

**INDEX****UNIT I****Chapter 1 : Introduction to Data Structure 1-1 to 1-18****Syllabus :** Concept and need of DS, Abstract Data Type.**Types of Data Structures :**

(i) Linear Data Structures, (ii) Non-Linear Data Structures

Algorithm Complexity : (i) Time, (ii) Space**Operations on Data Structures :**(i) Traversing, (ii) Searching, (iii) Insertion,
(iv) Deletion, (v) Sorting

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Syllabus :

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Stack representation in memory using array

Stack as an ADT

Stack Operations : PUSH, POP

Stack Operations Conditions : Stack Full/Stack Overflow, Stack Empty/Stack Underflow.

Applications of stack

- o Reversing a Stack
- o Polish notations

Conversion of infix to postfix expression, Evaluation of postfix expression, Converting an infix into prefix expression, Evaluation of prefix expression Recursion, Tower of Hanoi.

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Queue as an ADT

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Introduction to Linked List Terminologies : node, Address, Pointer, Information field/Data field, Next pointer, Null Pointer, empty list.

Type of lists : Linear list, Circular list

Operations on a singly linked list : Traversing a singly linked list, Searching a key in linked list, Inserting a new node in a linked list, Deleting a node from a linked list.

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Syllabus :

Terminologies : tree, degree of a node, degree of a tree, level of a node, leaf node. Depth/Height of a tree, In-degree and Out-Degree, Path, Ancestor and descendant nodes

Tree Types and Traversal methods Types of Trees : General tree, Binary tree, Binary search tree (BST).

Binary tree traversal : In order traversal, Preorder traversal, Post order traversal.
Expression tree.

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Adjacency List, Adjacency Matrix of directed/undirected graph.

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