CHAPTER 9

MARGINAL COSTING

Question 1

A company produces single product which sells for Rs. 20 per unit. Variable cost is Rs. 15 per unit and Fixed overhead for the year is Rs. 6,30,000.

Required:

(a) Calculate sales value needed to earn a profit of 10% on sales.

(b) Calculate sales price per unit to bring BEP down to 1,20,000 units.

(c) Calculate margin of safety sales if profit is Rs. 60,000.

(Nov 2007, 3 Marks)

Answer

(a) Suppose sales units are *x* then

S = V + F + P

S = Sales

V = Variable Cost

F = Fixed Cost

P = Profit

20x = 15x + 6,30,000 + 2x

20x – 17x = 6,30,000

$\therefore \ x = \frac{6,30,000}{3} = 2,10,000 \text{ units}$

Sales value = 2,10,000 × 20 = Rs. 42,00,000

(b) Sales price to down BEP 1,20,000 units

$S = V + \frac{F}{\text{New BEP}} \ \therefore S = 15 + \frac{6,30,000}{1,20,000} \therefore \text{Rs. } 20.25.$

(c) $\text{M S Sales} = \frac{\text{Profit}}{\text{P/ V ratio}} \ \therefore \frac{60,000}{\text{P/ V}} \text{ where P/ V} = \frac{C}{S} \times 100.$

$\therefore \ \frac{60,000}{25} \times 100 = 2,40,000 \quad \text{Or} \ \frac{5}{20} \times 100 = 25\%.$

Question 2

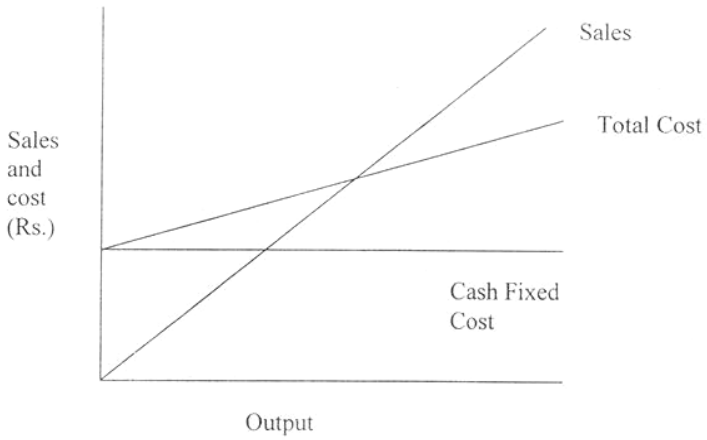
Explain and illustrate cash break-even chart.

(May 2008, 3 Marks)

Answer

In cash break-even chart, only cash fixed costs are considered. Non-cash items like depreciation etc. are excluded from the fixed cost for computation of break-even point. It depicts the level of output or sales at which the sales revenue will equal to total cash outflow. It is computed as under:

$$\text{Cash BEP (Units)} = \frac{\text{Cash Fixed Cost}}{\text{Cost per Units}}$$



Hence for example suppose insurance has been paid on 1st January, 2006 till 31st December, 2010 then this fixed cost will not be considered as a cash fixed cost for the period 1st January, 2008 to 31st December, 2009.

Question 3

A company has fixed cost of Rs. 90,000, Sales Rs. 3,00,000 and Profit of Rs. 60,000.

Required:

(i) Sales volume if in the next period, the company suffered a loss of Rs. 30,000.

(ii) What is the margin of safety for a profit of Rs. 90,000?

(May 2008, 3 Marks)

Answer

$$\text{P/V ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100$$

$$= \left(\frac{1,50,000}{3,00,000} \times 100 \right) = 50\%$$

(i) If in the next period company suffered a loss of Rs. 30,000, then

Contribution = Fixed Cost $\pm$ Profit

= Rs. 90,000 – Rs. 30,000 (as it is a loss)

= Rs. 60,000.

$$\text{Then Sales} = \frac{\text{Contribution}}{\text{P/V ratio}} \text{ or } \frac{60,000}{.50} = \text{Rs. } 1,20,000.$$

So, there will be loss of Rs. 30,000 at sales of Rs. 1,20,000.

(ii) $$\text{Margin of safety} = \frac{\text{Profit}}{\text{PV ratio}} \text{ or } \frac{90,000}{.50} = \text{Rs. } 1,80,000.$$

Alternative solution of this part:

$$\text{Break-even Sales} = \frac{\text{Fixed Cost}}{\text{PV Ratio}} = \frac{90,000}{.5} = \text{Rs. } 1,80,000$$

$$\text{Sales at profit of Rs. } 90,000 = \frac{\text{Fixed Cost} + \text{Profit}}{\text{PV Ratio}}$$

$$= \frac{90,000 + 90,000}{.5}$$

$$= \frac{1,80,000}{.5}$$

= Rs. 3,60,000.

