6. Discuss various components of Tree Data Structure. Discuss basic tree operations.

(Or)

7. Write a pseudo code for deleting an element from a binary search tree.

(Or)

8. Discuss linked list. Also write a program to create a linked list of n nodes.

(Or)

9. Explain Warshall's Algorithm. Write a program to compute transitive closure of a graph using Warshall's Algorithm.

••••

Roll No. .....

Paper Code – BCA 3002

BCA 2nd Year (Semester-III) EXAMINATION, 2023-24

DATA STRUCTURE USING C & C++

PAPER-II

K-010

Time : Two Hours] [Maximum Marks : 75

Note- This paper consists of three Section A, B and C. Carefully read the instructions of each Section in solving the question paper. Candidates have to write their answers in the given answer-copy only. No separate answer-copy (B Copy) will be provided.

Section-A

(Short Answer Type Questions)

Note- All questions are compulsory. Answer the following questions as short answer type questions. Each question carries 5 marks.

1. (A) What do you mean by sparse array ?

2. Write short notes on the following :

(a) Tridiagonal Matrices

(b) D-Queue

(c) B-Tree

(Or)

3. How do you push and pop elements in a stack. Explain the application of stack ?

(Or)

4. Convert "2 + (3 * 1) – 9" to postfix using stack & then evaluate postfix expression using stack.

(Or)

5. What are queues ? Write down algorithm for inserting and deleting elements from a queue implemented using arrays.

Section-C

(Long Answer Type Questions)

Note- This section contains four questions from which **one** question is to be answered as long question. Each question carries 15 marks.

(B) Convert the following Infix expressions to postfix using stack $(A + B * C)/(D - E) + F$.

(C) Discuss applications of Linked List.

(D) Evaluate "100 200 + 2/5 * 7 +" using stack.

(E) Write an algorithm for Breadth First Search (BFS).

(F) What do you mean by tree traversal ?

(G) Given the following inorder and preorder traversal reconstruct a binary tree

Inorder – D B E A F C

Preorder – A B D E C F

(H) Discuss various types of graph data structure.

(I) Discuss Insertion Sort.

Section-B

(Long Answer Type Questions)

Note- This section contains four questions from which **one** question is to be answered as long question. Each question carries 15 marks.