LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

SECOND SEMESTER – NOVEMBER 2012

# MT 2101 / CS 2100 - MATHEMATICS FOR COMPUTER APPLICATION

 Date : 03/11/2012 Dept. No. Max. : 100 Marks

 Time : 1:00 - 4:00

**Part A**

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

1. Show that $A=\left(\begin{matrix}\cos(θ)&\sin(θ)\\-\sin(θ)&\cos(θ)\end{matrix}\right)$ is orthonogal.
2. Prove that $\cos(h^{2})x-\sin(h^{2}x)=1$.
3. Transform into one in which the coefficient of  is unity.
4. Find the first order partial derivatives for .
5. Integrate  with respect to *x.*
6. What is the reduction formula for .
7. Solve .
8. Find the general solution of Clairaut’s equation .
9. How many types in Simpson’s rule?
10. State the Trapezoidal Rule.

**Part B**

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

1. Test for consistency and hence solve .
2. Prove that .
3. Solve the equation whose roots are in G.P.
4. Verify Euler’s theorem for the function .
5. Evaluate the double integral  if the region *R* is bounded by the straight lines .
6. Solve the equation .
7. Solve .
8. Evaluate  by using (i) Simpson’s  rule (ii) Simpson’s  rule.

**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 of the curve  at the points . (8)

1. (a)Prove that . (8)

(b)Solve the equation . (12)

1. (a)Find the real root of  by false position method correct to 3 decimal places. (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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