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GSM/J-21   1615

PROGRAMMING IN C AND NUMERICAL METHODS
BM-243

Time : Three Hours]   [Maximum Marks : 30

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

(Compulsory Question)

1. (a)   Define Keywords. Give *two* examples.   1

    (b)   Write the syntax of FOR loop.   1

    (c)   What are library functions in C language ?   1

    (d)   What is an array ?   1

    (e)   What is the purpose of break statement ?   1

    (f)   How function is declared in C language ?   1

Section I

2. (a)   Draw a flowchart to find the greatest among three numbers.   3

    (b)   What is an escape sequence ? What is its purpose ?   3

3. (a) What is the purpose of scanf() and printf() functions ? How is it used within a C program ? **3**

(b) Describe the six assignment operators. What is the purpose of each operator ? **3**

Section II

4. (a) Explain the syntax of switch statement by an example. **3**

(b) Differentiate between while and do-while loop. **3**

5. (a) Write a program to check whether a number is armstrong or not. **3**

(b) What is recursion ? How recursion is implemented in C language ? Illustrate through a suitable example.

3

Section III

6. (a) What is meant by concatenation ? What function is used to achieve this operation ? Write a program to concatenate the two strings. **3**

(b) How can a structure variable be declared and initialized ? **3**

7. (a) Find the order of convergence of Newton-Raphson method. **3**

(b) Find the real root of the equation $x^3 - 4x - 9 = 0$ by Regula-Falsi method, correct up to three decimal places. **3**

Section IV

8. Solve the following equations by triangularization (LU Decomposition) method : **6**

$$2x + y + z = 2$$
$$x + 3y + 2z = 2$$
$$3x + y + 2z = 2.$$

9. Solve the following system of equations using Cholesky method : **6**

$$x + y + z = 5$$
$$x + 2y + 2z = 6$$
$$x + 2y + 3z = 8.$$