



DATA STRUCTURE

- **[Maximum Marks: 70]**
- **Note: This paper contains two Sections A and B. All the questions in Section A are compulsory. Attempt any five questions from Section B.**

Section-A

✓ (Short Answer Type Questions)

1. What is Data Structure? Explain the basic operations to be performed on data structure.

Or

Define and explain BigO notation.

2. What is an algorithm? Explain the time and space complexity of an algorithm.

Or

Write an algorithm to print n natural number.

3. What are the applications of arrays ? Give suitable examples to show the usefulness of an array.

Or

Write algorithm to insert a node at the end in singly linked list.

4. Describe the advantages and disadvantages of a singly linked list.

Or

Write a program to find length of a string using array.

5. What is collision? Explain any one collision resolution technique with example.

Or

Explain linked representation of a Binary Tree.



Section-B

✓ **(Long Answer Type Questions)**

6. What is Bubble Sort ? Write a program to sort a given array using bubble sort.

7. Write short notes on any four of the following:

(a) Malloc

(b) Priority queue

(c) Recursion

(d) Switch

(e) If-else

(f) Header file

8. Explain Linear Search with the help of algorithm.

9. How are AVL trees different from BST? How are AVL trees represented in computer memory?

10. What is Graph Traversals? Explain the difference between Depth First Search and Breadth First Search.

11. Explain Kruskal's algorithm for Minimum Cost Spanning trees.

12. Define the following:

(a) Abstract Data type

(b) Pointer

(c) Perfect Binary Tree

(d) Hashing

