

# AMNE10 DATA STRUCTURE

## UNIT-1 INTRODUCTION TO DATA STRUCTURES

- 1.1 Arrays & sparse matrices,
- 1.2 Representation,
- 1.3 Searching, linear, binary,
- 1.4 Fibonacci
- 1.5 Sorting, selection, bubble, insertion,
- 1.6 Quick, merge, heap,
- 1.7 Introduction to external sorting, Hash tables,
- 1.8 Hashing functions

## UNIT-2 LINKED LISTS

- 2.1 Singly, doubly and circular lists,
- 2.2 Application of linked lists, polynomial manipulation,
- 2.3 Stacks, Implementation of stacks using arrays and lists,
- 2.4 Typical problems,
- 2.5 Conversion of infix to postfix,
- 2.6 Evaluation of postfix expression.
- 2.7 Queues & Deques,
- 2.8 Implementation. priority queues

## UNIT-3 TREES, DEFINITION AND MATHEMATICAL PROPERTIES.

- 3.1 Representation, sequential, lists, Binary trees,
- 3.2 Binary tree traversals, pre-order, in-order & post-order,
- 3.3 Expression trees.
- 3.4 Threaded binary trees. Binary Search trees. AVL trees

## UNIT-4 GRAPHS

- 4.1 Graph representation using adjacency matrices and lists,
- 4.2 Graph traversals, DFS, BFS, shortest path,
- 4.3 Dijkstra's algorithm, Minimum spanning tree
- 4.4 Kruskal Algorithm, prims algorithm
- 4.5 Binary search, B trees and B+ trees.

### References Books:

1. Robert Lafore, "Data Structures and Algorithms in Java" , 2/e, Pearson
2. Adam drozdek," Data Structures and Algorithms in Java", Thomson Publications, 2nd Edition.
3. Sartaj Sahni, 'Data Structures, Algorithms, and Applications in Java", McGraw-Hill
4. Aaron M.Tanenbaum, Moshe J.Augenstein, Yedidyah Langsam "Data Structures using Java", Pearson Education.