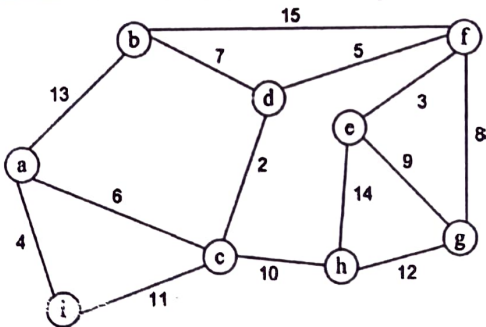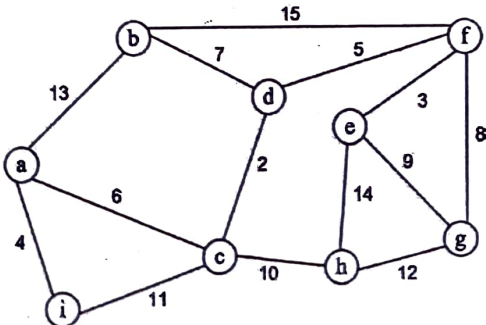| MSE - Oct 2022	
Max. Marks: 20	Duration: 60 Min.
Class: MCA	Semester: II
Course Code: MC507	
Name of the Course: Design and Analysis of Algorithms	

Instruction:
1) All questions are compulsory.
2) Draw neat diagrams.
3) Assume suitable data if necessary but justify the same.

Q. No.	Question	Max. Marks	CO-BL
Q. 1	Define the following terms with at least two examples of each. i) Big O Asymptotic Notation ii) Ω Asymptotic Notation iii) Big θ Asymptotic Notation	5	CO1-2
Q. 2	Consider the following two sequences X=abdceadklbac and Y=adkalc. Find the *Longest Common Subsequence* using Dynamic Programming Approach. Show all intermediate solutions and directions in terms of matrices of all common sub-sequences of X and Y.	5	CO3-3
Q. 3	Find the solution to the following recurrence relation using both *Master Theorem* and *Recursion Tree Methods*. $T(n)=3T(n/2)+n$	5	CO1-4 CO2-3
Q. 4	Find Minimum Spanning Tree for the following Graph using *Prim's MST Algorithm* with root as "a". Show all intermediate steps in terms of Cuts. **OR** Find Minimum Spanning Tree for the following Graph using *Kruskal's MST Algorithm*. Show all intermediate steps in terms of Disjoint sets. 	5 5	CO3-3 CO3-3