LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

**B.Sc.** DEGREE EXAMINATION – **MATHEMATICS**

SECOND SEMESTER – **APRIL 2012**

# MT 2100 - MATHEMATICS FOR COMPUTER SCIENCE

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

Time : 9:00 - 12:00

**PART A**

Answer **ALL** the questions: **10x2 = 20**

1. Define symmetric matrix with an example.
2. Prove that.
3. Remove the fractional coefficients from the equation
4. Find the partial differential coefficients of .
5. Evaluate.
6. Evaluate
7. Solve the equation = 0.
8. Derive the partial differential equation by eliminating the arbitrary constants from .
9. Find an iterative formula to , where N is a positive integer.
10. Write Simpson’s rule.

**PART B**

Answer any **FIVE** questions: **5x8 = 40**

1. Show that the equations are consistent and solve them.
2. Prove that
3. Find the condition that the roots of the equation may be in geometric progression.
4. Integrate with respect to *x*.
5. (i) Evaluate

(ii) Prove that (**4 + 4**)

1. Solve the equation
2. Solve (i) (ii) (**4 + 4**)
3. Determine the root of correct to three decimals using, Regula Falsi method.

**PART C**

Answer any **TWO** questions: **2x20 = 40**

1. (i) Find all the characteristic roots and the associated characteristic vectors of the matrix

A =.

(ii) If then prove that (**14+6**)

1. (i) Solve the equation

(ii) If , prove that . (**14+6**)

1. (i) Integrate with respect to *x*.

(ii) Solve (**6**+**14**)

1. (i) Solve

(ii) Evaluate using trapezoidal rule and Simpson’s rule. (**8+12**)

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