Roll No												

PRESIDENCY UNIVERSITY
BENGALURU

School Of Computer Science and Engineering & Information Science

End-Term Examinations, Aug 2024

Odd Semester: 2023 - 24
Course Code: CSE2007
Course Name: Design and Analysis of Algorithms
Department: SoCSE

Date:06.08.2024
Time: 09.30AM TO 12.30PM
Max Marks: 100
Weightage: 50%

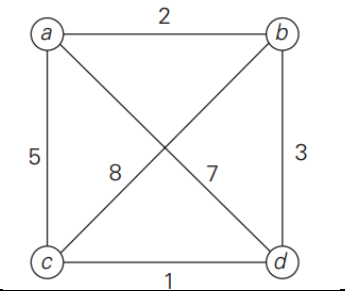
Instructions:

(i) Read the all questions carefully and answer accordingly.
(ii) Do not write any matter on the question paper other than roll number.

Q.No	Questions	Marks	CO	RBT
1	a. Define algorithm and brief about the key words in the definition.	4	CO1	L1
	b. Design algorithm to find factorial of a number.	6	CO1	L2
	c. Discuss the Analysis Framework for an algorithm.	10	CO1	L3

OR

2	a. Discuss the problem types: Sorting and Searching.	4	CO1	L1
	b. Discuss the Basic asymptotic notations.	6	CO1	L2
	c. With general plan for analyzing the time efficiency of non recursive algorithm using it Design algorithm to find largest element in list of n numbers.	10	CO1	L3

3	a. Design Bubble Sort Algorithm	4	CO2	L1
	b. Design Sequential Search Algorithm, trace the algorithm with example	6	CO2	L2
	c. Solve the problem of Travelling Salesperson using Exhaustive Search Method. 	10	CO2	L3

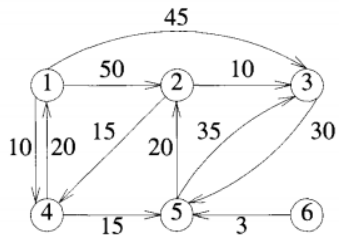
OR

4	a. Design Selection Sort Algorithm	4	CO 2	L 1
	b. Design Brute Force String Matching Algorithm, trace the algorithm with example	6	CO 2	L 2
	c. Solve Knapsack Problem for the given data. Item | Weight | Value 1 | 7 | 42 2 | 3 | 12 3 | 4 | 40 4 | 5 | 25	10	CO 2	L 3

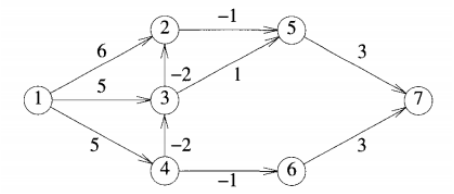
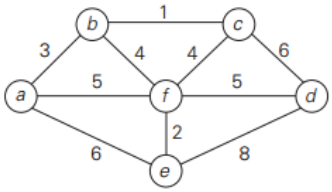
5	a. Discuss method divide and conquer	4	CO 3	L 1
	b. Design Binary Search Algorithm	6	CO 3	L 2
	c. Design algorithm to sort elements given using Merge Sort and find the time complexity for the same 32, -45, -23, 54, 43, 34, 09, 20, 27	10	CO 3	L 3

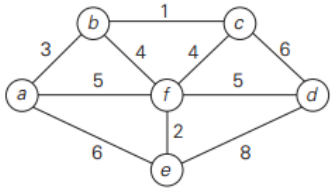
OR

6	a. Discuss method decrease and conquer	4	CO 3	L 1
	b. Design Insertion Sort Algorithm	6	CO 3	L 2
	c. Design algorithm to sort elements given using Quick Sort and find the time complexity for the same 32, -45, -23, 54, 43, 34, 09, 20, 27	10	CO 3	L 3

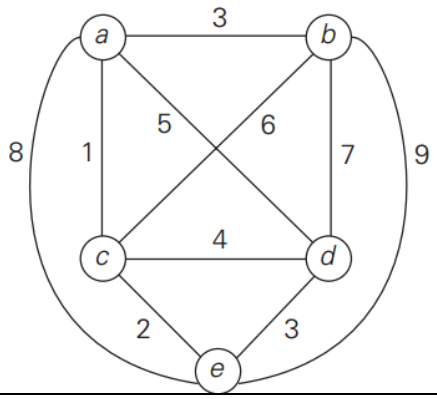
7	a. Design Warshall's Algorithm	4	CO 4	L 1
	b. Apply Appropriate algorithm and find the Single Source Shortest Path 	6	CO 4	L 2
	c. Consider the five-symbol alphabet {A, B, C, D, _} construct the Huffman Tree Construction. <table><tr><td>Symbol</td><td>A</td><td>B</td><td>C</td><td>D</td><td>-</td></tr><tr><td>Frequencies</td><td>0.35</td><td>0.1</td><td>0.2</td><td>0.2</td><td>0.15</td></tr></table>	10	CO 4	L 3

OR

8	a. Design Floyd's Algorithm	4	CO 4	L 1
	b. Apply Appropriate algorithm and find the Single Source Shortest Path 	6	CO 4	L 2
	c. Design Prims Algorithm to find the Minimum Spanning tree for the given graph. 	10	CO 4	L 3

9	a. Discuss Backtracking Method	4	CO5	L1
	b. Design Minimum Spanning tree the given graph using approach of Kruskal 	6	CO5	L2
	c. Design State Space Tree for n-Queen. N=4	10	CO5	L3

OR

10	a. Discuss Branch and Bound Method	4	CO 5	L 1
	b. Design State Space Tree for Subset-Sum problem. A = {1,2,5,6,8} for d=9	6	CO 5	L 2
	c. Design State Space Tree and find the optimal solution for travelling salesman problem using Branch and Bound Technique. 	10	CO 5	L 3