NKT/KS/17/5260

Bachelor of Computer Application (B.C.A.) Semester–III (C.B.S.) Examination

DATA STRUCTURES

Paper–III

Time : Three Hours]   [Maximum Marks : 50

N.B. :— (1) **ALL** questions are compulsory and carry equal marks.

(2) Draw neat and labelled diagram wherever necessary.

EITHER

1. (a) What is a Linked List ? Explain the representation of single linked lists in memory.   5

    (b) Write an algorithm to find the number of elements in linked list.   5

OR

    (c) Write an algorithm to delete the first node of double linked list.   5

    (d) Write an algorithm to insert the element at the beginning of single linked list.   5

EITHER

2. (a) What is Stack ? What are the different operations that can be performed on stack ?   5

    (b) Write an algorithm for the evaluation of a postfix expression.   5

OR

    (c) Explain Quicksort method with suitable example.   5

    (d) Translate infix expression into its equivalent prefix expression :

        (i)   (A–B) * (D/E).

        (ii) (A+B$\uparrow$D)/(E-F)*G.   5

EITHER

3. (a) What is a Queue ? Explain array representation of queue in memory.   5

    (b) Explain selection sort method with suitable example.   5

OR

    (c) What is Hashing ? Explain collision resolution technique.   5

    (d) Write an algorithm to insert element in circular queue.   5

EITHER

4. (a) What is Tree ? Explain the concept of Binary Search Tree.   5

   (b) Explain :

      (i) Graphs.

      (ii) Multigraphs.   5

OR

   (c) Explain BSF traversing on graphs.   5

   (d) Write an algorithm for preoder traversal of Binary Tree.   5

5. Attempt **ALL** :

   (a) Explain header linked list.   2½

   (b) Write the definition of recursive factorial function.   2½

   (c) Explain Deques.   2½

   (d) Explain Adjacency matrix.   2½