Ans.1: Statement showing ranking

	Products		
Particulars	P	Q	R
Selling Price/unit (Rs.)	25.00	30.00	35.00
Variable cost/unit (Rs.)			
Direct material	11.00	16.25	21.00
Direct labour	2.50	2.50	2.50
Other variable costs	1.50	2.25	3.50
Contribution per unit (Rs.)	10.00	9.00	8.00
Machine hours/unit	0.67	0.33	0.4167
Contribution/machine hour	15	27	19.2
Ranking	III	I	II

Ans: 2

Working Note

The limiting factor in the company is the No. of labour hours in department II. Hence, contribution per labour hour of department II has to be found and products ranked on that basis.

	A		B		C	
Selling price / unit		100		130		175
Less: Variable cost:						
Direct materials	40		50		64	
Direct Labour:						
Department I	10		12		15	
Department II	6		12		12	
Department III	12		15		18	
Variable overhead	12	80	11	100	16	125
		20		30		50
Contribution per unit						
Time taken in department II		0.5 hr.		1 hr.		1 hr.
Contribution per labour hour of Department II 20/0.5 =	40		30		50	
Ranking for allotment of department II labour hour		II		III		I

Solution

(a) Current mix profit and total labour hour in dept. IIs

Product	No. of units	Contribution / unit	Total contribution	Labour time in department II per unit	Total labour time in department II
A	30,000	Rs.20	Rs.6 lakhs	0.5 hr.	15,000 hr.
B	40,000	Rs.30	12 lakhs	1.0 hr.	40,000 hr.
C	25,000	Rs.50	12.50 lakhs	1.0 hr.	25,000 hr.
		Total	30.50		80,000 hr.
		FOH	25.00		

		Profit	5.50		

The suggested product mix is the optimum one because the first ranked product C is proposed to be produced & sold to the maximum of 30,000 units. Similarly, the second ranked product A can be produced and sold up to 50,000 units. The balance hours can be utilized to produce B to the extent of 25,000 units only. This will be optimum mix as indicated below:

Product	Ranking	No. of Units	No. of hours in Dept. II
C	I	30,000 (Maximum)	30,000
A	II	50,000 (Maximum)	25,000
B	III	25,000 (Balance)	25,000 (Balance)
		Total	80,000

(b) Statement of increase in profit

Product	No. of Units	Contribution per unit	Amounts (Rs.lakhs)
C	30,000	50	15.00
A	50,000	20	10.00
B	25,000	30	7.50
		Total	32.50
Less: FOH			25.00
Profit			7.50
Profit under proposed plan in question			5.50
Increase in profit			2.00

If the suggestion for optimum product mix is implemented, the increase in profit would be Rs.2.00 lakhs.

Ans: 3

Working Notes

Statement of contribution per machine hour (Limiting factor) and ranking

Particulars	PIE	SIGMA
Selling price	20	30
Less: Variable cost	11	16
Contribution per unit	9	14
Contribution per machine hour =	9/1 =Rs.9.00	14/2 Rs.7.00
Ranking	I	II

Solution

(a) Best combination:

Pie should be produced fully one lakh units. Then , sigma should be produced within the balance machine hours. This combination will give optimum contribution as follows:

Product	Ranking	No. of Units	No. of Machine Hours	CPU	Total contribution(Rs.)

Pie Sigma Less: Fixed Profit	I II Total	1,00,000 1,50,000 (300000 /2)	1,00,000 3,00,000 (Balance) 4,00,000	9.00 14.00	9,00,000 21,00,000 30,00,000 (Optimum) 26,00,000 4,00,000

(b) There is market for Sigma for one lakh units (i.e., 2,50,000 – 1,50,000 units). Two machine hours are required per unit of production of Sigma. That is 1,00,000 units at 2 hours = 2,00,000 machine hours required. For this purpose, 7 machines are to be taken on rental basis. Then, the profit will improve as follows:

		(Rs.lakhs)
Pie 1 lakh units at Rs.9		9.00
Sigma 2.5 lakh units at Rs.14		35.00
Total contribution		44.00
Less: Fixed cost	26.00	
Rent 7 X 1.5 =	10.50	36.50
Profit		7.50

(c) There is no change in number of machines required on rental basis. Total rental charges will come down and profit will improve further as follows: (Rs.lakhs)

Total contribution (as calculated above)		44.00
Less: Fixed cost	26.00	
Rent 7 X 1.25 =	8.75	34.75
Profit		9.25

Ans. 4:

Working Notes

	Products		
Particulars	X	Y	Z
Selling Price/unit (Rs.)	1900	2400	4000
Variable cost/unit (Rs.)	700	1200	2800
Contribution per unit	1200	1200	1200
Machine hours/unit	3	2	1
Contribution/machine hour	400	600	1200
Ranking	III	II	I

(b) Machine hours available will be only 20000 hours

Product	Ranking	No. of units	DLH	CPU	Total contribution
Z	I	1000	1000	1200	1200000
Y	II	2000	4000	1200	2400000
X	III	5000 (15000/3)	15000 (B.F.)	1200	6000000
Total			20000		Rs. 9600000

Ans. 5: Statement of Ranking

Working Notes **Products**

Particulars	X	Y	Z
Selling Price/unit (Rs.)	30	40	50
Variable cost/unit (Rs.)			
Direct material(@Rs. 8 p.kg)	5.6	3.2	12
Direct labour(@Rs. 8 p.h.)	8	16	12
Variable overheads(@Rs. 5.6 p.h.)	5.6	11.2	8.4
Sellling commission (10% of SP)	3	4	5
	22.2	34.4	37.4
Contribution/unit	7.8	5.6	12.6
Raw material per unit (kg)	0.7	0.4	1.5
Contribution per kg (Rs.)	11.14	14	8.4
Ranking	II	I	III

Statement of Ranking (if additional 4500kg are made of RM is available)

		Products	
Particulars	X	Y	Z
Selling Price/unit (Rs.)	30	40	50
Variable cost/unit (Rs.)			
Direct material(@Rs. 8 p.kg)	5.6	3.2	12
Direct labour(@Rs. 10 p.h.)	10	20	15
Variable overheads(@Rs. 7 p.h.)	7	14	10.5
Sellling commission (10% of SP)	3	4	5
	25.6	41.2	42.5
Contribution/unit	4.4	(1.2)	7.5
Raw material per unit (kg)	0.7	0.4	1.5
Contribution per kg (Rs.)	6.28	(3)	5
Ranking	I	-	II

(a) Raw material available will be only 10400 kg

Product	Ranking	No. of units	RM (kgs)	CPU	Total contribution
Y	I	6000	2400	5.6	33600
X	II	8000	5600	7.8	62400
Z	III	1600 (2400/1.5)	2400 (B.F.)	12.6	20160
Total			10400		Rs. 116160
Less: Fixed overheads					50000
Profit					66160

(b) Raw material available will be only 14900(10400+4500) kg

Product	Ranking	No. of units	RM (kgs)	CPU	Total contribution
X	I	8000	5600	4.4	35200
Z	II	5000	7500	7.5	37500
Balance			1800		-
Total			14900		Rs. 72700
Less: Fixed overheads					75000

Profit (2300)
Hence firm should not go into further production

Ans. 6: Statement of Ranking

Working Notes	**Products**		
Particulars	A	B	C
Selling Price/unit (Rs.)	20	16	10
Variable cost/unit (Rs.)			
Direct material	6	4	2.00
Direct labour	3	3	1.50
Variable overheads	2	1	1.00
	11	8	4.50
Contribution/unit	9	8	5.50
Units	10000	12000	20000
Total contribution	90000	96000	110000
Ranking	III	II	I
Raw material per unit (kg)	0.6	0.4	0.10
Contribution per kg (Rs.)	15	20	27.50
Ranking	III	II	I
DLH required per unit	0.20	0.20	0.10
Contribution per DLH	Rs. 45	Rs. 40	Rs. 55
Ranking	II	III	I

Solution
(a) Raw material available will be only 12100 kg

Product	Ranking	No. of units	RM (kgs)	CPU	Total contribution
C	I	20000	4000	5.50	110000
B	II	12000	4800	8	96000
A	III	5500 (3300/0.6)	3300 (B.F.)	9	49500
Total			12100		Rs. 255500
Less: Fixed overheads					138000
Profit					117500

(b) Direct labour hours available will be only 5000 hours

Product	Ranking	No. of units	DLH	CPU	Total contribution
C	I	20000	2000	5.50	110000
A	II	10000	2000	9	90000
B	III	5000 (1000/0.2)	1000 (B.F.)	8	40000
Total			5500		Rs. 240000
Less: Fixed overheads					138000
Profit					102000

(c) No shortage of materials and labour: Ranking as per total contribution is to be considered.

Product	Ranking	No. of units	CPU	Total contribution

C	I	25000 (20000 + 25%)	5.50	137500
B	II	12000	9	96000
A	III	10000	8	90000
Total				Rs. 323500
Less: Advertisement cost				20000
Net contribution				303500
Less: Fixed overheads				138000
Profit				165500

Ans 7:

Working Notes

Statement of comparative contribution and Ranking (Direct labour Hour (DLH) is key factor)

Particulars	A	B	C
Selling	28	60	125
Less: Variable cost	23	45	95
Contribution per unit (CPU)	5	15	30
DLH per unit 10/10 =	1	2	5
Contribution per DLH =CPU/DLH	5/1 =5.00	15/2 =7.50	30/5 =6.00
Ranking	III	I	II

Solution

(a) Profit according to current plan

Product	No. of Units	DLH	CPU	Total amount(Rs.)
A	500 (Minimum)	500	5	2,500
B	500 (Minimum)	1,000	15	7,500
C	500 (Minimum)	2,500	30	15,000
D	1,400(from surplus DLH)	7,000 (Balance)	30	42,000
	Total	11,000		67,000
Less :Fixed overheads				25,000
Profit				42,000

(b) Alternative plan for maximum profit

Product B is a Rank No. 1. Hence, instead of C Product. B should be manufactured by using surplus labour hours. This will maximize the profit as follows:

Product	No. of Units	DLH	CPU	Total amount(Rs.)

