Nov -2015

Total No. of Questions : 8]

SEAT No. :

P2009

[Total No. of Pages : 2

[4859]-1070

B. E. (Computer Engineering)

DESIGN AND ANALYSIS OF ALGORITHMS

(2012 Pattern)

Time : 2.30 Hours] *[Max. Marks :70*

Instructions to the candidates:

1) ***Attempt Q1 OR Q.2 , Q.3 , OR Q.4 , Q.5 OR Q.6 , Q.7 OR Q.8***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat diagram wherever necessary.***
4) ***Make suitable assumptions wherever necessary.***

Q1) a) Write control abstraction for Divide and Conquer Strategy and comment on its generalized recurrence equation. **[6]**

b) Find an optimal solution for following 0/1 Knapsack problem using dynamic programming: Number of Objects n = 4, Knapsack Capacity M = 5, Weights (W1, W2, W3, W4) = (2, 3, 4, 5) and profits (P1, P2, P3, P4) = (3, 4, 5, 6). **[6]**

c) Write a short note on graph coloring problem. Write algorithm for the same. **[8]**

OR

Q2) a) Calculate the worst case time complexity of $f(n) = 6n(n^3 - n)+9n$ using running time complexity. **[6]**

b) Write an algorithm for optimum binary search tree. **[6]**

c) Explain in detail with one example Travelling Salesperson Problem using branch and bound method. **[8]**

OR

Q3) a) Write non deterministic algorithm for Clique decision problem. **[8]**

b) Prove that Vertex cover problem is NP Complete. **[8]**

OR

Q4) a) Write a short note on Randomized algorithm. **[8]**

b) Write non deterministic algorithm for sorting elements in non-decreasing order. **[8]**

P.T.O.

Q5) a) Explain how graph problems can be solved using parallel algorithm. **[8]**

b) Write Kruskal's algorithm using parallel computing to find minimum spanning tree. Explain with a suitable example. **[8]**

OR

Q6) a) Write an algorithm for finding Parallel shortest paths. Also comment on the time complexity of this algorithm. **[8]**

b) Write an odd-even merge sort algorithm. Explain with a suitable example. **[8]**

Q7) a) Give and explain Dijkstra-Scholten algorithm. **[9]**

b) What is Embedded system? Explain Embedded system Scheduling. **[9]**

OR

Q8) a) Define Internet of things (IoT). Explain elements of IoT. **[9]**

b) Give and explain Algorithms in Software Engineering with example. **[9]**