

Total No. of Questions : 8]

SEAT No :

**P 3105**

**[5154]-671**

[Total No. of Pages :2

**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 ( $\Omega$ ) and Theta ( $\theta$ ) 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]

