Review Questions 14

Your Name:

Please print out this form (two-sided, if you can) and write your answers *legibly* in the spaces provided. If you can't write legibly, type.

1. Draw a graph with 5 vertices and 8 edges and assign the edges distinct costs from 3 up to 10. Compute a shortest path tree from one of the vertices using Dijkstra's algorithm and highlight the edges in the tree.

2. In the Bellman-Ford algorithm, suppose that a node x has a distance vector [0 3 2 8 6 - 15 -] where a dash means that there is no known path to that destination yet. The zero entry in the distance vector reflects the zero-length path from x to itself. Assume that x has an edge of length 3 to y and an edge of length 2 to z and that its current distance vector for y is [3 0 4 5 10 - 12 -] and that its current distance vector for z is [2 4 0 7 4 - 14 -]. Suppose that x receives a new distance vector [3 0 4 5 8 7 11 -] from y. Show how this changes the distance vector for x.

3. Consider an AS with 100 routers running OSPF. Assume that the network uses only point-to-point links and that each router has 10 links. If each router experiences a change to the status of one of its incident links every second, what is the maximum number of LSAs that a router can receive in a second? How many of these are not duplicates? How often would you expect a link's status to change, under "normal" conditions?