(PRINT) Name: _____ Student No.: _____

Signature: _____ Tutorial room _____ Total Mark: _____ /25

CSC 200—Social and Economic Networks

Quiz 4, December 3, 2015

You are allowed to use one, two-sided 8.5" by 11" sheet of *handwritten* notes. No other materials or aids of any type are permitted. You may use other side of quiz paper for your answers to the quiz question.

Time: 25 minutes; Total Marks: 25

Consider a matching market in which there are four houses, H1, H2, H3, and H4, for sale in a certain neighborhood. There are four buyers W, X, Y, and Z wishing to purchase these houses. The buyers have the following valuations (repeated on other side of paper):

	H1	H2	H3	H4
W	2	7	5	4
X	6	8	5	4
Y	3	2	5	4
Z	4	7	2	1

Suppose we run the ascending price "auction" mechanism described in Ch.10 (and Lectures 18 and 19 to determine market clearing prices), but *without using the price reduction step (i.e., we do not insist that the smallest price is* 0*).* Recall that we start with all house prices set to \$0 and then at each round of the auction, if there is a constricted set of buyers in the preferred seller graph, then we trigger price increases (of 1 \$) for one or more houses. Run this auction using the following rule: *if there is more than one possible constricted set of buyers at any round of the auction, choose a* ***minimal*** *set of constricted buyers to determine which house prices increase.* For each round of the auction, show each of the following: i. prices for each house; ii. the preferred seller graph; iii. if the prices are not market clearing at that round, the *minimal* constricted set of buyers you selected and thus the houses whose prices will increase; and iv. if the prices are market clearing at that round, a perfect matching that assigns a house to each buyer.

	H1	H2	H3	H4
W	2	7	5	4
X	6	8	5	4
Y	3	2	5	4
Z	4	7	2	1

SOLUTION

1. At start of round 1, H2 is a minimal constrictred set demanded by W,X,Z so we increase the price of H2 to be $1.

2. At start of round 2, H2 is still a minimal constricted set demanded by X and Z so price of H2 is now $2

3. At start of round 3, H2 and H3 are a minimal constricted set demanded by W,Y,Z so price of H2 becomes $3 and price of H3 becomes $1.

4. At start of round 4, there are no constricted sets and the perfect matchings are (H1,X), (H2,Z), (H3,W) (H4,Y) or (H1,X), (H2,Z), (H3,Y) (H4,W).