SUID:

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Exam 1
Spring 2016

DO NOT OPEN THIS EXAM UNTIL YOU ARE TOLD TO DO SO.

Instructions

1. Write your SUID in the upper right corner of this exam. Do NOT write your name.

2. SHOW ALL YOUR WORK. Answers without supporting work will receive little or no credit.

3. There are 72 points possible on this exam and you will have 80 minutes to complete it. *Be sure to budget your time accordingly.*

4. Do all your work on this exam. If you need extra space, write on the backs of the pages. However, if you do write an answer on the back of a page, *be sure you've noted that near the question*.

Area of a triangle: $\frac{1}{2}bh$ Area of a trapezoid: $\left(\frac{b_1 + b_2}{2}\right)h$

Part 1 (24 points)

A good is purchased by 20 type-A people and 10 type-B people, and it is produced by 40 type-X sellers. The willingness to pay or accept curves for an individual of each type are shown below.

Individual type-A buyer:	WTPai = 1000 – Qai
Individual type-B buyer:	WTPbi = 500 – (1/2)*Qbi
Individual type-X seller:	WTAxi = (1/5)*Qxi

(a) *12 points.* Please compute: ☐ the market equilibrium price and quantity; ☐ the quantity purchased by an individual buyer of type A; and ☐ the quantity sold by an individual seller. ☐ Illustrate the market equilibrium with an appropriate graph.

Part 1, continued

Now suppose the government announces a tax of $60 on the good.

(b) *12 points.* Please compute: ☐ the new buyer and seller prices and equilibrium quantity; ☐ the total amount of tax revenue; ☐ the new quantity purchased by an individual buyer of type A; ☐ the new quantity produced by an individual seller; ☐ the change in CS received by an individual buyer of type A; and ☐ the change in PS received by an individual seller.

Part 2 (12 points)

A $20 tariff currently applies to imports of a good. The market price is $100 and 1000 total units are being consumed. A domestic firm (H for home) produces 500 of those units and its supply elasticity is 1. A foreign firm (F) produces the rest and its willingness to accept is perfectly elastic and given by WTA_F = $80. Finally, the elasticity of demand is known to be -2.

(a) *12 points*. Please determine what would happen if the tariff were removed: ☐ the new equilibrium price and total quantity consumed; ☐ the new quantities produced by H and F; ☐ the change in CS; ☐ the change in government revenue; and ☐ the change in PS for each producer. Finally, ☐ how much better or worse off is the economy overall?

Part 3 (24 points)

Suppose a good is purchased by two buyers, U and C, and produced by two sellers, H and T. Seller T has a perfectly inelastic supply given by $Q_T = 1500$. The willingness to pay curves for U and C and the willingness to accept curve for H are given below; the supply by T is also included for completeness:

$$WTP_U = 6500 - 4 * Q_U$$
$$WTP_C = 1500 - 2 * Q_C$$
$$WTA_H = 1 * Q_H$$
$$Q_T = 1500$$

There are no taxes or subsidies.

(a) *8 points*. Please determine: ☐ the market equilibrium price and quantity; ☐ the amount purchased by each buyer; ☐ the amount sold by each seller.

Part 3, continued.

(b) *16 points*. Now suppose that buyer C exits the market and no longer buys any of the good. Please determine: ☐ the new market equilibrium price and quantity; ☐ the new amount sold by each seller; ☐ the change in CS for U; and ☐ the changes in PS for H and T. ☐ How does the change in CS for U compare to the total change in PS?

This question is very loosely based on current turmoil in world oil markets where U is the US, C is China (whose demand has dropped but not vanished completely), T is traditional production and H is production using hydraulic fracturing.

Part 4 (12 points)

Universities typically charge all students the same tuition no matter what their major. However, some majors, particularly those requiring laboratory work, are much more expensive to provide than others. In effect, universities operate a cross-subsidy policy between students with high and low cost majors. To explore this, suppose a university charges everyone $1000 per credit and serves two groups of students: L and H (low and high cost). In the absence of the policy, the university's WTA_L to provide a credit for an L student would be $800. Its WTA_H to provide a credit for an H student would also be perfectly elastic but at a price that will need to be deduced. The number of credits taken by L students is 100,000 and their elasticity of demand is -0.5. The number of credits taken by H students is 50,000 and their demand elasticity is -0.25. The university is currently breaking even on the policy. You may assume that L students take only L classes and H students take only H classes (no core requirements!).

(a) *12 points*. Please determine: ☐ the university's extra revenue in the L market; ☐ the university's WTA_H; ☐ the new quantity in each market if the cross-subsidy were eliminated and it switched to charging each group its corresponding WTA; ☐ the change in CS that would result in each market; and ☐ the total change in CS (both markets together).