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MMT-007 (P)

00579

M.Sc. (MATHEMATICS WITH APPLICATIONS IN COMPUTER SCIENCE)
M.Sc.(MACS)

Term-End Practical Examination

December, 2013

MMT-007 (P) : DIFFERENTIAL EQUATIONS AND NUMERICAL SOLUTIONS

Time : 1½ hours *Maximum Marks : 4*

Note : *There are **two** questions in this paper totalling **30** marks Answer **both** of them. Remaining **10** marks are for th **viva-voce.***

1. Write a program in 'C' language to solve the boundary value problem. **1**

$y'' = y' + 2y,\ 0<x<1$

$y'(0) = 1,\ \ y'(1) = (2e^2 + e^{-1})/3$

Using the shooting method. Use third order Taylor series method with $h = 0.25$ to solve the resulting initial value problems.

2. Write a program in 'C' language to find the solution of $\nabla^2 u = x - y$ in R subject to the given R and boundary conditions, using the five point difference formula. **1**

R : Square $0 \le x \le 1,\ 0 \le y \le 1,$

$u(x, y) = x - y$ on the boundary of the square. Take the step length $h = \frac{1}{3}$.