15. BUDGETARY CONTROL

ASSIGNMENT SOLUTIONS

PROBLEM NO: 1

1. Sales Budget **(in Rupees)**

Particulars	S1	S2
Sales (in units)	60,000	40,000
Selling price per unit	140	200
Sales value	84,00,000	80,00,000

2. Production Budget **(in Units)**

Particulars	S1	S2
Sales units	60,000	40,000
(+) Closing stock	25,000	9,000
(-) Opening stock	20,000	8,000
Purchase of Raw Material	65,000	41,000

Raw Materials Purchase Budget **(in Quantities & Rupees)**

Particulars	A	B	C
Raw Materials consumption			
S1 – 65000	2,60,000	1,30,000	1,30,000
S2 – 41000	2,05,000	1,23,000	41,000
Raw Materials consumption	4,65,000	2,53,000	1,71,000
(+) Closing stock	36,000	32,000	7,000
(-) Opening stock	32,000	29,000	6,000
Raw Material (Purchase) in kgs	4,69,000	2,56,000	1,72,000
Raw Material price per unit	12	5	3
Purchase of Ram Material in Rs.	56,28,000	12,80,000	5,16,000

Direct Labour budget (in Rs)

S_1 = 65,000 x 2Hr's x Rs.12 = Rs.15,60,000

S_2 = 41,000 x 3Hr's x Rs.16 = Rs.19,68,000

Total Wage Cost = Rs. **35,28,000**

Closing Finished Goods Budget:

Particulars	S_1	S_2
Direct Material		
A-12	48	60
B-5	10	15
C-3	6	3
Direct Wages	24 (2x12)	48(3x16)
Overhead	40	60
Total Cost	128	186
No. of units	25,000	9,000
Closing stock value	32,00,000	16,74,000

Profit and Loss Budget:

S_1 = 60,000 x (140-128) = 7,20,000

S_2 = 40,000 x (200-186) = 5,60,000

Profit for the year = **12,80,000**

PROBLEM NO: 2

i) **Production Budget (month wise) for the first quarter of the year 2015-16:**

Particulars	April	May	June
Product Xml			
Current month sales	8000	10,000	12,000
(+) Closing stock (25% of next month)	2,500 (10000X25%)	3,000 (12,000X25%)	4,000 (10,000X25%)
(-) opening stock	-	(2,500)	(3,000)
Production for the month	10,500	10,500	10,500
Product Yml			
Month sales	6,000	8,000	9,000
(+) Closing stock (25% of next month)	2,000 (8,000X25%)	2,250 (9,000X25%)	3,500 (14,000X25%)
(-) opening stock	-	(2,000)	(2,250)
	8,000	8,250	10,250

ii) **Production cost budget (for first quarter) of the year 2015-16:**

Particulars	Xml	Yml
Total production for the quantity (units)	34,000 (10,500+10,500+13,000)	26,500 (8,000+8,250+10,250)
Direct material per unit	220	280
Direct labour per unit	130	120
Direct man. Exp. Per unit	$2\left(\frac{400000}{200000}\right)$	$3.33\left(\frac{500000}{150000}\right)$
Total cost per unit	352	403.33
Total production cost	1,19,68,000 (34,000X352)	1,06,88,333 (26,500X403.3333)

Note:

1. Direct manufacturing expenses given is assumed as for to be budgeted production i.e. 2,00,000 & 1,50,000. for Xml & Yml given in the problem.
2. There are no opening stock of finishing goods at the beginning of the year 2015-16.

PROBLEM NO: 3

Production Budget of Product Minimax and Heavyhigh (in units)

	April		May		June		Total	
	MM	HH	MM	HH	MM	HH	MM	HH
Sales	8,000	6,000	10,000	8,000	12,000	9,000	30,000	23,000
Add: Closing Stock (25% of next month's sale)	2,500	2,000	3,000	2,250	4,000	3,500	9,500	7,750
Less: Opening Stock	2,000*	1,500*	2,500	2,000	3,000	2,250	7,500	5,750
Production units	8,500	6,500	10,500	8,250	13,000	10,250	32,000	25,000

* Opening stock of April is the closing stock of March, which is as per company's policy 25% of next month's sale.