A	500 (Minimum)	500	5	2,500
B	500 (Minimum)	1,000	15	7,500
C	500 (Minimum)	2,500	30	15,000
D	3,500(from surplus DLH)	7,000 (Balance)	15	52,500
	Total	11,000		77,500
Less :Fixed overheads				25,000
Profit				52,500

Note: This profit of Rs.52,500 is higher than current plan.

(C) BEP (units and value)

At BEP, contribution is equal to fixed overheads, i.e., and C=F. In such case, the company has to earn the contribution of Rs.25,000 in order to get BEP as follows:

Rank	Product	No. of Units	CPU	Total amount(Rs.)
I	B	500 (Minimum)	15	7,500
II	C	500 (Minimum)	30	15,000
II	A	500 (Minimum)	5	2,500
Total contribution				25,000
Less: Fixed overheads				25,000
Profit				Nil

BEP (Units and Value)

Product	No. of Units	Selling Price Per unit	Sales Value at BEP (Rs.)
B	500	60	30,000
C	500	125	62,500
A	500	28	14,000
Total	1500		1,06,500

BEP in terms of units: 1,500 units

BEP in terms of Sales Value : Rs.1,06,500

(d) Profit after tax (PAT) 24% on 1,00,0000 Rs.24,000

Tax Rate 50% Hence, Profit Before tax 24,000 x $\frac{100}{50}$ Rs.48,000

Less: Tax at 50% Rs.24,000

PAT 24,000

Note: By production and selling minimum quantities of A,B and C, BEP is achieved. Hence, in order to earn profit before tax of 48,000, Rank No.1, Product B should be sold to the extent of 3,2000 units (48,000 / CUP rs.15).

Then, the position will be as follows:

Product	No. of Units	DLH	CPU	Total amount(Rs.)
A	500	500	5	2,500
B	500	1,000	15	7,500
C	500	2,500	30	15,000
				25,000
B	3,200	6,400	15	48,000
	Total	10,400		73,000
Less: Fixed overheads				25,000
Profit				48,000

No. of Units and Sales value:

Product	No. of Units	Selling Price Per unit	Sales Value (Rs.)
A	500	28	14,000
B	3,700	60	2,22,000
C	500	125	62,500
Total	4,700		2,98,500

The sales value of Rs.2,98,500 will earn the profit of Rs.48,000 (Profit Before Tax) as worked out in the previous statement.

PBT	48,000
Less: Tax at 50%	24,000
PAT	24,000 (24% on capital employed of Rs.1,00,000)

Ans:8

(a) Profit for the current year (Rs.)

Products	A	B	C	D	Total
Sale Value Per acre 10 x 1000=	10,000	10,000	13,500	16,200	
Variable cost per acre	4,700	5,100	5,950	6,600	
	5,300	4,900	7,550	9,600	
Contribution per acre	25	20	30	25	100
Area occupied (acres)	1,32,500	98,000	2,26,500	2,40,000	6,97,000
					5,40,000
Total contribution 25 x 5,300=					1,57,000
Less: Fixed overheads					
Profit					

(b) profit for the product mix

The land which is being used for A and B can be used for either items. A gives higher contribution per acre. Hence, b should be produced to the minimum of 40 tonnes and in balance land A should be produced.

Similarly, the land which is being used for C and D can be used for either items. D gives higher contribution per acre. Hence, C should be produced to the minimum of 36 tonnes and in balance land , D should be produced. Then, the position will be as follows:

A + B Area occupied = 25 + 20 = 45 acres.

B : Minimum production : 40 tonnes i.e., $\frac{40}{8} = 5$ Acres required.

A : Balance 40 acres : A should be produced

C + D : Area occupied = 30 + 25 = 55 acres

C : Minimum production = 36 tonnes, i.e., $\frac{36}{} = 4$ acres required.

D : Balance 51 acres : D should be produced.

Then, the profitability will improve as follows:

Products	A	B	C	D	Total
No of acres	40	5	4	51	100
Contribution per acre	5,300	4,900	7,550	9,600	Rs.
Total Contribution	2,12,000	24,500	30,200	4,89,600	7,56,300
Less: Fixed Overheads					5,40,000
Profit					2,16,300

The profit will improve from Rs.1,57,000 to Rs.2,16,300

Ans: 9

(i) 15,000 tins scrapped per month can be converted into 75,000 lids. (Each rejected tin can be converted into 5 lids) unusable tins are sold as scrap at Rs.8 per unit. Hence, Rs.8 can be taken as raw material cost for conversion into lids.

	15,000 tines at Rs.8		1,20,000
Add:	Conversion cost Rs.50 per 100 pieces. i.e. 50 paise per piece. 15000 x 5 = 75,000 lids x 0.50 =		37,500
	Total cost of 75,000 lids		1,57,500
	Less: Value of scrapped lids and off-cuts.		
	Weight of tins:	15,000 kgs.	
	$\frac{75,000 \times 120 \text{ gms}}{1,000} =$	9,000 kgs.	
	Weight of scrap	6,000 kgs.	
	Sales value of scrap 6,000 x 5		30,000
	Net cost of 75,000 lids		1,27,500

	Cost of each lid 1,27,500 / 75,000	Rs.1.70
	Cost of buying one lid	Rs.2.00

Hence, there will be a saving of 30 paise on each lid converted instead of buying from outside. In view of saving , the proposal should be accepted.

			Rs.lakhs
(ii)	Saving in year: Buying 1,00,000 lids x 12 Months x Rs.2.00		24.00
Less:	Conversion cost:		
	75,000 lids x 12 months x 1.70 =	15.30	
	Cost of buying the balance lids = 25,000 lids x 12 months x 2.00 =	6.00	21.30
	Saving in a year		2.70

Or else, 75,000 lids x 12 months = 9,00,000 lids at Re. 0.30 each = Rs.2,70,000 savings in a year accrue to the company if the proposal is accepted.

Ans: 10
Working Notes

Statement of contributions per unit of raw material (Key factor)

	A	B	C
Contribution per unit=	2,00,000/20,000=Rs.10	4,00,000/40,000=Rs.10	3,00,000/20,000=Rs.15
Contribution per unit of Materials	10/4 = Rs.2.50	10/5 = Rs.2.00	15/6 = Rs.2.50
Ranking	I	II	I

Solution

(i) Production / Sales mix.

Product	Units	Materials (Units)	CPU	Total Amount(Rs.)
A	20,000	20,000 X 4 = 80,000	10	2,00,000
C	20,000	20,000 X 6 = 1,20,000	15	3,00,000
B	20,000	Balance 1,00,000	10	2,00,000
Total	60,000	3,00,000		7,00,000
Less: Fixed				7,50,000
Cost			(-)	50,000
Loss				

(ii) Product	No. of Units	CPU	Total Amount(Rs.)
A	20,000	10	2,00,000
C	20,000	15	3,00,000
B	20,000	10	2,00,000
B	40,000	6.25(Notes)	2,50,000

Total	1,00,000	9,50,000
Less: fixed Cost 7,50,000 + 50,000		8,00,000
=		1,50,000
Profit		

Yes, The company can optimize production of 1,00,000 units with local substitute materials.

Note 1. Imported Raw material cost Rs.3.00 per unit x 5 units = Rs.15.00
Local substitute materials 3.75 per unit x 5 unit = 18.75
Extra cost of materials 0.75 per unit 3.75
Contribution = 10.00-3.75= Rs.6.25 per unit

(iii) Product	No. of Units	CPU	Total Amount(Rs.)
A	20,000	10	2,00,000
C	20,000	15	3,00,000
B	10,000	10	1,00,000
Total	50,000		6,00,000
Add: Lease amount			2,75,000
			8,75,000
Less: Fixed cost			7,50,000
Profit			1,25,000

60,000-50,000 = 10,000

The company cannot enhance profits by leasing out a part of the plant.

Conclusion – The proposal at (ii) will maximize the profit at Rs.1,50,000.

Ans:12

Working Note 1

The following are the semi-variable expenses: Direct Materials, Repairs and Maintenance, selling and distribution expenses and miscellaneous expenses. These have been segregated as follows:

(a)	Direct Materials		80%		43,00,000
			60%		32,50,000
	Difference		20%		10,50,000
	Variable	20%		10,50,000	
	For	60%		31,50,000	
	Fixed: 32,50,000-31,50,000 = Rs.1.00 lakh				
(b)	Repairs and Maintenance		80%		2,30,000
			60%		2,10,000
	Difference		20%		20,000
	Variable	20%		20,000	
	For	60%		60,000	
	Fixed : 2,10,000-60,000 = Rs.1,50,000				
(c)	Selling and distribution :		80%		2,60,000
			60%		2,20,000

	Difference	20%		40,000
	Variable	20%	40,000	
	For	60%	1,20,000	
	Fixed: 2,20,000-1,20,000 = Rs.1.00 lakh			
(d)	Miscellaneous Exp :	80%		1,30,000
		60%		1,10,000
	Difference	20%		20,000
	Variable	20%	20,000	
	For	60%	60,000	
	Fixed: 1,10,000-60,000 = Rs.50,000			

Working Note 2.

