CMA2CN1 (7.4.2020)

As we have already discussed with all formulae of the Marginal Costing in CVP analysis part we shall handle the problems from various sides.

Problem - 1

a) Sales (10000 units) Rs. 160000 b) Variable Cost Rs. 96000 c) Fixed Cost Rs. 48000

Calculate 1) Sales to break even in unit 2) Sales to break-even in sales revenue 3)Sales to earn a profit of Rs.60000

TN1 In most of the problem Contribution per unit is important. If we can find it it will be easier to solve the rest of the problem

Selling price per unit (160000/10000)   16.00

Less Variable Cost per unit (96000/10000)   <u>9.60</u>

Contribution per unit   6.40

1) Sales to Break Even (in units) Fixed Cost/Contribution per unit = 48000/6.40 = 7500 units

2) Sales to Break Even (in Value) =7500 X 16 = Rs.120000

3) Sales to earn a profit of Rs. 60000

Sales unit for a target profit = (Fixed Cost + Target profit)/Contribution per unit

(48000 + 60000)/6.40 = 16875 units ; sales volume will be 16875 X Rs 16 = Rs. 270000

Problem – 2

i) Direct Material Rs.4 per unit ii) Direct labour Rs.3 per unit iii) Variable overhead 100% of direct labour iv) Selling price Rs. 20 per unit v) Fixed overhead Rs. 50000. Find a) BEP in units b) What should be the selling price if BEP is reduced to 4000 units? c) How many units must be sold to earn a profit of Rs. 10000 d) Profit when number of units sold = 7000 units

Solution 2

Selling Price   Rs 20

Less variable cost

Dir Mat   Rs.4

Dir Lab   Rs.3

Var OH(100%

Of labour)   Rs.3   Rs. 10

Contr per unit   Rs.10

a) BEP in units = Fixed Cost/Contr per unit = 50000/10 = 5000 units

b) In BEP we know Total Cost = Total Revenue , Total Cost = Fixed+ Variable = 50000 + 4000x10 = 90000

if the total revenue is 90000 and the no of unit is 4000, so selling price per unit will be Rs.90000/4000=Rs.22.50

c) If the targeted profit is 10000, then Total contribution will be Fixed cost + targeted profit = 50000+10000 = Rs. 60000 and contribution peer unit as calculated before is Rs. 10 , so no of units to be sold is 60000/10 = 6000 units.

d) Profit = Total Contribution - Fixed Cost, or profit = 7000 x 10 – 50000 = Rs. 20000

TN2 Use BEP equation, Total revenue = Total cost and add targeted profit with fixed cost to get the total contribution at the required level

Problem 3

From the following information calculate the BEP (in units) and the turnover required to earn a profit Rs. 36000, Fixed overhead Rs. 180000, variable cost per unit Rs. 10, Selling price per unit Rs.20. If the company is earning a profit of Rs. 36000 express the margin of safety.

Solution 3

Contribution per unit = Selling price per unit – variable cost per unit = Rs. 20 – Rs. 10 = Rs.10. So BEP (uts) = Fixed Cost/Contr. Per unit = 180000/10 = 18000 units

Contribution = Fixed Cost + Profit = 180000 + 36000 = 216000. Per unit contribution is Rs.10 So the no of units to be sold to earn a profit of Rs.36000 is 216000/10 = 21600 units . the Sales value will be

21600 x 20 = Rs. 432000. So the margin of safety = Sales at selected activity – BEP sales =

432000 – 18000x20 = 432000 – 360000 = 72000 or 72000/20 = 3600 units.

TN3 be sure you know both the results of BEP in value and in units.

Problem – 4

A company had incurred fixed expenses of Rs.45000 with sales of Rs. 1500000 and earned a profit of Rs. 300000 during the first half year. In the second half it suffered a loss of Rs. 150000. Calculate i) /the PV ratio, BEP and margin of safety for the first half of the year ii) expected sale volume for the second half

year assuming that selling price and fixed expenses remained unchanged during the second half year iii) the BEP and margin of safety for the whole year.

Solution

i) For the first half of the year, Contr = F + P = 450000 + 300000 = Rs. 750000; P/V ratio = 750000/1500000=.50 = 50%, BEP(val) = F/PV = Rs 450000/.5 = Rs.900000, Margin of safety=actual sales – BEP sales = 1500000-900000 = Rs.600000

ii) In the second half Contribution = Fixed cost – loss = Rs 450000 – Rs. 150000 = Rs. 300000; P/V=C/S, so sales = C/PV = 300000/.5 = Rs.600000

iii) BEP for the whole year = Fixed cost for the whole year / P/v ratio = (450000 + 450000)/.5 = Rs.1800000; Margin of safety = Total sales of the year – BEP for the whole year = Rs. 1500000 + Rs. 600000 – Rs. 1800000 = Rs.300000

TN4 this is a typical problem when result is divided in two parts of a particular year. Be careful whether the fixed incurred separately for the two periods or it is given for the full year. Some of the results of the previous part, like sales in this problem, will be carried forward to the next part of the year.

Problem 5

A company sells its product at Rs15 per unit. In a period, if it produces and saell 8000 units it incurs a loss of Rs.5 per unit. If the volume is raised to 20,000 units it earns a profit of Rs.4 per unit. Calculate break- even point both in units and rupees.

Solution

We know Sales = Cost + Profit, so Cost = Sales – Profit, here, Cost per unit = Rs.15-(-5)=15+5=20 for 8000 units. So total cost for 8000 units is 8000x20 = Rs.160000. For 20000 volume per unit cost will be 15-4=Rs.11 per unit. So total cost of 20000 unit is 20000x11 = Rs. 220000

For 8000 units	Cost Rs. 160000
For 20000 units	Cost Rs. 220000
For 12000 units	cost Rs. 60000

Obviously the change is for variable cost which is Rs60000/12000=Rs. 5 per unit. So the total fixed cost will be 160000 – 8000xRs.5 = Rs120000.

P/v ratio is 1-v/s ratio = 1 - 5/15 = 10/15 =2/3, so BEP = F/p/v = Rs.120000/2/3 = Rs. 180000 orRs. 180000/15 = 12000 units

TN5 Here the main issue is to find the variable cost. High low method is used to get it.