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.