

Exam Code : D-23

Subject Code—15058

**Dual Degree B.Sc. (Hons.)
(Mathematics)-M.Sc. (Mathematics)
(Fifth Semester) (Batch 2017 Onwards)**

EXAMINATION

**PROGRAMMING IN C AND NUMERICAL
METHODS**

BML-503

Time : 3 Hours

Maximum Marks : 70

Note : Attempt *Five* questions in all, selecting *one* question from each Section. Q. No. 1 is compulsory.

Section I

1. (a) Write the syntax of printf and scanf function in 'C'.
- (b) What is machine language ? Name two commonly used high level languages.

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- (c) What are Global Variables ?
- (d) Define operator and operand.
- (e) Draw flowchart to find area of circle.
- (f) What is a structure tag and write its purpose ?
- (g) Write the formula and order of convergence of Newton-Raphson method.

2×7=14

Section II

- 2. (a) What do you understand by programmer's model of a computer ? How does it help in problem solving and programming ? Illustrate. 7
- (b) What are Constants ? Name and describe the four basic types of constants in C. 7
- 3. (a) What is meant by operator precedence ? Explain with example. 7
- (b) Explain the execution of a 'C' program. 7

Section III

4. (a) Explain the syntax of switch statement by an example. 7
- (b) Differentiate between the following : 7
- (i) Break and continue
- (ii) While and do-while loop.
5. (a) What do you mean by formal and actual arguments ? Explain the concept of function prototype. 7
- (b) Write a program to sort an entire array using Bubble sort. 7

Section IV

6. (a) What are the purposes of strcat() and strstr() functions ? 7
- (b) What are Painters ? Why are they needed ? Explain with an example. 7

7. (a) Find the real root of the equation $x^4 - x - 10 = 0$ using Regula-Falsi method. 7
- (b) Find iterative formula for cube root of number N. Hence find the cube root of 24. 7

Section V

8. (a) Solve the following equations by Gauss-Elimination Method : 7

$$4x + 3y + 2z = 8$$

$$x + y + 2z = 7$$

$$3x + 2y + 4z = 13$$

- (b) Solve the following equations by LU decomposition method : 7

$$x + y + z = 2$$

$$2x + 3y + 2z = -4$$

$$x - 2y - 4z = 9$$

(a) Solve the following equations by Crout's method : 7

$$x + y + 2z = 4$$

$$2x + 3y + 4z = 9$$

$$3x + 4y + 5z = 11$$

(b) Solve the following equations by Relaxation method : 7

$$9x - y + 2z = 9$$

$$x + 10y - 2z = 15$$

$$2x - 2y - 13z = -17$$