

DECEMBER 2015

**P/ID 17461/RCL/
PCAL**

Time : Three hours

Maximum : 75 marks

PART A — (5 × 5 = 25 marks)

Answer ALL questions.

1. (a) Write notes on Ω notation, θ notation with respect to time complexity analysis.

Or

- (b) Write a procedure to find maximum and minimum of a set of numbers using divide and conquer.

2. (a) Define feasible solution, optimal solution, principle of optimality.

Or

- (b) What are the advantages and draw backs of greedy approach compared to dynamic programming?

3. (a) What is back tracking? Compare with dynamic programming.

Or

- (b) Write the control abstraction of back tracking.

4. (a) Write note on bounding techniques.

Or

- (b) How can you solve polynomial expressions by algebraic reduction?

5. (a) Draw the comparison tree for finding the smallest of three numbers.

Or

- (b) Write notes on Oracle.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

6. Explain about randomised algorithms with example.
7. Explain strassen's matrix multiplication algorithm using divide and conquer approach with example.
8. Write a procedure to find shortest path using greedy approach with an example.
9. Explain how least cost path can be obtained from source node to sink node in a multi stage graph with an example.

10. Explain breadth first search algorithm using back tracking.
 11. Solve travelling salesman problem using branch and bound technique.
 12. Provide a solution for graph coloring problem using back tracking.
 13. Explain NP-complete and NP-hard problems using examples.
-