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GSM/J-21 **1582**

MATHEMATICS

BM-243

Programming in C and Numerical Methods

Time : Three Hours] [Maximum Marks : 20

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

Compulsory Question

1. (a) Draw a flowchart to find the area of a circle.

(b) Give the syntax of goto statement.

(c) Differentiate between Jacobi's method and Gauss Seidal's method.

(d) Define pointers.

(e) What is a bit ? **1,½,1,1,½**

Unit I

2. (a) What is an algorithm ? What are its merits and demerits ?

(b) What are general characteristics of C ? **2,2**

3. (a) What do you mean by data types ? What are various data types used in C language ?

(b) Explain the following terms :

(i) Operators and operands

(ii) & and &&

(iii) < < and > >

(iv) + + and – – **2,2**

Unit II

4. (a) What is nested if statement ? Explain with the help of example.

(b) Differentiate between switch and else- if ladder. **2,2**

5. (a) Explain the difference between Local and Global variable in C with the help of example.

(b) Differentiate between function and function prototype. **2,2**

Unit III

6. (a) How is the end of a string recognized in C ?

(b) Explain the difference between call by value and call by reference. **2,2**

7. (a) Find a root of $x^3 - x - 1 = 0$ using Regula-False method correct to three decimal.

(b) Find the order of convergence of Newton-Raphson's Method. **2,2**

Unit IV

8. (a) Solve the following equations by Gauss-Jorden method :

$$2x + y + 4z = 12$$
$$4x + 11y - z = 33$$
$$8x - 3y + 2z = 20$$

(b) Solve the equation by Crout's method : **2,2**

$$x + y + 2z = 4$$
$$2x + 3y + 4z = 9$$
$$3x + 4y + 5z = 11$$

9. Solve the following equations by Jacobi's method : **4**

$$10x + y + 2z = 44$$
$$2x + 10y + z = 51$$
$$x + 2y + 10z = 61$$