Correctness Quiz 1

Discrete Structures 2

21 February 2023, 9am

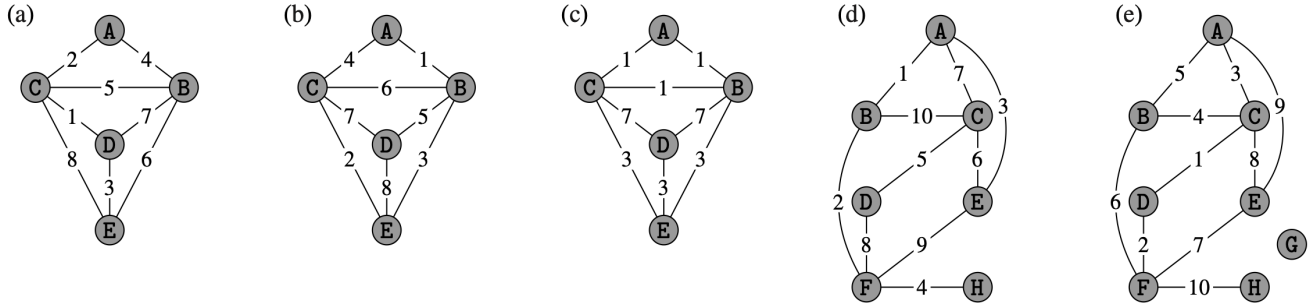
Name: _____
(please write legibly)

1. Prove or disprove: Let $G = \langle L \cup R, E \rangle$ be an undirected bipartite graph with $|L| = |R|$. Suppose every node in the graph (that is, all nodes in L and R) has at least one neighbor. Then the graph is connected.

2. Draw $\mathcal{K}_3, \mathcal{K}_4$ and $\mathcal{K}_5$.

3. Consider an undirected graph G with n nodes. In terms of n, what is the longest *simple* cycle that G can contain? Give an example.

4. Identify a minimum spanning trees in each of the following graphs. If a minimum spanning tree does not exist explain why under the graph.



5. Match the term to its definition:

_____ isomorphic	(a) a graph (or subgraph) where all possible edges are present between all nodes
_____ acyclic	(b) a graph such that it is possible to draw the graph such that no edges cross
_____ clique	(c) a graph that does not contain any simple paths between nodes and themselves
_____ planar	(d) two graphs for which there is a mapping between nodes and all edge relationships are equivalent