₹ 7,35,000 or, y = ₹ $\frac{7,35,000}{49}$ = 15,000

Putting the value of y we get

x = Rs 8,000 + $\frac{1}{5}$ th of y, or, x = ₹ 8,000 + $\frac{1}{5}$ of ₹15,000

or x = ₹ 8,000 + Rs, 3,000, or x = ₹11,000

Total expenses of Dept. S = ₹11,000

Total expenses of Dept. T = ₹15,000

Overhead Distribution Summary

Particulars	A (₹)	B (₹)	C (₹)	S (₹)	T (₹)
Total as per					
Primary Distribution	25,000	31,000	28,000	8,000	13,900
Distribution of Expenses of Dept. S in the ratio 3:2:4:1	3,300	2,200	4,400	-11,000	1,100
Distribution of Expenses of Dept. T in the ratio 8:3:5:4	6,000	2,250	3,750	3,000	-15,000
	34,300	35,450	36,150	---	---

(b) Reconciliation Statement

Particulars	Amount (₹)	Amount (₹)
Profit as per cost accounts		2,91,000
Add:		
Over-recovery of selling overheads	39,000	
Over-valuation of opening stock in cost accounts	30,000	
Interest earned not recorded in cost a/cs	7,500	
Rent received not recorded in cost a/cs	54,000	
Total		1,30,500
Total		4,21,500
Under recovery of work overheads	19,000	
Under recovery of administrative overheads	45,500	
Over-valuation of closing stock in cost a/cs	15,000	
Bad debts not recorded in cost a/cs	18,000	
Preliminary expenses written off not recorded in cost a/cs	36,000	
Total		1,33,500
Profit as per Financial Accounts		2,88,000

5. (a) (i) In order to draw up Job Cost Sheet, the factory overhead rates of different departments and percentage of selling cost will have to be determined first on the basis of previous year's figures as follows:

Factory Overhead Recovery Rates based on Labour Hours

Direct Wages ₹ 5.50

Labour Hours 22 hours $\left(\frac{₹\ 5.50}{₹\ 0.25\ per\ hour}\right)$

	Department A		Department B		Department C	
Direct Wages		₹ 5,000		₹ 6,000		₹ 4,000
∴ Labour Hours	$\left(\frac{₹\ 5,000}{₹\ 0.25\ per\ hour}\right)$	20,000	$\left(\frac{₹\ 6,000}{₹\ 0.25\ per\ hour}\right)$	24,000	$\left(\frac{₹\ 4,000}{₹\ 0.25\ per\ hour}\right)$	16,000
Factory Overheads		₹ 2,500		₹ 4,000		₹ 1,000
Factory Overhead Rate per Labour Hour	$\left(\frac{₹\ 2,500}{20,000}\right)$	₹ 0.125	$\left(\frac{₹\ 4,000}{24,000}\right)$	₹ 0.167	$\left(\frac{₹\ 1,000}{16,000}\right)$	₹ 0.063

(ii) **Cost Sheet of Previous Year**

	Amount (₹)
Materials Used	77,500
Direct Wages (A = ₹ 5,000, B = ₹ 6,000, C = ₹ 4,000)	15,000
Prime Cost	92,500
Factory Overhead (A = ₹ 2,500, B = ₹ 4,000, C = ₹ 1,000)	7,500
Factory Cost	1,00,000
Selling Overhead	30,000
Cost of Sales	1,30,000

Percentage of Selling Overhead on Works Cost = $\frac{₹\ 30,000}{₹\ 1,00,000} x100 = 30\%$

(iii) Cost Sheet of the Current Year (Job No. 3286)

Particulars		**Amount (₹)**
Materials		12.08
Direct Wages		
- Department A	10 hours x ₹ 0.25 = ₹ 2.50	
- Department B	4 hours x ₹ 0.25 = ₹ 1.00	
- Department C	8 hours x ₹ 0.25 = ₹ 2.00	5.50
Prime Cost		17.58
Factory Overhead		
- Department A	10 hours x ₹ 0.125 = ₹ 1.25	
- Department B	4 hours x ₹ 0.167 = ₹ 0.67	
- Department C	8 hours x ₹ 0.063 = ₹ 0.50	2.42
Factory Cost		20.00
Selling Overhead	₹ 20 x 30%	6.00
Cost of Sales		26.00
Profit (10% x ₹ 26.00)		2.60
Selling Price		28.60

(b) Calculation of Cost of Materials Issued to site

		₹
	Materials consumed	1,65,000
Add:	Materials stolen	10,000
	Materials returned to stores	5,000
	Materials in hand (31.12.2017)	15,000
		1,95,000

Contract Account
for the year ended 31 Dec. 2022

Dr. Cr.

