

Roll No.

Total No. of Pages : 02

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**B.Tech. (AI&ML/CSE/DS/IOT/Internet of Things and Cyber Security
including Block Chain Technology/) (Sem.-4)**

DESIGN & ANALYSIS OF ALGORITHMS

Subject Code : BTCS/403/18

M.Code : 77629

Date of Examination : 17-05-2024

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. Answer briefly :

- a) What is an algorithm?
- b) Define dynamic programming.
- c) Define implicit constraint.
- d) What are static trees?
- e) Define Branch-and-Bound method.
- f) What is worst-case efficiency?
- g) What is Topological sorting?
- h) Define the term transitive closure.
- i) What is Bin Packing Problem?
- j) What is the basic principal of divide-and-conquer?

SECTION-B

2. What are the requirements that are needed for performing Backtracking?
3. What are the features of dynamic programming?
4. List the types of Randomized Algorithms.
5. Explain Breath First Traversal Method for Graph with algorithm and examples.
6. Find the longest common subsequence for the following two sequences using dynamic programming. Show the complete process.

X = 100101001

Y = 101001.

SECTION-C

7. Explain the characteristics of Greedy algorithms. Compare Greedy algorithms with Dynamic Programming Method giving example of Knapsack Problem.
8. Write a detailed note on Approximation Algorithms.
9. What are NP-hard and NP-complete problems? Explain with examples.

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