Linear Functions

1m	2m	3m	4m	5m	Total
–	–	–	1(K)	–	4

(Knowledge based)

3 MARK QUESTIONS

1. The fixed cost of a firm and variable cost per unit of the product are ₹5000/- years and ₹5 respectively. If the selling price is ₹15/- unit. Find the

   (i) BEP in unit   (ii) Prove that total revenue is equal to the total cost at BEP.

2. A company sells x box of chalkpowder each day at ₹20 per box. The cost of manufacturing and selling these boxes is ₹15 per box. Plus a fixed dailies overhead cost of ₹900. Find the profit if 1000 boxes are manufactured and sold per day?

3. If the cost function C(x) of producing 'x' unit of a product is given by C(x) = $500x^2$ + $2500x$ + 5000 and if each unit of the product is sold at ₹6000 then find BEP.

4. The phillips light co. a manufacturing of light bulbs will break even at a sales volume of ₹2,00,000. The fixed cost is ₹40,000 and the selling price per bulb is ₹5. What is the average variable cost per bulb?

5. A manufacturer sells his product at ₹8.35 per unit. He is able to sell his entire production. His fixed cost is ₹2,116 and his varible cost per unit is ₹7.20. Find

6. A manufacturer of a product sells his entire output x. His total revenue R(x) = $7x$ and C(x) = $6x$ + 800 find the,

   (i)   BEP.

   (ii)   Write the Break Even Chart.

   (iii)   The BEP output of the total cost increased by 5%.

7. A manufacture of transistor finds that his cost function is linear. The total cost for 200 units is ₹6000 and for 300 units the total cost is ₹8000. What are the fixed cost and variable cost permit.

8. If R(x) = $1.05x$, C(x) = $0.85x$, total fixed cost = 600 (x = the volume of output) find the rupees sales and quantity sold at break even point. If a profit of ₹5000 is required how much rupees sales and volume of output are required?

9. If 'x' represents number of units produced, selling price per unit is ₹14, variable cost per unit is ₹7.33 and the fixed cost is ₹1200. Find the break-even point and quantity of sales. What is the slope of the total cost line?

10. A manufacture produce and sells bag at ₹8/- unit. His fixed cost is ₹5,550 and the variable cost per bag is ₹2.45. Find

    (i) Revenue function   (ii) Cost function   (iii) Profit function   (iv) BEP in unit

4 MARKS QUESTIONS

(Knowledge based)

1. A publishing house finds that the production of each book and the cost of the book are directly attributed. If the cost of each book is ₹30 and the fixed costs are ₹15000, selling price of each book is ₹45 then determine

   (i) Revenue function   (ii) Cost function   (iii) Break even point function

2. A confectioner makes and sells biscuit. He sells one pack of biscuit at ₹80. His cost of manufacturing is ₹40 per packet as variable cost and ₹3000 as fixed cost. Find the

   (i) Revenue function   (ii) Cost function   (iii) Profit function

   (iv) If he limits his production to 100 packets can he make profit?

   (v) What will be the number of boxes he must sell to make a profit so that he does not incur loss?

3. A manufacturer of steel vessels finds that his cost function is linear. He calculates that the total cost for 250 units is ₹8,000 and for 350 unit the total cost is ₹10,000. What are his fixed cost and variable cost per unit?

4. The daily cost of production C for x units of a manufactured product is given by

   $C(x) = 3.5x + 15000$

   (i) If each unit is sold for ₹5. Determine the minimum number of units that should be produced and sold to ensure no loss.

   (ii) If the selling price is increased by half a rupee per unit. What should be BEP.

   (iii) If 5000 units are sold daily what price per unit should be charged to guarantee no loss.

5. If the sale price per unit is ₹3, the variable cost per unit is ₹2 and the total fixed cost is ₹4,500 find the

   (i) Break even quantity.

   (ii) Total revenue function and total cost function at BEP.

   (iii) If a profit of ₹10,000 is desired the volume of output to be produced and sold.

   (iv) Sketch the break even chart.

6. A watch manufacturer produce 100 watches for a total cost of ₹20,000 and when the production is increased to 200 watches the total cost increased to ₹30,000. Assuming the cost and output to be in each related. Find the variable cost per unit, fixed cost and the slope of the line $y = a + bx$ (y = total cost). If the selling and sold what is the profit per watch. At a selling price of ₹200. What will be BEP output?

7. A shoe manufacturer is planning production of new varieties of shoes. For the first year the fixed cost of setting up the new production line are ₹1.25 lakh variable cost for producing each pair of shoes are ₹35. The sales department project that 1500 pair can be sold in the first year at the rate of ₹160 per pair.

(i) Find the cost function

(ii) Revenue function

(iii) Find the profit function for the product for the sale of 'x' pair of shoes.

(iv) If 1500 pairs are actually sold then what profit or loss does the company incur?

(v) Determine the BEP.

8. A company sells 'x' tins of talcum powder per day at ₹10 per tin. The cost of manufacturing is ₹6 per tin and the distributor charge ₹1 per tin. Besides the daily overhead cost comes to ₹600.

(i) Determine the profit function.

(ii) What is the profit if 500 tins are manufactured and sold per day.

(iii) How do you interpret the situation is the company manufacturer and sells 100 tins per day.

(iv) What is the B.E.P?

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