	₹		₹
To Materials issued to site	1,95,000	By Materials returned to stores	5,000
To Direct Expenses	5,000	By Insurance claim A/c (Loss of Stock)	6,000
To Wages	30,000	By Profit and Loss A/c	4,000

To Works Expenses 20% of wages	6,000	By Materials in hand (Stolen ₹ 10,000-₹6.000)	15,000
To Office Expenses 10% of Works Cost (Note 1)	21,000	By Cost of Contract Balancing Figure)	2,31,000
To Depreciation on Plant (Note 2)	4,000		
	2,61,000		2,61,000
To Cost of Contract b/d	2,31,000	By Work in Progress:	
To Notional Profit	80,000	Work certified	3,00,000
		Work uncertified	11,000
	3,11,000		3,11,000
To Profit & Loss A/c (Note 3)	48,000	By Notional Profit	80.000
To Profit Reserve	32,000		
	80,000		80.000

Working Notes:

1. Calculation of works cost

	₹
Materials consumed	1,65,000
Add: Direct Wages	30,000
Direct Expenses	5,000
Prime Cost	2,00,000
Add: Works expenses	6,000
Deprecation	4,000
	2,10,000

6. (a)

Crushing Process Account

Particulars	Tons	Amount ₹	Particulars	Tons	Amount ₹
To Copra	2000	1,00,000	By Copra Sacks	-	2,000
To Labour		10,000	By Copra Residue	250	5,000
To Sundry Materials		4,000	By Loss in Crushing (Balancing Figure)	50	-
To Electric Power		3,000	By Transfer to Refining @ ₹ 70 per ton	1,700	1,19,000
To Steam		2,000			
To Repairs of Machines		2,000			
To Factory Expenses		5,000			
	2000	**1,26,000**		**2000**	**1,26,000**

Refining Process Account

Particulars	Tons	Amount ₹	Particulars	Tons	Amount ₹
To Crushing Process A/c	1700	1,19,000	By Sale of by Products	120	5,100
To Labour		6,000	By Loss in Refining Process (Balancing Figure)	40	-
To Sundry Materials		3,000			-
To Electric Power		2,000	By Transfer to Finishing @ ₹ 85 per ton	1,540	1,30,900
To Steam		2,000			
To Repairs of Machines		1,000			
To Factory Expenses		3,000			
	1700	**1,36,000**		**1700**	**1,36,000**

Finishing Process Account

Particulars	Tons	Amount ₹	Particulars	Tons	Amount ₹
To Refining Process A/c	1540	1,30,900	By Loss in Finishing (Balancing Figure)	40	-
To Labour		4,000	By Cost of Production Transferred to Finished Oil A/c ₹ 95 per ton	1,500	1,42,500
To Sundry Materials		2,000			
To Electric Power		1,600			
To Steam		1,500			
To Repairs of Machines		500			
To Factory Expenses		2,000			
	1540	**1,42,500**		**1,540**	**1,42,500**
To Cost of Production of Finished Oil	**1,500**	**1,42,500**	By Total Cost @ ₹ 100 per Ton	**1,500**	**1,50,000**
To Cost of Casks		**7,500**			
	1,500	**1,50,000**		**1,500**	**1,50,000**

Working Notes: *Factory overhead of ₹10,000 is apportioned in the ratio of labour cost i.e., 5:3:2.

(b) (i) Calculation of cost per tonne km

Statement showing computation of total cost per tonne kilometer for carrying finished goods to warehouses

Particulars	A	B
Time for travelling	40 Min	60 Min
Time for loading	40 Min	40 Min
Time for unloading	30 Min	20 Min
	110 Min	120 Min

	₹	₹
Cost of Insurance, wages, tax, etc. [(110/60) × 18]	33	
[(120/60) × 18]		36
Fuel & oil etc. (20 × 2.4) (30 × 2.4)	48	72
Total Cost	81	108
Tonne Kilometers (5 × 10)// (5 × 15)	50	75
Cost per tonne KM	**₹ 1.62**	**₹ 1.44**

(ii) Composite unit can be calculated in two ways; 'Absolute (weighted average)' basis and 'Commercial (simple average)' basis. - Sometime two measurement units are combined together to know the cost of service or operation. These are called composite cost units. For example, a public transportation undertaking would measure the operating cost per passenger per kilometer.

Examples of Composite units are Ton- km., Quintal- km, Passenger-km., Patient- day etc. Composite unit may be computed in two ways.

- Absolute (Weighted Average) basis
- Commercial (Simple Average) basis.

In both bases of computation of service cost unit, weightage is also given to qualitative factors rather quantitative (which are directly related with variable cost elements) factors alone.

- Weighted Average or Absolute basis – It is summation of the products of qualitative and quantitative factors.
- Simple Average or Commercial basis – It is the product of average qualitative and total quantitative factors. For example, in case of goods transport, Commercial Ton-Km is arrived at by multiplying total distance km., by average load quantity.

