PAPER - 12 : MANAGEMENT ACCOUNTING

SUGGESTED ANSWERS

SECTION - A

1.

(i) (B)

(ii) (C)

(iii) (D)

(iv) (D)

(v) (B)

(vi) (A)

(vii) (B)

(viii) (A)

(ix) (D)

(x) (A)

(xi) (C)

(xii) (B)

(xiii) (D)

(xiv) (B)

(xv) (B)

SECTION – B

2. (a)

The Scope of Management Accounting is aligned as under:

(i) **Financial Accounting:** Financial accounting though provides historical information but is very useful for future planning and financial forecasting. Designing of a proper financial accounting system is a must for obtaining full control and co-ordination of operations of the business.

(ii) **Cost Accounting:** It provides various techniques of costing like marginal costing, standard costing, differential and opportunity cost analysis, etc., which play a useful role not operation and control of the business undertakings.

(iii) **Budgeting and Forecasting:** Forecasting on the various aspects of the business is necessary for budgeting. Budgetary control controls the activities of the business through the operations of budget by comparing the actual with the budgeted figures, finding out the deviations, analysing the deviations in order to pinpoint the responsibility and take remedial action so that adverse things may not happen in future. Both the techniques are necessary for management accountant.

(iv) **Cost Control Procedures:** These procedures are integral part of the management accounting process and includes inventory control, cost control, labour control, budgetary control and variance analysis, etc.

(v) Reporting: The Management Accountant is required to submit reports to the management on various aspects of the undertaking. While reporting, he may use statistical tools for the presentation of information such as graphs, charts, pictorial representations, index numbers, and other devices in order to make the information more impressive and intelligible.

(vi) Methods and Procedures: It includes in its study all those methods and procedures which help the concern to use its resources in the most efficient and economical manner. It undertakes special cost studies and estimations and reports on cost volume profit relationship under changing circumstances.

(vii) Tax Accounting: It is an integral part of management accounting and includes preparation of income statement, determination of taxable income and filing up the return of income etc.

(viii) Internal Financial Control: Management accounting includes the internal control methods like internal audit, efficient office management, etc.

(ix) Interpretation: Management accounting is closely related to the interpretation of financial data to the management and advising them on decision-making.

(x) Office Services: The management accountant may, in certain organizations, be entrusted with the responsibility of managing and overseeing office services. This function includes data processing, reporting on best use of mechanical and electronic devices, communication, etc.

2. (b)

(i) Calculation of Overhead Cost per unit using Traditional Machine Hr Method:

Total Engineering Change Cost

Product	Notices	Cost / Notice (₹)	Total Cost (₹)
Alpha	36	1,200	43,200
Beta	14	1,200	16,800
			60,000

Total Machine Hours

Product	Units	MH Per unit	Total MH
Alpha	2,400	3	7,200
Beta	2,600	5	13,000
			20,200

Machine Hour Rate = ₹60,000 / 20,200 = ₹2.97 per MH (approx.)

Calculation of Overhead Cost Per unit:

Product	MH Per unit	MHR (₹)	Overhead per unit (₹)
Alpha	3	2.97	8.91
Beta	5	2.97	14.85

(ii) Calculation of Overhead Cost Per unit using ABC:

Sl.	Particulars	Alpha	Beta
1	Engineering Change Notice	36	14
2	Cost per Engineering Change	₹1,200	₹1,200
3	Total Cost(1x 2)	₹43,200	₹16,800
4	Output	2,400	2,600
5	Overhead Cost per unit (3 ÷4)	₹18.00	₹6.46

(iii) Comment:

Comparison of cost under Traditional & ABC Method:

	Alpha (₹)	Beta (₹)
Traditional Method	8.91	14.85
ABC Method	18.00	6.46

- Traditional costing allocates overhead using machine hours, which assigns higher cost to Beta due to greater machine usage.
- However, engineering change notices are the actual driver of engineering costs.
- Since Alpha requires significantly more engineering changes, ABC assigns a higher overhead to Alpha.
- The traditional method therefore understates Alpha's cost and overstates Beta's cost, demonstrating the advantage of ABC.

