

MAY 2014

**P/ID 16166/PITSG**

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Time : Three hours

Maximum : 100 marks

PART A — (6 × 5 = 30 marks)

Answer any SIX questions.

1. What is an algorithm? List the characteristics.
2. Define recursive algorithm. Illustrate how it works.
3. Why randomized algorithms are required? Explain.
4. How merge sort algorithm works and resulting sorted result? Illustrate.
5. Write the principle of greedy approach.
6. Compare BFS and DFS.
7. How graph colouring problem is solved with minimum complexity? Illustrate.
8. Discuss on lower bounds through reduction.

PART B — (7 × 10 = 70 marks)

Answer any SEVEN questions.

9. Explain the need for pseudo code. Write the conventions of pseudo code. Write an algorithm for obtaining second largest among 100 numbers given, using pseudo code.
10. How divide and conquer principle is used in obtaining maximum and minimum among the given numbers? Illustrate the algorithm and the step by step procedure.
11. Explain strassen's matrix multiplication. How this is effectively and efficiently done?
12. What is job sequencing problem? How this algorithm works? Illustrate this problem, with deadlines and the solutions.
13. With suitable algorithm, explain single source shortest path, in a graph. Illustrate with an example.
14. Explain eight queens problems and describe how backtracking principle is used in solving this problem.
15. What is branch and bound technique? How this technique is applied in devising algorithm? Explain with suitable example.

16. Describe the principles of NP hard and NP complete problem with example problems.
  17. Write short notes on :
    - (a) Oracles.
    - (b) Primality Testing.
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