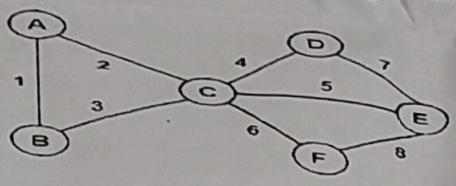
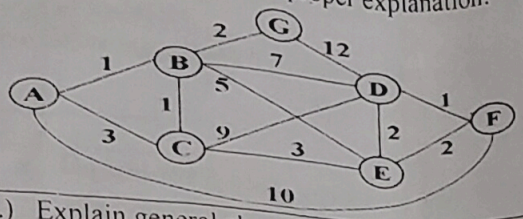
SOMAIYA VIDYAVIHAR UNIVERSITY

Semester: January 2024- April 2024 Maximum Marks: 30 Examination:Re-In-Semester Examination			Duration : 1 Hr. 15 min.
Programme code: 01 Programme: BTech in Computer Engg.		Class: ~~FY~~/SY/~~TY~~/~~LY~~ /~~MTECH~~	Semester: I/II/III/IV/~~V/VI/VII/VIII~~ (SVU 2020/ ~~SVU 2023~~)
Name of the Constituent College: K. J. Somaiya College of Engineering		Name of the department: COMP/~~ETRX/EXTC/IT/MECH~~	
Course Code: 116U01C402	Name of the Course: Analysis of Algorithms		

Question No.		Max. Marks
Q1	i.) Solve the following recurrence using Recursion Tree Method: $T(n) = 2T(n/2) + n^2$	7

	ii.) Calculate the time complexity of the following code :
	for(i=0; i<n; i++) {
	for(j=0; j<i; j++) {
	statements;
	}
	}
		3

Q2	Find the Minimum Spanning Tree (MST) of the given graph using both Prim's algorithm and Kruskal's algorithm:  **OR** Using Dijkstra's algorithm, find the shortest path from vertex A to vertex F in the given graph. Give proper explanation:  	(5+5) (10)
Q3	i.) Explain general characteristics of Divide and Conquer Algorithms. ii.) How does the Min-Max strategy integrate with divide and conquer algorithms to efficiently solve problems? Provide a concise example illustrating its application.	(3+7)