

Total No. of Questions : 8]

SEAT No. :

P2994

[Total No. of Pages : 2

[5669]-586

T.E. (Computer) (Semester - II)

DESIGN & ANALYSIS OF ALGORITHMS

(2015 Pattern)

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) Figures to the right indicate full marks.
- 3) Neat diagrams must be drawn whenever necessary.
- 4) Make suitable assumption whenever necessary.

Q1) a) Find the correct sequence for jobs that maximizes profit using following instances,

JobID (1, 2, 3, 4, 5), Deadline (2, 1, 2, 1, 3) and Profit (100, 19, 27, 25, 15).

[6]

b) Write and explain Huffman Code Generation Algorithm. [6]

c) Why the correctness of algorithm is important. What is loop Invariant property? Explain with example. [8]

OR

Q2) a) Consider the following instances of knapsack problem $n = 3$, $M = 50$, (P1, P2, P3): (60, 100, 120), and (W1, W2, W3) : (10, 20, 30), Find the optimal solution using Greedy approach? [6]

b) Explain different means of improving efficiency of Algorithm. [6]

c) What is mean by divide and conquer strategy. Name few problems that can be solved using divide and conquer. Write the Control abstraction for Divide and Conquer strategy? [8]

Q3) a) State vertex cover problem and prove that vertex cover problem is NP Complete. [8]

b) What are deterministic and non-deterministic algorithms? Explain with example. [8]

OR

P.T.O.

- Q4) a)** Write short note on : [8]
i) P class and NP class
ii) Big 'oh' and theta
b) Explain NP – hard-Hamiltonian cycle problem. [8]

- Q5) a)** Give and explain Dijkstra's Shortest path algorithm. [8]
b) Discuss sorting algorithm for embedded system. [8]

OR

- Q6) a)** State and explain Fibonacci Heaps in detail. Enlist its application. [8]
b) Explain the concept of in brief with example. [8]
i) Randomized algorithm and
ii) Approximation algorithm

- Q7) a)** What is distributed algorithm? Write and explain distributed breadth first search algorithm. [9]
b) What are string matching algorithms? Explain any one algorithm with example. [9]

OR

- Q8) a)** Explain Rabin-Karp algorithm. Explain the worst case and best case running time of Rabin Karp Algorithm? [9]
b) Write and explain multithreaded merge sort algorithm. Analyze the same. [9]

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