

FACULTY OF ENGINEERING
B.E. (CSE) VI – Semester (AICTE) (Main & Backlog) Examination,
September/ October – 2022

Subject: Design and Analysis of Algorithms

Time: 3 Hours

Max. Marks: 70

(Missing data, if any, may be suitably assumed)

PART – A

Note: Answer all the questions.

(10 x 2 = 20 Marks)

1. Define time complexity.
2. What is the collapsing find rule?
3. Write the control abstraction of Divide and Conquer.
4. What is a minimum cost spanning tree?
5. What do you understand by reliability design?
6. What is Exhaustive search?
7. Define a Hamiltonian cycle.
8. State the 8-Queens Problem.
9. What is NP Completeness?
10. Write the time complexity of Quick sort algorithm.

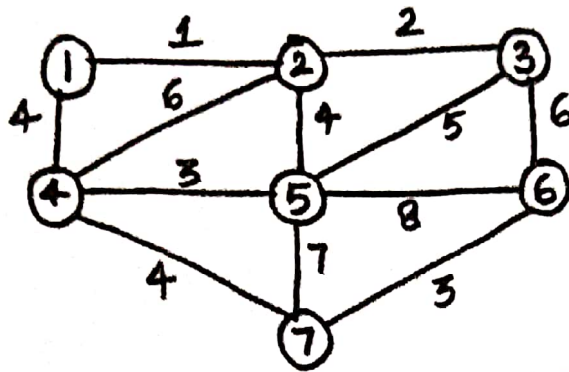
PART – B

Note: Answer any five questions

(5 x 10 = 50 Marks)

11. a) Write short notes on Performance analysis of algorithm.
 b) Explain the Recursive algorithms with an example.
12. a) Write a control abstraction for Greedy Method.
 b) Consider the following instance of knapsack problem where $n=7$, $m=15$,
 $(p_1, p_2, p_3, p_4, p_5, p_6, p_7) = (10, 5, 15, 7, 6, 18, 3)$ and $(w_1, w_2, w_3, w_4, w_5, w_6, w_7) = (2, 3, 5, 7, 1, 4, 1)$. Solve by using Greedy approach.
13. a) Explain briefly about branch and bound theory.
 b) For the identifier set $(a_1, a_2, a_3, a_4) = (\text{end}, \text{goto}, \text{print}, \text{stop})$ with
 $(p_1, p_2, p_3, p_4) = (3, 3, 1, 1)$ and $(q_0, q_1, q_2, q_3, q_4) = (2, 3, 1, 1, 1)$. Construct an OBST.
14. a) Explain about DFS with an example?
 b) Explain briefly about "Compressed Tries" with an example.
15. a) Write a Non-deterministic algorithm for sorting.
 b) Define Node Covering Problem with example.

16. a) Explain Kruskal's algorithm for finding MST of the following graph given below:



b) Explain briefly the Brute force String Matching problem with example.

17. Write short notes on:

- a) Travelling Salesperson problem
- b) Job sequencing with deadlines
