

CLASS - MSC. 3rd SEMESTER

SUBJECT – LAB ON DESIGN AND ANALYSIS ALGORITHM

PAPER CODE – CS-C-516

1. Write a program to trace the time complexity of the loop. For (i=0; i<n; i++)
2. Write a program to find factorial of a number using iterative and recursive method. Analyze time complexity.
3. Write a program to solve recurrence relation using the master method (manual lab exercise).
4. Write a program to perform bubble sort for any given list of numbers. Analyze time complexity.
5. Write a program to perform insertion sort for any given list of numbers. Analyze time complexity.
6. Write a program for Linear Search.
7. Write a program for Binary Search.
8. Implement Quick Sort and trace the partitioning process.
9. Write a program for Merge Sort and show the divide-and-conquer steps.
10. Write a program to implement Depth First Search (DFS) for a graph.
11. Write a program to implement Breadth First Search (BFS) for a graph.
12. Implement Heapify and Heap Sort and display intermediate heap structures.
13. Implement Prim's Algorithm for Minimum Spanning Tree.
14. Implement Kruskal's Algorithm using Union-Find structure.
15. Implement Dijkstra's Shortest Path Algorithm.
16. Write a program to implement Fractional Knapsack Problem using Greedy strategy.
17. Implement Huffman Coding for data compression (display tree & codes).
18. Implement Floyd-Warshall Algorithm for all-pair shortest path.
19. Implement Longest Common Subsequence (LCS) using dynamic programming.
20. Implement 0/1 Knapsack Problem using dynamic programming.
21. Write a program to solve Travelling Salesman Problem using Brute Force (for small input).