COST VOLUME PROFIT ANALYSIS AND MARGINAL COSTING PROBLEMS

Problem 1:

Number of units sold is 10000; Sale price per unit is Rs.25; Variable Cost per unit is Rs.20; Fixed cost is Rs.30000; Find profit.

Problem 2:

Profit desired Rs.15000; Fixed cost Rs.25000; Sale price per unit is Rs.30; Variable cost per unit is Rs.20; Find number units to be sold.

Problem 3:

Profit desired is Rs.30000; Fixed cost is Rs.50000; Expected demand is 10000 units; Variable cost per unit is Rs.32. Find sale price.

Problem 4:

Profit desired is Rs.25000; Expected demand is 15000 units; Sale price per unit is Rs.45; Variable cost per unit is Rs.35. Find fixed cost.

Problem 5:

Profit desired is Rs.40000; Expected demand is 12000 units; Sale price per unit is Rs.60; Fixed cost is Rs.20000. Find variable cost per unit.

Problem 6:

Sale price Rs.100; Variable cost per unit Rs.80; Fixed cost Rs.200000. Find number of units to be sold, such that neither profit is earned nor loss is incurred, i.e. profit is 0.

Problem 7:

Sale price per unit is Rs.75. Variable cost per unit is Rs.60. Number of units demanded, i.e. sold is 10000. Decide which of the following proposals are justified:

a) To increase sale price by 10% which will lead to fall in demand by 5%?
b) To reduce sale price by 10% which will lead to increase in demand by 5%?
c) To use a cheaper substitute material to reduce variable cost by 5% which will lead to fall in demand by 5%?
d) To move the showroom to a better locality and increasing fixed cost thereby by Rs.15000. Increase in demand expected is 750 units.
e) To curtail production of present product by 2000 units and use spare capacity to produce 4000 units of a new product. Variable cost and sale price per unit of this new product are Rs.25 and Rs.40 respectively. If this proposal is implemented, some additional godown space will be required, enhancing present fixed cost by Rs.25000.

Problem 8:

Decide which of the proposals at problem 7 above is best.

Problem 9:

Profit per unit is Rs.10 and Total cost per unit is Rs.15. Find sale price per unit.

Problem 10:

A company is considering launching of either of two products X and Y. Decide which product should be preferred in each of the following circumstances:

a) Sale price of both the products Rs.100; Variable cost (X) Rs.75 and Variable cost (Y) Rs.60. Fixed cost (X) Rs.50000 and Fixed cost (Y) Rs.75000. Expected demand (X) 4000units and Expected demand (Y) 3300 units.
b) Sale price of both the products Rs.200. Variable cost: X Rs.140; Y Rs.130; Fixed Cost Rs.65000 in either case. Expected demand: X 4000 units and Y 3300 units.
c) Sale price of both the products Rs.50; Variable cost: X Rs.30 and Y Rs.35. Fixed cost Rs.30000 in either case. Expected demand 4000 units in either case.
d) Sale price: X Rs.50 and Y Rs.80; Variable cost: X Rs.35 and Y Rs.60. Fixed cost Rs.25000 in either case. Total sale value in either case Rs.200000.

Problem 11:

Find demand in each of the cases stated at Problem 10 above that makes both the products equally profitable.

Problem 12:

Profit at 70% capacity is Rs.50000 and that at 80% capacity is Rs.60000. Sales at 70% capacity is Rs.200000 and that at 80% capacity is Rs.225000. A proposal is under consideration to reduce sale price by 10% and variable cost by 5%. This requires modification of present production methods, increasing fixed cost by Rs.3000. If the proposal is implemented, capacity utilization is expected to rise to 90% from present 80%.

Should the proposal be accepted?

Problem 13:

Plants of a company can produce 10000 units annually of a certain product P. At present the plant is operating at 80% capacity. The company is now considering utilization of idle capacity by production of a new product Q, each unit of which takes half of plant capacity, that is required to produce each unit of P. Sale price and variable cost per unit of Q are Rs.10 and Rs.8 respectively. Additional fixed marketing cost of Rs.9000 per annum has to be incurred to market Q.

Should the proposal be accepted?

Problem 14:

A plant of a company are at present operating at 75% capacity to produce 15000 units of product K and incurs a loss of Rs.10000. Sale price and variable cost of this product is Rs.25 and Rs.20 respectively. No further increase in demand for the product K is anticipated. The company is now considering to enhance the present capacity by 20%. This will increase fixed cost by Rs.12000. The spare capacity is then proposed to be utilized for production of a popular model of K. This popular model will however compete with the present product and will

depress its demand by a further 3000 units. The popular K is expected to be sold for Rs.15 per unit. Variable cost per unit of popular K is estimated at Rs.12. The popular K will require 60% less plant capacity than the present K.

Should the proposal be accepted if expected annual demand for popular K is 20000 units? What minimum demand for popular K will justify it production? What minimum sale price will you recommend if an export order for (a) 4000 units and (b) 4500 units of present K is received.

