Designing and Analysis of Algorithms

UNIT – I

Mathematical Preliminaries: Review of growth functions (03). Introduction of algorithm, characteristics of algorithm (03). Complexity of algorithm, Efficiency of Algorithm (02). Asymptotic notations (03).
Lectures: 11

UNIT – II

Sorting and Searching: Insertion sort, Bubble sort, Selection sort (04). Quick sort, Merge sort (02). Radix Sort, Bucket Sort (02). External Sorting (01). Searching: Sequential and Binary search and their complexities (03).
Lectures: 12

UNIT - III

Greedy algorithms: General characteristics of greedy algorithms (03). Job sequencing, Minimum spanning tree, Single source shortest paths (04). The knapsack problem, Task scheduling problem (01). Divide and Conquer Technique: Merge sort, Quick sort, Strassen's matrix multiplication (04).
Lectures: 12

UNIT - IV

Dynamic Programming: General method Matrix multiplications, Travelling salesperson problem, 0/1 knapsack problem (04). Backtracking – N-Queen's Problem, Hamiltonian Circuit problem, Graph colouring (03). Branch and bound – Traveling salesman problem, FIFO branch and bound (03).
Lectures: 10