

Assignment 02
Eco404
Marks: 15

Question: 01

Consider the following information of the firm:

Total fixed cost = Rs. 350

Price level = Rs. 20

Average variable cost = Rs. 10

Target profit level = Rs. 250

Calculate the break even level of output and target level of output.

(Marks: 5)

Solution:

Break even output can be calculated as:

$$Q_B = \frac{TFC}{P - AVC}$$

$$Q_B = 350 / (20 - 10)$$

$$= 350 / 10$$

$$Q_B = 35$$

Target output can be calculated as:

$$Q_T = \frac{TFC + \pi_T}{P - AVC}$$

$$Q_T = (350 + 250) / (20 - 10)$$

$$= 600 / 10$$

$$Q_T = 60$$

(Marks: 2.5+2.5)

Question: 02

You have given the linear programming problem as:

Maximize Profit (π) = Rs. 20X + Rs. 8Y

Subject to the following constraints:

$$3X + 1Y + SA = 40$$

$$2X + 2Y + SB = 25$$

$$4Y + SC = 30$$

The corner points are given as:

Corner points	X	Y
A	0	0
B	7	0
C	5	3
D	2	7
E	0	7

From all this information, find the profit (Rs.) level at each point.

(Marks: 5)

Solution:

Corner points	X	Y	20X + 8Y	Profit (Rs.)
A	0	0	20(0) + 8(0)	0+0 = 0
B	7	0	20(7) + 8(0)	140+0 = 140
C	5	3	20(5) + 8(3)	100+24 = 124
D	2	7	20(2) + 8(7)	40+56 = 96
E	0	7	20(0) + 8(7)	0+56 = 56

(Marks: 1 for each)

Question: 03

Given the total revenue and total cost functions:

$$TR = 80Q - 0.00025Q^2$$

$$TC = 260,450 + 5Q + 0.00035Q^2$$

Find the profit maximizing level of output under monopoly.

(Marks: 5)

Solution:

Profit is maximized under monopoly at $MR = MC$

$$MR = 80 - 0.0005Q$$

$$MC = 5 + 0.0007Q$$

$$MC = MR$$

$$5 + 0.0007Q = 80 - 0.0005Q$$

$$0.0007Q + 0.0005Q = 80 - 5$$

$$0.0012Q = 75$$

$$Q = 75/0.0012$$

$$Q = 62500$$

(Marks: 1.5+1.5+2)

(Best of Luck)