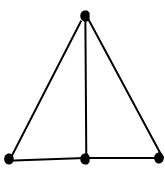

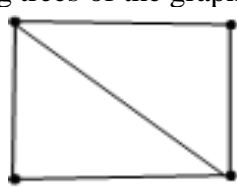
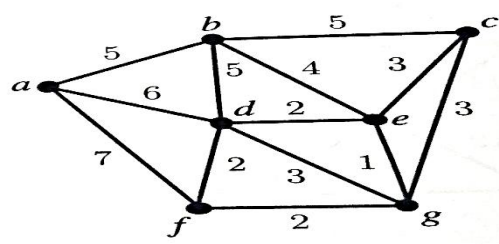
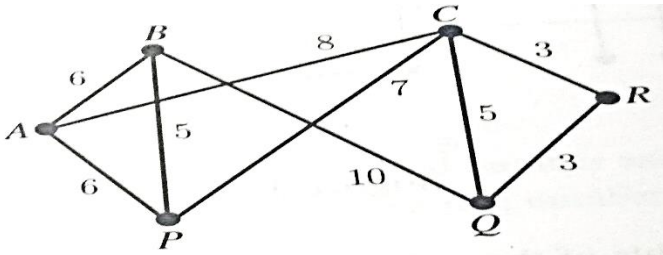
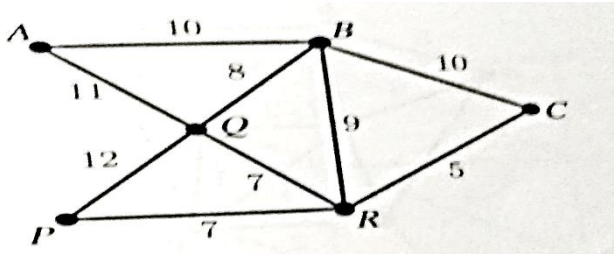
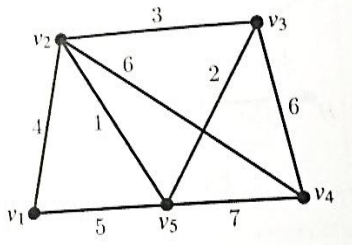
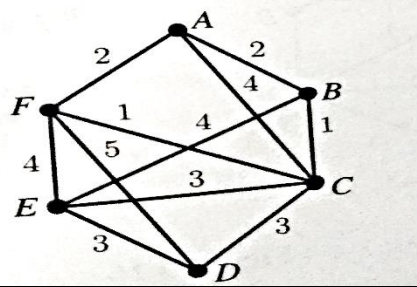
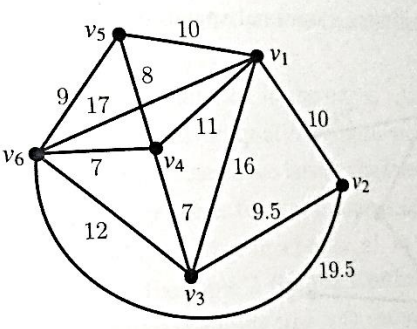


## Department of Mathematics

### Question Bank

Branch: CSE/IS/DS

Subject		Discrete Mathematics and Graph Theory
Subject Code		21CIDS31
Module 5		Trees
#	Questions	
1.	<p>Explain the following terms</p> <ol style="list-style-type: none"> <li>Trees.</li> <li>Spanning Trees.</li> <li>Rooted Tree.</li> <li>Binary Tree.</li> <li>Complete Binary Tree</li> <li>Balanced Tree</li> <li>Weighted Trees.</li> <li>Routed Trees.</li> <li>Sorting and Prefix Codes.</li> <li>Minimal Spanning Trees.</li> </ol>	
2.	<p>Define a spanning tree and find the spanning trees of the graphs.</p> <div style="display: flex; justify-content: space-around; align-items: center;">    </div>	
3.	<p>A computer laboratory of a school has 10 computers that are to be connected to the wall socket that has two outlets. The connections are made by using extension cords that have two outlets each. Find the least number of cords needed to get these computer setup for use.</p>	
4.	<p>If a tree T has four vertices of degree 2, one vertex of degree 3, two vertices of degree 4, one vertex of degree 5. Find the number of leaves in tree.</p>	
5.	<p>Suppose that a tree T has two vertices of degree 2, four vertices of degree 3 and three vertices of degree 4. Find the number of pendent vertices in T.</p>	
6.	<p>Using Kruskal's Algorithm, find a minimal spanning tree for the given weighted graph</p> 	

7.	<p>Using the Kruskal's algorithm find a minimal spanning tree of the given weighted graph</p> 
8.	<p>Using Kruskal's Algorithm, find a minimal spanning tree for the given weighted graph.</p> 
9.	<p>By analyzing the given graph obtain a minimal spanning tree for the given weighted graph by applying Prim's Algorithm.</p> 
10.	<p>Using Prim's algorithm, find a minimal spanning tree of the weighted graph.</p> 
11.	<p>Using Prim's algorithm find the minimal spanning tree for the weighted graph.</p> 
12.	<p>Using the merge sorting method sort the list {12, 11, 2, 3, 1, 5, 6, 7, 10, 9, 4, 15}</p>
13.	<p>Using the merge sorting method sort the following list -1, 0, 2, -2, 3, 6, -3, 5, 1, 4</p>
14.	<p>Find the prefix code represented by the following tree</p>

15.	<p>Find weight of the following tree T</p>
16.	Find the optimal tree for the given set of weights {2, 6, 7, 4, 8}
17.	Construct the optimal prefix code for the message “ROAD IS GOOD”. Indicate the code.
18.	Construct the optimal prefix code for the symbols A, B, C, D, E, F, G, H, I, J that occurs with frequencies 78, 16, 30, 35, 125, 31, 20, 50, 80, 3 respectively.