

(201CS17)

M.Sc. DEGREE EXAMINATION, APRIL 2018.

SECOND SEMESTER

Branch – Computer Science

DESIGN AND ANALYSIS OF ALGORITHMS

(New Syllabus For Batch 2017)

Time : 3 Hours

Max. Marks : 70

**PART - A**

Answer any FOUR questions from Part — A each question carries 5 Marks.

(Marks :  $4 \times 5$  marks = 20 marks)

1. List the difference between Algorithm and Psuedocode giving suitable examples.
2. Write short notes on disjoint set operation.
3. Distinguish between Divide and Conquer and Greedy methods?
4. Draw all possible binary search trees for the identifier set (do, if, stop)?
5. Define backtracking? Write the control abstraction of iterative Backtracing Method?
6. Define Dynamic programming? List its applications.
7. List the difference between NP- Hard and NP- Complete problem.
8. Define Bounding Function? Give the statement of 0/1 Knapsack FIFO BB.

**PART - B**

Answer all questions from Part -B each question carries 12.5 Marks

(Marks :  $4 \times 12.5$  marks = 50 marks)

**UNIT I**

9. (a) Explain the properties of an algorithm with an example. Given the algorithm for matrix addition and find the time complexity of the algorithm.

Or

- (b) Define Asymptotic notations. Distinguish between Asymptotic notation and conditional asymptotic notation.

**UNIT II**

10. (a) What is mean by Divide and Conquer approach? Write Divide and Conquer Merg sort algorithm and derive the time complexity of this algorithm?

Or

- (b) What is Minimum Cost Spanning tree? Explain Kruskal's Minimum cost spanning tree algorithm with suitable example?

[P.T.O]

UNIT III

11. (a) What is All Pair Shortest path problem (APSP)? Discuss the APSP algorithm with suitable example?

Or

(b) Write an algorithm for N-queen's problem. Give time and space complexity of 8-queen's problem.

UNIT IV

12. (a) Give the 0/1 Knapsack LCBB algorithm. Explain how to find optimal solution using variable-tuple sized approach.

Or

(b) Write a non-deterministic algorithm to find whether a given graph contains Hamiltonian cycle.