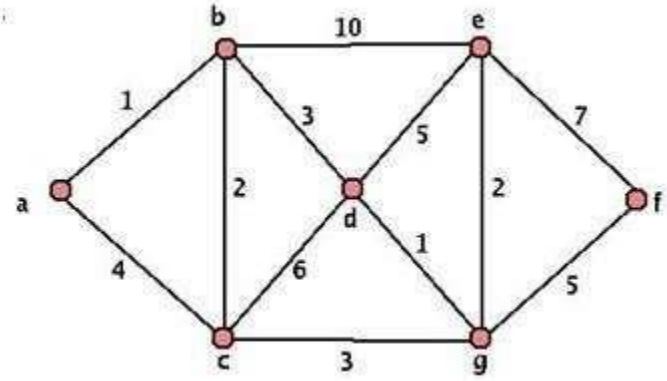
Problem 3

Virtual Network Topology: Steiner Tree with the presented Heuristic 2 Input for 2-3:

Network topology and link costs:



VPN end nodes: b, c, e, g assume

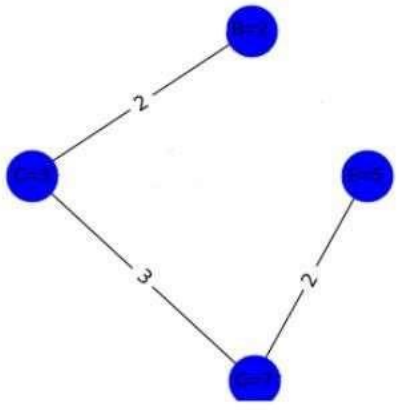
B=2, C=3, E=5 and G=7 **Solution**:

I used C language to solve algorithm and output of code in below Diagram 1.1.

```
##  Number of Vertices in Graph   ##
  A=1 , B=2 ,C=3 ,D=4  ,E=5 ,F=6 ,G=7

Terminal Vertex "2" is added to T
Next Terminal Vertex to be added to T is : "3"
Next Terminal Vertex to be added to T is : "7"
Next Terminal Vertex to be added to T is : "5"
Vertex 2 is present in T
Vertex 3 is present in T
Vertex 7 is present in T
Vertex 5 is present in T
Edge 2 <-> 3 is in T
Edge 3 <-> 7 is in T
Edge 7 <-> 5 is in T
Total Cost : 7
```

Diagram 1.1



The output in Diagram 1.1 is equal to the total cost and graph in diagram 1.2

diagram 1.2

Also write code in python shown Diagram 1.3 but not show min cost, I show the graph and shortest path. because I don't have more knowledge in Python.

```
The shortest path from sourc A to destiation B =  ['A=1', 'B=2']
The shortest path from sourc A to destiation C =  ['A=1', 'B=2', 'C=3']
The shortest path from sourc A to destiation E =  ['A=1', 'B=2', 'D=4', 'G=7', 'E=5']
The shortest path from sourc A to destiation G =  ['A=1', 'B=2', 'D=4', 'G=7']
```

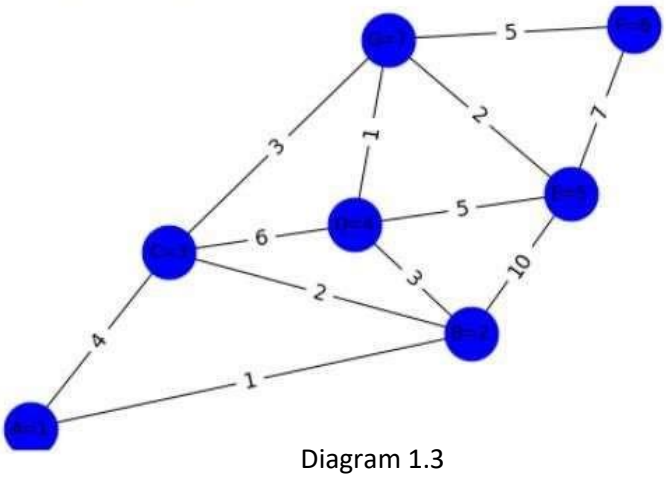


Diagram 1.3

Attachments:

- Code of python.
- Code of C language. Output of python and C