Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

Make-up Examinations – December 2025

Date: 27 – 12- 2025 **Time:** 01:00pm – 04:00pm

School: SOCSE	**Program:** B.Tech/BCA	
Course Code: CSE2007	**Course Name:** Design and Analysis of Algorithms	
Semester: MK	**Max Marks**: 100	**Weightage**: 50%

CO - Levels	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**
Marks	**14**	**14**	**24**	**24**	**24**

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

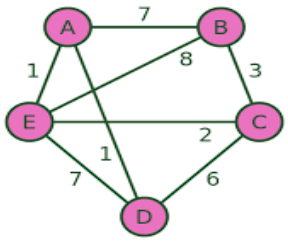
Part A

Answer ALL the Questions. Each question carries 2marks. **10Q x 2M=20M**

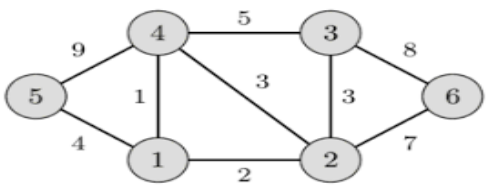
1.	List the characteristics of an algorithm.	2 Marks	L1	CO1
2.	How is a time complexity different from space complexity. Give an example.	2 Marks	L2	CO1
3.	With an example, explain, what is string matching?	2 Marks	L1	CO2
4.	In terms of space and time complexity, compare bubble sort and selection sort.	2 Marks	L1	CO2
5.	Give the general strategy of divide and conquer method.	2 Marks	L1	CO3
6.	Sort the following number using insertion sort method. [27, 5, 13, 42, 9, 31, 18, 3	2 Marks	L2	CO3
7.	What is transitive closure?	2 Marks	L1	CO4
8.	Differentiate dynamic programming and greedy technique.	2 Marks	L2	CO4
9.	Define state space tree.	2 Marks	L1	CO5
10.	What is backtracking?	2 Marks	L1	CO5

Part B

Answer the Questions. **Total Marks 80M**

11.	a.	Explain how analysis of linear search is done with suitable illustration.	10 Marks	L2	CO1
	b.	Solve the following instance of Knapsack problem by using exhaustive search. Item={A,B,C,D,E,F}, Weight={2,3,5,7,1,4}, Values={10,5,157,6,18} and Knapsack Capacity = 15.	10 Marks	L3	CO2
		Or			
12.	a.	Explain in detail about various asymptotic notations.	10 Marks	L2	CO1
	b.	Define travelling salesman problem. Explain how exhaustive method is used to solve the travelling salesman problem in the given graph. 	10 Marks	L2	CO2

13.	a.	State and explain the quick sort algorithm. Give the recurrence relation and efficiency. Sort the following numbers using quick sort algorithm. [37, 12, 89, 25, 44, 10, 73, 56, 3, 68, 91, 21]	20 Marks	L2	CO3
		Or			
14.	a.	Write an algorithm to perform binary search following sorted list of elements and key is 68. Analyze the algorithm for best case, average case and worst case. [3, 10, 12, 21, 25, 44, 56, 68, 73, 89]	20 Marks	L2	CO3

15.	a.	Write the kruskal's algorithm apply it to fined minimum spanning tree for the following graph. 	20 Marks	L2	CO4
		Or			
16.	a.	Explain in detail about floyd's algorithm with suitable example.	20 Marks	L2	CO4

17.	a.	State the subset-sum problem and compute the state-space tree of backtracking applied to the instance A={5,10,12,13,15,18} and d=30 of subset-sum problem	20 Marks	L2	CO5
Or					
18.	a.	Explain how does backtracking work on N-Queen problem with suitable state-space tree.	20 Marks	L2	CO5