Problem 15:

Estimate Break-even Sale and Margin of Safety for 2020 from the following data:
2018: Sales Rs.200000; Profit Rs.50000; Fixed cost Rs.40000
2019: Sales Rs.220000; Profit Rs.60000; Fixed cost Rs.35000

In the year 2020, sale price is proposed to be increased by 20%. Increase in variable cost is anticipated to be 15% over that of 2018 and 2019. Fixed cost is expected to remain at Rs.35000. Quantity sold may fall by 10% because of these changes.

Problem 16:

A company breaks even at sales Rs.100000 with fixed cost Rs.80000. If sale price is increased by 10%, quantity sold falls by 10%. If sale price is reduced by 10%, quantity sold increases by 10%. Should the price be increased, decreased or left as it is?

Problem 17:

Draw breakeven chart and P/v chart from the following data:
Fixed cost Rs.30000; P/v ratio 30%; Profit Rs.40000; Margin of safety 5000 units.

Problem 18:

Following information is available.

Year	Sales	Profit
2019	1000000	100000
2020	1500000	200000

Calculate:
(a) Profit Volume Ratio.
(b) Sales required to earn a profit of Rs.400000.
(c) Profit when sales are Rs.2000000.

Problem 19:

If sales is Rs.2000000; variable cost is Rs.1500000 and fixed cost is Rs.200000.
Calculate the following:
(a) Profit Volume Ratio
(b) Break-even Point
(c) Sales required to earn profit of Rs. 500000

Problem 20:

Year	Sales	Cost
2019	1600000	1576800
2020	2052000	1922400

From the above information, calculate: (A) P/V Ratio, (B) Fixed Ratio, (C) Break-even Point and (D) Profit/loss when sales Rs.1296000.

Problem 21:
From the following particulars, you are required to calculate:
1. Profit Volume Ratio;
2. Break-even Point;
3. Profit when sale is Rs.200000;
4. Sales required to earn a profit of Rs. 40,000;
5. Margin of safety in the 2nd year.

Year	Sales(Rs.)	Profit (Rs.)
I	240000	18000
II	280000	26000

You may assume that the cost structure and selling prices remain constant in the two years.

Problem 22:
KT & Co. has prepared the following budget estimates for the year 2019-2020: Sales 15,000 units. Sale price per unit Rs.10. Variable Costs Rs.90000 and Fixed Cost is Rs.34000.
You are required to find:
1. Profit Volume Ratio.
2. Break-even Point.
3. Margin of safety.
Also calculate revised Profit Volume Ratio, Break-even Point and Margin of Safety, if selling price per unit is reduced by 10%.

Problem 23:
Z Ltd. produces and sells a single article at Rs.10 each. The marginal cost of production is Rs.6 each and fixed cost is Rs.400 per annum.
Calculate:
1. P/V Ratio
2. The break-even sales (in Rs. and numbers)
3. The sales to earn profit of Rs.500.
4. Profit at sales of Rs.3000.
5. New break-even point if sales price is reduced by 10%.
6. Margin of safety at sales of Rs.1500.
7. Selling price per unit if the break-even point is reduced to 80 units.

Problem 24:
A product is sold at Rs.80 per unit. Its variable cost is Rs.60 and fixed cost is Rs.600000. Compute the following:
1. P/V Ratio
2. Break-even Point
3. Margin of safety at a sale of 50,000 units.
4. At what sale, the producer will earn profit at 15% on sales?

Problem 25:

From the following data, compute:

1. P/V Ratio.
2. BEP in rupees and units.
3. Number of units to be sold to earn a profit of Rs.750000.

Data given,

Sales price per unit is Rs.20; Direct material per unit Rs.5; Direct wages per unit Rs.6; Variable administrative overheads per unit Rs.3; Fixed Factory Overheads Rs.640000 p.a.; Fixed Administrative Overhead Rs.152000 p.a.

Problem 26:

The following is the cost structure of a product Selling price Rs.100 per unit.

Variable cost per unit:

Material Rs.38; Labour Rs.14; Direct Expenses Rs.8

Fixed overheads for the year:

Factory Overheads Rs.280000

Office Overheads Rs.220000

Number of Units Produced and Sold: 40,000 units.

Calculate:

1. P/V Ratio
2. Break-even Point (in units)
3. Margin of Safety (in Amount)
4. Break-even Point if fixed overheads increased by 20%.
5. Revised P/V Ratio when selling price increased by 20%.

Problem 27:

A company produces and sells 1500 units of a commodity at Rs.20 each. The variable cost of the production is Rs.12 per unit and fixed cost Rs. 8000 per annum.

Calculate:

(i) P/V Ratio

(ii) Sales at break-even point

(iii) Additional sales required to earn the same amount of profit if selling price is reduced by 10%.

Problem 28:

From the following particulars, you are required to calculate:

1. Fixed Cost.
2. Profit volume Ratio
3. Break even Sales
4. Sales to earn profit of Rs.600000
5. Margin of Safety of the year 2019

Particulars	2019	2020
Total Cost (Rs.)	1296000	1872000
Sales (Rs.)	1440000	2160000