Economics 310, Section 1 Summer 2008 Midterm 1 Name_____KEY_____

The following exam consists of 5 parts on 6 pages. Please check to see that you have all parts of the exam before beginning. The exam is worth 100 points. You have 90 minutes to complete the exam. Time may be a factor, so do not get stuck on any question. Make sure you show your work. Calculators are permitted. Good Luck.

I. 28 points. Multiple Choice:
(2 points each)

Use the following information for questions 1-3. The demand equation is given by Q= -120P + 1050
The supply equation is given by Q = 90P. Suppose the government institutes an excise tax of 7$ per unit.

1. An excise's tax's legal incidence is paid by
a. Suppliers.
b. Consumers.
c. Both suppliers and consumers.
d. Neither suppliers nor consumers.

2. After the tax, the price that suppliers actually receive is
a. $5.00
b. $1.00
c. $8.00
d. $12.00

3. With the $7 tax, suppliers bear what proportion of the economic burden?
a. 2/7
b. 3/7
c. 4/7
d. 5/7

4. If inflation causes the absolute prices of all commodities to double, then the relative prices
a. will also double.
b. will be halved.
c. will be unchanged.
d. may rise, fall, or remain unchanged.

5. The difference between an absolute price and a relative price is that:
a. absolute prices are based on costs of production, relative prices are based on market exchange.
b. absolute prices are in terms of currency, relative prices are in terms of another good.
c. absolute prices are in terms of another good, relative prices are in terms of currency.
d. absolute prices never change, relative prices change with inflation.

6. Farmer Ken in Kentucky can raise either 80 pounds of tobacco or 40 bushels of cotton on an acre. Farmer Calvin in California can raise either 150 pounds of tobacco or 50 bushels of cotton on an acre. Which farmer can produce tobacco more efficiently?
a. Farmer Ken in Kentucky.
b. Farmer Calvin in California.
c. The two farmers are equally efficient at growing wheat.
d. More information is needed to determine comparative advantage.

7. An indifference curve shows the baskets of goods which
a. have the same marginal values.
b. the consumer can purchase, given his income and the prices he faces.
c. are the most preferred of the baskets within his budget.
d. are all equally desirable, providing the consumer with some fixed level of satisfaction.

8. Under standard assumptions, which of the following is *not* a property of indifference curves?
a. They are downward sloping and convex.
b. They fill the plane and never cross.
c. Their slope is equal, in magnitude, to the relative price of the goods.
d. Baskets on indifference curves further away from the origin provide more satisfaction than those which are closer to the origin.

9. Suppose a consumer buy goods X and Y and is currently spending all of her income on some of both goods. If the marginal value of X is ***LESS*** than the relative price of X, how can the consumer improve her level of satisfaction?
a. By purchasing more of both goods.
b. By purchasing more of good X and less of good Y.
c. By purchasing more of good Y and less of good X.
d. The consumer cannot improve her level of satisfaction because she is at an optimum.

10. True or False: If the substitution effect is larger than the income effect, a good which has a downward sloping Engel curve will also have a downward sloping demand curve.
a. True
b. False
c. It is impossible to tell.

11. The cross price elasticity for goods that are substitutes is:
a. greater than zero.
b. less than zero.
c. greater than one.
d. less than one.

12. If the price elasticity of demand is greater than one, we say that this good has a(n)
a. inelastic demand
b. highly elastic demand
c. unit elastic demand.

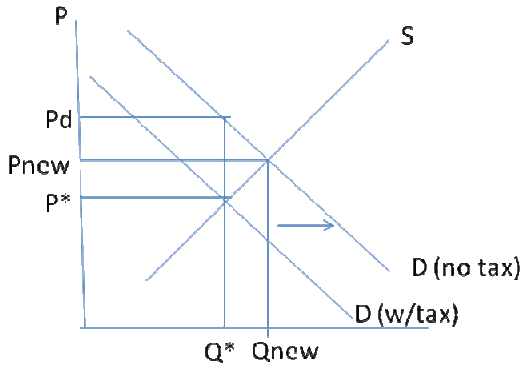
13. What types of goods have downward-sloping Engel curves?
a. Normal goods only.
b. Inferior goods only.
c. Giffen goods only.
d. All types of goods.

