Total No. of Printed Pages:03

SUBJECT CODE NO:- H-1199
FACULTY OF SCIENCE AND TECHNOLOGY
T.Y. B.Tech.(CSE) (Sem-V)
Design & Analysis of Algorithm
[Old]

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
i. Q. 1 and Q. 6 are compulsory.
ii. Attempt any two from remaining question's in each section.

Section A

Q.1 Answer the following question (any 5): 10

1) What is algorithm validation?
2) What is tightest upper bound that represents the no of swaps required to sort n numbers using selection sort.
3) Algorithm based on greedy method are used for solving
   i) Liner problem.
   ii) Optimization problem.
   iii) Quadratic problem.
   iv) Biquadratic problem.
4) Write the control abstraction for divide and conquer method.
5) define feasible and optimal solution
6) What is code tuning technique?

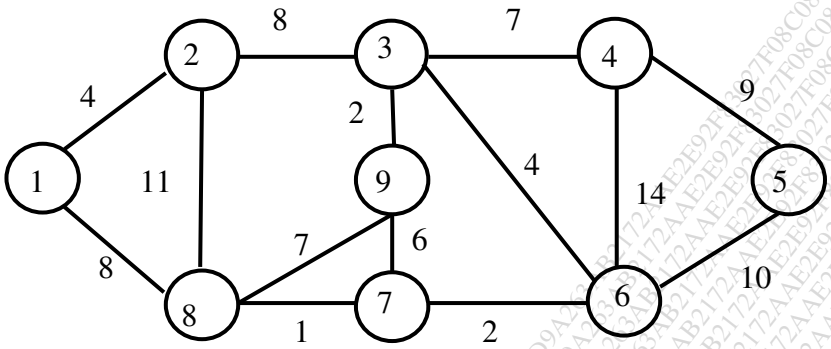
Q.2 a) Write short note on optimal merge pattern. 07
b) Explain Knapsack problem in detail. 08

Q.3 a) Explain binary search? Write algorithm for it. Consider the following elements of array A. 08

Index	1	2	3	4	5	6	7	8	9	10
element	-15	-10	0	7	12	30	45	58	82	104

b) Explain activity selection problem. 07

Q.4 a) What is minimum spanning tree? Explain Kruskal's algorithm with following example. 08



b) Explain various code tuning techniques. 07

Q.5 a) Explain quick sort with suitable example. 08

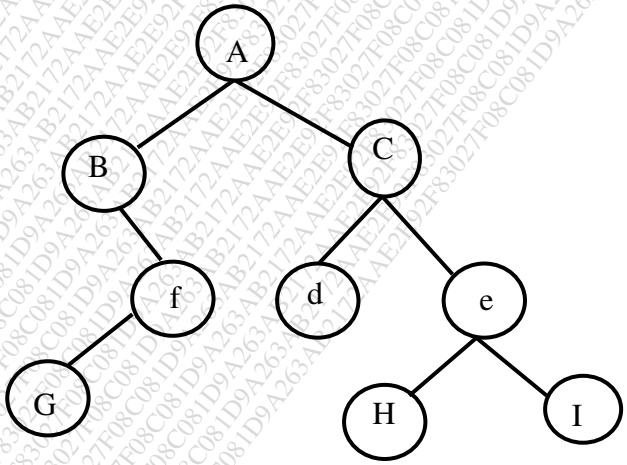
b) Write a short note on stressen's matrix multiplication. 07

Section B

Q.6 Solve any five: 10

a) What is difference between divide and conquer dynamic programming.

b) Find the tree traversal for following tree.



c) Define articulation point.

d) An adjacency matrix representation of graph can not contain information about.

i) Nodes ii) Edges iii) Direction of edges iv) parallel edge

e) You can implement DFS using queue
   a) True b) False

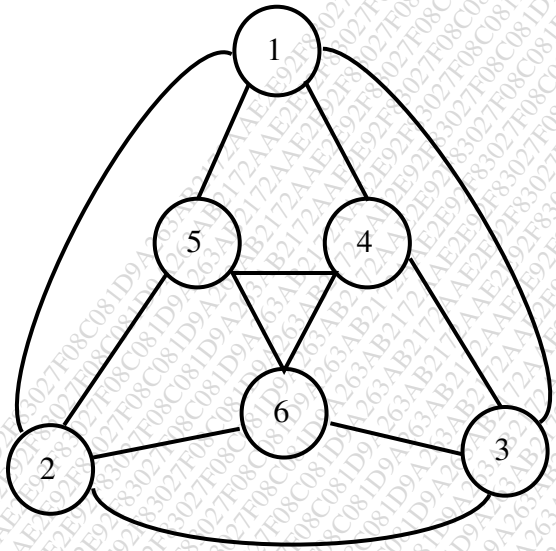
f) What is backtracking?

Q.7 a) Explain string editing? What is optimal cost of editing two strings "Monday" and "Friday". 08

b) Explain travelling salesperson problem. 07

Q.8 a) Explain sum of subset problem with suitable example. 08

b) Explain Hamiltonian cycle. Write algorithm for it. Find Hamiltonian cycle from following graph. 07



Q.9 a) Explain OBST in detail. 08

b) What is code optimization? Explain in detail. Write optimal code for following expression $A + (B/C) * D$. 07

Q10 a) Explain all pairs shortest path: 07

b) Define: 08

i) P-class problem.
ii) Deterministic & non-deterministic machine.
iii) Np hard problem.
iv) Np complete problem.