

Seat No.	
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T.E. (CSE) (Part - I) (Semester - V) (Revised)**Examination, May - 2019****COMPUTER ALGORITHM****Sub. Code : 66296****Day and Date : Monday, 06 - 05 - 2019****Total Marks : 100****Time : 02.30 p.m. to 05.30 p.m.**

- Instructions :**
- 1) Questions 4 and 8 are compulsory.
 - 2) Attempt any four questions from remaining questions.
 - 3) Figures to the right indicate full marks.
 - 4) Assume suitable data wherever necessary.

- Q1) a)** What is algorithm? Explain different characteristics of algorithm. [8]
b) Prove that the average case complexity of Quick Sort is $O(n \log n)$. [8]

- Q2) a)** Give solution to Optimal Merge Pattern using greedy solution. [8]
b) Solve the following instance of reliability design problem with 3 stages. Cost of the system is 175. Cost of device in stage 1 is 40, stage 2 is 25 and stage 3 is 35. Reliabilities for the three devices are 0.75, 0.85, and 0.6 respectively. Number of devices available in stage 1 are 3, stage 2 are 3, and stage 3 are 2. [8]

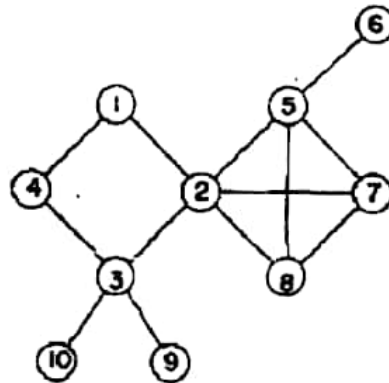
- Q3) a)** Find optimal solution to given Knapsack problem using Greedy method. $N = 6, m = 20$
 (P1, P2, P3, P4, P5, P6): (12, 5, 15, 7, 6, 18) ($w_1, w_2, w_3, w_4, w_5, w_6$): (2, 3, 5, 7, 1, 5). [8]
b) Explain travelling sales person problem to find tour of minimum cost. [8]

- Q4) Write short note on :** [18]
 a) Difference between Priori and Posteriori analysis.
 b) Single Source Shortest Path.
 c) Greedy solution for minimum cost spanning trees.

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- Q5) a) Explain solution to knapsack problem using back-tracking. [8]
 b) Explain packet routing in square mesh and linear array. [8]

- Q6) a) How DFS can be used to find an articulation point. Identify articulation points for the following undirected graph by using DFS spanning tree. [8]



- b) Describe and give example of prefix computational model with PRAM. [8]
- Q7) a) Draw and explain permutation tree for 4 queen problem using back-tracking. [8]
 b) What is Non deterministic algorithm? Explain non deterministic searching and sorting algorithm. [8]
- Q8) Write short note on: [18]
 a) Define the following terms:
 i) Deterministic and non-deterministic algorithms
 ii) Decision and Optimization Problems
 iii) P and NP Problems
 b) Game tree
 c) Data concentration with mesh and Hypercube.

