CSE 221: Algorithms
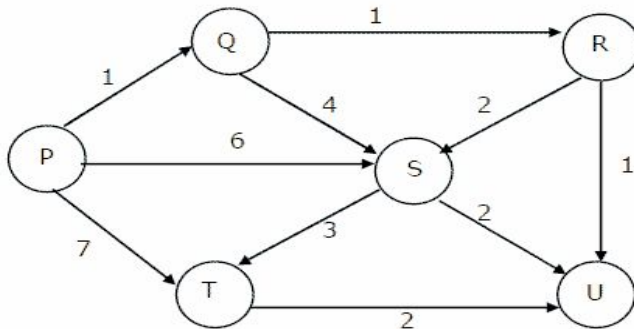## Worksheet 6
Shortest Path Algorithms

1.
   a) Run Dijkstra's algorithm on the above graph to find the shortest weighted path from 'P' to each other vertex.
   b) Can we apply Dijkstra's algorithm on a graph with a negative edges, give example relevant to your answer?

2. Run Bellman Ford's algorithm on the above graph to find the shortest path from 'P' to each other vertex. What is a negative weight cycle and how can you determine if a graph contains such a cycle?

3. Compare between Dijkstra's and Bellman Ford's algorithm, which one is better and how?

4. Following is a map of the magical forest. You are on a quest to find the "necklace of doom" before the evil witch does and destroys the world. Some paths in the forest will give you super speed and so you will need less time to cross them (the negative edges in the graph), while others will slow you down so it will take more time to cross them (the positive edges on the graph). The intermediate nodes: A - G are safe places where you can rest without being eaten by the dangerous creatures that dwell in the forest. You have to find the shortest path to all the nodes. Good news is that you are a computer scientist and you know exactly which algorithm to use to find the shortest path to all nodes from "start". So, hurry up!