Production Cost Budget

Element of cost	Rate (Rs.)		Amount (Rs.)	
	MM (32,000 units)	HH (25,000 units)	MM	HH
Direct Material	220	280	70,40,000	70,00,000
Direct Labour	130	120	41,60,000	30,00,000
Manufacturing Overhead				
(4,00,000 ÷ 1,80,000 × 32,000)			71,111	
(5,00,000 ÷ 1,20,000 × 25,000)				1,04,167
			1,12,71,111	1,01,04,167

PROBLEM NO: 4

i) Production Budget for the year 2013 by Quarters

		I	II	III	IV	Total
	Sales demand (Unit)	18,000	22,000	25,000	27,000	92,000
I	Opening Stock	6,000	7,200	8,100	8,700	30,000
II	70% of Current Quarter's Demand	12,600	15,400	17,500	18,900	64,400
III	30% of Following Quarter's Demand	6,600	7,500	8,100	7,400*	29,600
IV	Total Production (II &III)	19,200	22,900	25,600	26,300	94,000
V	Closing Stock (I+IV-Sales)	7,200	8,100	8,700	8,000	32,000

*Balancing Figure

ii) Break Even Point = Fixed Cost ÷ PV Ratio = Rs. 2,20,000 ÷ 13.75% = Rs.16,00,000 or 40,000 units.

P/V Ratio = (Rs.40 - Rs.34.50 = Rs. 5.50) ÷ 40 × 100 =13.75%

(Or, Break Even Point = Fixed Cost ÷ Contribution = Rs. 2,20,000 ÷ Rs. 5.50 = 40,000 Units)

Total sales in the quarter II is 40,000 equal to BEP means BEP achieved in II quarter.

PROBLEM NO: 5

a) Preparation of Production Budget (in no's)

Particulars	Oct	Nov	Dec	Jan
Demand for the month (No's)	4,000	3,500	4,500	6,000
Add: 20% of next Month's demand	700	900	1200	1300
Less: Opening Stock	(950)	(700)	(900)	(1200)
Vehicles to be Produced	3,750	3,700	4,800	6,100

b) Preparation of Purchase budget for Part – X

Particulars	Oct	Nov	Dec
Production for the Month (No's)	3,750	3,700	4,800
Add: 40% of next Month's production	1,480 (40% of 3700)	1,920 (40% of 4,800)	2,440 (40% of 6,100)
	5,230	5,620	7,240
No. of units required for production	20,920 (5,230 x 4 units)	22,480 (5,620 x 4 units)	28,960 (7,240 x 4 units)
Less: Opening stock	(4,800)	(5,920) (1,480 x 4 units)	(7,680) (1,920 X 4 units)
No. of units to be Purchased	16,120	16,560	21,280

c) Budgeted Gross Profit for the Quarter October to December

Particulars	Oct	Nov	Dec	Total
Sales in no's	4,000	3,500	4,500	12,000
Net selling price per unit*	3,46,150	3,46,150	3,46,150	
Sales Revenue (Rs in lakh)	13,846	12,115.25	15,576.75	41,538
Less: Cost of sales (Rs in lakh) (sales unit x cost per unit)	11,428	9,999.50	12,856.50	34,284
Gross Profit (Rs in Lakh)	2,418	2,115.75	2,720.25	7,254

*Net Selling Price Unit = Rs.3,95,600 – 12.5% Commission on Rs.3,95,600 = Rs.3,46,150

PROBLEM NO: 6

a)

(i) Production Budget (in Units) for the year ended 31-3-2016

Particulars	Product M	Product N
Budgeted sales (Units)	28,000	13,000
Add: Increase in Closing stock	320	160
No good Units to be Produced	28,320	13,160
Post Production Rejection rate	4%	6%

No. of units to be Produced	29,500 $\left[\frac{28,320}{0.96}\right]$	14,000 $\left[\frac{13,160}{0.94}\right]$

