TUTORIAL 10

ECE 532

1. What is meant by shortest path in a graph? Where shortest path can be implemented?

2. Consider the graph in Figure 1. Find the shortest distance from node 0 to every other node in the graph.
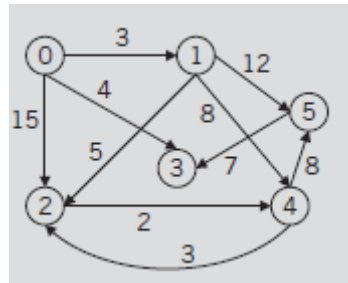

Figure 1

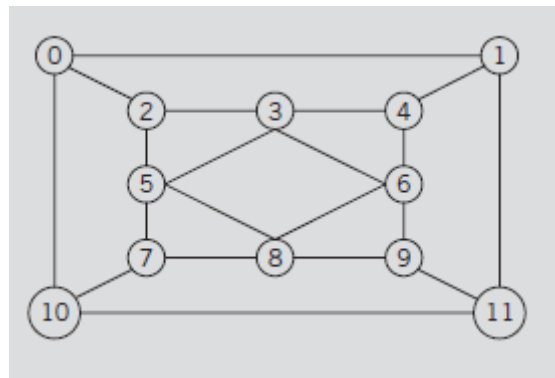3. Find a spanning tree in the graph in Figure 2.

Figure 2

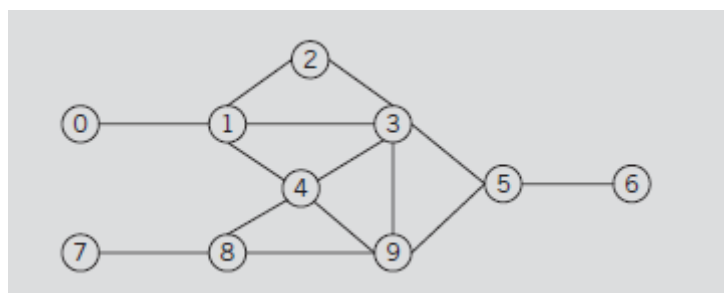4. Find a spanning tree in the graph in Figure 3.

Figure 3

5. Find the minimum spanning tree for the graph in Figure 4 using the Prim's and Kruskal algorithm.
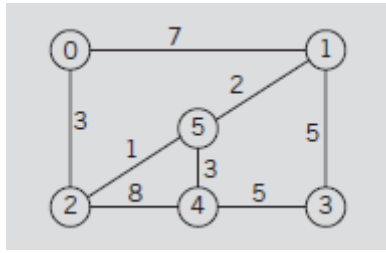
Figure 4