3. (a)

RSR Ltd. — Optimal Product Mix

Working Note 1: Labour hours available

Department A = 78 x 300 x 8 = 187,200 hours

Department B = 54 x 300 x 8 = 129,600 hours

Department C = 48 x 300 x 8 = 115,200 hours

Working Note 2: Labour hours required per unit

Department	Product P	Product Q
A	60/40 = 1.5 hrs	80/40 = 2.0 hrs
B	Nil	100/40 = 2.5 hrs
C	80/40 = 2.0 hrs	Nil

Total labour hours per unit:

- Product P = 1.5 + 2.0 = 3.5 hours
- Product Q = 2.0 + 2.5 = 4.5 hours

Working Note 3: Contribution per unit

Particulars	Product P	Product Q
Selling price	384	525
Less: Raw materials	158	240
Less: Direct labour	140	180
Less: Variable overheads	32	45
Contribution per unit	54	60

Contribution per labour hour:

- Product P = 54/3.5 = 15.43 (Rank 1)
- Product Q = 60/4.5 = 13.33 (Rank 2)

So, Product P has higher contribution per labour hour and should be produced first.

Working Note 4: Maximum output
Maximum P:

- From Department A = 187,200/1.5 = 124,800
- From Department C = 115,200/2 = 57,600

  Therefore, Product P is limited by Department C.

Since Product P can be made only up to the smallest of these limits, the binding limit is:

- 57,600 units from Department C

  So Department C is the limiting factor for Product P.

  So, produce Product P = 57,600 units.

Hours of Department A used by P:

- 57,600 x 1.5 = 86,400 hours

Remaining hours in Department A:

- 187,200 - 86,400 = 100,800 hours

Now Product Q can be produced from Department A:

- 100,800/2 = 50,400 units

Check Department B for Q:

- 50,400 x 2.5 = 126,000 hours
- Available = 129,600 hours

  So Product Q = 50,400 units.

Final Answer

- Product P = 57,600 units
- Product Q = 50,400 units

Alternative Presentation

1. **Computation of total labour hours available**

Department (a)	No. of workmen (b)	Days (c)	Hrs/day (d)	Total hours e= b x c X d
A	78	300	8	1,87,200
B	54	300	8	1,29,600
C	48	300	8	1,15,200

2. **Computation of hours required per unit of each product**

Department	Product P			Product Q		
	Wages	Wage/hr.	Hrs	Wages	Wage/hr.	Hr
	₹	₹		₹	₹	
	(a)	(b)	(c)=(a)/(b)	(d)	(e)	(f)=(d)/(e)
A	60	40	1.50	80	40	2.00
B	-	-	-	100	40	2.50
C	80	40	2.00	-	-	-
	Total hours per unit:		3.5			4.50

3. **Statement showing maximum output permissible**

Departments Hours available		Product P		Product Q	
		Hrs required / unit	Maximum output in Units	Hrs required / unit	Maximum output in Units
	(a)	(b)	(c) = (a) / (b)	(d)	(e) = (a) / (d)
A	1,87,200	1.5	1,24,800	2	93,600
B	1,29,600			2.5	51,840*
C	1,15,200	2	57,600*	-	-

- This shows that either 57,600 units of product P or 51,840 of product Q can be obtained by utilising the available hours in the three departments.

4. **Product -wise contribution per hour**

Particulars	P (₹ / unit)	Q (₹ / unit)
Selling Price	384	525
Less: Direct Material	158	240
Less: Direct Labour Per unit: Department A (₹40 X 1.5 hrs; ₹40 X 2 hrs) Department B (₹40 X 2.5 hrs)	60	80

Department C (₹40 X 2hrs)	- 80	100 -
Less: Variable Overheads	32	45
Contribution	54	60
Labour Hour per unit	3.5	4.5
Contribution per hr	15.43	13.33
Rank	I	II

Since Contribution per labour hour of product P is more than that of Product Q, first preference will be given to Product P. That is after producing 57,600 units of Product P, the remaining time will be utilized for Product Q.