Details of variable cost and fixed cost at 60% and 80%

Variable Cost	60%	80%
Direct Materials	31,50,000	42,00,000
Direct Labour	12,00,000	16,00,000
Electric Power	1,20,000	1,60,000
Consumables	2,40,000	3,20,000
Repairs and Maintenance	60,000	80,000
Indirect Labour	4,50,000	6,00,000
Selling and distribution	1,20,000	1,60,000
Miscellaneous	60,000	80,000
	54,00,000	72,00,000
Fixed Cost:		
Direct Materials	1,00,000	
Repairs and Maintenance	1,50,000	
Admn. Exp.	3,00,000	
Salaries	4,00,000	
Selling and distribution	1,00,000	
Depreciation	3,00,000	
Miscellaneous	50,000	
	14,00,000	14,00,000
Total	68,00,000	86,00,000

Solution

(a) Contribution /sales ratio is 31.25% i.e., variable cost / sales ratio is 68.75%

Hence, current sales : 54 lakhs x $\frac{100}{68.75\%}$ = Rs.78,54,545

Less: Total Cost 68,00,000

Current Profit 10,54,545

(b) Current Break-even Sales = F/P.V. Ratio

Rs.14 lakhs/31.25% = Rs.44,80,000

(c) New order is for 20% capacity

For 60% capacity, variable cost is Rs.54 lakhs

For 20% capacity, variable cost is Rs.18 lakhs

Hence, price to be quoted for new order:
i.e., Sale price = 18 lakhs x $\frac{100}{68.75\%}$ =Rs.26,18,182

(d) At 60% capacity

	Rs.
Sales	78,54,545
Less: Variable cost	54,00,000
Contribution	24,54,545
Variable Direct Materials	31,50,000

Material is in short supply. Hence, contribution per Rupee of Material:

$\frac{24,54,545}{31,50,000}$ = 0.7792206

Direct material for 20% CAPACITY = 31,50,000 X $\frac{20}{60\%}$ = 10,50,000

Contribution on the new order : 10,50,000 x 0.7792206 = 8,18,182

Sales price for the New Order

Sales x P/v Ratio = Contribution

Sales Price = $\frac{\text{Contribution}}{\text{P/v ratio}}$ = $\frac{8,18,182}{31,25\%}$ = Rs.26,18,182 to be quoted

For the new order.

Note: Answer at (c) and (d) above will be the same, i.e.,Rs.26,18,182.

Ans:13

To maximize Profit.

(a) Statement of current profit (Rs.lakhs)

Products	A	B	C	Total
Direct Materials : 10,000 x 20	2.00	0.80	1.44	4.24
Direct labour : 10,000 x 12	1.20	0.70	0.96	2.86
Variable overheads : 10,000 x 8	0.80	0.50	0.48	1.78
Marginal cost	4.00	2.00	2.88	8.88
Sales 10,000 x 64	6.40	3.00	4.16	13.56
Contribution	2.40	1.00	1.28	4.68
Less: Fixed overheads 10,000 x 6	0.60	0.30	0.32	1.22
Profit 10,000 x 18	1.80	0.70	0.96	3.46
Ranking according to profitability	I	III	II	
P/v Ratio = $\frac{C}{S}$ x 100	$\frac{2.40}{6.40}$ x 100 =37.5%	$\frac{1.00}{3.00}$ x 100 33 1/3 %	$\frac{1.28}{4.16}$ x 100 30.77%	

		3		

(b) Though the contribution per unit of C is lowest, it should not be discontinued. Instead, B should be discontinued. Total contribution from C is more than that of B.

Analysis:

Product	A	B	C
Selling price	64	60	52
Less: Variable cost	40	40	36
CPU	24	20	16

If C is discontinued, Sales of A and B will increase by 50%.

		Rs.lakhs
Contribution		
A	10,000 + 50% = 15,000 units at 24= 3.60	
B	5,000 + 50% = 7,500 units at 20= 1.50	
		5.10
Less: Fixed overheads		1.22
Profit		3.88

If B is discontinued, sales of A and C will increase by 50%

Contribution		
A		3.60
C	8,000 + 50% = 12,000 units at 16 =	1.92
		5.52
Less: Fixed overheads		1.22
Profit		4.30

Hence, C should not be discontinued. Product B should be discontinued. Then , the profit will improve to Rs. 4,30,000.

Present profit	3,46,000
Proposed profit	4,30,000
Increase in profit	84,000

C. Product D:

Selling Price		48
Less: Marginal cost		25
Contribution per unit	Rs.	23

Total contribution Rs.5,52,000 less contribution from a & C 3,68,000 = 1,84,000

Minimum sales = Rs.1,84,000/23 = 8,000 units are to be sold in order to ensure maximum profit as per (b) above, i.e., Rs.4,30,000.

Statement of Profitability

	Rs.lakhs
Contribution from A (original level)	2.40
Contribution from C (original level)	1.28

Contribution from D (proposed) 8,000 x 23	1.84
Total Less: Fixed overheads	5.52 1.22
Profit	4.30

Ans:14
Working Note

Statement of contribution per labour hour (limiting Factor)

	P	Q	R
Selling price / unit (Rs.)	80	60	50
Variable cost / unit (Rs.)	62	49	36
Contribution (Rs.)	18	11	14
Labour hrs/unit 20/10=	2	1.5	1
Contribution /labour hr(Rs.) 18/2=	9	7.33	14
Current sales (Units)	15,000	20,000	10,000

Solution

(a) Current Profit

Contribution:	P : 15,000 x Rs.18	=	Rs.2,70,000
	Q : 20,000 x Rs.11	=	Rs.2,20,000
	R : 10,000 x Rs.14	=	Rs.1,40,000
	Total contribution		Rs.6,30,000
	Less: Fixed overheads		Rs.5,50,000
	Profit as per estimate		Rs. 80,000

(b) Labour is the limiting factor

Total Labour Hours utilized for the above production units : (Production and sales same).

P	=	30,000 hrs.(15,000 x 2)
Q	=	30,000 hrs.(20,000 x 1.5)
R	=	10,000 hrs.(10,000 x 1)
		70,000 hrs
Available hrs.		75,000 hrs.

Since contribution per labour hour is Maximum for R, and since labour hour is the limiting Factor, normally this excess 5,000 hrs have to be allocated to R. But, increase in production / sales is limited to 25% of current sales of any one of the products:

Product (i)	Labour hours available (ii)	Production/sales possible (iii)	25% of current sales (iv)	Lower of the (iii) & (iv)	Contribution per unit (Rs.)	Total contribution Rs.
P	5,000	2,500	3,750	2,500	18	45,000
Q	5,000	3,333	5,000	3,333	11	36,663
R	5,000	5,000	2,500	2,500	14	35,000

Contribution is highest for P.P should be chosen and after deduction of Rs. 30,000 for advertisement, profit is Rs.15,000.

© If selling price is reduced by 5% the position will be as follows:

Product	Reduced Selling price Rs.	Variable cost Rs.	Contribution per unit Rs.	Labour hrs reqd per unit	Contribution per labour hour	Ranking for production Rs.
P	80-5%=76	62	14	2	7	II
Q	60-5%=57	49	8	1.5	5.33	III
R	50-5% 47.50	36	11.50	1	11.50	I

Since labour hours are limited to 75000 hours only,product mix will be as follows:

Product	No of units with increase	Labour hrs. reqd.	Total contribution
R	15,000	15,000	@ Rs.11.5=1,72,500
P	22,500	45,000	@ Rs.14 =3,15,000
Q	10,000 (15,000/1.5)	15,000 (Bal.Fig)	@ Rs. 8 = 80,000
		75,000	5,67,500

Less: Fixed overheads	5,50,000
Profit	17,500

This proposal is not recommended because of lower profit.

Ans. 15:

Bloom Ltd.

Peak Season.

Statement of Contribution and BEP (in units)

Figures Rs.

	Product	***A***	***B***	***C***
A.	Selling Price per unit	550	630	690
	Variable Costs per unit:			
	Direct Material	230	260	290
	Direct Labour	110	120	150
	Variable Overhead – Production	100	120	130
	Variable Overhead-Selling	10	20	15
B.	Total Variable Cost	450	520	585
C.	Contribution / unit (A – B)	100	110	105
D.	Direct Labour hours / required per unit	8	11	7
E.	Contribution per Labour Hour (C / D)	12.5	10	15
F.	Ranking	2	3	1

	General Fixed Overhead				20,000
	Specific Fixed overhead		2,000	4,780	6,780
G.	Total Fixed Overhead				26,780
H.	BEP (units) (for only 1 Product at a time) (G/C)	$\frac{20,000}{100}=200$	$\frac{22,000}{110}=200$	$\frac{24,780}{105}=236$	

Maximum units that can be produced of product C with limited labour hours 1,617.

$=\frac{1,617}{7}=231.$

231 < Break Even units.

Hence, Bloom Ltd. cannot produce C.

Next rank = A

Maximum units of A that can be produced with limited labour hours = $\frac{1,617}{8}=202$ units.

Break Even units of A = 200

∴ Profit if only A is produced

	Rs.
Contribution = Rs. 202 × 100	20,200
Fixed Cost	20,000
Profit	200

Off Season

Bloom Ltd.
Off Season
Statement of Contribution and demand

Figures Rs. per unit

	Product	***A***	***B***	***C***	
A	Selling Price	550	604	690	
	Direct Material	230	260	290	
	Direct Labour	100	99	149	
	Production-Variable Overhead	100	120	130	
B	Total Variable Cost	430	479	569	
C	Contribution per unit (A – B)	120	125	121	
	Ranking	3	1	2	
	Maximum demand	100	115	135	
	Overall limit of production				215 units

Statement of profitability under different options

(limit of production = 215 units)

	A	B	C	Total	Fixed Cost	Profit (loss)
Contribution per unit	120	125	121	-		
Option 1: Units	-	115	100	215		
Contribution (Rs.)	-	14,375	12,100	26,475	26,780	(305)
Option 2: Units	100	115	-	215		
Contribution (Rs.)	12,000	14,375	-	26,375	22,000	4,375
Option 3: Units	80	-	135	215		
Contribution (Rs.)	9,600	-	16,335	25,935	24,780	1,155

Best strategy is to produce 100 units of product A and 115 units of product B during off- season.

