

Total No. of Questions : 8]

SEAT No. :

P2326

[Total No. of Pages : 2

[5254]-661

B.E. (Computer Engineering)
DESIGN & ANALYSIS OF ALGORITHMS
(2012 Pattern)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answer Q. 1 or Q. 2, Q. 3 or Q. 4, Q. 5 or Q. 6, Q. 7 or Q. 8.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*
- 4) *Assume suitable data, if necessary.*

- Q1)** a) Find an optimal solution for the following instance using job sequencing with scheduling: Number of jobs $n = 4$, profits = (100, 27, 15, 10), deadlines = (2, 1, 2, 1) [6]
- b) Define asymptotic notations. Explain their significance in analyzing algorithms. [6]
- c) Explain backtracking algorithm with graph coloring problem. [8]

OR

- Q2)** a) With respect to dynamic programming, explain in brief the following:[6]
- i) Optimal Substructure.
 - ii) Overlapping Subproblem.
- b) State Recursive Relation for Binary Search and solve them using Master Theorem. [6]
- c) Write the algorithm for m-coloring graph using backtracking strategy And also analyze the time complexity for the same. [8]
- Q3)** a) State Vertex Cover Problem and prove that Vertex Cover Problem is NP Complete. [8]
- b) What is deterministic and non deterministic algorithm? Explain with example. [8]

P.T.O.

OR

- Q4)** a) Explain the concept of Randomized algorithm and Approximation algorithm in brief with example. [8]
b) Explain in brief NP complete problem. Prove that the 3-SAT problem is NP-complete. [8]

- Q5)** a) Explain in brief how parallel algorithm can be used for finding shortest paths of a given graph. [8]
b) Explain Concurrent Algorithms for Dining philosopher's problem. [8]

OR

- Q6)** a) When the parallel algorithms are "work optimal". Explain performance parameters for parallel algorithms. [8]
b) Explain in detail parallel algorithm with example. [8]

- Q7)** a) What is election algorithm in distributed system? Explain Bully algorithm with example. [9]
b) Explain Buddy memory algorithm to allocate memory. [9]

OR

- Q8)** a) Explain in detail KMP algorithm. [9]
b) Write Short note on: [9]
i) Data management algorithms and clustering.
ii) Cryptography algorithms.

