

FOURTH SEMESTER M.Sc. DEGREE EXAMINATION, MAY 2014

(CUCSS)

Mathematics

MT 4E 07—COMPUTER ORIENTED NUMERICAL ANALYSIS

Time : One Hour and a Half

Maximum : 18 Weightage

Part A*Short answer questions (1 – 6)**Answer **all** questions.**Each question has 1 weightage.*

1. Write a C++ program to display the following statement on the screen "National Mathematical Year 2012".
2. Write C++ program that uses for loop.
3. Write a C++ program for checking whether the given positive integer is a prime.
4. Write an algorithm for finding the area of an equilateral triangle.
5. Write an algorithm for the elimination of x_1 from the following system of equations :

$$a_{11}x_1 + a_{12}x_2 =$$

$$a_{21}x_1 + a_{22}x_2 = a_{23}.$$

6. Write an algorithm to find the derivative of a function $y = f(x)$ at the initial point.

(6 x 1 = 6 weightage)

Part B*Answer any **four** from the following **six** questions (7 – 12)**Each question has weightage 2.*

7. Write a C++ program that generates the following table :

2001	735
2003	1025
2005	8783
2007	10045

8. Write a C++ program to demonstrate a function that convert weight in pounds to weight in kilograms.

Turn over

9. Write an algorithm for generating Fibonacci numbers less than *or* equal to 50.
10. Draw the flow chart for finding the maximum of two numbers.
11. Write a C++ program to interpolate using the given pairs of values of x and y by Newton's forward difference formula.
12. Write a C++ program to evaluate $\int_a^b f(x) dx$ using Simpson's rule.

(4 x 2 = 8 weightage)

Part C

*Answer any **one** from the following two questions. (13 – 14)*
Each question has weightage 4.

13. Write a C++ program to illustrate the use of C++ objects as data.
14. Write an algorithm and the corresponding C++ program for finding a root of an equation $f(x) = 0$ by using Newton-Raphson method.

(1 x 4 = 4 weightage)