(2%)

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2026

B.Tech.-IV Semester (M&C)

COURSE CODE (CREDITS): 25BS1MA411 (3) MAX. MARKS: 25

COURSE NAME: NUMERICAL ANALYSIS FOR MATHEMATICAL COMPUTING

COURSE INSTRUCTOR: SST MAX. TIME: 1 Hour 30 Minutes

Note: *(a) All questions are compulsory.*

(b) The candidate is allowed to make suitable numeric assumptions wherever required for solving problems.

(c) Use of a scientific calculator is allowed.

Q. No.	Question	CO	Marks
Q1	Using Newton-Raphson method find the root of the equation $x^4 - x = 10$, with initial point 2, correct to three decimal places.	2	4
Q2	Perform only three iterations of the Gauss-Jacobi method to solve the following system of linear equations: $4x + 2y + z = 14$ $x + 5y - z = 10$ $x + y + 8z = 20$	3	4
Q3	Using Newton-Gregory's backward difference formula, find the value of $f(2.0)$, if x: 1 | 1.4 | 1.8 | 2.2 $f(x)$: 3.4956 | 4.8235 | 5.9617 | 6.5013	4	4
Q4	Using Newton's divided difference interpolation, find the cubic polynomial of the given data: x: 0 | 1 | 2 | 5 $f(x)$: 2 | 3 | 12 | 147	4	4
Q5	The following are the measurements T made on a curve recorded by oscillograph representing a change of current I due to a change in the conditions of an electric current. T: 1.2 | 2.0 | 2.5 | 3.0 I: 1.36 | 0.58 | 0.34 | 0.20 Using Lagrange's interpolation formula, find I when $T = 1.6$.	4	5
Q6	The table below reveals the velocity v of a body during the specified time t, find its acceleration at $t = 1.1$? t: 1.0 | 1.1 | 1.2 | 1.3 | 1.4 v: 43.1 | 47.7 | 52.1 | 56.4 | 60.8	5	4