PG Even Semester Examination, May 2025

MATHEMATICS

2nd Semester

Course No. : MAT - 555 (Lab)

(Numerical Analysis)

Full Marks : 30

Pass Marks : 12

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. (a) Write a Scilab program to find an approximate root of the equation $x.\, \sin x + \cos x = 0$ by Newton-Raphson method. 5

Or

(b) Write a Scilab program to find an approximate root of the equation $x^3 - 2x - 5 = 0$ by Fixed-point iteration method. 5

2. (a) Write a Scilab code for finding y(3) from the following data :

x_i	1	2	4	5
y_i	1	4	16	25

by using Lagrange's intepolation. 5

Or

(b) Write a Scilab code for finding y(3) from the following data :

x_i	1	2	4	5
y_i	1	4	16	25

by Newton's Divided-Difference formula. 5

3. (a) Write a Scilab code for evaluating $\int_0^1 \frac{1}{1+x^2}\, dx$, by using Composite Trapezoidal Rule (CTR) with n=100. 5

Or

(b) Write a Scilab code for solving on IVP : $\frac{dy}{dx} = x + y$; y (0) = 1 and find y (0.1), y (0.2), y (0.4) using Runge-Kutta method of order 4, with h = 0.01 5

4. Lab Copy. 10

5. Viva-voce. 5

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