D4AMT2004 **(Pages:2)** **Name: .....**

Reg. No.: .....

FOURTH SEMESTER M. Sc. DEGREE EXAMINATION, APRIL 2022
(Regular/Improvement/Supplementary)
MATHEMATICS
FMTH4E12 - COMPUTER ORIENTED NUMERICAL ANALYSIS

Time: 1 $\frac{1}{2}$ hours **Maximum weightage: 15**

PART A

Answer **all** questions. Each question carries 1 weightage.

1. What is a "Comment" in C++ ?

   Give example of a comment in a sample C++ program.

2. Explain the difference (if any) between "declaring" and "defining" a variable.

   Write the corresponding syntax with one example for each.

3. What are "Manipulators" in C++ ? Give example of two manipulators and describe the use.

4. Write the syntax of "FOR" loop and use it in a simple program.

   . **($4 \times 1 = 4$ weightage)**

PART B

Answer any **one** question from each unit. Each question carries 2 weights.

UNIT I

5. Write a note on "Functions" in C++. What are the important things to be taken care of while using functions in a C++ program. Give example of a simple program that uses a function.

6. Write a C++ program to show the use of the control sequences "Break", "Continue" and "Goto".

UNIT II

7. Write a C++ program to input a natural number and to give that many terms of the Fibonacci sequence as output.

   Write the type of variable that will be "good" for the natural number you input.

8. Give example of a C++ program to test whether a natural number that you input is a prime number or not. The program must have proper comments, specification of the variables used etc. and must be complete in all respects.

UNIT III

9. Write the problem, its explanation and the algorithm for the Trapezoidal rule.

10. Explain the Runge Kutta method (order 2) for solving differential equations.

. **(3×2 = 6 weightage)**

Section C

Answer any **one** question. Each question carries 5 weights.

11. a) Write a C++ Program to find the area of a triangle having vertices given as co-ordinates in the X-Y plane which you input.

    b) Explain the problem, the method, the algorithm and a C++ program to choose a cubic polynomial and to find its zero correct to three places of decimals.

12. Explain the problem, the method, the algorithm and a C++ program to find the inverse of a matrix of your choice.

. **(1×5 = 5 weightage)**