**DESIGN AND ANALYSIS OF ALGORITHMS**

**IMPORTANT QUESTIONS**

**UNIT-I**

1. Define an algorithm. What are the different characteristics of an algorithm?
2. Discuss the pseudo code conventions for expressing algorithms.
3. Explain the performance analysis of an algorithm (space and time complexity).
4. Explain about Asymptotic notations used for algorithm analysis with examples.
5. Differentiate between priori analysis and posterior analysis of algorithm.

**UNIT-II**

1. Write the Control Abstraction for Divide and Conquer Technique.
2. Write and explain recursive binary search algorithm.
3. Discuss the time complexity of binary search for worst case.
4. Write divide and conquer merge sort algorithm and derive time complexity of this algorithm.
5. Write divide and conquer quick sort algorithm and derive time complexity of this algorithm.
6. State the Greedy Knapsack problem? Find an optimal solution to the knapsack problem using Greedy method.
7. What is minimum cost spanning tree? Explain Prim’s and Kruskal’s algorithms with suitable examples.

**UNIT-III**

1. Differentiate between greedy method and dynamic programming.
2. Explain how 0/1 knapsack problem can be solved using dynamic programming with suitable example.
3. Explain how travelling sales person problem can be solved using dynamic programming with suitable example.
4. Discuss how to construct Optimal Binary search tree for the given data with an example.
5. Discuss All pairs shortest path algorithm with an example.

**UNIT-IV**

1. Define backtracking. Solve the N-queen problem by backtracking method.
2. Give the statement of sum of subsets problem. Explain how it is solved by using Backtracking method.
3. What is a Hamiltonian Cycle? Explain how to find Hamiltonian path and cycle using backtracking algorithm.
4. Explain the Graph coloring problem with an example.
5. Explain how backtracking technique is used to solve O/1 knapsack problem.

**UNIT-V**

1. Differentiate between Deterministic and Non-deterministic Algorithms
2. Differentiate between NP complete and NP Hard Problems
3. Explain about Cook’s Theorem.