CS-8451Design and Analysis of Algorithms

Important 13Mark questions

Unit I

1. Briefly explain the mathematical analysis of recursive and non-recursive algorithms.
2. Explain briefly Big oh notation, Omega notation and Theta notations. Give example.
3. Derive the worst case analysis of Merge Sort using suitable illustrations.

Unit II

1. State and explain the merge sort algorithm and Give the recurrence relation and efficiency.
2. What is divide and conquer strategy and explain the binary search with suitable example problem.
3. Explain the Convex hull problem and the solution involved behind it.

Unit III

1. Explain the working of prim's algorithms.
2. Explain the Dijkstra's shortest path algorithm and its efficiency.
3. Explain the Kruskal's algorithm to find minimum spanning tree.

Unit IV

1. State and prove Max-Flow Min-Cut Theorem.
2. Explain KMP string matching algorithm for finding a pattern on a text, and analyze the algorithm.
3. What is stable marriage problem? Give the algorithm and analyze it.

Unit V

1. Give any five undecidable problem and explain the famous halting problem.
2. Write backtracking algorithm for 4-Queen's problem and discuss the possible solution.
3. Discuss the approximation algorithm for NP-hard problems.