Margin of Safety = Sales – Break-even Sales

= 3,60,000 – 1,80,000

= Rs. 1,80,000.

Question 4

ABC Ltd. can produce 4,00,000 units of a product per annum at 100% capacity. The variable production costs are Rs. 40 per unit and the variable selling expenses are Rs. 12 per sold unit. The budgeted fixed production expenses were Rs. 24,00,000 per annum and the fixed selling

expenses were Rs. 16,00,000. During the year ended 31st March, 2008, the company worked at 80% of its capacity. The operating data for the year are as follows:

Production	*3,20,000 units*
Sales @ Rs. 80 per unit	*3,10,000 units*
Opening stock of finished goods	*40,000 units*

Fixed production expenses are absorbed on the basis of capacity and fixed selling expenses are recovered on the basis of period.

You are required to prepare Statements of Cost and Profit for the year ending 31st March, 2008:

(i) On the basis of marginal costing

(ii) On the basis of absorption costing.

(Nov 2008, 8 Marks)

Answer

(i) Statement of Cost and Profit under Marginal Costing

for the year ending 31st March, 2008

Output = 3,20,000 units

Particulars	*Amount (Rs.)*	*Amount (Rs.)*
Sales: 3,10,000 units @ Rs. 80		2,48,00,000
Less: Marginal cost / variable cost:		
Variable cost of production (3,20,000 × Rs. 40)	1,28,00,000	
Add: Opening stock 40,000 units @ Rs. 40	16,00,000	
	1,44,00,000	
Less: Closing Stock		
[(3,20,000 + 40,000 – 3,10,000) @ Rs. 40 = 50,000 units @ Rs. 40]	20,00,000	
Variable cost of production of 3,10,000 units	1,24,00,000	
Add: Variable selling expenses @ Rs. 12 per unit	37,20,000	1,61,20,000
Contribution (sales – variable cost)		86,80,000
Less: Fixed production cost	24,00,000	
Fixed selling expenses	16,00,000	40,00,000
Actual profit under marginal costing		46,80,000

(ii) Statement of Cost and Profit under Absorption Costing

for the year ending 31st March, 2008

Output = 3,20,000 units

Particulars	*Amount (Rs.)*	*Amount (Rs.)*
Sales: 3,10,000 units @ Rs. 80		2,48,00,000
Less: Cost of sales:		
Variable cost of production (3,20,000 @ Rs. 40)	1,28,00,000	
Add: Fixed cost of production absorbed 3,20,000 units @ Rs. 6 (1)	19,20,000	
	1,47,20,000	
Add: Opening Stock: $40,000 \times \frac{1,47,20,000}{3,20,000}$	18,40,000	
	1,65,60,000	
Less: Closing Stock: $50,000 \times \frac{1,47,20,000}{3,20,000}$	23,00,000	
Production cost of 3,10,000 units	1,42,60,000	
Selling expenses:		
Variable: Rs. 12 × 3,10,000 units	37,20,000	
Fixed	16,00,000	1,95,80,000
Unadjusted profit		52,20,000
Less: Overheads under absorbed: (2)		
Fixed production overheads		4,80,000
Actual profit under absorption costing		47,40,000

Workings:

1. Absorption rate for fixed cost of production = $\frac{\text{Rs. } 24,00,000}{4,00,000 \text{ units}} = \text{Rs. } 6 \text{ per unit.}$

2. Fixed production overhead under absorbed = Rs. (24,00,000 – 19,20,000) = Rs. 4,80,000.

Question 5

PQ Ltd. reports the following cost structure at two capacity levels:

	(100% capacity)	
	2,000 units	*1,500 units*
Production overhead I	*Rs. 3 per unit*	*Rs. 4 per unit*
Production overhead II	*Rs. 2 per unit*	*Rs. 2 per unit*

If the selling price, reduced by direct material and labour is Rs. 8 per unit, what would be its break-even point?

(Nov 2008, 3 Marks)

Answer

Computation of Break-even point in units:

	2,000 units	1,500 units
Production Overhead I: Fixed Cost (Rs.)	6,000	6,000
	(2,000 unit × Rs. 3 per unit)	(1,500 unit × Rs. 4 per unit)
Selling price – Material and labour (Rs.) (A)	8	8
Production Overhead II (Variable Overhead) (B)	2	2
Contribution per unit (A) – (B)	6	6

$$\text{Break-even point} = \frac{\text{Fixed cost}}{\text{Contribution per unit}} = \frac{6,000}{6} = 1,000 \text{ units}$$

Question 6

Product Z has a profit-volume ratio of 28%. Fixed operating costs directly attributable to product Z during the quarter II of the financial year2009-10 will be Rs.2,80,000.