6. The Djikstra's algorithm is use to find the shortest path between 2 nodes. Using this algorithm find the shortest path between node 0 and node 5 in graph illustrated in **Figure 5**. Your answer should include steps taken to determine the shortest path, the shortest path and cost of the shortest path.
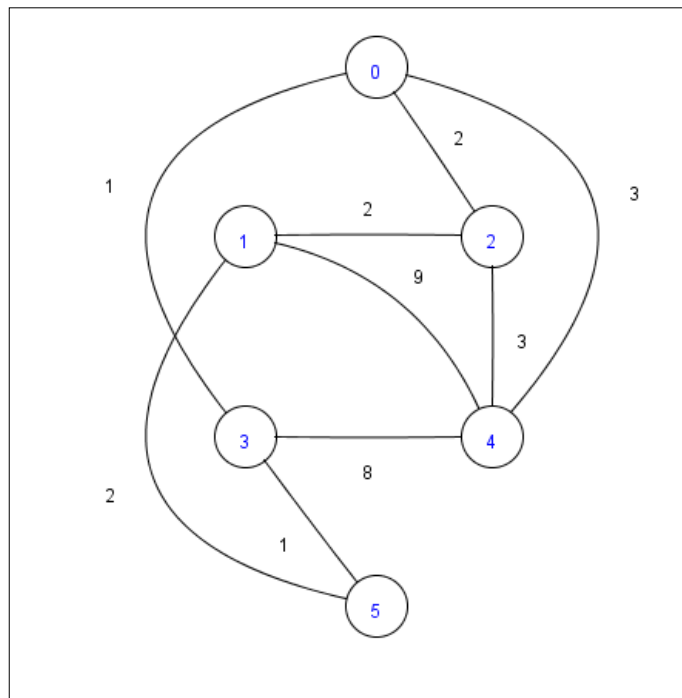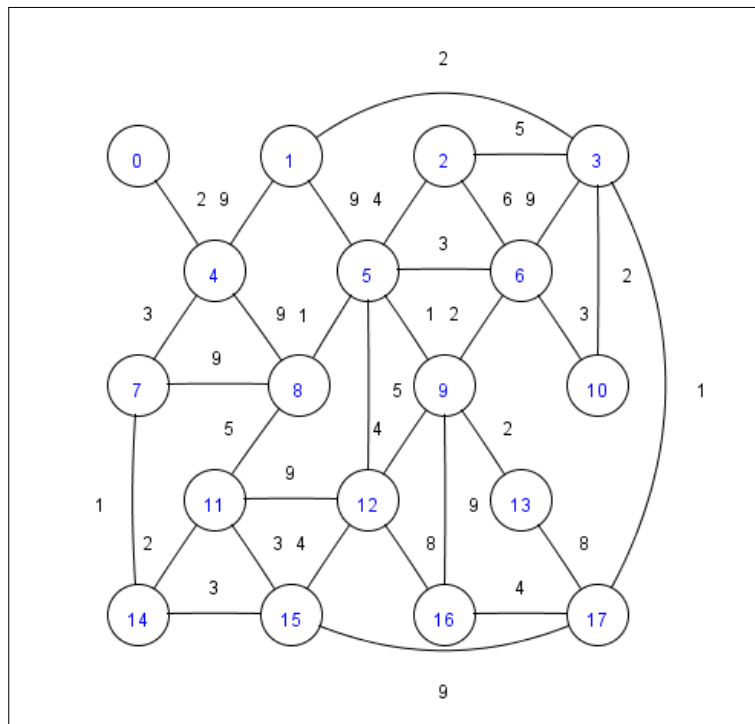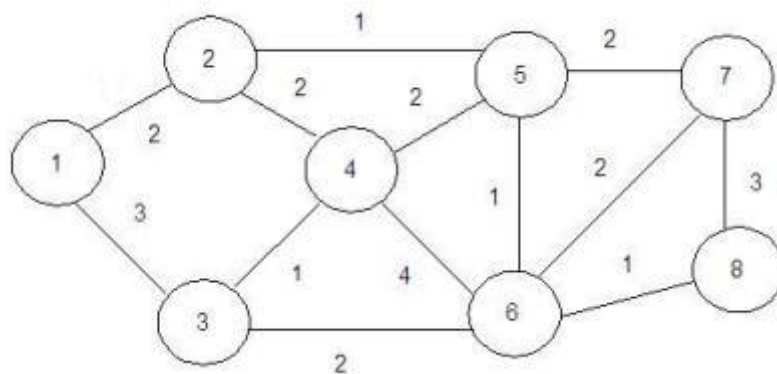

Figure 5

7. A Spanning tree is a graph which all the vertices of graph are present but it may not contain all the edges. Using Prim's Algorithm find the **minimum** Spanning Tree for graph in **Figure 6.**
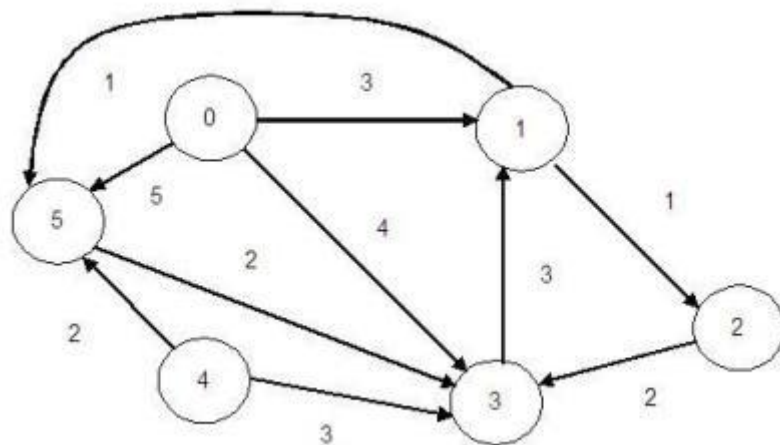