Maximum possible production of Q:

Department	Available Hrs	Hrs required for 57,600 units of P	Remaining Hours	Hrs/ unit of Product Q	Production of Product Q
A	1,87,200	86,400	1,00,800	2	50,400*
B	1,29,600	0	1,29,600	2.5	64,800
C	1,15,200	1,15,200	0	-	

- 50,400 units of Q should be prepared as the labour available in Department A restricts the same.
  Therefore, the optimum product mix is

  P: 57,600 units
  Q: 50,400 units

3. (b)

Total Cost = ₹115 + ₹90 + ₹35 + ₹9 = ₹249
Let T be the Transfer Price

(i) [Transfer Price – (Total Cost)] (1- tax rate) = 0.15T
(T-249) (1-0.30) = 0.15T
(T-249) (0.70) = 0.15T
0.70T – 174.30 = 0.15T
0.55T = 174.30
T = 316.91

(ii) [Transfer Price – (Total Cost)] (1- tax rate) = 20% of ROI
(T-249) (1-0.30) = 0.20 X (₹75,00,000 / 25,000)
(T-249) (0.70) = 60
0.70T – 174.30 = 60
0.70T = 234.30
T = 334.71

(iii) Transfer Price = Total Cost + 30% of Marginal Cost
= 249 + 30 % [(115 + 90 +(35) X (0.60)]
= 316.80

[Note: For determination of transfer price, total cost has been considered as Division K is a profit centre and its entire production is utilized internally by other divisions.]

4. (a)

Let C be the contribution per unit of X.

Therefore, contribution per unit of product Y = 4/5 C = 0.8C

Given $F_1 + F_2$ = ₹1,50,000……Eqn (1)

Further F_1 = 1,800C (BEP X contribution per unit)….Eqn (2)

Applying the condition for indifference point,

$3{,}000C - F_1 = 3{,}000 \times 0.8C - F_2$

$3{,}000C - 2{,}400C = F_1 - F_2$

$600C = F_1 - F_2$

$600C = 1{,}800C - F_2$

$F_2 = 1{,}200C$……Eqn (3)

Putting the value of F_1 and F_2 from Equation (2) & (3) in Equation (1), we have

1,200C + 1,800C = ₹1,50,000

C = ₹1,50,000/ 3,000 = ₹50

Therefore, Contribution per unit of X = ₹ 50

Contribution of per unit of Y = ₹50 X 80% = ₹40

(i) Fixed Cost of X, F_1 = 1,800C = ₹1,800 X 50 = ₹90,000

Fixed Cost of Y, F_2 = 1,200C = ₹1,200 X 50 = ₹60,000

(ii) Contribution per unit of X = ₹ 50

Contribution of per unit of Y = ₹40

4. (b)

Calculations:

Component	Calculation	Amount
Current operations	80% capacity = 20,000 units	
Current sales	₹4,00,000 at 20% profit margin	₹4,00,000
Current profit	20% × ₹4,00,000	₹80,000
Current total cost	₹4,00,000 - ₹80,000	₹3,20,000

Indirect costs at 80% capacity (20,000 units):

- Variable cost: ₹80,000 (₹4/unit)
- Semi-variable cost: ₹40,000
- Fixed cost: ₹80,000
- Total indirect: ₹2,00,000

Direct cost:

- Direct cost total: ₹3,20,000 - ₹2,00,000 = ₹1,20,000
- Direct cost per unit: ₹1,20,000 ÷ 20,000 = ₹6/unit

Semi-variable cost per additional unit

Capacity	Production (units)	Semi-variable cost
80%	20,000	₹40,000
90%	22,500	₹42,500

Calculation:

- Increase in production: 22,500 - 20,000 = 2,500 units
- Increase in semi-variable cost: ₹42,500 - ₹40,000 = ₹2,500
- Semi-variable cost per additional unit: ₹2,500 ÷ 2,500 = ₹1 per unit

Export order (20% of present operations = 4,000 units):

Cost Component	Amount
Direct cost (4,000 × ₹6)	₹24,000
Variable cost (4,000 × ₹4)	₹16,000
Semi-variable cost (4,000 × ₹1)	₹4,000
Packing charges	₹1,000
Total export cost	₹45,000

Export price for 10% profit margin:

- Required: Profit = 10% of export price (P)
- Cost = P - 0.10P = 0.90P
- P = ₹45,000 ÷ 0.90 = ₹50,000

Alternative Presentation:

Calculation of Direct Cost per unit:

Particulars	Calculation	Amount (₹)
Selling Price per unit	₹4,00,000/ 20,000	20
Less: Profit Margin	20% of ₹20	4
Total Cost		16
Less: Indirect Cost	₹2,00,000/20,000	10
Direct Cost per unit		6

