SUID: | |

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Exam 1
Fall 2014

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. Each person has an individual willingness to pay given below. The good is produced by 100 type-X sellers and 1 type-Y seller with the willingness to accept curves shown below.

Individual type-A buyer:	WTPai = 880 – Qai
Individual type-X seller:	WTAxi = 1*Qxi
Individual type-Y seller:	WTAyi = (1/100)*Qyi

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

Part 1, continued

Now suppose the government announces a tax of $44 on the good.

(b) *12 points.* Please compute: ☐ the new equilibrium quantity and buyer and seller prices; ☐ the total revenue generated by the tax; ☐ the new quantity purchased by an individual buyer; ☐ the new quantity produced by an individual seller of each type; ☐ the change in consumer surplus received by an individual buyer; ☐ the change in producer surplus received by an individual seller of each type; and ☐ the deadweight loss created by the policy.

Part 2 (12 points)

Suppose a community currently has two electricity producers: C (uses coal) and R (uses renewables). The price of electricity is currently $50, total consumption is 1000 units, and the demand elasticity is known to be -0.5. Producer C has a perfectly elastic supply curve given by WTAc = $50. Producer R's supply curve has an elasticity of 5 and Qr is initially 100 units. The government is concerned about carbon dioxide emissions from producer C and would like to shift production from C to R. To do that, it is considering imposing a $10 tax on units produced by C. There would be no tax on units produced by R.

(a) *12 points*. Please determine: ☐ the new equilibrium price and total quantity consumed; ☐ the old and new quantities produced by C; ☐ the new quantity produced by R; the changes in ☐ CS and ☐ PS for each producer, and the change in ☐ government revenue.

Part 3 (12 points)

Governments often have to choose between broad taxes that fall on many goods and narrow taxes that fall on just a few but have higher rates. This question explores that tradeoff.

Suppose a government is choosing between two tax policies. Policy B (for broad) would impose a $5 tax on each of two goods, X and Y. Policy N (for narrow) would impose a larger tax, $12, but only on good X. There are no taxes on either good now. The supply of both goods is perfectly elastic at WTAx = $100 and WTAy = $100 and 1000 units of each good are currently being sold. Finally, the demand elasticity for each good is known to be -2. (To confirm: prior to the policy, both markets look the same.)

(a) *12 points*. Please determine the following for each policy: ☐ output in each market; ☐ total tax revenue raised; ☐ total DWL. Then explain ☐ which tax is better and why.

Part 4 (12 points)

A government is considering imposing a subsidy to increase consumption of a good. The demand and supply curves for the good are given by the WTP and WTA curves below. There is currently no tax or subsidy in the market and the government is considering a subsidy of $60 on each unit purchased.

$$WTP = 1100 - 2Q$$
$$WTA = 200 + Q$$

(a) *12 points*. Please determine: ☐ the equilibrium price and quantity in the market without the subsidy; ☐ the new equilibrium that would occur if the subsidy is imposed; ☐ the changes in CS, PS and government revenue the subsidy would produce; and ☐ the DWL, if any.

Part 5 (12 points)

Suppose a community has 100,000 low-skilled workers who earn $8 per hour. There is currently no minimum wage and the market is in equilibrium. The elasticity of demand for labor by employers is known to be -0.5 and the elasticity of supply of labor by employees is known to be 1. The government is considering imposing a minimum wage of $10 per hour.

(b) *12 points*. Please determine: ☐ the new number of workers employed with the minimum wage in effect; ☐ the changes in CS and PS that would be caused by the policy; and ☐ the DWL it would create.