(ii) Purchase budget (in kgs and value) for Material Z

Particulars	Product M	Product N
No. of Units to be Produced	29,500	14,000
Usage of Material Z per unit of production	5 Kg	6 Kg
Material Needed for Production	1,47,500Kg	84,000 Kg
Materials to be Purchased	1,63,889 Kg $\left[\frac{1,47,500}{0.90}\right]$	88,421 Kg $\left[\frac{84000}{0.95}\right]$
Total quantity to be Purchased	2,52,310 Kg	
Rate per Kg of Material Z	Rs.36	
Total Purchase Price	Rs.90,83,160	

b) Calculation of Economic Order Quantity for Material Z

$$EOQ = \sqrt{\frac{2x2,52,310KgxRs320}{Rs36x11\%}} = \sqrt{\frac{16,14,78,400}{Rs3.96}} = 6,385.72 \text{ Kg}$$

c) Since, the Maximum number of order per year cannot be More than 40 orders and the Maximum quantity per order that can be Purchased is 4,000kg. Hence, the total quantity of Material Z that can be available for Production

= 4,000kg x 40 orders = 1,60,000 kg.

Particulars	Product M	Product N
Material needed for Production to maintain the same Production Mix	1,03,929 Kg $\left[1,60,000x\frac{1,63,889}{2,52,310}\right]$	56,071 Kg $\left[1,60,000x\frac{88,421}{2,52,310}\right]$
Less: Process Wastage	10,393 Kg	2,804 Kg
Net Material available for Production	93,536 Kg	53,267 Kg
Units to be Produced	18,707 Units $\left[\frac{93,536Kg}{5Kg}\right]$	8,878 Units $\left[\frac{53,267Kg}{6Kg}\right]$

PROBLEM NO: 7

a)

i) Production Budget for January to March 2009 (Quantitative)

Particulars	Jan	Feb	Mar	April
Budgeted sales	10,000	12,000	14,000	15,000
Add: Budgeted closing stock (20% of sales of next month)	2,400	2,800	3,000	3,000
	12,400	14,800	17,000	18,000
Less: Opening stock	2,700	2,400	2,800	3,000
Budgeted Output	9,700	12,400	14,200	15,000

Total Budgeted output for the Quarter ended March 31, 2009 = (9,700+12,400+14,200) = 36,300 Units

ii) Raw Material Consumption Budget (in quantity)

Month	Budgeted output (Units)	Material 'X' @ 4 kg Per Unit (kg)	Material 'Y' @ 6 Kg Per Unit (kg)
Jan	9,700	38,800	58,200
Feb	12,400	49,600	74,400
Mar	14,200	56,800	85,200
Apr	15,000	60,000	90,000
Total		2,05,200	3,07,800

iii) Raw Materials Purchase Budget (in quantity) for the Quarter ended (31-3-2009)

Particulars	Material x (kg)	Material y (kg)
Raw Material required for Production	1,45,200	2,17,800
Add: Closing stock of Raw Material	30,000	45,000
	1,75,200	2,62,800
Less: Opening Stock of Raw Material	19,000	29,000
Material to be Purchased	1,56,200	2,33,800

b) Material Cost Variances

	SQ	SP	SQ x SP	AQ	AP	AQ x AP	RSQ	RSQ x SP	AQ x SP
X	1,60,000	10	16,00,000	1,65,000	10.20	16,83,000	1,61,200	16,12,000	16,50,000
Y	2,40,000	15	36,00,000	2,38,000	15.10	35,93,800	2,41,800	36,27,000	35,70,000
	4,00,000		**52,00,000**	**4,03,000**		**52,76,800**	**4,03,000**	**52,39,000**	**52,20,000**

Direct Material cost variance = SQ x SP – AQ x AP = Rs.52,00,000 - Rs.52,76,800 = Rs.76,800 (A)

Material price variance = AQ x SP – AQ x AP = Rs.52,00,000 - Rs.52,76,800 = Rs.56,800 (A)

Material usage variance = SQ x SP – AQ x SP = Rs.52,00,000 - Rs.52,20,000 = Rs.20,000 (A)

Verification:

Direct Material Cost Variance = Direct Material Usage Variance + Direct Material Price Variance

