Design and Analysis of Algorithms (R1UC407B)

Practice Set

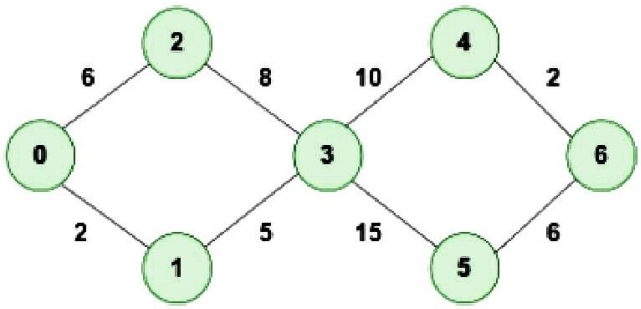
Note: It is just a practice set. You will find the similar questions, not exact ones. Therefore, practice as much as you can.

IMPORTANT: This is based on after MTE syllabus. For your ETE exam, consider MTE practice set as well.

1. Difference between Greedy and Dynamic approach.
2. Compare uses of Backtracking and Branch & Bound strategies.
3. Explain the roles of Huffman encoding using greedy approach by taking a suitable example along with its encoded data.
4. Describe algorithm of fractional knapsack and practice to solve the following where knapsack capacity is 40

Item	Value	Weight
1	60	10
2	100	25
3	120	35

5. Describe the algorithm for Floyd–Warshall Algorithm to find all pair shortest paths.
6. Practice to solve 0/1 knapsack, Longest Common Subsequence (LCS), Travelling Salesman Problem (TSP), Floyd Warshall, coin exchange problem, multistage graph, using dynamic programming approach
7. What is Disjoint Set (Union-Find) in Kruskal's Algorithm, and how do you use it to detect a cycle?
8. Write pseudocode of Dijkstra algorithm. Apply the method to find the shortest path in the given graph and mention its complexity.



9. Practice to solve sum of subset, N-Queens problem using backtracking approach.
10. Define P, NP, NP-Complete and NP-Hard with suitable examples.
11. Find the chromatic number of a graph using backtracking.
12. Explain the shortcomings of Dijkstra method. Justify your answer with a suitable example.