

Total No. of Questions : 8]

SEAT No. :

P3847

[5561]-275

[Total No. of Pages : 2

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]

OR

- 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]
- 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 Floyd - 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]

