

Spanning Trees, minimum spanning Tree, The basic Greedy Strategy for computing Algorithm of Kruskal, and Prim Applications of Graphs : Shortest path and Longest Path Problems.

- Text & Reference Books :**
- Fundamentals of Data Structure by S Sawhney & E Horowitz*
 - Data Structure by Tremblay & Sorenson*
 - Data Structure Schaum's outline series, McGraw Hill Publication*

2MSC1-DATA STRUCTURES AND ALGORITHMS USING C

UNIT-I

Introduction to data structures, Abstract data types
Stacks - Introduction to stack & primitive operation on stack, Stack as an abstract data type, Stack's applications - Infix, post fix & Prefix expressions, Recursion, Multiple stacks
Queues - Introduction to queues, Primitive Operations on the Queues, Queue as an abstract data type, Circular queue, Dequeue, Priority queue.

UNIT-II

Linked List - Introduction to the Linked List, Memory representation of linked list, Operation on Linked List, Linked List representation of stack and Queue, Header nodes. Types of Linked List - Doubly Linked List, Circular Linked List, Application of Linked List.

UNIT-III

Trees -Basic Terminology of Trees, Binary Trees, Tree Representations as Array & Linked List.
Binary tree representation, Traversal of binary trees - In order, Preorder & post order, Application of Binary tree, Threaded binary tree
Balanced tree, AVL tree, B-tree, B+ & B* trees, Conversion of General Tree to Binary Tree.

UNIT-IV

Analysis of algorithm, Complexity with big'O' notation.
Searching - Sequential Searching, Binary search and their Comparison.
Sorting - External & Internal sorting, Insertion sort, Selection sort, Quick sort, Bubble sort, Merge sort, Comparison of sorting methods Algorithms of sorting and searching in Linked list and Arrays.
Tables - Hash table, Collision resolution Techniques.

UNIT-V

Graphs - Introduction to graphs, Basic Terminology, Directed, Undirected & Weighted graph, Representation of graphs, Warshall's algorithm for path matrix and shortest path, Graph Traversals-Depth first & Breadth first search.