Maximum profit = Rs. 4,375.

(i) Best strategy for peak-season is to produce 202 units of A. (ii) Maximum profit for off-season Rs. 4,375.

Ans. 16:

Calculation of area to be cultivated in respect of each crop to achieve the largest total profit

Available information:

Land available for all four vegetables	340 hectares
Land available for peas and carrots	140
Total land available	480
Min. requirement of each variety	500 boxes
Max. requirement of each variety	113750 boxes

	Potato	Peas	Carrots	Tomatoes
Boxes per hectare	350	100	70	180
(a) Market price	Rs. 30.76	Rs. 31.74	Rs. 36.80	Rs. 44.55
(b) Variable costs:				
Direct material	2.72*	4.32	5.49	3.47
Labour – Growing	5.12*	12.16	10.63	5.87
- Harvesting & Packing	7.20	6.56	8.80	10.40
Transport per box	10.40	10.40	8.00	19.20
Total variable costs	25.44	33.44	32.92	38.94
(c) Contribution per box (a)-(b)	5.32	(1.70)	3.88	5.61

Contribution per hectare × Boxes per hectare (c)	1862	(170)	271.60	1009.80
Ranking	I	IV	III	II

*Cost per hectare ÷Boxes per hectare

Best cultivation plan: From 140 hectares for peas and carrots:

Peas: Minimum 5000 boxes = 5000÷100 = 50 hectares

Carrots: Balance land 140 hectares – 50 hectares = 90 hectares

From 340 hectares all four vegetables:

Tomatoes: Minimum 5000 boxes = 5000÷180 = 28 hectares

(in terms of complete hectares)

Potatoes: Balance of land i.e. 340 -28 = 312 hectares

Area to be cultivated for each variety and total contribution

	Potatoes	Peas	Carrots	Tomatoes
Hectares	312	50	90	28
Contribution per hectares	Rs. 1862	(170)	271.60	1009.80
Contribution	Rs. 580944	(8500)	24444	28274.40
Total contribution				Rs. 625162.40
Less: Fixed expenses				424000.00
Profit				201162.40

(i) Analysis to show whether land development should be undertaken

Carrot yield a lower contribution per hectare than Potatoes and Tomatoes, but it is grown in excess of the requirement of 5000 boxes or 72 hectares i.e. 5000 boxes ÷700. Therefore, 18 hectares i.e., 90 hectares – 72 hectares can be made available for Potatoes and Tomatoes by land improvement.

After land improvement the contribution per hectare of Tomatoes will be foloows:

Present contribution per hectare	Rs. 1009.80
Saving per hectare after land improvement Rs. 2.60 ×180 boxes	460.00
	1477.80

Allocation of 18 hectares available

Crop	Maximum Sales (Boxes)	Present Production (Boxes)	Addl. Reqt. (Boxes)	Yield per hectare (Boxes)	Additional hectares to be allotted

Potatoes	113750	109200*	4550	350	13
Tomatoes	113750	5000	900	180	5(B.F.)

* 312 hectares X 350 boxes = 109200

Profit by revised Cultivation plan

	Potatoes	Peas	Carrots	Tomatoes	Total
Hectares	325	50	72	33	480
Contribution per hectare	Rs. 1862	(170)	271.60	1477.80	
Total contribution	Rs. 605150	(8500)	19555.20	48767.40	664972.60
Less: Fixed cost (revised)*					440200.00
Profit					2224772.60

*Capital expenditure	= 18 hectares	X 6000 = 108000
Interest (108000 X 0.15)	= Rs. 16200	
Existing fixed expenses	424000	
	440200	

Conclusion: Since the profit after land development is greater, the company should implement the proposal to develop 18 hectares of land.

Question 17: (i) Statement of Cost break-up

	Sambalpur		*Bilaspur*	
	Total cost (Rs. Lacs)	*Cost per M.T. of output (Rs.)*	*Total cost (Rs. Lacs)*	*Cost per M.T. output (Rs.)*
Material cost	198	1,650	240	1,600
(Refer to working note)	(6,000 M. T. × Rs.1,800 + 3,600 M. T. × Rs.2,500)	(Rs.198 lacs/ 12,000 M. T.)	(12,000 M. T. × Rs.12,000)	(Rs. 240 lacs/ 15,000 M. T.)
Other variables	156	1,300	192	1,280
		(156 lacs/ 12,000 M. T.)		(192 lacs/ 15,000 M. T.)
Fixed Cost	108	900	120	800
		(108 lacs/ 12,000 M. T.)		(120 lacs/ 15,000 M. T.)
Total Cost	462	3,850	552	3,680

Working Note:

	Sambalpur	*Bilaspur*
Annual output (M. T.)	12,000	15,000

Maximum possible output (M. T.)	15,000	25,000
	(12,000/80%)	(15,000/60%)
Basic raw material requirement (M. T.)	9,600	12,000
	(12,000 × 80%)	(15,000 × 80%)
Material available locally (M. T.)	6,000	16,000
Possible output from local material (M. T.)	7,500	20,000
	(6,000 / 80%)	(16,000 / 80%)

(ii) Quantity of production at each unit from the availability of local supplies of basic raw material:

	Sambalpur	*Bilaspur*
Maximum output/ possible (M. T.)	15,000	25,000
(Refer to above working note)		
Material cost/ M. T. of output from locals (Rs.)	1,440 (6,000 × Rs.1,800) / 7,500 M T.	1,600
Other variables / M. T. of output from locals (Rs.)	1,300	1,280
[Refer to part (i)]		
Total variable cost / M. T. of output	2,740	2,880
Possible output (M. T.) from local supplies of basic raw material	7,500	19,500
		(Balancing Figure)

(iii) Cost saving as per revised schedule of production :

	Sambalpur	*Bilaspur*	*Total*
	(Rs. lacs)	*(Rs. lacs)*	*(Rs. lacs)*
Total variable cost of output	205.5	561.6	767.1
(Refer to part ii)	(7,500 M. T. × Rs.2,740)	(19,500 M. T. × Rs.2,880)	
Fixed Cost	108.0	120.0	228.0
Total cost: (A)	313.5	681.6	995.1
Previous total cost: (B)	462.0	552.0	1014.0
[as per (i) above]			
Cost savings: {(B) – (A)}	148.5	(129.6)	18.9

Ans. 18

Statement of cost per tonne and net profit earned in respect of each factory

	Lucknow	*Pune*
Present production tonnes: (A)	7,200	10,800
	Rs.	Rs.

Cost of raw material (Rs. in lacs)	59.04	87.48
(Refer to working note 1)		
Other variable costs (Rs. in lacs)	22.32	32.94
Fixed cost (Rs. in lacs)	18.00	24.84
Total cost (Rs. in lacs): (B)	99.36	145.26
Cost per tonne (Rs) : (C) = [(B) / (A)]	1,380	1,345
Selling price (Rs. Per tonne: (D)	1,450	1,460
Net profit per tonne (Rs.) : [(D) – (C)]	70	115
Total net profit (Rs. in lacs)	5.04	12.42
	(Rs.70 ×7,200 tonnes)	(Rs.115×10,800 tonnes)

Total profit of the company = Rs.15.46 lacs

(Rs.5.04 lacs + Rs.12.42 lacs)

Alternative production plan to earn optimum

	Lucknow	*Pune*
Maximum production capacity (tonnes)	9,000	11,880
Present production (tonnes)	7,200	10,800
	Rs.	Rs.
Cost per tonne of output:	800	810
Cost per tonne of output manufactured from locally purchased raw material: (A)		
(Refer to working note 2)		
Cost per tonne of output manufactured from material purchased from Bhopal : (B)	880	880
(Return to working note 3)		
Other variable cost (Rs.) : (C)	310	305
	$\left(\frac{\text{Rs.22.32 Lacs}}{\text{7,200 tonnes}}\right)$	$\left(\frac{\text{Rs.32.94 Lacs}}{\text{10,800 tonnes}}\right)$
Selling price per tonne (Rs.) : (D)	1,450	1,460
Contribution per tonne of Output : [(D)–{(A)+(C)}]	340	345
Contribution per tonne of Output : [(D) – {(B)+(C)}]	260	275

(When material was purchased from Bhopal)

The priority to produce 18,000 tonnes of total output is as below as apparent from the above data:

	Priority
Pune factory (Local purchase of raw material)	1st
Lucknow factory (local) purchase of raw material)	2nd
Pune factory (raw material purchased from Bhopal)	3rd
Lucknow factory (raw material purchased from Bhopal)	4th

Suggested alternative production plan :

	Production priority	*Raw Material Input(in tonnes)*	*Output (in tonnes)* *Lucknow*	*Pune*	*Total*
I	11,700 tonnes	13,000	--	11,700	11,700
II	5,400 tonnes	6,000	5,400	--	5,400
III	(11,880 – 11,700) = 180 tonnes	200	--	180	180
IV	720 tonnes balancing figure (18,000 – 17,280 tonnes)	800	720	--	720
		20,000	6,120	11,880	18,000

Working Notes:

		Lucknow	*Pune*
1.	Present production output (tonnes)	7,200	10,800
	Total raw material required for present production (tonnes)	8,000	12,000
		$\left(7,200 \times \frac{100}{90}\right)$	$\left(10,800 \times \frac{100}{90}\right)$
	Raw material produced locally (tonnes)	6,000	12,000
	Raw material product from Bhopal	2,000	--
	Cost of raw material purchased locally and from Bhopal (Rs. in lacs)	59.04 (Rs.720×6,000+ Rs.792 × 2,000)	87.48 (12,000 × Rs.729)
2.	Cost per tone of output manufactured from locally purchased raw material (in Rs.)	800	810
		$\left(720 \times \frac{100}{90}\right)$	$\left(729 \times \frac{100}{90}\right)$
3.	Cost per tonne of output manufactured from material purchased from Bhopal (in Rs.)	880	880
		$\left(792 \times \frac{100}{90}\right)$	

Ans.: 21: Throughout Accounting ratio is highest for 'Machine 2'.

