LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

**B.Sc., B.Com.,** DEGREE EXAMINATION – **ECO., & COMM.,**

FOURTH SEMESTER – **APRIL 2012**

# MT 4205 / 4202 - BUSINESS MATHEMATICS

 Date : 19-04-2012 Dept. No. Max. : 100 Marks

 Time : 1:00 - 4:00

**Part A (Answer ALL questions) (2 x 10 = 20)**

1. The total cost C for output x is given by . Find the average cost of output of 10 units.
2. If the marginal function for output is given by, find the total revenue function by integration.
3. Find the differential coefficient of with respect to x.
4. Find the first order partial derivatives of .
5. Evaluate.
6. Prove that.
7. If, find *A*2.
8. If , Can you find the inverse of the matrix of A?
9. If then find *A* and *B.*
10. Define Feasible solution.

**Part B (Answer any FIVE of the following) (5 x 8 = 40)**

1. The total cost C for output *x* is given by . Find (i) Cost when output is 4 units (ii) Average cost when output is 10 units (iii) Marginal cost when output is 3 units.
2. If  then prove that .
3. For the following pair of demand functions for two commodities *X*1 and *X*2, determine the four partial marginal demands, the nature of relationship (Complementary, Competitive or neither) between *X*1 and *X*2 and the four partial elasticities of demand and .
4. Integrate with respect to *x*.
5. Prove that .
6. If  then show that .
7. Compute the inverse of the matrix .
8. Resolve into partial fractions: .

**Part C (Answer any TWO questions) (2 x 20 = 40)**

1. (a) If AR and MR denote the average and marginal revenue at any output, show that elasticity of demand is equal to. Verify this for the linear demand law.

(b) If the marginal revenue function is , show that is the demand law. **(10+10)**

1. (a) If , prove that .

(b) Evaluate. **(10+10)**

1. (a) Find the consumer’s surplus and producer’s surplus for the demand curve and the supply curve .

(b) Find the maximum and minimum values of the function.

 **(10+10)**

1. (a) Solve the equations ; ; by inverse matrix method.

(b) Solve the following LPP by graphical method:

 Maximize

 Subject to

 . **(12+8)**

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