

CORE COURSE III - DATA STRUCTURES AND ALGORITHMS

(Revised - Applicable to the arrear candidates admitted in the academic year 2005-2006 and thereafter)

Unit I

Arrays and sequential representations – ordered lists – Stacks and Queues – Evaluation of Expressions – Multiple Stacks and Queues – Singly Linked List – Linked Stacks and queues – Polynomial addition.

Unit II

Trees – Binary tree representations – Tree Traversal – Threaded Binary Trees – Binary Tree Representation of Trees – Graphs and Representations – Traversals, Connected Components and Spanning Trees – Shortest Paths and Transitive closure – Activity Networks – Topological Sort and Critical Paths.

Unit III

Algorithms – Pseudo code conventions - Sorting – Heap Sort – Merge Sort – Quick Sort - Binary Search – Finding the Maximum and Minimum.

Unit IV

Greedy Method : The general method – optimal storage on tapes – Knapsack Problem – Job Sequencing with dead lines – Optimal Merge Patterns.

Unit V

Back tracking: The general method – The 8-Queens Problem – Sum of Subsets – Graph Coloring.

Text Books:

1. Fundamentals of Data Structure – Ellis Horowitz, Sartaj Sahni and Sanguthevar.
2. Fundamentals of Computer Algorithms – Ellis Horowitz, Sartaj Sahni and Sanguthevar Rajasekaran, Galgotia Publications, 2001.

Reference Book:

Data Structures – LIPSCHUTA, Tata Mcgraw Hill, Schaum's Outline Series.