∴ 'Machine 2' is the bottleneck

Contribution per unit of bottleneck machine hour :

Total 'Machine 2' hours available = 6,000

		A	B	C
A.	Contribution per unit (Rs.)	30	25	15
B.	'Machine 2' hours	15	3	6
C.	Contribution per 'Machine 2' hours (A / B)	2	8.33	2.50
D.	Ranking	3	1	2

E.	Maximum Demand	500	500	500
	'Machine 2' hours required (B × E)	7,500	1,500	3,000
	'Machine 2' hours available	1,500	1,500	3,000
	Units	100	500	500

Ans. 22:

Solution

Note-1:

	Production					
	A	B	C	Total	Mach Capacity	TA ratio
Demand (units)	200	200	200			
Hrs. required in Dept.						
Machine 1	2,400	800	400	3,600	3,200	112.5%
2	3,600	1,200	600	5,400	3,200	168.75%
3	1,200	400	200	1,800	3,200	56.25%

∴Machine 2 is the bottleneck

Note-2:

Through put contribution & rank

	A	B	C
(a) Throughput Contribution	24	20	12
(b) MR/unit in Machine 2	18	6	3
(c) Contribution/hr. Machine –2	1.33	3.33	4
Rank	III	II	I

Identification of product mix.

	Hrs. in machine 2	units
Available	3,200	
Less: Rank I C	600	200
		2,600
Less: Rank II B	1,200	200
Less: Rank III A	18	77.77
		i.e. 77 units

Ans. 23:

(a)

Machine	Time required for products				Total Time	Time Available	Machine utilization
	A	B	C	D			
1	2000	1200	400	200	3800	3000	126.67%
2	2000	1800	600	300	4700	3000	156.67%
3	2000	600	200	100	2900	3000	96.67%

Since Machine 2 has the highest machine Utilization it represents the bottleneck activity hence product, ranking & resource allocation should be based on contribution/machine hour of Machine 2.

Allocation of Resources

	A	B	C	D	Machine Utilization	Spare Capacity
Contribution per unit (Rs.)	1500	1200	1000	600		
Time required in Machine 2	10	9	3	1.5		
Contribution per Machine – hour (Rs.)	150	133.33	333.33	400		
Rank as per contribution / mach. Hour	3rd	4th	2nd	1st		
Allocation of Machine 2 time	200×10 = 2000	100 (balancing figure)	200×3 = 600	200×1.5 = 300	3000	
Production Quantity	200	100/9=11.11	200	200	2666.66	333.34
Allocation Machine 1 time	2000	11.11×6 = 66.66	400	100	2333.33	666.67
Allocation of Machine 3 time	2000	11.11×3 = 33.33	200			

Ans. 24: **W. Note 1**

		Rs. p. u	Rs. p. u.
		A	B
Material		2	40
Variable production overhead cost		28	4
TVC		30	44
Selling price		60	70
(a)	Contribution	30	26
(b)	Limiting factor (hr./u)	0.25	0.15
(c)	Contribution/hr. (a/b) Rs.	120	173.33
(d)	Rank	II	II
(e)	Budgeted production & sales	1,20,000	45,000
(f)	Maximum demand	1,44,000	54,000
	Total Fixed cost Rs	14,70,000	

W. Note-2:

Fixed overhead recovery rate =(Amount÷Budgeted hours) = 14,70,000 ÷36,750 = Rs. 40/hr.

Budgeted hours A 1,20,000 units @ Rs. 0.25 = 30,000 hrs.

B 45,000 units @ Rs. 0.15 = 6,750 hrs.

36,750 hrs.

(a)

	A	B
Contribution per unit Rs.	30	26
Less: Fixed overhead per unit Rs.	10	6
(a) Profit per unit Rs.	20	20
(b) Units	1,20,000	45,000
Total (a×b)	24 lakhs + 9 lakhs = 33 lakhs	

Management is indifferent on the basis of profit per unit however this is wrong concept on selecting the product mix.

(b)

	A	B
(a) Contribution per unit Rs.	30	26
(b) Limiting time/unit	0.02	0.015
Contribution /hr. (a/b)	Rs. 1,500	Rs. 1,733
Rank	II	II

Statement of product mix & profit

	Hrs.	*units*	*Contribution/u*	*Total*
Available	3,075			
Less: for Rank I	810	54,000	26	14,04,000
For Rank II	2,265/0.02	1,13,250	30	33,97,500
Product A				48,01,500
		Less: Fixed cost		14,70,000
		Profit		33,31,500

(c) Return per bottleneck hour = (selling price – material cost)/ (Time on bottleneck resource)

Product A = Rs. 2,900 [(Rs. 60 – Rs. 2)/ Rs. 0.02 hours]

Product B = Rs. 2,000 [(Rs. 70 – Rs. 40)/ 0.015 hours]

Product A should be sold up to its maximum capacity of utilizing 2,880 bottleneck hours (1,44,000 units × 0.02 hours). This will leave 195 hours for product B thus enabling 13,000 units (195/0.015) to be produced.

The maximum profit is calculated as follows:

	Rs.
Throughput return from product A (1,44,000 × Rs. 58)	83,52,000
Contribution from product B (13,000 × Rs. 30)	3,90,000
	87,42,000
Less: Variable overheads	35,40,000
Fixed overhead cost	14,70,000
Net profit	37,32,000

Note:

It is assumed that the variable overheads (e.g. direct labour) are fixed in the short term. They are derived from part (a) – [(120,000 × Rs. 28) + (45,000 × Rs. 4)]

Ans. 29:

Details of Computation		Capacity Machine hours	Capacity Production units @ 10 units per hour
1. Maximum capacity (365 days × 8 hours per day)		2,920	29,200
2. Practical capacity			
Maximum capacity (in hours)	2,920		
Less: Idle capacity			
Sundays: (52 days × 8 hours)	416		
Holidays (10 days × 8 hours)	80		
Plant maintenance	200	2,224	22,240
3. Normal capacity		2,000	20,000
4. Expected capacity		1,900	19,000

Determination of Factory overhead application rate

(a) *Total Budgeted overheads*	
Fixed overhead costs	Rs. 6,00,000
Variable overhead costs (2,000 hours × Rs. 100)	2,00,000
	8,00,000
(b) Normal Capacity (machine-hours)	2000
(c) (i) Factory overhead application rate (Rs. 8,00,000÷2,000) per hour	400
(ii) Factory overhead application rate (Rs. 8,00,000÷2,0000) per unit	40

Ans. 30 Working Notes:

(Amount in Rupees)

	X	*Y*	*Z*
Selling price per unit (A)	135.00	140.00	200.00
Variable costs per unit			
Direct material	32.00	76.00	58.50
Direct labour			
Department 1	45.00	25.00	50.00
Department 2	15.00	12.00	21.00
Department 3	20.00	10.00	40.00
Variable overheads	8.00	4.50	10.50
Total variable costs (B)	120.00	127.50	180.00
Contribution per unit (A–B)	15.00	12.50	20.00

(i) Statement of budgeted profitability

	X	*Y*	*Z*
Budgeted quantity (units)	19,500	15,600	15,600

Contribution per unit (Rs.)	15.00	12.50	20.00	
Total contribution (Rs.)	2,92,500	1,95,000	3,12,000	
Contribution fund (Rs.)				
Fixed overheads (Rs.)				
Profit (Rs.)				3,99,500

(ii) Contribution per direct labour hour for Department 2

	X	*Y*	*Z*
Contribution per unit (Rs.)	15.00	12.50	20
Direct labour hours per unit	5	4	7
Contribution per labour hour	3.00	3.125	2.857
Rank	II	I	III

(iii) Total hours available in department 2

X	19,500 units × 5 =	97,500 hours
Y	15,600 units × 4 =	62,400 hours
Z	15,600 units × 7 =	1,09,200 hours
Total	=	2,69,100 hours

Product	*Maximum Sales (units)*	*Direct labour hours available*	*Hours per unit*	*Output (units)*	*Hours used*	*Balance hours*
Y	19,500	2,69,100	4	19,500	78,000	1,91,100
X	23,400	1,91,100	5	23,400	1,17,000	74,100
Z	19,500	74,100	7	10,585	74,095	5

Optimal profit (Rs.) Contribution

(Rs.)

