

## CSci 3501 Assignment 12

Due Thursday, December 10th at noon

**Problem 1 (2 points).** Sipser, exercise 7.5 p. 294.

**Problem 2 (9 points).** Sipser, Exercise 7.6 p. 294.

**Problem 3 (9 points).** CLRS, Exercises 16.1-1, 16.1-2 p. 378.

**Problem 4 (8 points).** Show the work and the result of the Huffman code algorithm for the following frequencies:

$$a : 10, b : 20, c : 30, d : 15, e : 25$$

**Problem 5 (6 points).** Show the work of Kruskal's algorithm on the same graph as on p. 568, but change the weights of the edges as following:

- $a, h$  to 7
- $h, g$  to 5
- $g, i$  to 3
- $d, f$  to 5

You don't need to draw the pictures, but you need to say what happens at each step of the algorithm. You also need to show the resulting spanning tree.

**Problem 6 (6 points).** Show the work of Prim's algorithm on the same graph as on p. 571, but with the root vertex  $e$ . You don't need to draw the pictures, but you need to say what happens at each step of the algorithm. You also need to show the resulting spanning tree.