Total No. of Questions : 8]

SEAT No :

P 3105

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[5154]-671

B.E.(Computer Engineering)

DESIGN AND ANALYSIS OF ALGORITHMS

(2012 Course) (Semester-I) (410441)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) *Attempt Q.1 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 diagrams wherever necessary.*
4) *Make suitable assumptions wherever necessary.*

Q1) a) Explain Big Oh (O), Omega (Ω) and Theta (θ) notations in detail along with suitable examples. **[6]**

b) Write an algorithm for Knapsack problem using Greedy Strategy. **[6]**

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

OR

Q2) a) Calculate the Average case time complexity of $f(n) = 3n(n^2-n)+ 2n + 5$ using running time complexity. **[6]**

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

c) Explain in detail backtracking strategy and give control abstraction for the same. **[8]**

Q3) a) Give and explain relationship between P, NP, NP complete and NP Hard. **[8]**

b) Explain Non-Deterministic clique problem along with algorithm. **[8]**

OR

Q4) a) Give and Explain Non-Deterministic sorting algorithm. **[8]**

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

P.T.O.

Q5) a) Explain in detail Dining philosopher's problem. **[8]**

b) Give and explain Minimum Spanning Tree algorithm. **[8]**

OR

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

b) Explain in detail with example Sequential and Parallel computing. **[8]**

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

b) Explain in detail Sorting algorithm for embedded Systems. **[9]**

OR

Q8) a) Write a short note on Internet of Things Algorithm. **[9]**

b) Give and explain String matching algorithm. **[9]**