C PROGRAMMING AND DATA STRUCTURE – A

Time Allowed : 3Hrs. **Maximum Marks : 70**

Note : Attempt **FIVE** questions in all, selecting **ONE** question from each Section A, B, C and D an dthe entire Section E. All questions carry equal marks. Use of Non-programmable scientific calculator is allowed.

(SECTION–A)

1. What are arithmetic, logical and relational operators available in C ? Explain each type of operator with the help of suitable examples. Also discuss the concept of operator precedence. (14)
2. Explain various iterative control structures available in C language with the help of examples. (14)

(SECTION–B)

3. What is meant by lifetime and scope of variables and explain the various types of storage classes. (14)
4. What is a structure and what are its uses ? Differentiate between structure declaration and structure intialization. How are data elements of a structure accessed and processed ?

(14)

(SECTION–C)

5. What do you mean by Array ? What are the advantages and disadvantages of using arrays ? How a two-dimensional array is stored in memory ? Explain with suitable examples. (14)

6. What do you mean by Stack ? How a stack is represented in memory ? What are various operations that can be performed on stack ? Discuss in detail. (14)

(SECTION–D)

7. What do you mean by Searching ? List various searching techniques. Which searching technique you consider is the best and why ? Explain that searching technique you consider the best. (14)

8. Write an algorithm to implement the quick sort. (14)

(SECTION–E)

9. Write short notes on the following :
   (a) Differentiate between user defined words and reserve words.
   (b) Differentiate among getch( ), getche( ) and getchar( ).
   (c) What are the features of a static variable ?
   (d) Differentiate between array of pointers and pointer to an array.
   (e) What is a sparse array ?
   (f) How a queue data structure is differnet from stack data structure ?
   (g) Compare selection sort and bubble sort. (2×7=14)