Statement of Differential Costs for 4,000 units:

Particulars	Present	Proposed	Differential
Production	20,000	24,000	4,000
Direct Cost @ ₹6 per unit	1,20,000	1,44,000	24,000
Indirect Cost:			
Variable Cost@ ₹ 4 per unit	80,000	96,000	16,000
Semi-Variable	40,000	44,000@	4,000.00
Fixed	80,000	81,000*	1,000.00
Total	3,20,000	3,65,000	45,000.00

[* ₹1,000 for additional packing charges]

Calculation of Semi-Variable Cost at 24,000 units:

Variable component of Semi-Variable Cost = Change in Cost / Change in output
= (42,500 - 40,000) /2,500 = ₹1

@ Fixed component = ₹40,000 – (₹1 x 20,000) = ₹20,000

Semi- Variable Cost at 24,000 units = ₹1 X 24,000 + ₹20,000 = ₹44,000

Computation of Price to be quoted for the export order of 4,000 units:

Particulars	Amount (₹)
Differential Cost	45,000
Add: Profit (10% of export price or 1/9th of Cost)	5,000
Price to be quoted	50,000
Export price per unit (₹50,000 / 4,000)	12.50

5. (a)

Standard Labour hour rate of the standard group:

Category	No. of Men	Hrs per Month	Total Hrs	Std Rate (₹)	Standard Labour Cost (₹)
Skilled	30	200	6,000	5	30,000
Semi – skilled	10	200	2,000	3	6,000
Unskilled	10	200	2,000	2	4,000
Total			10,000		40,000

Hence, Standard rate per hour of the group = ₹40,000/ 10,000 = ₹4

Standard labour hour rate of Actual group:

Category	No. of Men	Hrs per Month	Total Hrs	Std Rate (₹)	Standard Labour Cost (₹)
Skilled	24	200	4,800	5	24,000
Semi – skilled	15	200	3,000	3	9,000
Unskilled	12	200	2,400	2	4,800
Total			10,200		37,800

Hence, Standard rate per hour of actual Group = ₹37,800 / 10,200 = ₹3.71

Actual Labour hour rate of Actual group:

Category	No. of Men	Hrs per Month	Total Hrs	Act Rate (₹)	Actual Labour Cost (₹)
Skilled	24	200	4,800	6.00	28,800
Semi – skilled	15	200	3,000	2.50	7,500
Unskilled	12	200	2,400	2.00	4,800
Total			10,200		41,100

Hence, Actual rate per hour = ₹41,100 / 10,200 = ₹4.03

A. Standard cost of output = 9,600 @ ₹4 = ₹38,400
B. Actual hours at Standard rate of standard group 10,200 hours @₹4 = ₹40,800
C. Actual hours at standard rates of Actual group 10,200 hours @ ₹3.71 = ₹37,800
D. Actual hours at actual rate for actual group = ₹41,100

Calculation of Labour Cost Variances:

Total Labour Cost Variance	A – D	₹2,700 (A)
LabourRate Variance	C – D	₹3,300 (A)
Labour Efficiency variance	A – C	₹600 (F)
Labour Mix Variance	B – C	₹3,000 (F)

Alternative Presentation (1)

L_1- Actual payment made to workers for the actual hours worked:

Category	No. of Men	Hrs per Month	Total Hrs	Act Rate (₹)	Actual Labour Cost (₹)
Skilled	24	200	4,800	6.00	28,800
Semi – skilled	15	200	3,000	2.50	7,500
Unskilled	12	200	2,400	2.00	4,800
Total			10,200		41,100

L_2 -Actual Hours worked at Standard Wage Rate:

Category	No. of Men	Hrs per Month	Total Hrs	Std Rate (₹)	Standard Labour Cost (₹)
Skilled	24	200	4,800	5	24,000
Semi – skilled	15	200	3,000	3	9,000
Unskilled	12	200	2,400	2	4,800
Total			10,200		37,800

L_3 -Payment involved, if the workers had been used in the ratio of standard gang payment had been made at Standard Rate:

