

## MCS-202 Data Structures

### *Instructions for Paper setters*

The question paper contains 3 sections. **Section-A** consists of 10 questions (2 questions from each unit of syllabus). **Section-B** consists of 10 questions (2 questions from each unit of syllabus). **Section-C** consists of 5 questions (1 question from each unit syllabus).

The word limit of part A, B and C are 50, 200 and 500 respectively.

### Unit I

**Algorithm:** Efficiency & Analysis Algorithm: Time and Space complexity of Algorithm.

**Abstract Data Type: Linked List-** Linear, Circular, Two Way List, Basic Operation on Linked Lists, Application of Linked List.

### Unit II

**Stack :** primitive operations, stack Application- Infix, postfix, prefix and Recursion Array and Linked Representation of Stack. **Queue:** Primitive operation, Circular Queue, Priority Queue, D-queue, Array and Linked Representation of Queue.

### Unit III

**Searching :** Linear Search, Binary Search; **Sorting:** Insertion Sort, Selection Sort, Quick Sort, Bubble Sort, Heap Sort, Shell Sort, Merge sort, Radix Sort, Comparison of sorting Methods.

### Unit IV

**Trees :** Basic terminology, **Binary Tree :** Representation as Array and link List, Basic operation, **Tree Traversal :** Inorder, Preorder, Postorder, Application of Binary Tree. B-tree, Height Balance Tree(AVL Tree).

### Unit V

**Graph :** Basic Terminology, Directed, Undirected, Weighted, Representation of Graphs, **Graph Traversal :** Depth First Traversal, Breadth First Search.

### Suggested Readings:

1. Expert Data Structure with 'C' By R.B Patel (Khana Book Publishing Co.(P))
2. Data structure By Lipschutz (Tata McGraw Hill)
3. Data Structure By Yashvant Kanitkar (BPB)
4. An Introduction to Data Structures with Applications By Jean-Paul Tremblay, Paul G.Sarerson (Tata McGraw Hill)
5. Data Structure Using C and C++ By Yedidyah Langsam, Moshe J.Augenstein, Arora M. Tenenbaum (Prentice- Hall India)