

Department of Computer Science and Engineering

R23 II B.Tech – I Semester

ADVANCED DATA STRUCTURES AND ALGORITHM ANALYSIS

(Important Short Questions)

UNIT – 1

1. Define Algorithm?
2. What is the algorithm analysis?
3. Define Time & Space Complexity?
4. Define Big Oh Notation?
5. Define Omega Notation?
6. Define Theta Notation?
7. Define Little Omega notation?
8. Define little oh notation?
9. List the asymptotic notations?
10. Define AVL Tree?
11. List the rotations of AVL Tree?
12. Define B-Tree?
13. What is the Purpose of AVL Tree?
14. What is the Purpose of B- Tree?
15. What are the properties of B-Tree?
16. List the applications of AVL Tree?
17. List the applications of B-Tree?
18. Write insertion operation of AVL Tree?
19. List the operations of B-Tree?
20. Compare AVL Trees & B-Trees?

UNIT – II

1. Define Min & Max Heap?
2. What are the operations of Heap Tree?
3. Define Heapify?
4. List the applications of Heap Tree?
5. What is Priority queue?
6. Define Graph?
7. List the terminology of a graph?
8. What are the ways to represent the graph?

9. Differentiate & Compare DFS & BFS?
10. What are the connected components? Give one example?
11. What are the bi-connected components with one example?
12. What is Spanning Tree?
13. List the applications of DFS & BFS?
14. Define Divide and Conquer?
15. List the worst & best time complexities of quick sort?
16. Write the difference between quick sort & merge sort?
17. Write an algorithm of merge sort?
18. List the formulas of Strassen's matrix multiplication?
19. Define Convex Hull?

UNIT – III

1. What is Problem solving technique? List the types of problem solving techniques?
2. What is greedy method?
3. What is Job Sequencing with dead line Problem?
4. Define 0/1 Knapsack problem?
5. List the applications of Greedy method?
6. What is Spanning Tree?
7. What is dynamic Programming?
8. What is Bellman-ford algorithm?
9. What is Warshall algorithm?
10. What is the importance of String editing?
11. Give one example of String editing?
12. State all Pairs of shortest Problem?
13. What is Optimal Binary Search Tree?
14. Discuss briefly travelling sales person problem?
15. List the steps involved in dynamic programming?
16. List the applications of dynamic Programming?
17. Discuss briefly minimum cost spanning tree problem?
18. Discuss briefly single source shortest paths problem?
19. List the applications of Dynamic Programming?

UNIT – IV

1. Define Backtracking?
2. Write general method of backtracking?
3. List the applications of backtracking?
4. State n-Queens Problem?
5. What is Solution space Tree?
6. List the terms used in backtracking?
7. Define Livenode & E-node?
8. Discuss briefly sum of all subsets problem?
9. What is Pruning? What are the different types of pruning?
10. State Graph coloring problem?
11. Define 0/1 Knapsack problem?
12. What are the key concepts of Branch and Bound?
13. What is bounding function?
14. Define LIFO Branch and Bound?
15. Define FIFO Branch and Bound?
16. Differentiate LIFO & FIFO Branch and Bound?
17. Compare Backtracking and Branch and Bound?
18. List the application of Branch and bound?
19. List the real world application of where sum of all subsets problem?
20. Discuss briefly travelling sales person problem?
21. What is ranking function?
22. Define 0/1 knapsack problem? List the different methods to solve?
23. Write the general method of Branch and Bound?
24. Write a procedure for Least Cost Branch & Bound?

UNIT - V

1. Define P & NP Problems?
2. Define NP Hard problems?
3. Define NP Complete Problems?
4. State and explain Cook's theorem?
5. What is job shop scheduling?
6. Define click Decision Problem?
7. Define chromatic number decision problem?
8. List the NP Hard Graph problems?
9. State Traveling salesperson decision problem?

10. List NP Hard scheduling Problems?