SUID:

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Exam 1

Fall 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 (36 points)

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

Individual type-L buyer:	WTPli = 100 – Qli
Individual type-H buyer:	WTPhi = 50 – (1/5)*Qhi
Individual type-X seller:	WTAxi = (1/4)*Qxi

In addition, it is known that type-L people each have an income of $30,000 per year and that type-H people each have an income of $80,000 per year.

(a) *12 points.* Please compute: ☐ the market equilibrium price and quantity; ☐ the quantity purchased by an individual buyer of type L; 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 $15 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 L; ☐ the new quantity produced by an individual seller; ☐ the change in CS received by an individual buyer of type L; and ☐ the change in PS received by an individual seller.

Part 1, continued

(c) *12 points.* Finally, please report the following distributional information: ☐ the part of the change in CS for a type L buyer that is a transfer to the government (which is L's tax burden); ☐ the part of the change in CS for a type H buyer that is a transfer to the government (H's tax burden); ☐ indicate whether the tax is regressive or progressive, including any necessary calculations; calculate ☐ the portion of the change in PS for a type X seller that is a transfer to the government (X's tax burden); and finally ☐ verify that sum of all the tax burdens exactly matches the total revenue produced by the tax.

Part 2 (12 points)

A domestic industry ("U") facing strong competition from a foreign producer ("F") is asking the government to impose a tariff. At the moment, there is no tariff and domestic production is 1000 units, total consumption is 3000 units, and the market price is $100. It is known that the supply elasticity for the domestic industry is 1, the foreign producer's supply is perfectly elastic at a $WTAf = 100$, and the demand elasticity is -2. The industry would like the government to impose a $20 tariff.

(a) *12 points*. Please determine what would happen if the tariff were imposed. What will be ☐ the new equilibrium price and total quantity consumed; ☐ the new quantities produced by U and F; ☐ the change in CS; ☐ the change in government revenue; and ☐ the change in PS; and ☐ the change in SS.

Part 3 (12 points)

Suppose that consumption of a good creates a positive externality. The market WTP and WTA curves for the good are given below, as is the marginal benefit curve for the externality. There is initially no tax or subsidy.

$$WTP = 300 - 2 * Q$$
$$WTA = 3 * Q$$
$$MBext = 60$$

(a) *12 points.* Please determine: ☐ the market equilibrium price and quantity in the absence of a policy; ☐ the efficient quantity; ☐ the efficient buyer and seller prices; ☐ the subsidy rate that would move the market to the efficient equilibrium; ☐ the resulting change in CS; ☐ the change in PS; ☐ the change in government revenue; ☐ the change in the benefits created by the externality; and ☐ the change in SS from the policy.

Part 4 (12 points)

Many producers are subject to regulations that raise their costs. Some examples include manufacturing firms that are subject to occupational health and safety rules, paper mills subject to environmental regulations, and taxi drivers subject to insurance requirements (part of the fight over Uber). This problem explores the impact of such rules. Suppose that prior to regulation, the market WTP and WTA for a particular good are given by the equations below, where $WTA1$ indicates the initial WTA:

$$WTP = 2000 - 4 * Q$$
$$WTA1 = 1 * Q$$

The government then imposes a safety regulation that raises costs by \$50 for each unit. The market WTA curve thus becomes $WTA2$ below:

$$WTA2 = 50 + 1 * Q$$

(a) *12 points*. Please determine: ☐ the price and quantity in the market prior to the regulation; ☐ the CS and PS prior to the regulation; ☐ the new price and quantity after the regulation is imposed; ☐ the new CS and PS; ☐ the change in CS and PS; ☐ the total amount actually spent by producers on the safety rule (known as the "compliance cost" of the regulation). *Extra credit*: ☐ explain why the sum of the changes in CS and PS is larger than the compliance cost.