Category	No. of Men in Std Ratio	Hrs per Month	Total Hrs	Std Rate (₹)	Standard Labour Cost (₹)
Skilled	51x 30/50	200	6,120	5	30,600
Semi – skilled	51 x 10/50	200	2,040	3	6,120
Unskilled	51 x 10/50	200	2,040	2	4,080
Total			10,200		40,800

L_4 -Standard Labour Cost of Input:
Standard Labour hour rate of the standard group:

Category	No. of Men	Hrs per Month	Total Hrs	Std Rate (₹)	Standard Labour Cost (₹)
Skilled	30	200	6,000	5	30,000
Semi – skilled	10	200	2,000	3	6,000
Unskilled	10	200	2,000	2	4,000
Total			10,000		40,000

Hence, Standard rate per hour of the group = ₹40,000/ 10,000 = ₹4
Standard Labour Cost of output = 9,600 hours x ₹4 = ₹38,400

Calculation of Labour Cost Variances:

Total Labour Cost Variance	$L_1 - L_4$	₹2,700 (A)
LabourRate Variance	$L_1 - L_2$	₹3,300 (A)
Labour Efficiency variance	$L_4 - L_2$	₹600 (F)
Labour Mix Variance	$L_3 - L_2$	₹3,000 (F)

Alternative Presentation (2)

Computation of Labour Hours

Labour Category	Standard Hours (SH) for Actual output 9600 hrs	Actual Hours (AH)	Revised Standard Hours (RSH) for Actual Hours 10,200 hrs
Skilled	5,760	4,800	6,120
Semi-skilled	1,920	3,000	2,040
Unskilled	1,920	2,400	2,040
Total	9,600	10,200	10,200

Working: (Standard Labour Mix = 30 : 10 : 10)

- Skilled: 9,600×30/50=5,760, 24×200=4,800, 10,200×30/50=6,120
- Semi-skilled: 9,600×10/50=1,920, 15×200=3,000, 10,200×10/50=2,040
- Unskilled: 9,600×10/50=1,920, 12×200=2,400, 10,200×10/50=2,040

Calculation of Labour Cost Variances:

(1) Labour Rate Variance ⇒ (SR − AR) × AH
Skilled (5 − 6) × 4800 = 4800 (A)
Semi-Skilled (3 − 2.5) × 3000 = 1500 (F)
Unskilled (2 − 2) × 2400 = 0
3,300 (A)

(2) Labour Efficiency Variance ⇒ (SH − AH) × SR
Skilled (5760 − 4800) × 5 = 4800 (F)
Semi-Skilled (1920 − 3000) × 3 = 3240 (A)
Unskilled (1920 − 2400) × 2 = 960 (A)
600 (F)

(3) Labour Mix Variance ⇒ (RSH − AH) × SR
Skilled (6120 − 4800) × 5 = 6600 (F)
Semi-Skilled (2040 − 3000) × 3 = 2880 (A)
Unskilled (2040 − 2400) × 2 = 720 (A)
3000 (F)

(4) Labour Cost Variance ⇒ SC − AC
38,400 − 41,100 = 2,700 (A)

Working:

Labour Cost – Standard / Actual

Category	Standard Hours	Standard Rate (₹)	Standard Cost (SC) (₹)	Actual Hours	Actual Rate (₹)	Actual Cost (AC) (₹)
Skilled	5,760	5.00	28,800	4,800	6.00	28,800
Semiskilled	1,920	3.00	5,760	3,000	2.50	7,500
Unskilled	1,920	2.00	3,840	2,400	2.00	4,800
Total	9,600	-	38,400	10,200	-	41,100

5. (b)

(i) Fixed Overhead Expenditure Variance:

= Budgeted Fixed Overhead – Actual Fixed Overhead

= ₹ 1,50,000 – ₹ 1,56,000 = ₹6,000 (A)

(ii) Fixed Overhead Calendar Variance:

$=[\frac{\text{Budgeted Fixed overhead}}{\text{Budgeted working days}}$ x Actual working days] – Budgeted Fixed Overhead

$=\frac{₹1,50,000}{25\text{days}}$ x 27days – ₹ 1,50,000 = ₹ 12,000 (F)

(iii) Fixed Overhead Capacity Variance:

$=$AFO for actual production – $[\frac{\text{BFO}}{\text{Budgeted working days}}$ x Actual working days]