Calculate the sales revenue required to achieve a quarterly profit of Rs. 70,000.

(May 2009, 3 Marks)

Answer

P/V ratio = 28%

Quarterly fixed Cost = Rs.2,80,000

Desired Profit = Rs.70,000

Sales revenue required to achieve desired profit

$$= \frac{\text{Fixed Cost} + \text{Desired Profit}}{\text{P / V ratio}}$$

$$= \frac{2,80,000 + 70,000}{28\%} = \text{Rs.}12,50,000$$

Question 7

A Company sells two products, J and K. The sales mix is 4 units of J and 3 units of K. The contribution margins per unit are Rs.40 for J and Rs.20 for K. Fixed costs are Rs.6,16,000 per month. Compute the break-even point

(November 2009, 2 Marks)

Answer

Let 4x = No. of units of J

Then 3x = no. of units of K

$$\text{BEP in x units} = \left(\frac{\text{Fixed Cost}}{\text{Contribution}}\right) = \frac{\text{Rs.}616000}{4(40) + 3(20)}$$

$$\text{Or} \quad \frac{616000}{220} = 2800 \text{ units}$$

Break even point of Product J = 4 × 2800 = 11200 units

Break even point of Product K = 3 × 2800 = 8400 units

Question 8

Mega Company has just completed its first year of operations. The unit costs on a normal costing basis are as under:

		Rs.
Direct material 4 kg @ Rs.4	=	*16.00*
Direct labour 3 hrs @ Rs.18	=	*54.00*
Variable overhead 3 hrs @ Rs.4	=	*12.00*
Fixed overhead 3 hrs @ Rs.6	=	*18.00*
		100.00

Selling and administrative costs:

Variable	*Rs.20 per unit*
Fixed	*Rs.7,60,000*

During the year the company has the following activity:

Units produced	*= 24,000*
Units sold	*= 21,500*
Unit selling price	*= Rs.168*
Direct labour hours worked	*= 72,000*

Actual fixed overhead was Rs.48,000 less than the budgeted fixed overhead. Budgeted variable overhead was Rs.20,000 less than the actual variable overhead. The company used an expected actual activity level of 72,000 direct labour hours to compute the predetermine overhead rates.

Required :

(i) Compute the unit cost and total income under:

(a) Absorption costing

(b) Marginal costing

(ii) Under or over absorption of overhead.

(iii) Reconcile the difference between the total income under absorption and marginal costing.

(November 2009, 15 Marks)

Answer

(i) Computation of Unit Cost & Total Income

Unit Cost	*Absorption Costing (Rs.)*	*Marginal Costing (Rs.)*
Direct Material	16.00	16.00
Direct Labour	54.00	54.00
Variable Overhead	12.00	12.00
Fixed Overhead	18.00	-
Unit Cost	100.00	82.00

Income Statements

Absorption Costing		
Sales (21500 × Rs.168)		36,12,000
Less: Cost of goods sold (21500 × 100)	21,50,000	
Less: Over Absorption	28,000	21,22,000
		14,90,000
Less: Selling & Distribution Expenses		11,90,000
Profit		3,00,000

Marginal Costing		
Sales		36,12,000
Less: Cost of goods sold (21500×82)	17,63,000	
Add: Under Absorption	20,000	17,83,000
		18,29,000
Less: Selling & Distribution Expenses		4,30,000
Contribution		13,99,000
Less: Fixed Factory and Selling & Distribution Overhead (38,400 + 7,60,000)		11,44,000
Profit		2,55,000

(ii) Under or over absorption of overhead:

Budgeted Fixed Overhead	*Rs.*
72,000 Hrs. × Rs.6	4,32,000
Less: Actual Overhead was less than Budgeted Fixed Overhead	48,000
Actual Fixed Overhead	3,84,000
Budgeted Variable Overhead	
72,000 Hrs. × Rs.4	2,88,000
Add: Actual Overhead was higher than Budgeted	20,000
Budgeted	3,08,000

Both Fixed & Variable Overhead applied	
72,000 Hrs × Rs,10	7,20,000
Actual Overhead (3,84,000 + 3,08,000)	6,92,000
Over Absorption	28,000

(iii) Reconciliation of Profit

Difference in Profit: Rs.3,00,000 – 2,55,000 = Rs.45,000

Due to Fixed Factory Overhead being included in Closing Stock in Absorption Costing not in Marginal Costing.

Therefore,

Difference in Profit = Fixed Overhead Rate (Production – Sale)

18 (24,000 – 21,500) = Rs.45,000