Data Structures

UNIT - I

Data Structure, definition, and application, Arrays: Representation of single and multidimensional arrays; sparse arrays - lower and upper Triangular matrices and Tri-diagonal matrices, Recursion, Defining Stack and Queue, Stack Operations and Implementation, Array Implementation, Pointer Implementation (05), Stack Applications, Convert Number Bases by Using Stacks, Infix to Postfix Conversion, Evaluation of postfix expression. Introduction and primitive operation on queues, D-queues Queue Application, Circular, Double Ended and Priority Queues (05).
Lectures: 10

UNIT - II

Lists, Basic Terminology, Static Implementation of Lists, Pointer Implementation of Lists, Insertion in a list, Deletion from a list, traversal, Searching (05), Arrays using Linked List, Doubly Linked Lists, Circular, Doubly, Circular Doubly Linked List (07).
Lectures: 12

UNIT - III

Defining Graph, Basic Terminology, Graph Traversal: Depth First Search (DFS), Breadth First Search (BFS), Shortest Path Problem (03), Trees: Introduction and terminology; Traversal of binary trees; Algorithms for tree operations such as traversal, insertion, deletion; Binary Trees, Inorder, Postorder and Preorder Traversals (03), Minimal Spanning Tree, Prims and Kruskals Algorithm, Binary Search Trees, Operations on a BST, Insertion, Deletion, Search for a key in BST, B-Trees: Introduction: Threaded Binary tree, AVL Trees (06).
Lectures: 12

UNIT - IV

Searching and Sorting techniques, Sequential Search, Binary Search, Selection Sort, Insertion Sort, Bubble Sort (05), Quick Sort, 2-way Merge Sort, Heap Sort, Bucket or Radix sort, Hashing (06).
Lectures: 11