14. When should a firm increase its production?
a. When it is earning a positive profit.
b. When its revenues are too low to cover the firm's fixed costs.
c. When there is a fall in the price of its product.
d. When its marginal revenue exceeds its marginal cost.

SHORT ANSWER/PROBLEMS

II. 20 points. To give consumers relief from the high gas prices, Senator John McCain proposes a plan under which consumers would no longer have to pay the gasoline tax this summer. Some opponents argue that this plan would partially act like a subsidy for suppliers of gas.

i. Using a normal upward sloping supply and downward sloping demand diagram, illustrate the impact of the proposed tax break on the market quantity and the market price of gasoline. Label the original price and quantity P* and Q* (when there is a gas tax). Label the new market price and quantity Pnew and Qnew (after the tax break). 8 points.



ii. Given your diagram above, how would the price actually paid by consumers change under this plan? 4 pts.

Price paid to consumers will FALL. Before the tax, consumers pay the market price, P, plus the tax. This price is Pd. After the tax, the market price rises, but consumers no longer have to pay the tax. Therefore, the price they actually pay falls after the tax break.*

iii. Given our simple supply/demand analysis of taxes, in what sense is the proposed tax break providing a "subsidy" for suppliers of gas? 4 pts.

Even though consumers bear the legal burden of a sales tax, when the demand curve is downward sloping and supply is upward sloping, suppliers share a portion of the economic burden. This means that the market price is lower when there is a sales tax. When the tax is eliminated, this helps both consumers and suppliers because they share the economic burden. The "subsidy" in this case comes in the form of a higher market price. Suppliers now get Pnew which is greater than P. The difference between these 2 prices represents suppliers' share of the economic burden that is now eliminated with the tax break.*

iv. Under what condition would the tax break provide little to no subsidy to suppliers? In other words, when would the tax break help consumers to a much larger extent than suppliers? (Hint: think about the shape of the demand curve) 4pts.

When demand is perfectly inelastic (or vertical), consumers bear the entire economic burden of a sales tax. Therefore, in this case, a tax break will only help consumers. Thus, the steeper the demand curve, the more the tax break helps consumers (rather than suppliers).

III. 20 points.

Dawson consumes goods X and Y. His utility function for these two goods is given by the following equation:
$U = X^2 * Y^3$ where X is the amount of good X consumed and Y is the amount of good Y consumed.

Given this utility function, his marginal utility for X and Y are given by the following equations:
$MUx = 2XY^3$
$MUy = 3X^2Y^2$

Dawson's income is $60. The prices of good X and good Y are as follows:
Px = $4
Py = $2

i. What is Dawson's Marginal Value of X in terms of Y { $MV_{x/y}$} at the optimal point*?__2__* (2pts)

ii. Write the equation of his budget line: y = *__30-2x_____* (2pts)

iii. If he purchases no units of X, how much Y can he afford? *___30_____* (2pts)

iv. What is Dawson's optimal bundle of good X and Y? X = *_6__* Y = *_18___* (2pts)

v. What is Dawson's Total Utility received at his optimal bundle? *_209,952_____* (2pts)

Suppose the price of good X falls from $4 to $2.

vi. Derive Dawson's new optimal bundle of X and Y. X = *_12__* Y = *_18___* (2pts)

vii. From the information obtained about the consumption of good X both before and after the price change, derive the equation of Dawson's linear demand curve for *good X* that passes through both points.

Qx = *__-3Px + 18_____* (4 pts)

viii. What is the elasticity of demand at the point in this region? *__-2, or 2 in absolute value_____* (2 pts)

ix. Is good X a giffen or a non-giffen good for Dawson? *_non-giffen_____* (2 pts)

SHOW WORK HERE:

iv) 2y/3x = 2=> y=3x
3x = 30-2x
5x=30
X=6, y= 3*6=18

vi) 2y/3x=1 & new budget: y=30-x
y= 1.5x
1.5x= 30-x
2.5x=30
X=12
Y=1.5*12=18

vii) (4,6) & (2,12) are 2 points on curve
m= -6/2= -3
12= -3(2) +b
12= -6 +b

viii) [(12-6)/6]/[(2-4)/4]= 1/(1/2) = -2, or abs(-2) = 2

18=b =➔ Qx = -3Px+ 18

IV. 20 points. Ashley consumes two types of clothes: Old Navy and Banana Republic. When Ashley's relative passed away, she received a large inheritance that increased her income. Upon receiving this inheritance, Ashley decreased her consumption of clothes from Old Navy.

