CSE 542 – Advanced Data Structures and Algorithms *Jon Turner*

Review Questions 8

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 non-bipartite graph on with at least 10 vertices and 12 edges. Assign positive weights to all of the edges. By trial and error, find a maximum weight matching. Find a second matching that is a maximum size matching, but is not a maximum weight matching.

2. Draw a bipartite graph with at least 5 vertices in each part and at least 12 edges. For this part, the edges should not have weights. Construct the flow graph described on page 3 and find a maximum flow from the source to the sink. What is the matching that corresponds to this flow?

3. Add edge weights to your graph from question 2. Construct the flow graph for this graph (including edge costs). Find a series of mincost augmenting paths for this flow graph, stopping when you find an augmenting path of positive cost. What is the matching corresponding to this flow?