Y	19,500 × Rs. 12.50	=	Rs. 2,43,750
X	23,400 × Rs. 15	=	Rs. 3,51,000
Z	10,585 × Rs. 20	=	Rs. 2,11,700
Total Contribution		=	Rs. 8,06,450
Less fixed cost		=	Rs. 4,00,000
Profit		=	Rs. 4,06,450

Ans 31:

(a) **Flexible Budget**

Output level (units)	50,000 (Rs. in lakhs)	80,000 (Rs. in lakhs)	1,00,000 (Rs. in lakhs)
Sales	20.00	32.00	36.00
Direct Material 12.5 per unit (reduction for 1,00,000 units by Rs.0.50)	6.25	10.00	12.00
Direct wages (5.00 per unit) Semi	2.50	4.00	5.00
variable cost (variable) Factory	0.25	0.40	0.50
overhead (V) Rs.5 per unit) Selling	2.50	4.00	5.00
and Adm. (25% variable) Total	1.00	1.60	2.08
variable cost	12.50	20.00	24.58
Contribution	7.50	12.00	11.42
Fixed factory overheads (5×60,000)	3.00	3.00	3.00
Selling and adm. (6 × 60,000)	3.60	3.60	3.60
Semi variable fixed part	.30	.30	.30
Increase due to expansion		2.00	2.80
Interest		.60	.60
Depreciation		.50	.50
Special Advertisement exp.	.	.50	.
Total fixed costs	6.90	10.50	10.80
	0.60	1.50	0.62

Therefore activity level 80,000 units is most profitable level. Calculation of

Break even point

P/V ratio

7.5/20.00 × 100 = 37.5%, 12.00/32.00 × 100 = 37.5%, 11.42/36.00 × 100 = 31.72%BEP (value)

= 6.90/37.5% = Rs.18,40,000, 10.50/37.5% = Rs.28,00,000, 10.80/31.72% = 34,04,792

BEP (Units)

$$\frac{6.90 lakhs}{Rs.15} \quad \frac{10.50 lakhs}{Rs.15} \quad \frac{10.80 lakhs}{Rs.15}$$

= 46,000 units = 70,000 units = 94,571 units

Alternative Solution (BEP in Sales)

Break Even Point in value of sales: (F x S) / (S – V)

At 50000 units' level : (6,90,000 x 20,00,000)/7,50,000 = Rs. 18,40,000

At 80000 units' level : (10,50,000 x 32,00,000)/12,00,000 = Rs. 28,00,000

At 100000 units' level : (10,80,000 x 36,00,000)/11,42,000 = Rs. 34,04,553

Ans. 32: **Budget statement for April**

Overheads	Budget			Actual	variance	
	Fixed	Variable	Total		Adverse	Favourable
Management	Rs.30,000	-	30,000	30,000	-	-

Shift premium	-	3,600	3,600	4,000	400	-
ESI	6,000	7,920	13,920	15,000	1,080	-
Inspection	20,000	9,000	29,000	28,000	-	1,000
Supplies	6,000	6,480	12,480	12,700	220	-
Power	-	7,200	7,200	7,800	600	-
Lighting and heating	4,000	-	4,000	4,200	200	-
Rates	9,000	-	9,000	9,000	-	-
Repairs	8,000	5,400	13,400	15,100	1,700	-
Materials handling	10,000	10,800	20,800	21,400	600	-
Depreciation	15,000	-	15,000	15,000	-	-
Administration	12,000	-	12,000	11,500	-	500
Idle time	-	-	-	1,600	1,600	-
	1,20,000	50,400	1,70,400	1,75,300	6,400	1,500
						Rs.4,900 (A)

(b) E.S.I. This variance may be due to increase of E.S.I. rates. If this assumption is correct, than the variance will be beyond the control of management. It should be noted that actual activity is less than budgeted activity. It is , therefore, unlikely that increase is due to increase in the number of labour hours worked. Another possibility is that E.S.I. Payment might have got increased due to increase in E.S.I. rates.
Inspection: There is a possibility that standard inspection has been lowered, thus resulting in a saving in costs. If this is not due to management policy, then the variance requires immediate investigation. Another possibility is that a number of staff members have resigned and consequently actual inspection is less than the budget.
Repairs and Maintenance: This increase may be due to unexpected repair, which might not have been envisaged. The variance for this item over a period of several months should be studied to form an opinion.
Idle Time: No Idle time has been included in the budget. Consequently this idle time must be of an abnormal nature. Possible uncontrollable causes include a power failure or machine breakdown. Controllable causes may include poor scheduling or lack of material.

(c) (i) Calling for comments on variances in excess of a specific figure may not be satisfactory for control purpose. For decision on whether to investigate or not, Cost of investigation should be compared with benefits of investigation. Statistical tests may also be applied.
(ii) The statement could be improved by analyzing the expense items into their controllable and non- controllable elements. Variances should be analysed according to whether they are due to price and quantity changes. Analysis should include non- financial measures such as a comparison of actual hours worked with standard hours produced.

(d) (i) Overhead absorbed = Rs.1,58,400, i.e.,36,000 hrs x Rs.4.40
(ii) Overhead spending = Rs.4,900
(iii) Actual production was 4,000 standard hours less than budgeted production and this decline in output has resulted in a failure to recover Rs.12,000 fixed overheads. This under recovery of Rs.12,000 is also known as the volume variance.

Ans. 33: **A.Z. Limited**

Analysis of the information required for preparation of cash budget (Rs.'000)

	April	May	June	July	August
Sales receipts	-	401.70	450.28	425.88	-

Variable cost of sales (60%)	240.00	270.00	312.00	252.00	288.00
Variable production costs:					
In the month of sales (60%)	144.00	162.00	187.20	151.20	-
In prior month (40%)	108.00	124.80	100.80	115.20	-
	252.00	**286.80**	**288.00**	**266.40**	
Material costs 60% of production cost	151.20	172.08	172.80	159.84	
Purchases:					
In the month of production (50%)	75.60	86.04	86.40	79.92	
In prior month (50%)	86.04	86.40	79.92		
Payment to supplier	**161.64**	**172.44**	**166.32**		
Labour costs					
(Variable production cost x 0.3)	75.60	86.04	86.40	79.92	
Variable overhead	25.20	28.68	28.80	26.64	
(Variable production cost x 0.1)					
Variable cost was paid as follows:					
Paid in the month of incurrence (40%)	10.08	11.47	11.52	10.66	
Paid in the following month (60%)		15.12	17.21	17.28	
Variable overhead expenditure		**26.59**	**28.73**	**27.94**	

Cash budget for the month of May to July 1997

	May	June	July
Receipts from sales	401.70	450.28	425.88
Payments:			
Materials	161.64	172.44	166.32
Labour	86.04	86.40	79.92
Variable overhead	26.59	28.73	27.94
Fixed costs (12,00,000-3,00,000)/12	75.00	75.00	75.00
Capital expenditure			
Total expenditure	**349.27**	**552.57**	**349.18**
Net inflow (outflow)	52.43	(102.29)	76.70
Balance b/f	40.00	92.43	(9.86)
Balance c/f	**92.43**	**(9.86)**	**66.84**

Note. In this question language should be given particular attention:

(a) Variable production cost 60% in the same month 40% in the prior month.
Production cost relevant for cash budget for each month should be found.

(b) 60% of production cost is material 50% in the same month and 50% in the prior month.
30% of production cost is labour which is paid the same month.
10% of production cost is variable overhead, 40% is paid the same month.
60% is paid in the following months.

(c) This question illustrates the interaction of sales, purchase and manufacturing process and requires the reader to think clearly about these relationships

Ans. 34

Note: Since question has not clearly specified that whether labour efficiency is lower by ANOTHER 1% or by 1%, also it is unclear that efficiency is to reduced based on BUDGETED EFFICIENCY OR ACTUAL EFFICIENCY, hence this question can be solved in following 3 ways (after giving prompt assumption)

Solution – Way 1

Production Cost Budget
(for 6 months ending 30th September, 2009)

	30,000 units Cost per unit Rs.	Total Rs.
Material cost	180	54,00,000
Labour cost	115.47	34,64,208
Variable overhead	23.65	7,09,500
Fixed overhead	23.2	6,96,000
	342.34	1,02,69,708

Assumption : Here, difference in actual and standard time is also considered for calculating the lower efficiency i.e. 3.74% + 1% = 4.74% based on budgeted efficiency

Working Notes:

I. Material cost
Material consumption per unit = 1,600MT ÷16,000 = 0.10 MT

Consumption for 30,000 units = 3,000 MT.
Cost of 3,000 MT @ Rs. 1,800 per MT = Rs. 54,00,000.

II. Labour cost can be calculated as follows:
2008 – Total Budgeted Hour = 16,00,000 ÷40 = 40,000 hours

Labour hour budget for each unit = 40,000÷ 16,000 = 2.5

Actual time paid = 15,99,840÷ 44 = 36,360 hours

Less: Standard labour hours for 14,000 units (i.e. 14,000×2.5)= 35,000 hours
Difference in actual and standard hours = 1,360
3.74% = Difference in actual and standard hours ÷ Actual hours ×100
= 1,360 hours÷ 36,360 hours

Budget unit (2008) for each labour hour = 16,000÷40000 = 0.4 units
Less: (3.74% + 1%) = 4.74% for lower efficiency = 0.01896 units
Budget unit (2009) for each labour hour = 0.38104 units

Time required for 30,000 units (30,000 ÷ 0.38104) = 78,732 hours

Labour cost = 78,732 hours× 44 per hour = Rs. 34,64,208.

III. Variable overhead
Actual rate = Rs.2,76,000 ÷14,000 units = 19.71 per unit
Add: 20 % = 3.94
New rate 23.65

Total variable overhead = 30,000 ×23.65 = Rs. 7,09,500
IV. Fixed overhead

Actual	= Rs. 5,80,000
Add: 20%	= Rs. 1,16,000
	= Rs. 6,96,000

According to above the production cost budget will be as follows:

Solution – Way 2

Production Cost Budget
(for 6 months ending 30th September, 2009)

	30,000 units	
	Cost per unit	Total
	Rs.	Rs.
Material cost	180	54,00,000
Labour cost	111.11	33,33,352
Variable overhead	23.65	7,09,500
Fixed overhead	23.2	6,96,000
	337.96	1,01,38,652

Assumption : Here, lower efficiency of 1% is based on budgeted efficiency

Working Notes:

I. Material cost

Material consumption per unit = 1,600MT ÷ 16,000 = 0.10 MT
Consumption for 30,000 units = 3,000 MT.
Cost of 3,000 MT @ Rs. 1,800 per MT = Rs. 54,00,000.