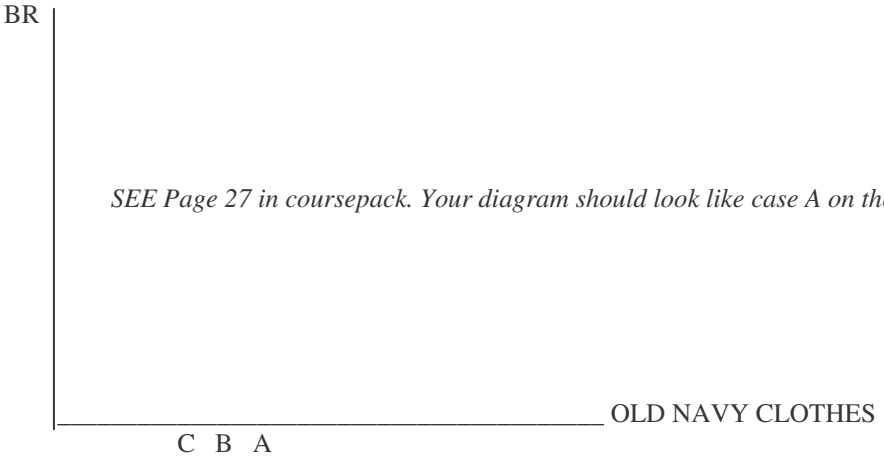
i. What type of good are clothes from Old Navy for Ashley? ***_Inferior***_____ How do you know? (4pts)

Income went up and she consumed less.

ii. Suppose the price of Old Navy clothes rises. Given the type of good you found in part (i), under what condition would her consumption of Old Navy clothes fall in response to the price increase? (6 pts)

Since Old Navy clothes are an inferior good, they will be non-giffen (consumption will fall when price rises), when substitution effect > income effect of the price increase.

iii. In the graph below, use a budget line and indifference curve diagram to illustrate the effect of the Old Navy price increase on Ashley's consumption of Old Navy clothes. Assume that the condition you found in (ii) holds true (that is, overall, Ashley will end up consuming fewer clothes from Old Navy after the price increase). Label her initial point "A" her final point "B". Use point C to illustrate and label the substitution and income effects of this price increase. (10pts)



Substitution Effect: ___A__ to __C____
Income Effect: __C___ to ___B___

V. 12 points. The following table shows the demand for a firm's product and the firm's total cost of production.

Quantity Produced	Total Cost	Quantity Demanded	Price
0 units	$ 0	0 units	$155 per unit
1	70	1	150
2	142	2	145
3	217	3	140
4	297	4	135
5	385	5	130
6	485	6	125
7	603	7	120

i. According to the equimarginal principle, how many units should the firm produce in order to maximize its profit?_____***6***___ (3 pts)

ii. And what would that profit be? __*TR-TC= 265*_____ (3 pts)

iii. Suppose the cost of producing an item increases by $40 *per unit*. Would you expect your profit maximizing quantity to change? Why? (3 pts)

Yes, because a change in variable cost changes total cost by a different amount for each quantity which changes marginal cost. Since marginal cost is affected, MC will no longer equal MR at 6 units.

iv. Suppose the cost of production increased by *a flat fee* of $40. Would you expect your profit maximizing quantity to change? Why? (3 pts)

No. A flat fee is a fixed cost. Fixed costs change total cost by the same amount at each level of output. Therefore, MC is unaffected. Thus, as long as the firm produces, it will produce where MR=MC at 6 units.

SHOW WORK HERE:

Quantity Produced	Total Cost	*MC*	Quantity Demanded	Price	*TR*	*MR*	profit
0 units	$ 0		0 units	$155 per unit	*0*	*0*	
1	70	*70*	1	150	*150*	*150*	
2	142	*72*	2	145	*290*	*140*	
3	217	*75*	3	140	*420*	*130*	
4	297	*80*	4	135	*540*	*120*	
5	385	*88*	5	130	*650*	*110*	
6	485	*100*	6	125	*750*	*100*	265
	603	*118*	7	120	*840*	*90*	