Total No. of Questions : 8]

SEAT No. :

P3847

[Total No. of Pages : 2

[5561]-275
B.E. (Computer Engineering)
DESIGN & ANALYSIS OF ALGORITHMS
(2012 Pattern) (Semester - I)

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 diagram must be drawn whenever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data if necessary.***

Q1) a) What is Amortized analysis and how it differs from Average Case analysis? **[8]**

b) Write an algorithm to solve Knapsack problem using greedy strategies. **[8]**

c) Explain in details in control abstraction for LC Search. **[4]**

OR

Q2) a) Write the algorithm for Merge Sort. Derive the time complexity for the same. **[8]**

b) 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). **[8]**

c) State the Principle of backtracking algorithm. **[4]**

Q3) a) What do you mean by P, NP, NP - Hard and NP - Complete Problems? Give an example of each category. **[8]**

b) What is Non-deterministic algorithm? Write the Non-deterministic algorithm for sorting the element of an array. **[8]**

OR

Q4) a) What is NP-Complete problem explain in detail with example. **[8]**

b) Explain complexity classes P and NP also differentiate between NP complete and NP hard class. **[8]**

P.T.O.

Q5) a) Explain how parallel computations are possible using complete binary tree. **[8]**

b) Write short note on optimal parallel algorithms. **[8]**

OR

Q6) a) How parallel computing can be applied to obtain minimum spanning tree? **[8]**

b) Explain in detail the models for parallel computing. **[8]**

Q7) a) Illustrate with example Floyed - Warshall Algorithm. **[9]**

b) State different software engineering algorithms and explain in brief. **[9]**

OR

Q8) a) Write a short note on following wrt IoT. **[9]**

i) Cryptography algorithms

ii) Data management algorithms and clustering

b) Explain in detail Bully algorithm for dynamically selecting a coordinator in Distributed system. **[9]**