

**MAJOR PAPER V – DATA STRUCTURES**

**UNIT – I**

Introduction – How to create programs – How to analyze programs – arrays – sparse matrices – representation of arrays.

**UNIT – II**

Stacks & Queues – Evaluation of Expressions – Multiple stacks & Queues – linked lists – Singly linked lists – linked stacks & Queues – polynomial addition – more on linked lists – doubly linked lists & Dynamic Storage management – Garbage collection & Compaction – Strings.

**UNIT – III**

Trees – Basic Terminology – Binary trees – Binary tree Representations – Binary tree traversal – More on Binary trees – threaded binary trees – Binary tree representation of trees – Applications of Trees – counting binary trees.

**UNIT – IV**

Graphs – terminology & representation – traversals connected components & Spanning trees – Shortest paths & Transitive closure – Activity networks, topological sort & Critical paths.

**UNIT – V**

Internal sorting : Insertion sort – Quicksort – 2 way merge sort – Heap sort – sorting on several keys – external sorting – storage devices – sorting with disks – sorting with tapes.

**TEXT:**

“FUNDAMENTALS OF DATA STRUCTURES” – Ellis Horowitz sartaj sahani – Galgotia Publishers.

**REFERENCE:**

1. “THEORY & PROBLEMS OF DATA STRUCTURES” – Sohaum’s outline series, International editions.
2. “AN INTRODUCTION TO DATA STRUCTURES WITH APPLICATIONS” – Jean-Paul G.Sorenson, Mcgraw-Hill book company.