II. Labour Cost:

2008 – Total Budgeted Hour = 16,00,000 ÷40	= 40,000 hours
Budget unit (2008) for each labour hour = 16,000÷40000	= 0.4 units
Less: 1% for lower efficiency	= 0.004units
Budget unit (2009) for each labour hour	= 0.396 units
Time required for 30,000 units (30,000 ÷ 0.396)	= 75,758 hours

Labour cost = 75,758 hours × 44 per hour = Rs. 33,33,352

III. Variable overhead

Actual rate = Rs.2,76,000÷14,000 units	= 19.71 per unit
Add: 20 %	= 3.94
New rate	23.65
Total variable overhead = 30,000 ×23.65	= Rs. 7,09,500

IV. Fixed overhead

Actual	= Rs. 5,80,000
Add: 20%	= Rs. 1,16,000
	= Rs. 6,96,000

Solution – Way 3

Production Cost Budget

(for 6 months ending 30th September, 2009)

	30,000 units	
	Cost per unit	Total
	Rs.	Rs.
Material cost	180	54,00,000
Labour cost	115.44	34,63,196
Variable overhead	23.65	7,09,500
Fixed overhead	23.2	6,96,000
	342.29	1,02,68,696

Assumption : Here, lower efficiency of 1% is based on actual efficiency

Working Notes:

I. Material cost

Material consumption per unit = 1,600MT ÷ 16,000 = 0.10 MT
Consumption for 30,000 units = 3,000 MT.
Cost of 3,000 MT @ Rs. 1,800 per MT = Rs. 54,00,000.

II. Labour Cost:

2008 – Total Actual Hour = 15,99,840 ÷44	= 36,360 hours
Actual unit (2008) for each labour hour = 14000÷36360	= 0.385 units
Less: 1% for lower efficiency	= 0.00385units
Budget unit (2009) for each labour hour	= 0.38115 units
Time required for 30,000 units (30,000 ÷ 0.38115)	= 78,709 hours

Labour cost = 78,709 hours × 44 per hour = Rs. 34,63,196

III. Variable overhead

Actual rate = Rs.2,76,000÷14,000 units	= 19.71 per unit
Add: 20 %	= 3.94
New rate	23.65
Total variable overhead = 30,000 ×23.65	= Rs. 7,09,500

IV. Fixed overhead

Actual	= Rs. 5,80,000
Add: 20%	= Rs. 1,16,000
	= Rs. 6,96,000

Ans. 35: (a) Cash Budget for October, November and December 1990

	October	November	December
Opening balance of bank (overdraft)	Rs.35,000	Rs.(9,100)	Rs.(12,600)
Cash inflows – Sales:		-	
From cash sales of current month	5,000	6,000	8,000
From credit sales of previous month	15,000	18,000	20,000
Total Receipts (A)	55,000	14,900	15,400
Cash outflows:			
Creditors for purchases of the			

preceding month	40,000	23,000	27,000
Equipment	16,000	-	-
Wages	3,000	3,000	3,000
Administration	1,500	1,500	1,500
Rent	3,600	-	-
Dividend	-	-	15,000
Total payment (B)	64,100	27,500	46,500
Closing balance (Overdraft) (A-B)	(9,100)	(12,600)	(31,100)

(b) Budgeted Income Statement for three months ending 31st December 1990

Sales		Rs.82,000
Less: Cost of Goods Sold:		
Material- Opening Stock	Rs.20,000	
Add: Purchases (23,000 + 27,000 + 26,000)	76,000	
	96,000	
Less: Closing stock	43,500	
Cost of material consumed	52,500	
Wages (3,000 x 3 0	9,000	61,500
Gross profit		20,500
Less: Rent [3,600 x (3 / 12)]	900	
Administration (1,500 x 3)	4,500	
Depreciation [3,000 x (3 / 12)]	750	
Less on sale of asset (Rs.15,000 – Rs.14,000)	1,000	7,150
Net profit		13,350

Working Notes:

(i)	Total Sales	Credit Sales	Cash Sales	Total
	October 1990	Rs.18,000	Rs.5,000	Rs.23,000
	November 1990	20,000	6,000	26,000
	December 1990	25,000	8,000	33,000
		63,000	19,000	82,000

For Cost of Sales:

(ii)	Sales for the quarter	Rs.82,000
	Less: Gross Profit 25% of Sales	20,500
	Cost of sales	61,500
(iii)	For Material consumed:	
	Cash of sales for three months	Rs.61,500
	Less: Wages (3,000 x 3)	9,000
	Cost of material consumed	52,500
(iv)	For closing stock of material	
	Opening stock of material	Rs.20,000
	Add: Purchases (23,000 + 27,000 + 26,000)	76,000
		96,000
Less: Material consumed		52,500
Closing stock of material		43,500

Ans36:

(a) Production Budget for product A and B

	A units	B units
Inventory at the end of the year	1,000	2,000
Sales forecast	8,000	15,000
Total requirements	9,000	17,000
Less: Beginning inventory	3,000	5,000
Production	6,000	12,000

Budgeted requirements of components P, Q and R

Components	**P**	**Q**	**R**
For Product **A**: Production 6,000 units			
P: 6,000 × 1 per unit	6,000		
Q: 6,000 × 2 per unit		12,000	
For Product **B**: Production 12,000 units			
P: 12,000 × 2 per unit	24,000		
Q: 12,000 × 1 per unit		12,000	
R: 12,000 × 2 per unit			24,000
For comp **R**: Production 24,000 comp			
Q: 24,000 × 1 per component **R**		24,000	
Total requirements	30,000	48,000	24,000

(b) The company is advised to adopt EOQ system.

P Q

EOQ $\sqrt{\frac{2 \times 30,000 \times 15}{20 \times 20\%}}$ $\sqrt{\frac{2 \times 48,000 \times 15}{8 \times 20\%}}$

= 1,500 components = 3,000 components

(c) Calculation of savings arising from switching over to the new ordering system.

Existing situation:

		P		Q
Present order quantity (units)	30,000 × ¼	7,500	48,000 × ¼	12,000
(equivalent to 3 months consumption)				
Average stock (units)	7,500 × ½	3,750	12,000 × ½	6,000
Investment in inventory of P & Q	3,750 × Rs. 2	7,500	6,000 × Re. 0.80	4,800
Total investment	Rs. 7,500 +	Rs. 4, 800	=Rs. 12,300	
Carrying cost @ 20% p.a. of average inventory investment	Rs. 12,300 × 20%			Rs. 2,460

Ordering cost:	P = 4×Rs. 15	= Rs. 60		Rs. 120
Total cost				Rs. 2,580

After switching over:

		P		Q
Economic order quantity (units)		1,500		3,000
Average stock (units)	1,500 × ½	750	3,000 × ½	1,500
Investment in inventory of P & Q	750 × Rs. 2	1,500	1,500 × Re. 0.80	1,200
Total investment	Rs. 1,500 +	Rs. 1,200	=Rs. 2,700	
Carrying cost @ 20% p.a. of average inventory investment	Rs. 2,700 × 20%			Rs. 540
Ordering cost:	P = 20×Rs. 15	= Rs. 300		
	Q = 16×Rs. 15	= Rs. 240		Rs. 540
Total cost				Rs. 1,080

Saving in costs: Rs. 2,580 – Rs. 1,080 = Rs. 1,500

Reduction in working capital: Rs. 12,300 – Rs.2,700 = Rs. 9600

Ans. 37:

(i) Material usage budget

	Products A (units)	*Products B (units)*	*Total material usage units*	*Cost per unit (Rs)*	*Total cost of materials (Rs)*
Estimated sales	5,000	10,000			
Material X : 10 units per product A and 5 units per product B	50,000	50,000	1,00,000	2	2,00,000
Material Y : 3 units per product A and 2 units per product B	15,000	20,000	35,000	3	1,05,000
Total	65,000	70,000	1,35,000		3,05,000

Material Purchase Budget

	X Units	*Y Units*	*Total*
Required for sales	1,00,000	35,000	
Add: desired closing stock			
Product A:			
1,000 units (A)× 10 units (X) =10,000 units of X	25,000		
3,000 units (B) × 5 units (X) =15,000 units of X.			

Product B:		9,000	
1,000 units (A) × 3 units (Y) = 3000 units of Y			
3,000 units (B) × 2 units (Y) = 6,000 units of Y.			
	1,25,000	44,000	
Less: Opening stock			
Product A:			
800 units (A) × 10 units (X) = 8,000 units of X	16,400		
1,680 units (B) × 5 units (X) = 8,400 units of X			
Product B			
800 units (A) × 3 units (Y) = 2,400 units of Y		5,760	
1,680 units (B) × 2 units (Y) = 3,360 units of Y.			
Units to be purchased	1,08,600	38,240	1,46,840
Cost per unit	Rs.2	Rs.3	
Cost of purchase (Rs.)	2,17,200	1,14,720	3,31,920

(ii) Production Budget

	Product A	*Product B*
	Units	*Units*
Sales	5,000	10,000
Add: Closing stock**	1,000	3,000
	6,000	13,000
Less: Opening stock	800	1,680
Production	5,200	11,320

**Calculation of closing stock:

Budgeted period is 12 weeks of 5 days each =60 days.

