

**COMPUTER ALGORITHMS AND DATA STRUCTURE**

---

Time : Three hours

Maximum : 100 marks

**PART A — (6 × 5 = 30 marks)**

Answer any SIX questions.

1. What is Divide and Conquer method? Give an example.
2. Write short notes on partition in Quick Sort.
3. Discuss about optimal storage on Tapes problem.
4. Define Greedy method and explain it.
5. Explain in detail the general concept behind 0/1 Knapsack problem.
6. Explain Optimal binary search trees in detail.
7. Define queue and how do you represent.
8. Write algorithm to delete an element from stack.
9. What is binary tree? How do you represent?
10. Define the following :  
(a) Tree (b) Siblings (c) root.

**PART B — (4 × 10 = 40 marks)**

Answer any FOUR questions.

11. Write an algorithm for selection sort.
12. Write Kruskel's algorithm to find minimal spanning tree.
13. Explain multi stage graphs in detail.
14. Explain the insertion and deletion operations on doubly linked list. Give algorithms.
15. Explain garbage collection and compaction in detail.
16. Explain threaded binary tree in detail.

**PART C — (2 × 15 = 30 marks)**

Answer any TWO questions.

17. Write the quick sort algorithm and explain it with an example.
18. Write a procedure to add two polynomials using a linked list.
19. Describe the tree traversal techniques and explain their applications.