Total No. of Questions : 8]

SEAT No. :

P3220

[Total No. of Pages : 2

[5461]-261

B. E. (Computer Engineering)
DESIGN & ANALYSIS OF ALGORITHMS
(2012 Pattern) (End Sem.) (410441) (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 diagrams must be drawn whenever necessary.*
3) *Figures to the right indicate full marks.*
4) *Assume suitable data if necessary.*

Q1) a) Explain amortized time complexity. **[4]**

b) Write a greedy algorithm for sequencing unit time jobs with deadline and profits(Job scheduling algorithm) **[8]**

c) Write and explain an algorithm to solve 8-queens problem. **[8]**

OR

Q2) a) Which are the advantages and disadvantages of divide and conquer approach. **[4]**

b) What is knapsack problem? Write an algorithm for 0/1 knapsack problem using dynamic programming. **[8]**

c) Explain sum of subset problem using backtracking. **[8]**

Q3) a) Show that 3-SAT problem is NP-Complete. **[8]**

b) Write deterministic and nondeterministic algorithm for searching a number from a list. **[8]**

OR

Q4) a) What are different approaches to write randomized algorithm? Explain randomized sort algorithm. **[8]**

b) What is deterministic and nondeterministic algorithms explain in detail with example. **[8]**

P.T.O.

Q5) a) Describe how parallel algorithms can be used to find minimum spanning tree? **[8]**

b) How complete binary tree is useful for parallel algorithms? Show parallel multiplication of following eight numbers: 9, 2, 8, 3,4, 5, 6, 1. **[8]**

OR

Q6) a) Which are different performance measures used for parallel algorithms? **[8]**

b) Which are different PRAM models? Explain with example. **[8]**

Q7) a) Write Bully algorithm to select coordinator dynamically in distributed system. **[9]**

b) Define Internet of Things (IoT). Explain elements of IoT. **[9]**

OR

Q8) a) Write Floyed-Warshall algorithm for all pair shortest path. **[9]**

b) Write short notes on : **[9]**

i) Software engineering algorithms

ii) Clustering used for data management

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