In both the example, variable cost is dependent of distance and is a quantitative factor. Since, the weight carried does not affect the variable cost hence and is a qualitative factor.

7. (a)

Particulars	₹	₹
Revenues		6,00,000
Deduct variable costs:		
Cost of goods sold	3,00,000	
Sales commissions	60,000	
Other operating costs	30,000	3,90,000
Contribution margin		2,10,000
Contribution margin percentage =	210000/600000	= 0.35

Incremental revenue	(15% × 600,000) =	90000	
Incremental contribution margin	(35% × 90,000)		31,500
Incremental fixed costs (advertising)			13,000
Incremental operating income			18,500

If Mr. Lurvey spends ₹13,000 more on advertising, the operating income will increase by ₹18,500, decreasing the operating loss from ₹ 49,000 to an operating loss of ₹30,500.

Check (optional)

Particulars			₹	₹
Revenues	(115% × 600,000)			6,90,000
Cost of goods sold	(50% of sales)			3,45,000
Gross margin				3,45,000
Operating costs:				
Salaries and wages			1,70,000	
Sales commissions		(10% of sales)	69,000	
Depreciation of equipment and fixtures			20,000	
Store rent			54,000	
Advertising			13,000	
Other operating costs:				
Variable	(30000×690000)÷600000		34,500	
Fixed			15,000	3,75,500
Operating income				30,500

(b) (i) Production Budget

Product	A	B
Sales	2000	1500
Opening Stock	(100)	(200)
Closing Stock (10% x Sales level)	200	150
	2100	1450

(ii) Material Usage Budget

Material Type	X	Y
(2100 x2) + (1450 x 3)	8550	
2100 x1) + (1450 x 4)		7900

(iii) Material Purchases Budget

Product	X	Y
Material Usage Budget	8550	7900
Opening Stock	(300)	(1000)
Closing Stock [a]	850	800
	9100 x ₹10 = ₹ 91000	1450 x ₹= ₹ 53900

(iv) Labour Budget

Material Type	X	Y
(2100 x4) + (1450 x 2)	11,300	
2100 x2) + (1450 x 5)		11,450
11,300 x ₹12 11,450 x ₹ 8	₹ 1,35,600	 ₹ 91,600

Note:

[a] Material Closing Stock

Material X (2000 x 2 + 1500 x 3) x 10% = 850

Material Y (2000 x 1 + 1500 x 4) x 10% = 850

8. (a) The following calculation are required for a submitting a comprehensive report to Mr Hardik which covers the analysis of the variances calculated.

Working note

A. $Actual\ hours\ worked\ (in\ actual\ mix) \times Actual\ rate$

Skilled – 13 workers × 40 hrs × ₹4.80 per hour = 2496

Semi-skilled - 4 workers × 40 hrs × 3.40 per hour = 544

Unskilled – 3 workers × 40 hrs × 2.60 per hour = 312

3352

B. $Actual\ hours\ worked\ (in\ actual\ mix) \times Standard\ rate$

Skilled – 13 workers × 40 hrs × ₹5.00 per hour = 2600

Semi-skilled - 4 workers × 40 hrs × 3.20 per hour = 512

Unskilled – 3 workers × 40 hrs × 2.80 per hour = 336 **3448**

C. $Actual\ hours\ worked\ (in\ standard\ mix) \times Standard\ rate$

Skilled – 10 workers × 40 hrs × ₹5.00 per hour = 2000

Semi-skilled - 5 workers × 40 hrs × 3.20 per hour = 640

Unskilled – 5 workers × 40 hrs × 2.80 per hour = 560

3200

D. $Actual\ hours\ paid\ (in\ actual\ mix) \times Standard\ rate$

Skilled – 10 workers × 38 hrs × ₹5.00 per hour = 1900

Semi-skilled –5 workers × 38 hrs × 3.20 per hour = 608

Unskilled – 5 workers × 38 hrs × 2.80 per hour = 532

3040

E. $Standard\ labour\ cost\ for\ actual\ yield$

$$\frac{40\ hrs \times (10 \times 5.00\ per\ hr + 4 \times 3.20\ per\ hr + 3 \times 2.60\ per\ hr)}{1000\ units} \times 960\ units = \mathbf{3072}$$

