LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

**B.Sc.** DEGREE EXAMINATION – **COMPUTER SCI. & APPL.**

FIRST SEMESTER – NOVEMBER 2012

# MT 1103 - MATHEMATICS FOR COMPUTER SCIENCE

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

Time : 1:00 - 4:00

Part A

Answer ALL questions: (10X2 =20)

1. Define Unitary Matrix.
2. Write down the expansion of in terms of *cosθ*.
3. If *α* and *β* are the roots of *2x2 + 3x +5 = 0*, find *α+β* and *αβ*.
4. Find partial differential coefficients of *u = sin (ax + by + cz)* with respect to *x*, *y* and *z*.
5. Evaluate .
6. Evaluate.
7. Solve the differential equation *(D2 +2D + 1)y = 0*.
8. Find the complete integral of 
9. Write the formula for Trapezoidal rule.
10. Write Newton’s backward difference formula for first and second order derivatives.

**Part B**

Answer any FIVE questions: (5 x8 = 40)

1. Test the consistency of the following system of equations and if consistent solve

2x-y-z = 2, x+2y+z = 2, 4x-7y-5z = 2*.*

1. Show that
2. Solve
3. What is the radius of curvature of the curve at the point (1,1).
4. Show that .
5. Evaluate: .
6. Solve the equation.
7. Find by Newton-Raphson method, the real root of, correct to three decimal places.

# Part C

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

1. Verify Cayley-Hamilton theorem for the matrix and hence find its inverse.
2. (i) Evaluate: *dx*

(ii) Evaluate: *.*

(15+5)

1. (a) Solve the equation .

(b) Solve *q2 - p = y – x*.

(14+6)

1. (i) Solve upto 3 decimals by using Regula-flasi method.

(ii) Evaluate using Simpson’s 1/3rd rule with

(12+8)

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