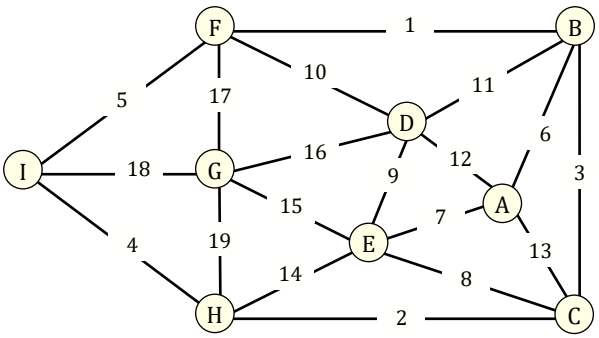
Assignment 7

Foundations of Algorithms

1. [50 pts, clique]
   A clique **H** is defined as a subgraph of an undirected graph **G** where there is an edge for every pair of vertices in **H**, i.e. $|E_H| = \binom{|V_H|}{2}$. Describe a greedy algorithm to find a largest clique (only one of them, not all of them).

2. [40 pts, MST]
   Consider the following (G, w) with 9 vertices and 19 edges with distinct weights.



   (a.) Show the sequence of edges (labeled by weights) in the MST by Prim's algorithm starting from vertex A.
   (b.) Show the sequence of edges in the MST by Kruskal's algorithm.

3. [10 pts, complexity, NP]

What is the difference between NP-hard problems and NP-complete problems?