= (6,300 x 27 x ₹ 1) – ₹ 1,62,000 = ₹ 8,100 (F)

(iv) Fixed Overhead Efficiency Variance:

Standard rate/hr (Standard hr for A/O – Actual hrs worked)

$=\frac{1,50,000}{6X25000}$(6,300 x 27 x 0.9 – 6,300 27) = ₹17,010 (A)

(v) Fixed Overhead Volume Variance:

= Recovered Fixed Overhead – Budgeted Fixed Overhead

= Std rate/ unit x Actual output – Budgeted Fixed Overhead

= ₹1 x 6,300 x 27 x 0.9 – ₹1,50,000

= ₹1,53,090 – ₹1,50,000 = ₹3,090 (F)

(vi) Fixed Overhead Cost Variance:

= Recovered Fixed Overhead– Actual Fixed Overhead

=₹1,53,090 – ₹1,56,000 = ₹2,910 (A)

Alternative Presentation:

FO Values:

FO	Calculation	Value
FO1	Actual Fixed Overhead	₹1,56,000
FO2	Budgeted Fixed Overhead	₹1,50,000
FO3	Budgeted Hours for Actual Days × SR = 27 days × (₹1,50,000/25 days) × ₹1	₹1,62,000
FO4	Actual Hours × SR = (6,300 × 27) × ₹1 = 170,100 × ₹1	₹1,70,100
FO5	Standard Hours for AO × SR = (6,300 × 27 × 0.9) × ₹1 = 153,090 × ₹1	₹1,53,090

Calculation of Fixed Overhead Variances:

Variance	Calculation	Amount (₹)
Fixed Overhead Expenditure Variance	FO_2 -FO_1	1,50,000 -1,56,000 = ₹6,000 (A)
Fixed Overhead Calendar Variance	$FO_3 – FO_2$	1,62,000 – 1,50,000 = ₹12,000 (F)
Fixed Overhead Capacity Variance	$FO_4 – FO_3$	1,70,100 – 1,62,000 = ₹8,100 (F)
Fixed Overhead Efficiency Variance	$FO_5 – FO_4$	1,53,090 – 1,70,100 = ₹17,010 (A)
Fixed Overhead Volume Variance	$FO_5 – FO_2$	1,53,090 – 1,50,000 = ₹3,090 (F)
Fixed Overhead Cost Variance	$FO_5 – FO_1$	1,53,090 – 1,56,000 = ₹2,910 (A)

6. (a)

Calculation of Opening Stock and Closing Stock:

	A	C	E
Closing balance of finished stock anticipated on 31.03.25 (₹ in '000)	720	540	1,800
Standard Cost per unit	24	15	20
Closing Balance in '000 units as on 31.03.25	30	36	90
Closing balance of finished stock anticipated on 31.03.26 (₹ in '000)	600	570	1,000
Standard Cost per unit (₹)	24	15	20
Closing Stock in '000 units as on 31.03.26	25	38	50

Calculation of Units sold:

	A	C	E
Profit as % of Sales	20	25	16.66
Profit as % of cost	25	33.33	20
Standard Cost per unit (₹)	24	15	20
Add: Profit (₹)	6	5	4
Selling Price per Unit (₹)	30	20	24
Sales Value (in ₹ '000)	4,200	3,000	10,080
No. of units sold	1,40,000	1,50,000	4,20,000

We know that Opening Stock + Production = Sales + Closing Stock
Using the above formula, Production Budget of products A, C and E can be worked out as follows:

Production Budget for 2025-26

	A	C	E
Sales	140	150	420
Add: Closing Stock	25	38	50
Less: Opening Stock	30	36	90
Production (net)	135	152	380
Production loss (% of input)	10	20	5
Production (Gross) (in'000 units)	150	190	400

Direct Labour Budget for 2025-26:

	A	C	E
No. of units to be produced	1,50,000	1,90,000	4,00,000
Dept. F: Hours required per unit	0.25	0.20	0.20
Labour Hours required	37,500	38,000	80,000
Wages @ ₹10 per hour (A)	3,75,000	3,80,000	8,00,000
Dept. G: Hours required per unit	0.25	0.20	0.25
Labour Hours required	37,500	38,000	1,00,000
Wages @ ₹12 per hour (B)	4,50,000	4,56,000	12,00,000
Total Wages (A +B)	8,25,000	8,36,000	20,00,000