Figure 6

8) For the graph in **Figure 7** use Kruskal's algorithm to find a minimum cost spanning tree for the network.
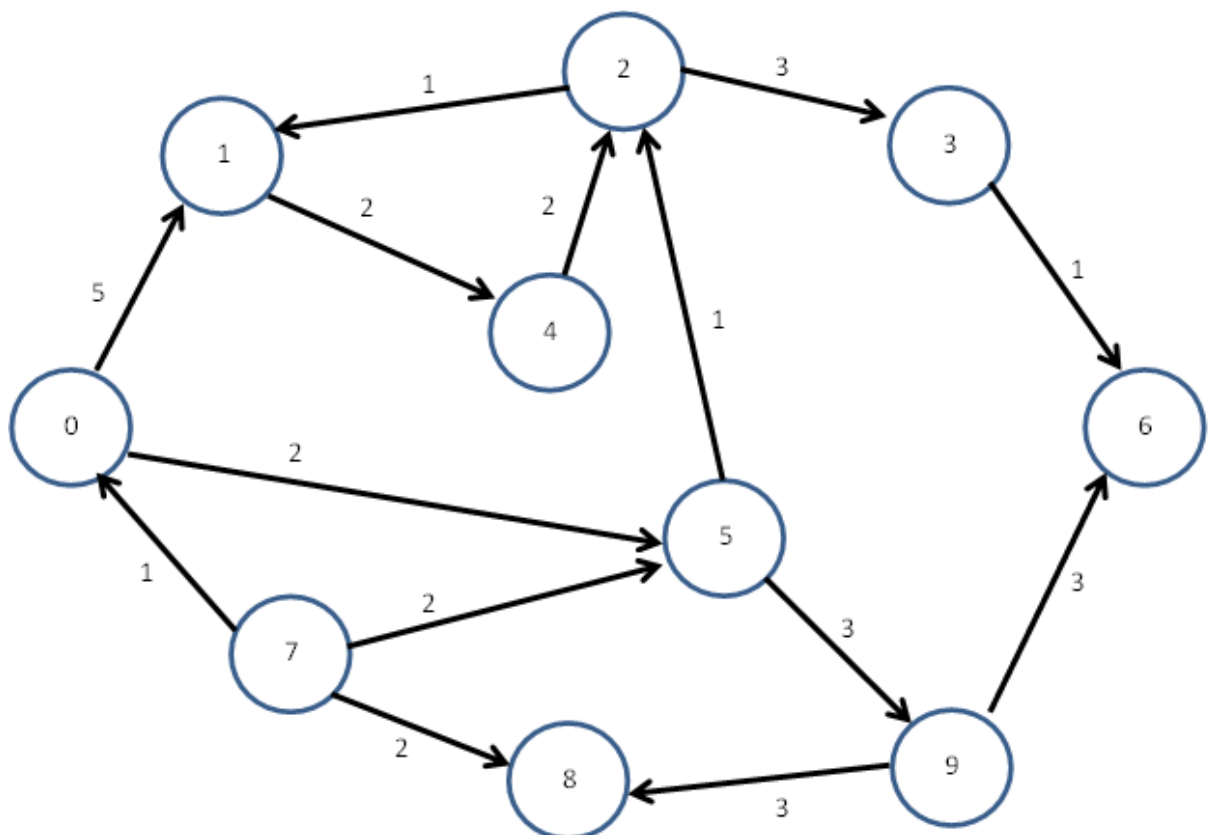

Figure 7

9) The Djikstra's algorithm is used to find the shortest path between two nodes. Apply this algorithm to **Figure 8** to find the shortest path between node 0 to the other nodes. At each

iteration, show the edge chosen with a thick-marked line, and show *d*, the distance array with its current contents.

Figure 8

10. For the weighted digraph shown in **Figure 9**, with vertex 0 as the source: Perform Dijkstra's algorithm to find the shortest paths and path lengths from vertex 0 to all other vertices. Highlight the shortest path taken and indicate the node distance from node 0.

Figure 9