5221

B. A./B. A. (Hons.)/B.Sc. EXAMINATION

(For Batch 2011 & Onwards)

(Fourth Semester)

MATHEMATICS

BM-243

Programming in C and Numerical Methods

Time : Three Hours   *Maximum Marks :* $\begin{cases} \text{B.Sc.} : 30 \\ \text{B.A.} \ : 20 \end{cases}$

Note : Attempt *Five* questions in all, selecting *one* question from each Section and the compulsory question.

(Compulsory Question)

1. (a) Write an algorithm to find area of a circle.

   (b) Write a short note on goto statement.

(c) Define Pointers.

(d) Derive Newton's iterative method for finding cube root of a number.

(e) What do you mean by keywords in C language ? 6(4)

Section I

2. (a) Write a short note on progammer's model of a computer.

   (b) Write an algorithm and flow chart to calculate compound interest. 6(4)

3. Write short notes on printf and scanf functions. Explain these with examples. 6(4)

Section II

4. Write short notes on arithmetic and assignment operators used in C language. Give examples also. 6(4)

5. (a) Explain nested if else statement with an example.

(b) Explain the syntax of switch statement.

6(4)

Section III

6. (a) What is Structure ? Why is it used in C language ?

(b) What is the difference between call by value and call by reference ? Explain with example.

6(4)

7. (a) Find a real root of the equation $x^4 - x - 10 = 0$, using Bisection method, correct to 3 places of decimal.

(b) Find the iterative formula of inverse of a number. Also evaluate $\frac{1}{49}$ using it. 6(4)

Section IV

8. Solve the following system of equations using Gauss elimination method : 6(4)

$$x_1 + x_2 + 2x_3 = 7$$
$$3x_1 + 2x_2 + 4x_3 = 13$$
$$4x_1 + 3x_2 + 2x_3 = 8$$

9. Solve the following system of equations using Jacobi's method : 6(4)

$$10x - 2y - 2z = 6$$
$$-x + 10y - 2z = 7$$
$$-x - y + 10z = 8$$