Economics 110 Mike Lovell
Name _____ October 3, 2006
Pledge: *No Aid; No Violations*
Sign _____ Quiz #1

Note:
- Please answer in the space provided, or continue on the back of the page.
- Show your calculations in order that you may receive partial credit even if you make a numerical error. The last sheet of the exam is scrap paper. Additional scrap paper is available in the front of the room.
- This is a one hour exam.
- After you finish the exam, check over your work carefully.
- You may turn in the exam and leave the room when you have finished. Leave your exam on your desk if you must leave the room during the exam.
- Please place cell phones and calculators in your backpack on the floor.

Part A: Identify each concept by writing its name in the blank space.:

1. _____ $p_x x + p_y y = M$

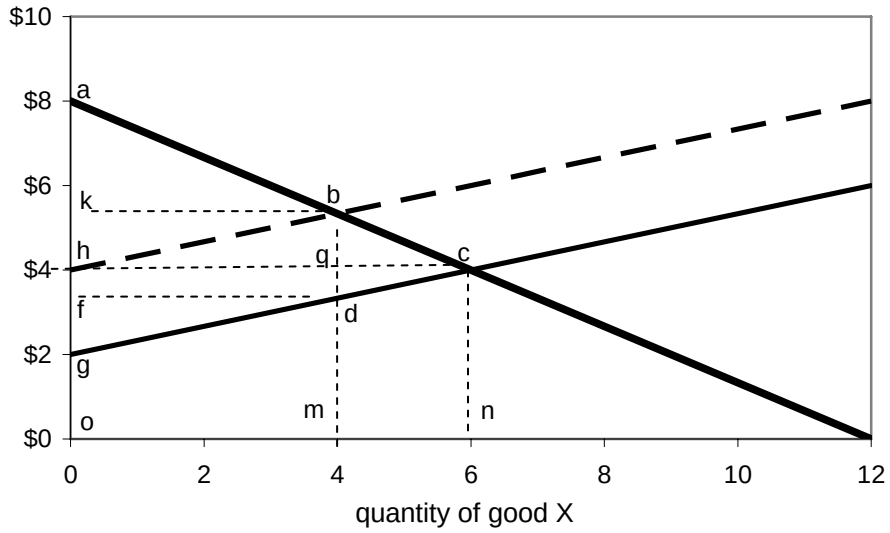
2. _____ $\frac{\Delta q}{\Delta \bar{q}} \div \frac{\Delta p}{\Delta \bar{p}}$

3. _____ $\frac{dq}{dm}\frac{m}{q}$

4. _____ $q(p) - s(p)$

5. _____ the value of a commodity to consumers less what they pay for it.

Part B: Consider the following graph of the Widget Market.



1. The demand function is q(p) = 12 – 3/2p; the supply function is s(p) = 3p -6. Label these two curves on the graph.

2. The equilibrium price of the commodity is _____; quantity sold is _____. The elasticity of demand at the equilibrium level of output is _____.

3. The revenue collected by the sellers is represented on the graph by the area of the rectangle with vertices (corners) at points h,c,n,0. The consumer surplus is the area of the triangle with vertices at points _____.

4. A tax of $2 is imposed on each unit sold of the commodity. The new price paid by consumers will be _____ and sales will be _____. The new consumer surplus area has vertices at points _____. The total revenue collected by the sellers of our commodity has is represented by the region with vertices at points _____.

5. The tax revenue collected by the government is represented by the rectangle with vertices at points _____

6. The loss imposed on consumers by the tax is the area with vertices at _____

7. The triangle with vertices at points b, c, d is know as the _____.

8. The government can maximize its tax revenue by imposing a tax of $_____? Explain

Part C: Here are five tricky statements. Place a ***T*** in front of each *True* statement; place an ***F*** in front of each *False* statement. Now carefully explain on the back of this page what is wrong with <u>one</u> (only 1) false statement. Use a graph if it will help to clarify your explanation.

1. If the production transformation curve for England is Wine = 1000 – 2 Cloth, then the opportunity cost of a bolt of cloth is 2 barrels of wine and the opportunity cost of a barrel of wine is ½ a bolt of cloth.

2. A government imposed price ceiling on apples would create a shortage of apples.

3. A minimum wage will increase the income of low wage workers if the demand for their services is elastic.

4. An individual who violates the Law of Demand cannot be a utility maximizer.

5. A utility maximizing consumer's indifference curves cannot cross.

Part D: Mr. Max maximizes has utility function $U(X,Y) = X^2Y$. Determine his demand for X as a function of prices p_x, p_y and his income M; i.e., find: $q_x(p_x,p_y,M)$.

Does Max's utility function satisfy the Law of Diminishing Marginal Utility? Explain!

Honors Option: *Please read over your answers to the rest of the exam before attempting this tricky problem; no partial credit!*

Optimal Population Policy: The Benevolent Potentate of Econoland wishes to establish an optimal population policy for his country. There are 1,000 goodies to distribute, and all citizens will receive the same ration. So if the Benevolent Potentate decrees that the population will be 10, each citizen will get 100 goodies. If, for example the Potentate were to decree that the population will be 100, each citizen will get ten goodies. All Econoland citizens have the utility function $U(Xi) = \sqrt{X_i}$.

Note: Unlike cookies, Econoland goodies don't crumble but can be cut into portions as small as you please

a) One adviser recommends that the Potentate maintain a population of that size n that will maximize the sum total of happiness. .

Find the integer n (if there is one) that maximizes

$$H = U(X_1) + U(X_2) + ... + U(X_n),$$

where $X_i = 1000/n$ and $U_i(X_i) = \sqrt{X_i}$

b) A second adviser suggests that the potentate should pick that population size n that will maximize the position of the least advantaged; i.e., maximize the minimum $U_i(X_i)$.

What value of the integer n (if there is one) will maximize the position of the least advantaged?