6. (b)

	% Variable	Amount (₹)	Amount (₹)	Amount (₹)
Production		5,000	4,000	6,000
Material cost	100	25,000	20,000	30,000
Labour cost	100	15,000	12,000	18,000
Power				
Variable	80	1,000	800	1,200
Fixed	20	250	250	250
Repairs and Maintenance				
Variable	75	1,500	1,200	1,800
Fixed	25	500	500	500
Stores	100	1,000	800	1,200
Inspection				
Variable	20	100	80	120
Fixed	80	400	400	400
Administration overheads				
Variable	25	1,250	1,000	1,500
Fixed	75	3,750	3,750	3,750
Selling overheads				
Variable	50	1,500	1,200	1,800
Fixed	50	1,500	1,500	1,500
Depreciation	0	10,000	10,000	10,000
Total		62,750	53,480	72,020
Unit Cost		12.55	13.37	12.00

Total Cost & Unit Cost:

Total	53,480	72,020
Unit Cost	13.37	12.00

7. (a)

Calculation of EBIT:

	₹ in Lakh
PAT	130
PBT (130/0.65)	200
Add: Interest (600 x 8%)	48
EBIT	248.00

Calculation of EVA:

For calculation of EVA, we need Capital Employed, Weighted Average Cost of Capital (WACC) & NOPAT, which are calculated below:

Calculation of Capital Employed:

Sl.	Particulars	₹ in Lakh
1	Net Worth	300
2	Unrecorded Patent	150
3	Adjusted Equity (1+2)	450
4	Long Term Debt	600
5	Capital Employed (3 + 4)	1,050

Calculation of WACC:

Sl.	Particulars	
1	Cost of Equity@	13.00%
2	Post Tax Cost of Debt* [8%×(1−0.35)]	5.20%
3	WACC (13%×450/1,050) + (5.2%×600/1,050)	8.54%

@ Because the stock's beta is 1 (moving directly in line with the market), the cost of equity equals the market portfolio return of 13%.

*Since no separate cost of debt is given in question, the 365-Day govt securities rate (8%) is taken as cost of debt(pre.tax).

Calculation of EVA:

Sl.	Particulars	₹ in Lakh
1	NOPAT [EBIT x (1-.35)]	161.20
2	Capital Charge (CE x WACC)	89.67
3	EVA (1 -2)	71.53

Alternative Presentation:

Calculation of EBIT:

	₹ in Lakh
PAT	130
PBT (130/0.65)	200
Add: Interest (600 x 8%)	48
EBIT	248.00

Calculation of EVA:

For calculation of EVA, we need Capital Employed, Weighted Average Cost of Capital (WACC) & NOPAT, which are calculated below:

Calculation of Capital Employed:

Sl.	Particulars	₹ in Lakh
1	Net Worth	300
2	Long Term Debt	600
3	Capital Employed*	900

*Note-The patents market value of ₹150 lakhs is on off-balance sheet intangible asset and is not included in capital employed for EVA computation (since EVA uses book value of capital employed).

Calculation of WACC:

Sl.	Particulars	
1	Cost of Equity@	13.00%
2	Post Tax Cost of Debt* [8%×(1−0.35)]	5.20%
3	WACC (13%×300/900) + (5.2%×600/900)	7.80%

@ Because the stock's beta is 1 (moving directly in line with the market), the cost of equity equals the market portfolio return of 13%.

*Since no separate cost of debt is given in question, the 365-Day govt securities rate(8%) is taken as cost of debt(pre.tax).

Calculation of EVA:

Sl.	Particulars	₹ in Lakh
1	NOPAT [EBIT x (1-.35)]	161.20
2	Capital Charge (CE x WACC)	70.2
3	EVA (1 -2)	91

7. (b)

1 Batch = 10 Units

Therefore, 160 units = 16 batches (160 / 10)

Labour hours required for the 1st batch = 4 hours

Learning rate = 80%

Calculation of labour hours required:

Batch	Labour Hours required per Batch	Total Labour Hours
1	4	4.00
2	3.2 (4 x 0.8)	6.40
4	2.56 (3.2 x 0.8)	10.24
8	2.05 (2.56 x 0.8)	16.40
16	1.64 (2.05 x 0.8)	26.24

Calculation of Variable Cost per unit:

Cost Statement	
Particulars	**Amount (₹)**
Direct Material Cost (160 x ₹130)	20,800
Direct Labour Cost (26.24 hours x ₹ 300)	7,872
Other Variable Overheads (160 x ₹70)	11,200
Total Variable Cost for 160 Units	39,872
Therefore, Variable Cost per unit	249.20

As fixed cost is committed, the same is not considered in decision making.

