Seat No.	

SC-189

Total No. of Pages : 2

T.E. (CSE) (Part-III) (Semester - V) (Revised) Examination, November - 2019
COMPUTER ALGORITHM
Sub. Code : 66296

Day and Date : Friday, 29 - 11 - 2019
Time : 2.30 p.m. to 5.30 p.m.

Total Marks : 100

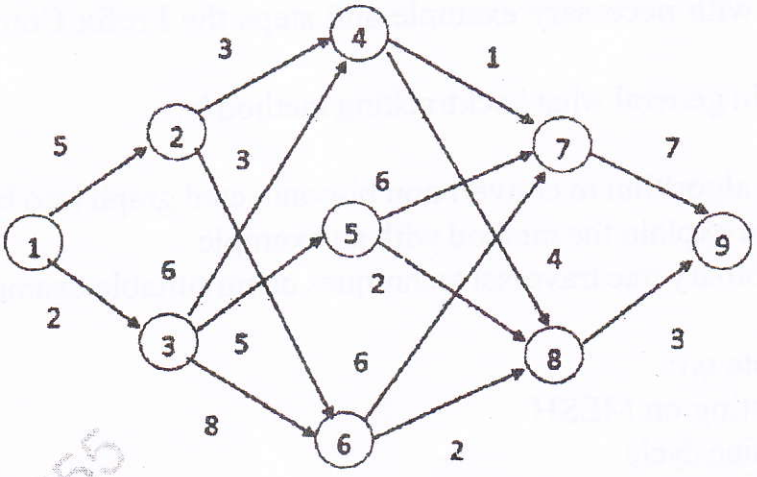
Instructions :
1) **Questions 4 and 8 are compulsory**
2) **Attempt any four questions from remaining questions**
3) **Figures to the right indicate full marks.**
4) **Assume suitable data wherever necessary.**

Q1) a) Illustrate recursive algorithm for Tower of Hanoi with its analysis. **[8]**

b) Define Job Sequencing with deadline problem using Greedy approach. Solve following instance, **[8]**
n=7, (p1,p2,p3,p4,p5,p6,p7) = (3,5,20,18,1,6,30) and
(d1,d2,d3,d4,d5,d6,d7) = (1,3,4,3,2,1,2)

Q2) a) Illustrate recursive and iterative binary search algorithm with example and complexity. **[8]**

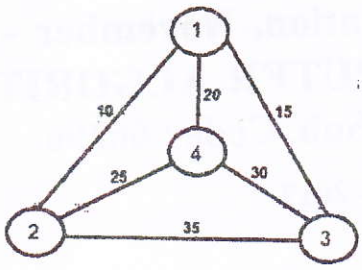
b) Apply dynamic programming method to find minimum cost of path from S-T is the multistage graph of following figure. **[8]**



Q3) a) Define Spanning Tree. Explain prim's and Kruskal's Algorithm to find minimum Spanning Tree with suitable example. **[8]**

P.T.O.

b) Discuss Travelling Sales Person problem with dynamic programming. Construct an optimal trevelling sales person tour using Dynamic Programming for following instance. [8]



Q4) Solve the following. [18]

a) Write an algorithm for matrix transpose and find the time complexity of the algorithm using step count method

b) Solve 0/1 knapsack problem using dynamic programming foe following source instance using n=3, (w1, w2, w3) = (2,3,4) and (p1,p2,p3) = (1,2,5) and capacity of knapsack is 6.

c) Build the set of optimal Huffman code for 7 messages with relative Frequencies (3,5,9,13,21,25,30).

Q5) a) What is AND/OR graph decision problem? Show that CNF satisfiability is reducible to AND/OR graph decision problem. [8]

b) With respect to parallel algorithms define what is speedup, work done, efficiency of an algorithm. Explain Amdahl's law and mention when parallel algorithm is said to be work Optimal. [8]

Q6) a) Explain with necessary example and steps the Prefix Computation on MESH [8]

b) Explain in general what backtracking method is. [8]

Q7) a) Write an algorithm to convert non bi-connected graph into bi-connected graph and explain the method with an example [8]

b) Explain binary tree traversal techniques using suitable example. [8]

Q8) Write short note on: [18]

a) Broadcasting on MESH

b) Hamiltonian cycle

c) Hypercube computational model

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