

Roll No. _____

3230

**B. Tech. (CSE) 5th Semester
Examination – February, 2022**

DESIGN AND ANALYSIS OF ALGORITHMS

Paper : PCC-CSE-207-C

Time : Three hours]

[Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt any five questions in all, selecting one question from each Unit. Question No. 1 is compulsory.

1. Answer the following questions : 2.5 × 6 = 15

- (a) Define Tree data structure.
- (b) What is Asymptotic Notation ? Explain Big-Oh in detail.
- (c) Differentiate between Greedy and Dynamic Programming.
- (d) Explain general method of Backtracking by taking suitable example.

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- (c) What are P and NP classes ?
- (d) Differentiate between Subject Paradigm and Ordering Paradigm.

UNIT - I

- 2. Define the term Algorithm. How we determine the performance (time and space complexity) of an algorithm? Explain by taking suitable example. 15
- 3. (a) What is Divide and Conquer Strategy? How we sort a number series using Merge Sort by consideration of Divide and Conquer Strategy? 10
- (b) Explain Strassen's Matrix Multiplication using Divide and Conquer Strategy. 5

UNIT - II

- 4. What is Spanning Tree? Which algorithms are available for finding Minimum Cost Spanning Tree in Greedy Methods? 15
- 5. Explain Optimal Binary Search Tree using Dynamic Programming. 15

UNIT - III

- 6. Describe 8 queens Problem Using Backtracking Method. 15
- 7. Explain Travelling Salesperson Problem using Branch and Bound Strategy. 15

UNIT - IV

- 8. Explain Cook's Theorem in detail. 15
- 9. Explain the following:
 - (a) NP Complete Problem 5
 - (b) NP Hard Problem 5
 - (c) Relation between P and NP 5