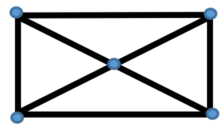
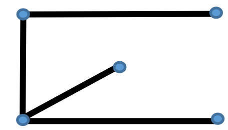
SPANNING TREE

A subgraph that contains all of the original vertices, has no circuits, and is connected

Graph



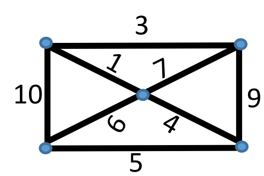
Spanning Tree



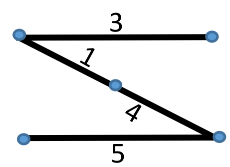
MINIMAL SPANNING TREE

A spanning tree of least weight

Weighted Graph



Minimal Spanning Tree

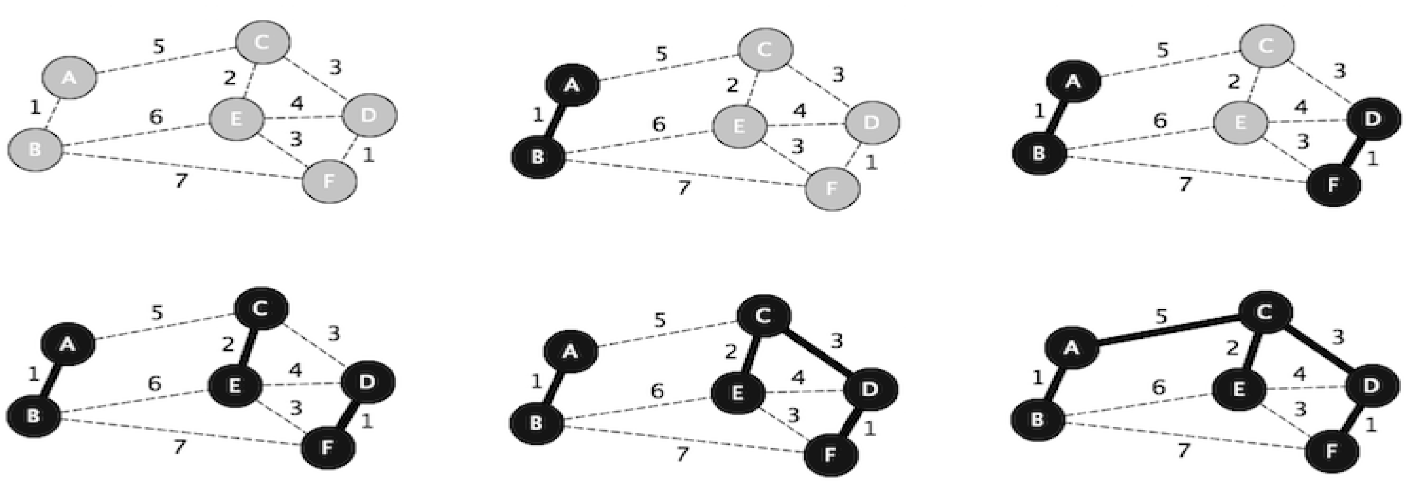


How do we find a Minimal Spanning Tree?

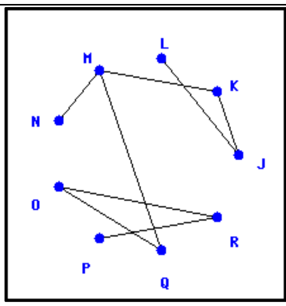
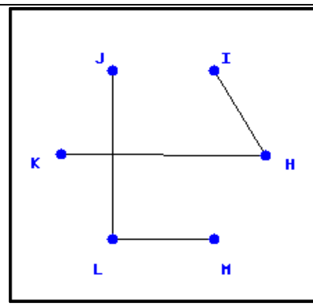
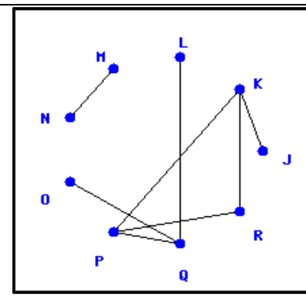
Kruskal's Algorithm

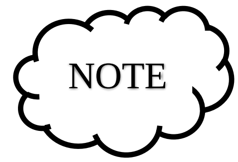
Steps

1. Choose any edge with the smallest weight
2. Choose any remaining edge with the next smallest weight
3. Keep adding the next smallest weighted edge that does not create a circuit until all vertices have been added to your subgraph.



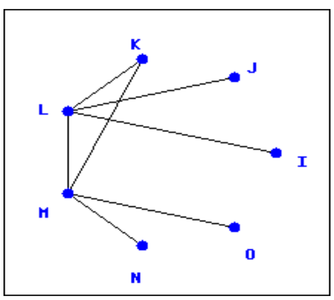
Trees and Kruskal's Algorithm

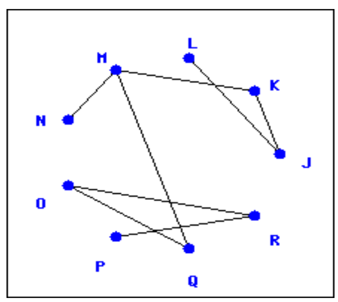
TREE	**FOREST**	**NEITHER**
Is a ***connected*** graph that has no ***circuits***	Is a collection of trees	There is a ***circuit***
	 Two or more trees	 Circuit (KPRK)

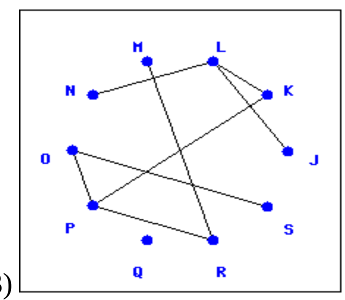


A **Tree** is always a **Forest**, but a **Forest** is **not** necessarily a **Tree.**

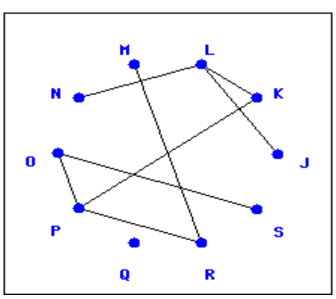
Which of the following is a TREE?

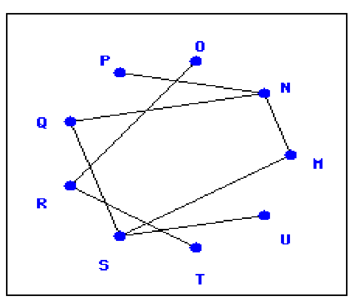
1) 

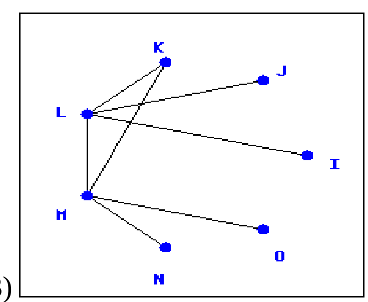
2) 

3) 

Which of the following is a FOREST?

1) 

2) 

3) 

Answer:

TREE: 1) Not (Circuit MLKM) 2) Tree 3) Not (Disconnected "**Q**")

FOREST: 1) Forest 2) Not (Circuit QMNSQ) 3) Not (Circuit KLMK)