

Institute of Management Technology (IMT), Ghaziabad  
End Term Examination

Name of the Course: **Managerial Economics**

Term: **PGDM-FT (2016-2018), End Term I**

Duration : **2.0 hours**

Max. Marks : **50**

**Closed Book Examination**

Name of the Faculty :

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*Question no. 1 is compulsory  
Of the remaining four questions ( 2 to 7 ), answer any four.*

(1) Write a maximum one-sentence answer for each of the following :  
[ Note : Each of them carry only *one* mark. ]

- (i) In a regression analysis, when can a normal test be used in place of a 't' test ?
- (ii) Which test is used to test the overall explanatory power of the entire regression ?
- (iii) A reduction in the price of resources used in the production of a commodity will shift the supply curve of that commodity in which direction ?
- (iv) An estimated Cobb-Douglas Production Function is  $Q = 20K^{0.4}L^{0.8}$  . If the firm increases simultaneously both the quantity of capital and the quantity of labour by 10% , by how much would output increase ?
- (v) It may be inefficient to unload a small truck by using a conveyor belt, but the latter may greatly enhance efficiency if a train or a ship has to be unloaded. This is an example of which type of returns to scale ?
- (vi) In the learning curve of a firm what is the variable represented on the horizontal axis, and what is it that is shown on the vertical axis?

- (vii) If an industry is comprised of four firms and their market shares are 40%, 30%, 20%, and 10%, then what is the Herfindahl index for the industry ?
- (viii) Name one oligopolistic model in which there is implicit collusion, and one in which there is explicit collusion.
- (ix) Organization of Petroleum Exporting Countries (OPEC) is an example of which type of cartel ?
- (x) Define Nash equilibrium.

2/ XYZ Ltd. estimates the monthly demand for its product( $Q_x$ ) as below:

$$\log Q_x = 1.00 - 2.50 \log P_x + 3.00 \log I - 2.00 \log P_y ; \quad \text{Adj. } R^2 = 0.31$$

(1.2)      (-2.5)      (0.02)      (-2.9)

where  $P_x$  is price of 'x', 'I' is income per capita in thousands of Rupees and  $P_y$  is price of product 'y'; natural logs have been used.

(Note: Table t-value at 5% significance level is 1.98; figures in brackets are computed 't' values.)

- 2(a) What is the value of price elasticity of demand?
- 2(b) Based on the equation, say whether the product 'x' is an inferior good, a necessity, or a luxury good, giving reason for your answer.
- 2(c) How are products 'x' and 'y' related?
- 2(d) Is the equation likely to be useful in predicting demand for the product? Why or Why not?

(2+3+3+2)

3(a) Explain the concept of returns to scale with appropriate diagrams (5)

3(b) Suppose that the production function for a commodity is given by:

$$Q = 10\sqrt{LK}, \text{ where } Q \text{ is the quantity of output, } L \text{ is the quantity of labour, and } K \text{ is the quantity of capital.}$$

(i) Indicate whether the production function exhibits increasing, constant, or decreasing returns to scale. (2)

(ii) Does the given production function exhibit diminishing returns? If so, at what level of output does law of diminishing returns begins to operate? (3)

4. Using appropriate diagrams, explain the difference between the long run equilibrium of a perfectly competitive firm and that of a monopolist. (10)

5(a) Prisoner's dilemma is a type of situation in which an equilibrium outcome is shown to be inferior to a cooperative outcome. Explain briefly.

5(c) Change one figure in the following table in such a manner that the resulting table reflects a Prisoner's Dilemma type of situation.

		Firm B	
		Low Price	High Price
Firm A	Low Price	2, 2.5	4, 1.5
	High Price	1, 3.5	5, 3

(6+4)

6. The demand function for price increases and for price cuts for an oligopolistic are

$$Q_1 = 210 - 30 P_1$$

$$Q_2 = 90 - 10 P_2$$

The oligopolist's total cost function is

$$TC = 3.5 Q + (Q^2 / 60)$$

6(a) Identify the demand curve which is above the kink and the demand curve which is below the kink. 3

6(b) Derive the  $MR_1$ ,  $MR_2$  and MC functions facing the oligopolist.

6(c) Determine the equilibrium price and output.

6(d) Determine the upper and lower limits of the MR gap and prove that MC falls in the MR gap.

6(e) Find the value of the total profits of the oligopolist at the equilibrium.

(2\*5)

7. In Ghaziabad, U.P, the movie market is monopolistically competitive. The demand function for daily attendance of moviegoers and the long-run average cost (LAC) function at the RDC Movie Theatre are respectively,

$P = 18 - 0.08Q$ , where P is the price of a ticket and Q is the no. of moviegoers,

$LAC = 20 - 0.12Q + 0.0002Q^2$

7(a) Find the (i) price that RDC will charge for admission to movies in the long run, and (ii) the long-run equilibrium number of moviegoers.

7(b) For a firm whose degree of operating leverage (DOL) at the output level 100 is 2.5, the average variable cost is Rs 10, and the average fixed cost is Rs 3. The firm decides to produce this output by using a more capital intensive method of production, whereby its average variable cost reduces to Rs 8, but its average fixed cost increases to Rs 5. Find the new DOL of the firm.

(2\*5)