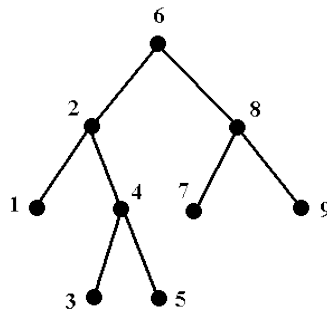


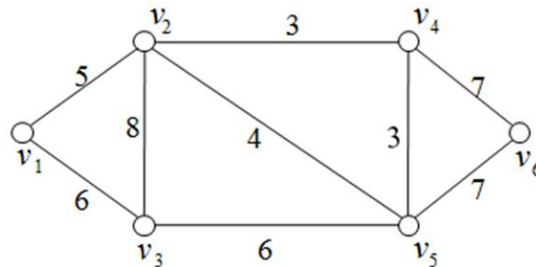
Name:

1. Determine the Prüfer code of the following labeled tree.

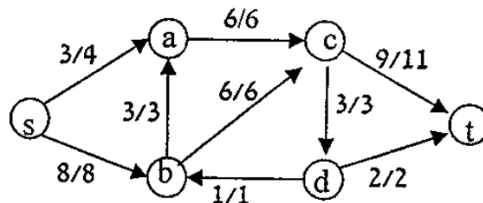


2. Using the Havel–Hakimi-algorithm, decide whether the following sequence can be realized by a simple graph or not: 5, 5, 5, 4, 2, 1, 1, 1.

3. Find a minimum cost spanning in the following weighted graph using Kruskal’s algorithm:



4. Consider the network in the figure (s is the source, t is the sink; and the label of an edge e is $f(e)/c(e)$ where f is a flow, c is the capacity function).



- Check that the flow f in the figure is feasible.
- Determine the value of the flow f .
- Find an augmenting path (with respect to f), and augment the flow using the path.

5. Let G be the graph seen in the figure below.

- Determine $\kappa(G)$, i.e. find the largest number k for which G is k -connected.
- Determine $\lambda(G)$, i.e. find the largest number l for which G is l -edge-connected.

