**SUID:** 

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**Exam 1**
Fall 2007

**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)**

Suppose there are two types of buyers, "A" and "B", for a particular good. There are 5 type-A buyers and 10 type-B buyers. Each type-A buyer has a perfectly inelastic demand for the good with $Q_A = 200$. Each type-B buyer has a willingness to pay given by $W2P_B = 40 - 0.2 * Q_B$. The W2A curve for the suppliers as a group is given by $W2A = Q/100$.

(a) *12 points.* Find an equation for the market demand curve and then use it to calculate the market equilibrium. What will the price and quantity be? How much does a typical person of each type consume?

**Part 1, continued**

(b) *12 points.* Now suppose the government imposes a $12 tax on the good, to be collected from the seller. What will the new equilibrium price and quantity be? How much does a typical person of each type consume after the tax is imposed?

**Part 1, continued**

(c) *12 points.* Calculate the revenue raised by the tax, the change in consumer and producer surplus, and the deadweight loss. Then calculate the change in consumer surplus for a typical buyer of each type. Briefly explain why the two types are affected differently.

**Part 2 (24 points)**

An "earmarked" tax is one whose revenue is used only for a specific purpose (rather than just going into general revenue). In the US, a good example is the federal gasoline tax, which is used to pay for highway construction. This problem explores such a policy.

(a) *12 points*. Suppose a government is considering an earmarked tax that would be imposed on good A. It is known that suppliers of A have a perfectly elastic supply curve with W2A = $1. It is also known that the elasticity of demand is -0.5. Currently, the good is untaxed and 1 million units of it are consumed.

What will happen in market A if a $0.20 tax is imposed on the good? Please calculate all of the following: the new price, the new quantity, the amount of revenue raised, the effect on consumer and producer surplus, and the deadweight loss.

**Part 2, continued.**

(b) *12 points.* Now consider the use of the revenue in a second market, B. Initially, there are no taxes or subsidies on B. The supply curve is perfectly elastic at a W2A of $10. The elasticity of demand for B is -1.0 and 100,000 units are sold.

Suppose the earmarking policy imposes a $2 subsidy on good B. Please determine the new equilibrium and the amount spent on the subsidy. How does the revenue from good A compare to the amount needed for the subsidy on good B? Does the overall policy generate a budget surplus or deficit?

**Part 3 (12 points)**

Low-skilled workers in a particular area currently earn $5 per hour and work a total of 2 million hours per year. The elasticity of demand for labor is -0.5 and the elasticity of supply is 1.0. Initially, there are no regulations in effect and the market is in equilibrium. However, a proposal has recently been made to establish a minimum wage of $7 per hour.

(a) *12 points.* Please analyze the proposal. What happens to the number of hours? What happens to the surplus received by employers? What happens to the surplus received by employees? How large is the deadweight loss?