Subject Code : CCSCS2

FUNDAMENTALS OF DATA STRUCTURES AND ALGORITHMS
(Applicable to the arrear candidates admitted in the academic year 2005-2006 onwards 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 – Set Representation – Decision Trees – Game Trees and counting Binary 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 – conventions – Writing Structured Programs – Analyzing Sorting – Heap Sort – Binary Search – Finding the Maximum and Minimum – Merge Sort – Quick Sort.

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 – Hamiltonian Cycles – Knapsock Problem.

Text Books:

1. Fundamentals of Data Structure – Ellis Horowiz, Sartaj Sahni.
2. Fundamentals of Computer Algorithms – Ellis Horowiz, Sartaj Sahni, Galgotia Publications.

Reference Book:

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