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# 41253

## B. Sc. (Hons.) Mathematics 4th Semester Examination – May, 2019

### PROGRAMMING IN C AND NUMERICAL METHODS

**Paper : BHM-243**

*Time : Three hours ]* *[ Maximum Marks : 45*

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

*Note :* Question No. 1 is ***compulsory***. Attempt ***five*** questions in all taking at least ***one*** question from each Unit. All questions carry equal marks.

**1.** (a) What is difference between algorithm and flowchart ? $1.5 \times 6 = 9$

(b) What is preprocessor ? What is its importance ?

(c) What are the arithmetic operations that can be performed on characters ?





(d) What are the advantages of pointers ?

(e) What is order of convergence ?

(f) What is the difference between Gauss-Seidal and relaxation method ?

### UNIT – I

**2.** (a) What is an output function ? Explain various output functions used in C language by giving suitable examples. 5

(b) What is an expression ? Explain various types of expressions by giving examples. 4

**3.** (a) Explain the programmer's model of computer with the help of diagram. 5

(b) What is algorithm ? What are its advantages ? Write an algorithm to determine whether the given number is odd or even ? 4

### UNIT – II

**4.** (a) What is a Function ? What are its merits and demerits ? 4

(b) What is an Array ? Write a program in C [redacted] an array of 100 integers.

5. (a) Explain Switch-Case control structure by suitable C program example.

(b) Explain FOR loop statement by giving C pr[redacted]

## UNIT – III

6. (a) What is a pointer ? How it is related with ar[redacted] Give example.

(b) Find the real root of the equation $x^3 - 9x + 1$ by Regula-Falsi Method.

7. (a) What is structure ? How it is declared and us[redacted] Give example.

(b) Find the real root of the equation $x^2 - 5x + 2 =$ [redacted] Newton-Raphson's Method.





## UNIT – IV

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

$2x_1 + 3x_2 + x_3 = -1, 5x_1 + x_2 + x_3 = 9, 3x_1 + 2x_2 + 4x_3 = 11$ 6

(b) Explain the procedure to solve algebraic equations by Triangularization method. 3

9. Solve the following equations by Jacobi's method : 9

$27x + 6y - z = 85, 6x + 15y + 2z = 72, x + y + 54z = 110$