

FOURTH SEMESTER M. Sc. DEGREE EXAMINATION, APRIL 2025

(Regular/Improvement/Supplementary)

MATHEMATICS

FMTH4E12 - COMPUTER ORIENTED NUMERICAL ANALYSIS

Time: 1 ½ Hours

Maximum Weightage: 15

Part A: Answer *all* questions. Each carries 1 weightage.

1. What is C++?
2. What are arrays? How are arrays defined?
3. Write an algorithm for finding the maximum of three numbers.
4. Write a C++ program to compute volume of a cube.

(4 × 1 = 4 weightage)

Part B: Answer any *one* question from each unit. Each carries 2 weightage.**Unit 1**

5. What are conditional operators?
6. Explain while loop. Write a C++ program using while loop.

Unit 2

7. Write a C++ program to reverse a number.
8. Explain Newton- Raphson method.

Unit 3

9. Write an algorithm to approximate the value of a definite integral using the Trapezoidal Rule.
10. Write a C++ program to solve a system of linear equation using Gaussian elimination.

(3 × 2 = 6 weightage)

Part C: Answer any *one* questions. Each carries 5 weightage.

11. Write an algorithm and the corresponding C++ program to solve the differential equation $\frac{dy}{dx} = f(x, y)$, $y(x_0) = y_0$ by Euler's method.
12. Write an algorithm and the corresponding C++ program to approximate the derivative of a function at a given point using the Forward Difference Formula.

(1 × 5 = 5 weightage)