= 20,000 (A) + 56,800 (A) = 76,800 (A)

Calculation of Labour Cost Variances:

Budgeted output for the quarter = 36,300 Units

Budgeted direct Labour hours = 36,300 x 3/4 hrs = 27,225 hours

Standard or Budgeted Labour rate per hour = $\frac{\text{Budgeted direct Labour Cost}}{\text{Budgeted direct Labour hours}} = \frac{\text{Rs}10,89,000}{27,225\text{ hours}} = \text{Rs } 40$

Standard Labour hours for Actual Output = 40,000 Units x 3/4 hour = 30,000 hours

SH x SR	AHP x SR	AHP x AR
30,000 x 40	32,000 x 40	13,12,000
12,00,000	12,80,000	

Actual Labour hour rate = $\frac{\text{Rs}13,12,000}{32,000\text{ hours}} = \text{Rs.}41$

i) Direct Labour Cost Variance = (Std. Rate x Std. hrs)-(Actual Rate x Actual hrs)

= (Rs.40 x 30,000) – (Rs.41 x 32,000)

= Rs.12,00,000 – Rs.13,12,000 = Rs.1,12,000 (A)

ii) Direct Labour Rate Variance = Actual hrs x (Standard rate – Actual rate)

= 32,000 x (Rs.40 - Rs.41) = Rs.32,000 (A)

iii) Direct Labour Efficiency Variance = Standard Rate x (Std. hrs – Actual hrs)

= Rs.40 x (30,000 – 32,000) = Rs.80,000 (A)

Verification:

Direct Labour Cost Variance = Direct Labour Efficiency Variance + Direct Labour rate variance

= Rs 80,000 (A) + Rs 32,000 (A) = Rs.1,12,000 (A)

PROBLEM NO: 8

Flexible Budget

Activity Level Production (Units)	50% 4000(Rs)	75% 6,000(Rs)	100% 8000 (Rs)
Sales @ Rs.400 per Unit	16,00,000	24,00,000	32,00,000
Variable Costs:			
Direct Materials	3,08,000	4,62,000	6,16,000
Direct Labour	6,40,000	9,60,000	12,80,000
Power	9,000	13,500	18,000
Repairs etc.	8,000	12,000	16,000
Other Variable Cost	3,200	4,800	6,400
Total Variable Costs:	9,68,200	14,52,300	19,36,400
Fixed costs:			
Manufacturing	2,28,000	2,28,000	2,28,000
Administration, selling & Distribution	72,000	72,000	72,000
Total Fixed Costs:	3,00,000	3,00,000	3,00,000
Total costs	12,68,200	17,52,300	22,36,400
Profit (sales-variable cost)-Fixed cost	3,31,800	6,47,700	9,63,600

PROBLEM NO: 9

Head of Account	Control basis	70%	80%	90%	100%
Budgeted hours		7,000	8,000	9,000	10,000
		(Rs.)	(Rs.)	(Rs.)	(Rs.)
Variable expenses	V	1,260	1,440	1,620	1,800
Semi-variable expenses	SV	1,200	1,200	1,320	1,440
Fixed expenses		1,800	1,800	1,800	1,800
Total expenses		4,260	4,440	4,740	5,040
Recovery rate per hour		0.61	0.55	0.53	0.50

Conclusion: We notice that the recovery rate at 70% activity is Rs. 0.61 per hour. If in a particular month the factory works 8,000 hours, it will be incorrect to estimate the allowance as Rs. 4,880 @ Rs. 0.61. The correct allowance will be Rs. 4,440 as shown in the table. If the actual expenses are Rs. 4,500 for this level of activity, the company has not saved any money but has over-spent by Rs. 60 (Rs. 4,500 – Rs. 4,440).