Product A = $\frac{5,000 \times 12}{60}$ =1,000 units

Product B = $\frac{10,000 \times 18}{60}$ =3,000 units

(iii) Wages budget for direct workers

	Product A	*Product B*	*Total*

	(hrs)	(hrs)	(hrs.)
Standard hours (budgeted)			
5,200 units (A) × 4 hours per unit and 11,320 units (B) × 3 hours per unit.	20,800	33,960	54,760
Standard hours at 80% efficiency ratio			68,450
Add: non productive time (20% of 68,450)			13,690
			82,140
Labour hours required (150 workers × 8 hours per day × 60 days)			72,000
Overtime			10,140

Wages for normal hours(72,000 × 8) = Rs 5,76,000

Wages for overtime (10,140 × 8 × 1.5) = Rs 1,21,680

Total wages = Rs 6,97,680

Ans. 39: **Production Budget**

(showing quantities to be manufactured)

	Chairs	Tables	Benches
Units to be sold (Note 1)	4,200	800	500
Add: Closing inventory as per budget	200	300	50
	4,400	1,100	550
Less: Opening inventory as per budget	400	100	50
	4,000	1,000	500

(b) **Material Purchase Budget (in quantities)**

	Timber (cu. ft.)	Upholstery (Sq. yards)
Material required for production (Note 1)	4,450	1,000
Add: Closing stock as per budget	650	260
	5,100	1,260
Less: Opening stock as per budget	600	400
Raw materials to b purchased	4,500	800

Materials Purchase (in rupees)

	Quantities to be purchased	Rate	Amount
Timber (c.ft.)	4,500	50	Rs.2,25,000
Upholstery (sq. yds.)	860	20	17,200
			2,42,200

(c) **Direct wage Cost Budget**

	Total hrs.	Rate p.h.	Amount
Carpenter's time and wages	4,625	6.00	Rs.27,750

Fixer's and finisher's time and wages	1,500	4.80	7,200
			34,950

(d) **Statement showing the variable cost of manufacture per unit of all three products.**

	Chairs	Tables	Benches
Raw materials – Timer	Rs.25.00 (0.5 x Rs.50)	60.00 (1.2 x Rs.50)	125.00 (2.5 x Rs.50)
Upholstery	5.00 (0.25 x 20)	-	-
Fixing and finishing materials cost (Note 2)	1.50	3.00	6.25
Wages			
Carpenters	4.50 (45/60) x Rs.6	6.00 (60/60) x Rs.6	7.50 (75/60) x Rs.6
Fixer's and finisher's	1.20 (15/60) x 4.80	1.20 (15/60) x 4.80	2.40 (30/60) x 4.80
	37.20	70.20	141.15

(e) **Budgeted Net Income Statement**
(For the quarter)

	Chairs	Tables	Benches	Total
Selling price (per unit)	Rs.50.00	Rs.85.00	Rs.158.00	Rs.
Less: Variable cost	37.20	70.20	141.15	
Contribution per unit (A)	12.80	14.80	16.85	
Units to be sold (B)	4,200	800	500	
Total contribution	53,760	11,840	8,425	74,025
Fixed cost for the quarter (Rs.8,000 x 30				24,000
Budgeted net income				50,025

Working Notes:

1. Raw Materials, Carpenter's Time and Fixer's and finisher's Time

	Chairs	Tables	Benches	Total
Units to be manufactured	4,000	1,000	500	
Timber (c. ft.)	2,000 (4,000 x 0.5)	1,200 (1,000 x 1.2)	1,250 (500 x 2.5)	4,450
Upholstery (sq. yards)	1,000 (4,000 x 0.25)	-	-	1,000
Carpenter's time (hrs.)	3,000 (4,000 x(45 /60)	1,000 1,000 x (60/60)	625 500 x (75/60)	4,625
Fixer's and Finisher's time(hrs.)	1,000 4,000 x(15/60)	250 1,000 x (15/60)	250 500 x (30/60)	1,500

2. Per unit cost of materials of fixing and finishing

	Chairs	Tables	Benches

Total cost of Timber and Upholstery	Rs.30	Rs.60	Rs.125
Fixing and Finishing Material will cost 5% Of total cost of timber and upholstery	1.5 (5% of 30)	3 (5% of Rs.60)	6.25 (5% of Rs.125)

Ans. 40:Necessary Calculations

Statement showing total cost and selling price and sales in units for each product

(Working Note 1)	Working	A	Working	B	Working	C
Materials		Rs.		Rs.		Rs.
M_1	(Rs.2x5 units)	10		-	2x12	24
M_2		-	(4x10)	40	(4x9)	36
M_3	(Rs.1x5 units)	5	(1x5)	5		
		15		45		60
Labour						
Department I	(Rs.2.5x4)	10	(2.5x2)	5	(2.5x2)	5
Department II	(Rs.2.0x6)	12	(2x2)	4	(2x3)	6
Department 1II	(Rs.1.5x2)	3	(1.5x4)	6	(1.5x6)	9
Variable overhead		10		20		15
Fixed Cost(Working Note 2)						
Department I	(Rs.5x4 hrs.)	20	(5x2)	10	(5x2)	10
Department II	(Rs.3x6 hrs)	18	(3x2)	6	(3x3)	9
Department 1II	(Rs.6x2 hrs.)	12	(6x4)	24	(6x6)	36
Total production cost		100		120		150
Adm.(Based on 20% of production cost)		20		24		30
Selling and Distb. Cost (40% of prod. Cost)		40		48		60
Total cost		160		192		240
Profit (25% of total cost)		40	(12 ½ % of total cost)	24	(16 2/3% of total cost	40
Selling price per unit		200		216		280
Sales in rupees		15,00,000		10,80,000		16,80,000
Sales in units		7,500		5,000		6,000
Sales in rupees / Selling price (per unit)						

(a) Production Budget for July 1986	A (Units)	B (units)	C (Units)
Sales	7,500	5,000	6,000
Less: Closing stock (given)	3,000	2,000	2,500
	4,500	3,000	3,500
Add: Closing stock : 20% reduction (working Note 3)	2,400	1,600	2,000
Production	6,900	4,600	5,500

(b) Material Usage budget for July 1986

Product	Units of product	Qty. per unit of	M_1 total Qty reqd.	Qty. per unit of	M_2 Total	M_3 Qty per units	Total Qty.

		product		product	Qty reqd.	of product	reqd.
A	6,900	5	34,500	-	-	5	34,500
B	4,600	-	-	10	46,000	5	23,000
C	5,500	12	66,000	9	49,500	-	-
Total usage in unit			1,00,500		95,500		57,500

(c) Material Purchase Budget

	M_1		M_2		M_3	
	Units	Rs.	Units	Rs.	Units	Rs.
Usage	1,00,000	2,01,000	95,500	3,82,000	57,500	57,500
(price is given Less: O/stock	24,500	49,000	20,500	82,000	17,500	17,500
	76,000	1,52,000	75,000	3,00,000	40,000	40,000
(Add: C/stock) (10% reduction)	22,050	44,100	18,450	73,800	15,750	15,750
	98,050	1,96,100	93,450	3,73,800	55,750	55,750

(d) Budgeted profit and loss account for each product and in total

	A	**B**	**C**	**Total**
Sales	Rs.15,00,000	Rs.10,80,000	Rs.16,80,000	Rs.42,60,000
Less: cost (Working Notes)	12,00,000	9,60,000	14,40,000	36,00,000
Profit	3,00,000	1,20,000	2,40,000	6,60,000

Working Notes

Note: 1. Price per unit of material and material units required for each product should be multiplied.

Note:2. Fixed overhead rate

Deptt. I $= \frac{\text{Rs.2,39,000}}{47,800}$ or Rs.5 per hour

Deptt. II $= \frac{\text{Rs.2,01,300}}{67,100}$ or Rs.3 per hour

Deptt. II $= \frac{\text{Rs.3,91,200}}{65,200}$ or Rs.6 per hour

Note:3. A = $\frac{3,000 \times 80}{100}$ or 2,400 , B = $\frac{2,000 \times 80}{100}$ or 1,600, C = $\frac{2,500 \times 80}{100}$ or 2,000

Note:4. A -7,500 x 160 =Rs. 12,00,000; B - 5,000 x 192 Rs.9,60,000;
C – 6,000 x 240 =Rs.14,40,000

Ans. 40:

Responsibility Accounting Reports

For the production manager

Cutting Department	Budgeted Rs.	Actual Rs.	Variance Rs.
Cloth	31,000	36,000	5,000 (A)
Cutting Labour	6,000	6,600	600 (A)
Cutting utilises	800	700	100 (A)
Total cutting Deptt. (A)	37,800	43,300	5,700 (A)
Sewing Department:			
Thread	500	450	50 (F)
Sewing Labour	17,000	18,400	1,400 (A)
Sewing utilities	900	950	50 (F)
Total Sewing Dept. (B)	18,400	19,800	1,400 (A)
Total (A + B)	56,200	63,100	6,900 (A)

For the director-Manufacturing

Production Department *	56,200	63,100	6,900 (A)
Production engineering expenses	13,000	12,200	800 (F)
Production manager-office expenses	18,000	17,000	1,000 (F)
Total	87,200	92,300	5,100 (A)

(* As per responsibility accounting report for the production manager)

For the Direct-Marketing

Sales representative:			
Travelling expenses	9,000	10,200	1,200 (A)
Sales commission	7,000	7,000	--
Total (A)	16,000	17,200	1,200 (A)
Sales Management:			
Office expenses	16,000	15,700	300 (F)
Advertising	4,000	4,000	—
Total (B)	20,000	19,700	300 (F)
Credit Department:			
Salaries	8,000	8,000	
Credit reports	1,200	1,050	150 (F)
Bad debt Losses	5,000	3,000	2,000 (F)
Total	14,200	12,050	2,150 (F)
Total (A + B + C)	50,200	48,950	1,250 (F)

Note: 'F' denotes favourable variance while 'A' denotes adverse variance.

Ans. 42:

Performance Budget

	Original Plan Rs.	Revised Budgeted Rs.	Actual Result Rs.	Variance Rs.

Revenue	(5,000×10)	50,000			
(4,000×10)		40,000			
(4,000×11)				44,000	4,000 (F)
Variable	(5,000×4)	20,000			
Costs (4,000×4)		16,000			
(4,000×4.5)				18,000	2,000 (A)
Contribution	(5,000×4)	30,000			
(4,000×6)		24,000			
(4,000×6.5)			26,000	2,000 (F)	
Fixed costs		20,000	20,000	21,000	1,000 (A)
Net Profit		10,000	4,000	5,000	1,000 (F)

Summary Report on Profit Plan

Planned Income (from Project plan)		Rs. 10,000
Activity variance (lost contribution margin due to shortage of materials)	(6,000)	
Selling price variance (increased Selling price of Re. 1/- per unit)		4,000
Variance cost variance (increased production Costs at 0.50 per unit)	(2,000)	
Fixed cost variance (new research programme to Develop raw materials and processes)	(1,000)	
Actual income (from income statement)		5,000