Advice:

Offer price is ₹275 against the variable cost per unit of ₹249.20.

Therefore, M/s ASHA SHG should accept the offer.

8. (a)

(i) Probability that the company will Break Even:

Break-even Units=Fixed Cost / Contribution per unit

= ₹38,250 / (8.50 – 5.10) =11,250 units.

The company will break-even or earn profit when sales ≥ 11,250 units.

Relevant sales levels are:

Units	Probability
12,000	25%
14,000	27%
16,000	18%
Total	70%

Therefore, probability of at least break-even = 70%

(ii) Probability that the company will earn a profit of ₹15,000:

For this purpose, we have to first calculate sales level required to earn a target profit of ₹15,000.

Let Q be the sales volume.

Therefore, 3.40Q –38,250 = 15,000

Solving for Q, we have Q = 15,662

There is only one sales level satisfying this condition i.e. 16,000.

Therefore, the required probability is 18%

(iii) Expected Annual Profit:

Units	Profit Formula	Profit (₹)	Probability	Weighted Profit
8,000	3.4×8,000−38,250	-11,050	0.12	-1,326.00
10,000	3.4×10,000−38,250	-4,250	0.18	-765.00
12,000	3.4×12,000−38,250	2,550	0.25	637.50
14,000	3.4×14,000−38,250	9,350	0.27	2,524.50
16,000	3.4×16,000−38,250	16,150	0.18	2,907.00
	TOTAL			3,978.00

Expected Annual Profit = ₹3,978

8. (b)

The responsibility centres represent the sphere of authority or decision points in an organisation. A responsibility centre is under the control of an individual who is responsible for the control of activities of that sub-unit of the organisation. The main types of Responsibility Centres are:

(i) Cost Centre

(ii) Revenue Centre

(iii) Profit Centre

(iv) Investment Centre.

Concepts of Responsibility Centres:

Concepts of Responsibility Centres are briefly discussed below:

Cost Centre

- A cost or expense centre is a segment of an organisation in which the managers are held responsible for the cost incurred in that segment but not for revenues.
- For planning purposes, the budget estimates are cost estimates; for control purposes, performance evaluation is guided by a cost variance equal to the difference between the actual and budgeted costs for a given period.
- In manufacturing organisations, the production and service departments are classified as cost centre. Also, a marketing department, a sales region or a single sales representative can be defined as a cost centre.
- Cost centre may vary in size from a small department with a few employees to an entire manufacturing plant. In addition, cost centres may exist within other cost centres.

2. Revenue Centre

- It is a segment of the organisation which is primarily responsible for generating sales revenue.
- A revenue centre manager does not possess control over cost, investment in assets, but usually has control over some of the expense of the marketing department.
- The revenue centre manager will control the selling price, promotion mix and product mix.
- The performance of a revenue centre is evaluated by comparing the actual revenue with budgeted revenue and actual marketing expenses with budgeted marketing expenses.

Profit Centre

- It is a segment of an organisation whose manager is responsible for both revenues and costs.
- In a profit centre, the manager has the responsibility and the authority to make decisions that affect both costs and revenues (and thus profits) for the department or division.
- The main purpose of a profit centre is to maximise profit by making decisions relating to production volume, product mix, selling price, marketing strategy.
- Profit centre managers aim at both the production and marketing of a product.

Investment Centre

- It is responsible for both profits and investments.
- The investment centre manager has control over revenues, expenses and the amounts invested in the centre's assets.
- The manager of an investment centre has more authority and responsibility than the manager of either a cost centre or a profit centre.
- Besides controlling costs and revenues, he has investment responsibility too. 'Investment on asset' responsibility means the authority to buy, sell and use divisional assets.