LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

**B.C.A.** DEGREE EXAMINATION – **COMPUTER APPL.**

SECOND SEMESTER – **APRIL 2012**

# MT 2101 - MATHEMATICS FOR COMPUTER APPLICATIONS

 Date : 23-04-2012 Dept. No. Max. : 100 Marks

 Time : 9:00 - 12:00

**Part A**

**Answer ALL questions: (10 x 2 = 20)**

1. Give an example of skew symmetric matrix.
2. Prove that .

1. If α and β are the roots of the equation, find α+β, αβ.

1. Find the first order partial derivatives for .
2. Evaluate .
3. Write down the Bernoulli’s formula for integration.
4. Find the complementary function for .
5. Form partial differential equation by eliminating arbitrary constants from .
6. Write the approximation formula to find the root using Regula Falsi method.
7. How many types in Simpson’s rule.

**Part B**

**Answer any FIVE questions: (5 x 8 = 40)**

1. Find the rank of the matrix .
2. Prove that .
3. Solve the equation  whose roots are in A.P.
4. If  where ,then prove that .
5. Evaluate .
6. Solve the equation .
7. Solve .
8. Apply Simpson’s  rule to evaluate  correct to 2 decimal places by dividing the range into 8 equal parts.

**Part C**

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

1. (a)Find the Eigen values and Eigen vectors of the matrix . (12)

(b)Prove that . (8)

1. (a)Solve . (12)

(b)Find the radius of curvature for the curve  at . (8)

1. (a)Prove that . (8)

(b)Solve the equation . (12)

1. (a)Using Newton-Raphson method find the root of the equation  (15)

(b)The velocity of a particle at distance S from a point on it’s path is given by the following table

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| S(ft) | 0 | 10 | 20 | 30 | 40 | 50 | 60 |
| V(ft/s) | 47 | 58 | 64 | 65 | 61 | 52 | 38 |

Estimate the time taken to travel 60 ft using Trapezoidal rule. (5)

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