PROBLEM NO: 10

Expense Budget of RST Ltd. for the period

	Per unit (Rs.)	30,000 units	36,000 units
		Amount (Rs.)	Amount (Rs.)
Sales (A)	200.00	60,00,000	72,00,000
Less: Variable Costs:			
- Direct Material	82.50	24,75,000	29,70,000
- Direct Wages	27.50	8,25,000	9,90,000
- Variable Overheads	27.50	8,25,000	9,90,000
- Direct Expenses	16.50	4,95,000	5,94,000
- Variable factory expenses (75% of Rs. 20 p.u.)	16.50	4,95,000	5,94,000
- Variable Selling & Dist. exp. (80% of Rs. 10 p.u.)	8.80	2,64,000	3,16,800
Total Variable Cost (B)	179.30	53,79,000	64,54,800
Contribution (C) = (A – B)	20.70	6,21,000	7,45,200
Less: Fixed Costs:			
- Office and Admin. exp. (100%)	--	1,72,500	1,72,500
- Fixed factory exp. (25%)	--	1,72,500	1,72,500
- Fixed Selling & Dist. exp. (20%)	--	69,000	69,000
Total Fixed Costs (D)	--	4,14,000	4,14,000
Profit (C – D)	--	2,07,000	3,31,200

PROBLEM NO: 11

Flexible Budget

Activity Level	50%	75%	100%
Production (units)	3,200	4,800	6,400
	Rs	Rs	Rs
Sales @ Rs 40 per Unit	1,28,000	1,92,000	2,56,000
Variable Costs:			
Direct Materials	24,640	36,960	49,280
Direct Labour	51,200	76,800	1,02,400
Power	720	1,080	1,440
Repairs etc.	850	1,275	1,700
Miscellaneous	270	405	540
Total Variable Cost	77,680	1,16,520	1,55,360
Fixed Costs:			
Manufacturing	20,688	20,688	20,688
Administration, selling and distribution	3,600	3,600	3,600
Total Costs	1,01,968	1,40,808	1,79,648
Profit	26,032	51,192	76,352

PROBLEM NO: 12

a) Flexible Budget before marketing efforts:

	Product A (Rs.) 6,000 units		Product B (Rs.) 9,000 units	
	Per unit	Total	Per unit	Total
Sales	120.00	7,20,000	78.00	7,02,000
Raw material cost	60.00	3,60,000	42.00	3,78,000
Direct labour cost per unit	30.00	1,80,000	18.00	1,62,000
Variable overhead per unit	12.00	72,000	6.00	54,000
Fixed overhead per unit	8.00	48,000	4.00	36,000
Total cost	110.00	6,60,000	70.00	6,30,000
Profit	10.00	60,000	8.00	72,000

b) Flexible Budget after marketing efforts:

	Product A (Rs.) 7,500 units		Product B (Rs.) 9,500 units	
	Per unit	Total	Per unit	Total
Sales	120.00	9,00,000	78.00	7,41,000
Raw material cost	60.00	4,50,000	42.00	3,99,000
Direct labour cost per unit	30.00	2,25,000	18.00	1,71,000
Variable overhead per unit	13.20	99,000	6.60	62,700
Fixed overhead per unit	6.72	50,400	3.98	37,800
Total cost	109.92	8,24,400	70.58	6,70,500
Profit	10.08	75,600	7.42	70,500

PROBLEM NO: 13

Master Budget for the year ending

Sales			Rs
Toughened Glass			6,00,000
Bent Glass			2,00,000
Total sales			**8,00,000**
Less: Cost of Production			
Direct Materials (60% of 8,00,000)		4,80,000	
Direct Wages (20 Workers x 150 x 12 Months)		36,000	
Prime cost		5,16,000	
Fixed Factory overhead:			
Works Manager's salary (500 x 12)	6,000		
Foreman's salary (400 x 12)	4,800		

Depreciation	12,600		
Light and Power (assumed Fixed)	3,000	26,400	
Variable Factory overhead:			
Stores and Spares (8,00,000 x 2.5%)	20,000		
Repairs and Maintenance	8,000		
Sundry expenses	3,600	31,600	
Works Cost			**5,74,000**
Gross Profit (sales-works cost)			**2,26,000**
Less: Administration, selling and distribution expenses			36,000
Net Profit			**1,90,000**

