**SUID:** 

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**Exam 1**
Fall 2013

**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. You may not discuss this exam with anyone before Friday, October 4.

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

5. 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 10 type-A people and 1 type-B person. Each person has an individual willingness to pay given below. The good is produced by 12 type-X sellers with the willingness to accept shown below.

| | |
|---|---|
| Individual type-A buyer: | WTPai = 200 – Qai |
| Individual type-B buyer: | WTPbi = 200 – (1/10)*Qbi |
| Individual type-X seller: | WTAxi = 1*Qxi |

(a) *12 points.* Please compute: ☐ the market equilibrium price and quantity; ☐ the quantity purchased by an individual buyer of each type; 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 subsidy of $8 on the good.

(b) *12 points.* Please compute: ☐ the new equilibrium quantity and buyer and seller prices; ☐ the total cost of the subsidy to the government; ☐ the new quantity purchased by an individual buyer of each type; ☐ the new quantity produced by an individual seller; ☐ the total cost of the subsidy to the government; ☐ the change in consumer surplus received by a type-A buyer; and ☐ the deadweight loss created by the policy.

**Part 2 (24 points)**

A $50 tariff currently applies to imports of a particular good. The domestic supply of the good is given by WTAh = (1/2)*Qh where "h" indicates "home" production (to avoid using "d" for domestic, which could be confused with demand). Foreign supply is perfectly elastic at WTAf = $150. The market demand for the good is given by WTP = 1150 – Q.

(a) *9 points*. Please determine the following when the tariff is in effect: ☐ the equilibrium price and total quantity; ☐ the quantity produced by domestic firms; and ☐ the quantity produced by foreign firms. Then ☐ show the equilibrium with an appropriate graph or graphs.

**Part 2, continued.**

Now suppose the government repeals the tariff.

(b) *15 points*. Please calculate: ☐ the new equilibrium price and total quantity; ☐ the quantity produced by domestic firms; ☐ the quantity produced by foreign firms; and ☐ the changes in CS, PS, government revenue and overall social surplus.

**Part 3 (12 points)**

A regulated health insurance company provides coverage to two groups of people: L and H. People in L have a low risk of health problems and are relatively cheap to insure; people in H are high risk and more expensive to insure. The firm's WTA to insure an L person is given by WTAl = $800. However, the firm is subject to a cross-subsidy policy and is allowed to charge L customers $1000 in exchange for subsidizing coverage for H people. The firm currently charges H customers $1600 and is breaking even on the cross subsidy. It has 1000 L customers and 500 H customers. The elasticities of demand by L and H people are known to be -2 and -0.2 respectively.

(a) *12 points*. Please determine: ☐ the firm's extra revenue in the L market; ☐ the firm's WTA to insure an H person; ☐ 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) if prices were adjusted.

**Part 4 (12 points)**

Price ceilings are sometimes considered in the wake of hurricanes and other disasters when supply disruptions can cause large spikes in prices. This problem explores a stylized example in the market for gasoline.

Suppose a community usually has two suppliers of gasoline: firm A, which has a supply curve given by WTAa = (1/5)*Qa, and firm B which brings in gasoline from other areas with a WTAb = $4. The demand for gasoline is given by WTP = 24 – (1/5)*Q. However, a hurricane has damaged local infrastructure and firm B can no longer bring in any gasoline. Gasoline prices have risen and there are calls for the government to impose a price control that would limit the price of gas to its usual no-hurricane level.

(a) *12 points*. Please determine: ☐ the usual price and quantity of gasoline when both firms can supply the market; ☐ the post-hurricane price and quantity of gasoline when firm B is unable to supply but *no price control* is imposed; ☐ the post-hurricane price and quantity of gasoline *with the price ceiling*; ☐ the changes in CS and PS that would be caused by imposing the price ceiling (that is, the changes in CS and PS relative to the post-hurricane equilibrium without a price ceiling). In what sense is the ceiling counterproductive?