Time: 3 Hours   **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
- - -

1. State any two differences between traditional matrix multiplication and Strassen's matrix multiplication. Discuss Strassen's matrix multiplication and derive its time complexity.   [15]

2. Design merge sort algorithm and discuss its best-case, average-case and worst-case efficiency.   [15]

3. How sets are represented in memory? What is a disjoint set? Write algorithm for Union and Find operations of disjoint sets.   [15]

4. Write recursive backtracking schema for m coloring of the graph. Determine the time complexity of the same.   [15]

5. Solve the instance of 0/1 knapsack problem using dynamic programming: n = 4, m = 25 (P1, P2, P3, P4) = (10, 12, 14, 16), (W1, W2, W3, W4) = (9, 8, 12, 14).   [15]

6. Define the Travelling Salesperson Problem. Solve the TSP problem using Dynamic programming where the edge lengths are given as:

0	10	15	20
5	0	9	10
6	13	0	12
8	8	9	0

                                                                                              [15]

7. Explain the Greedy Kruskal's minimum spanning tree. Compare this with Greedy Prim's method.   [15]

8. Write the control abstraction for LC-Search. Explain how Traveling Salesperson problem is solved using LCBB.   [15]

0	20	30	10	11
15	0	16	4	2
3	5	0	2	4
10	6	18	0	3
16	4	7	16	0

---ooOoo---