LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

**B.A.** DEGREE EXAMINATION – **ECONOMICS**

FIFTH SEMESTER – **NOVEMBER 2012**

# EC 5404 - MATHEMATICS FOR ECONOMISTS

Date : 16/11/2012 Dept. No. Max. : 100 Marks

Time : 9:00 - 12:00

**PART – A**

**Answer any FIVE questions in about 75 words each (5 x 4 = 20)**

1. State the condition for minima in case of a function with only one independent variable.
2. Define a ‘Limit’.
3. Find dy for y = ( 2x2 + 4x – 5 )6

dx

1. The Total Cost is given as y = 200 + 1000x - 24x2 + 4x3 + x4. Find the Average Cost and Marginal Cost.
2. What is point of inflection? Support your explanation with relevant diagram.
3. Evaluate ∫ (x3 - 4x2 + x)dx
4. Find the Total Differential of

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**PART – B**

**Answer any FOUR questions in about 300 words each (4 x 10 = 40)**

1. Find the relative maxima and minima (if any) for y = x3 + 3x2 + 2
2. Explain the various types of discontinuities with relevant examples.
3. If Z = 2x2 5x2y+ xy2 + y2, find

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1. Explain the various properties of limits.
2. The demand function faced by a firm is p = 500 – 0.2x and its cost function is C = 25x + 10000, where p is the price, x is output and C is the total cost. Find the profit maximizing output and price.
3. The average cost function is given as

http://latex.codecogs.com/gif.latex?%5Cwidetilde%7By%7D=%2025-8x+x%5E%7B2%7D. Find the minimum average cost and show that at the minimum average cost, marginal cost and average cost are equal.

1. State and prove the Euler’s theorem.

**PART – C**

**Answer any TWO questions in about 900 words each (2 x 20 = 40)**

1. Minimise f (x,y) = x2 + 2y2 – xy subject to x + y = 8.
2. The demand and supply functions under pure competition are, respectively, Pd = 16 – x2 and Ps = 4 + x. Find the producer’s surplus and consumer’s surplus.
3. Derive the relationship between AC and MC.
4. Explain the significance of differentiation in Economics.