

Data Structure and Files [DSF]

S.E. Sem. III [CMPN]

EVALUATION SYSTEM

	Time	Marks
Theory Exam	3 Hrs.	100
Practical & Oral Exam	2 Hrs.	25
Oral Exam	–	–
Term Work	–	25

SYLLABUS

1. Introduction to Data Structures

Definition; The Abstract Data Type(ADT); Arrays; Strings; Recursion.

2. File Handling

File Organization; Types of files; File operations.

3. Sorting and Searching

A. Sorting : Insertion sort; Selection sort; Exchange sort (Bubble, Quick); Merge sort; Heap sort.

B. Searching : Linear Search; Binary Search; Hashing Technique and collision handling.

4. Stack

The stack as an ADT; Representation; Stack Operations; Applications.

5. Queue

The Queue as an ADT; Representation; Queue Operations; Circular and Priority Queues; Applications.

6. Linked List

The Linked List as an ADT; Operation on Linked List; Linked Stacks and Queues; The Linked List as a Data Structure; Array implementation of Linked List; Linked List using Dynamic variable; Comparison of Dynamic and Array implementation of Linked List; Doubly Linked List; Circular Linked List.

7. Trees

Basic tree concepts; Binary Tree Operations and Applications; Binary Tree representations; Binary Tree Traversals; Threaded Binary Tree; The Huffman algorithm; Binary search tree implementation; Expression Trees; Introduction of multiway tree (B-Tree, B+ Trees, AVL Tree)

8. Graphs

Graph as an ADT; Graph Representation; Graph Traversal (Depth First Search, Breadth First Search)

References :

1. Data Structures using Java (*Y. Langsam, M. J. Augenstein and A. M. Tanenbaum*) – Pearson Education.
2. Data Structure : A Pseudocode Approach with C (*R. F. Gilberg and Behrouz A. Forouzan*) – Thomson Edition.
3. Data structures and algorithms in Java[™] (*Michael Goodrich and Roberto Tamassia*) – Second Edition, Wiley India Edition.
4. Data structures with Java (*John R. Hubbard and Hurry*) Pearson Education.
5. Data Structure and Algorithm Analysis in C++, (*Mark Allen Weiss*) Pearson Education (3rd Edition).
6. A Practical to Data Structure & Algorithms (*Sanjay Pahuja*) – First Edition, New Age International Publisher.
7. File organization and processing (*Alan L. Tharp*) – Amazon Publication.

