NOVEMBER 2022 **57701/CS21A**

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer any TEN questions.

1. Mention the characteristics of an Algorithm.

2. Distinguish between Time and Space complexity.

3. What is B+ Tree?

4. Define the term – AVL Tree.

5. What is Minimum Spanning tree?

6. What is meant by Directed Acyclic graph?

7. Define the term – Divide-and-Conquer approach.

8. Differentiate – External and Internal sorting methods.

9. Define the term – Greedy method.

10. What are Huffman codes?

11. Define the term – Branch and Bound technique.

12. What are Hamiltonian Cycles?

PART B — (5 × 5 = 25 marks)

Answer any FIVE questions.

13. Describe about the Pseudo-code for Expressing algorithms.

14. Explain the Probabilistic and Amortized Analysis.

15. Discuss on insertion and deletion operations in Binary Search Tree.

16. Describe the functioning of Prim's algorithm for finding Minimum Spanning tree.

17. Explain the working of K-Way Merge sort algorithm with an example.

18. Discuss on 0/1 Knapsack problem and the Greedy method to find solution.

19. Describe the Sum-of-subsets problem and the algorithm for providing solution.

PART C — (4 × 10 = 40 marks)

Answer any FOUR questions.

20. Discuss on the Performance analysis of Algorithm.

21. Define about the Fibonacci Heap operations.

22. Explain the working of Dijkstra' s algorithm for Single source Shortest path problem.

23. Discuss on the functioning of Quick sort algorithm with a numeric example.

24. Describe about the Travelling Salesperson problem and the algorithm for finding solution.

25. Explain the n-Queen problem and the Backtracking algorithm for finding solution.

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