And

$Labour\ cost\ variance$

$= (Actual\ hours\ worked \times Actual\ rate)$

$- \ Standard\ labour\ cost\ for\ actual\ yield$

$= A - E = \mathbf{280}\ (\boldsymbol{A})$

$Labour\ rate\ variance$

$= (Actual\ hours\ worked \times Actual\ rate)$

$- (Actual\ hours\ worked \times Standard\ rate$

$= A - B = \mathbf{96}\ (\boldsymbol{F})$

$Labour\ idle\ time\ variance$

$= ((hours\ paid - hours\ worked)$

$\times\ standard\ direct\ labour\ rate\ per\ hour)$

$= C - D = \mathbf{160}\ (\boldsymbol{A})$

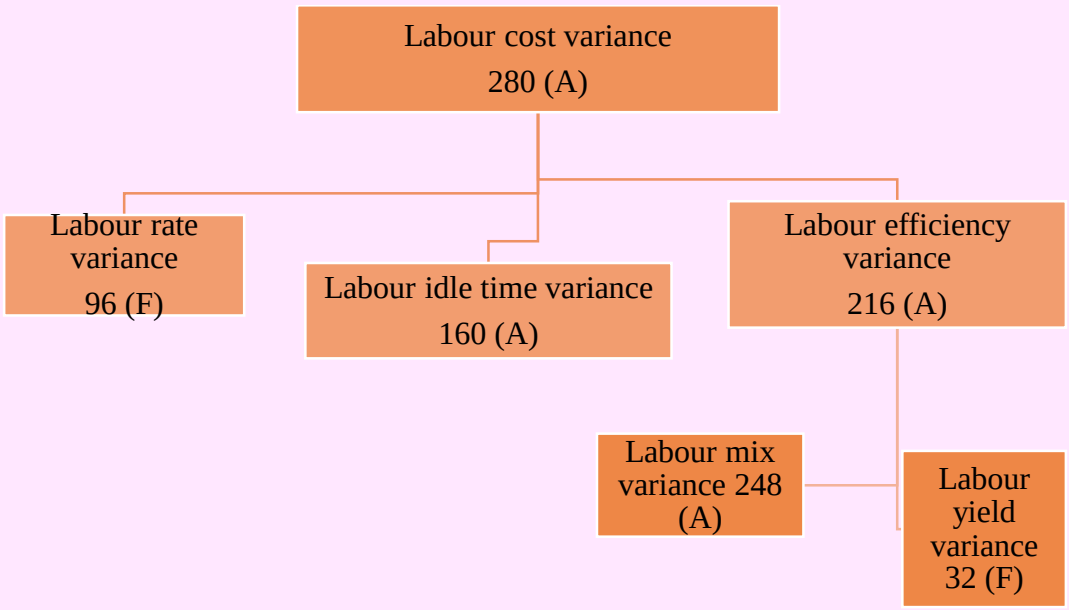
$$Labour\ efficiency\ variance$$
$$= (Actual\ hours\ worked \times Standard\ rate)$$
$$- Standard\ labour\ cost\ for\ actual\ yield$$
$$= B - E = 376\ (A)$$

But idle time variance is to be calculated separately which is recommend.
Thus labour efficiency variance adjusted for idle time variance = 376(A) – 160 (A) = **216 (A)**[1]

Labour mix variance
= ((actual hours for grade – hours for grade based on total labour hours split in standard proportions) × (weighted average cost per hour – standard cost per hour))
= Standard Cost of Standard Mix of Labourers – Standard Cost of Actual Mix of Labourer
$= B - C = \mathbf{248}\ (\boldsymbol{A})$

$$Labour\ yield\ variance$$
$$= (Actual\ yield\ or\ output - Standard\ yield\ or\ output\ for\ actual\ input)$$
$$\times Standard\ cost\ per\ unit$$
$$= D - E = \mathbf{32}\ (\boldsymbol{F})$$

Reconciliation



[1]Labour idle time variance is shown separately from efficiency variance as discussed in previous section.

(b)

TRINITY ENGINEERING LTD.

Production Budget for the Quarter ended March 2022 and for the month April, 2022

(Figures in Units)

Particulars	January	February	March	April
Budgeted Sales	10,800	15,600	12,200	10,400
Add: Opening Inventory	3,900	3,050	2,600	2,450
	14,700	18,650	14,800	12,850
Less: Opening Inventory	2,700	3,900	3,050	2,600
Required Monthly Production	12,000	14,750	11,750	10,250

TRINITY ENGINEERING LTD.

Direct Material Usage and Purchase Budget for the Quarter ended March 2022

Material A

Particulars	January (Units)	February (Units)	March (Units)
Production Requirement – 4 units of Material A for each of Finished Product	48,000	59,000	47,000
Add: Closing Inventory	29,500	23,500	20,500
	77,500	82,500	67,500
Less: Opening Inventory	24,000	29,500	23,500
	53,500	53,000	44,000

Material B

Particulars	January (Units)	February (Units)	March (Units)
Production Requirement – 54 units of Material B for each of Finished Product	60,000	73,750	58,750
Add: Closing Inventory	36,875	29,375	25,625
	96,875	1,03,125	84,375
Less: Opening Inventory	30,000	36,785	29,375
	66,875	66,250	55,000