PROBLEM NO: 14

Flexible budget of department of company x

	80% (Rs.)	90% (Rs.)	100%(Rs.)	110%(Rs.)
Sales	6,00,000	6,75,000	7,50,000	8,25,000
Administration Costs:				
Office Salaries (fixed)	90,000	90,000	90,000	90,000
General expenses (2% of Sales)	12,000	13,500	15,000	16,500
Depreciation (fixed)	7,500	7,500	7,500	7,500
Rent and rates (fixed)	8,750	8,750	8,750	8,750
(A) Total Adm. Costs	1,18,250	1,19,750	1,21,250	1,22,750
Selling Costs:				
Salaries (8% of sales)	48,000	54,000	60,000	66,000
Travelling expenses (2% of sales)	12,000	13,500	15,000	16,500
Sales office (1% of sales)	6,000	6,750	7,500	8,250
General expenses (1% of sales)	6,000	6,750	7,500	8,250
(B) Total Selling Costs	72,000	81,000	90,000	99,000
Distribution Costs:				
Wages (fixed)	15,000	15,000	15,000	15,000
Rent (1% of sales)	6,000	6,750	7,500	8,250
Other expenses (4% of sales)	24,000	27,000	30,000	33,000
(C) Total Distribution Costs	45,000	48,750	52,500	56,250
Total Costs (A + B + C)	2,35,250	2,49,500	2,63,750	2,78,000

Note: In the absence of information it has been assumed that office salaries, depreciation, rates and taxes and wages remain the same at 110% level of activity also. However, in practice some of these costs may change if present capacity is exceeded.

PROBLEM NO: 15

Budget Showing Current Position and Position for 2013

	Year-2012			Year-2013			
	A	B	Total (A+B)	A	B	C	Total (A+B+C)
Sales (in units)	2,00,000	1,00,000	-	1,50,000	50,000	2,00,000	-
(A) Sales (Rs)	4,00,000	3,50,000	7,50,000	3,00,000	1,75,000	3,50,000	8,25,000
Direct Material	1,00,000	75,000	1,75,000	75,000	37,500	80,000	1,92,500
Direct wages	50,000	50,000	1,00,000	37,500	25,000	50,000	1,12,500
Factory overhead	50,000	50,000	1,00,000	37,500	25,000	50,000	1,12,500
Other variable cost	50,000	30,000	80,000	37,500	15,000	50,000	1,02,500
(B) Marginal Cost	2,50,000	2,05,000	4,55,000	1,87,500	1,02,500	2,30,000	5,20,000
(C) contribution (A-B)	1,50,000	1,45,000	2,95,000	1,12,500	72,500	1,20,000	3,05,000
Fixed costs - Factory	1,00,000						1,00,000
- Others	80,000						80,000
(D)Total Fixed Cost	1,80,000						1,80,000
Profit (C-D)	1,15,000						1,25,000

Comments: Introduction of Product C is Likely to increase profit by Rs 10,000 (i.e. From Rs.1,15,000 to Rs.1,25,000) in 2013 as Compared to 2012. Therefore, Introduction of Product C is recommended.

PROBLEM NO: 16

$$\text{Capacity Ratio} = \frac{\text{Actual Hours}}{\text{Budgeted Hours}} \times 100$$

$$75\% = \frac{\text{AH}}{\text{6,000 Units x 4 hour per unit}}$$

$$0.75 = \frac{\text{AH}}{\text{24,000 hours}}$$

AH = 18,000 Hours

$$\text{Efficiency Ratio} = \frac{\text{Actual Output in term of Standard Hours}}{\text{Actual Working Hours}} \times 100$$

$$= \frac{\text{5,000 units x 4 hours per unit}}{\text{18,000 hours}} \times 100$$

$$= \frac{\text{20,000 hours}}{\text{18,000 hours}} \times 100 = 111.11\%$$

$$\text{Activity Ratio} = \frac{\text{Actual Output in term of Standard Hours}}{\text{Budgeted Output in term of Standard Hours}} \times 100$$

$$= \frac{\text{20,000 units}}{\text{6,000 units x 4 hours per unit}} \times 100$$

$$= \frac{\text{20,000 units}}{\text{24,000 units}} \times 100 = 83.33\%$$

THE END