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Total No. of Pages: 02

Total No. of Questions: 09

B.Tech. (CSE / AI&ML / CE) (Sem. - 4)
DESIGN & ANALYSIS OF ALGORITHMS

Subject Code: BTCS-403-18

M Code: 77629

Date of Examination : 07-01-2023

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

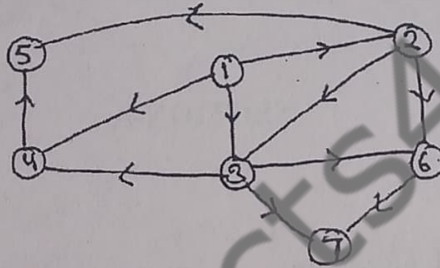
1. Write briefly:
 - a) Discuss Depth first search algorithm.
 - b) What is travelling salesman problem?
 - c) What do you mean by minimum spanning tree.
 - d) What is flow network?
 - e) Name the approximation and Randomized Algorithms.
 - f) What is Knapsack problem?
 - g) What are the characteristics of Algorithm.
 - h) Solve the recurrence equation $T(n)=9T(n/3)+n$
 - i) Define dynamic programming approach
 - j) How does brute force work?

SECTION-B

2. Explain Bin packing problem.
3. Give a set $S = \langle 1, 4, 5, 6, 7, 3 \rangle$ and $W = 12$. Obtain the sum of subset using backtracking approach.
4. Write a short note on Masters Method for solving recurrences
5. Explain Greedy method with suitable example
6. Explain Dijkstra's shortest path algorithm with suitable example. Find the time complexity for it.

SECTION-C

7. What is topological sort? Show the ordering of vertices produced by topological sort on the following digraph.



8. Explain the various classes problems (i.e P, NP, NP-C, NP-Hard). Also show relationship among them with the help of a diagram.
9. Write a short note on following:
 - a) Heuristics and their characteristics
 - b) Network flow algorithm

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.