Economics 310 Spring 2007 Midterm 1 Name__ANSWER KEY____

The following exam consists of 2 parts. Part 1 has 25 multiple choice questions. Part 2 has two problems. The exam has a total of 6 pages. Please check to see that you have all parts of the exam before beginning. The exam is worth 80 points. You have 50 minutes to complete the exam. *Time may be a factor, so do not get stuck on any question.* Calculators are permitted. Good Luck.

Part 1. Multiple Choice: 25 Questions, 48 points. Miss one for free.
(2 points each)

1. Which of the following would cause a fall in the price of video tape rentals?
a. A new nationwide video rental chain opens.
b. Movie theaters raise their prices.
c. The royalties paid to movie actors increase.
d. The price of video cassette recorders (VCRs) falls.

2. 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.

3. In 1 hour, Robinson Crusoe can either shoot 4 birds or catch 4 fish. A typical native on a nearby island can either shoot 5 birds or catch 10 fish in an hour's time. Which of the following is true according to the doctrine of comparative advantage?
a. Crusoe will be better off if he specializes in either activity and then trades with the natives.
b. The natives have a comparative advantage in both shooting birds and catching fish, so Crusoe cannot make himself better off by trading with the natives.
c. Crusoe should concentrate on shooting birds and then trade with the natives to obtain fish.
d. Crusoe should spend his time catching fish, and he should trade with the natives to obtain birds.

4. The absolute price of beef in Japan is $10.00 per pound and the absolute price of tuna is $5.00 per pound then the relative price of tuna in terms of beef is
a. one-half.
b. two.
c. fifteen.
d. fifty.

Goods X and Y
For questions 5-8, assume that good X is on the horizontal axis and good Y is on the vertical axis in the consumer-choice diagram. P_X denotes the price of good X, P_Y is the price of good Y, and I is the consumer's income. Unless otherwise stated, the consumer's preferences are assumed to satisfy the standard assumptions.

5. Refer to Goods X and Y. The relative price of good X in terms of good Y is always equal to
a. the magnitude of the slope of the budget line.
b. the marginal value of X in terms of Y.
c. the horizontal intercept of the budget line.
d. the vertical intercept of the budget line.

6. Refer to Goods X and Y. When the price of good X rises, what happens to the budget line?
a. The budget line shifts in, with no change in the slope.
b. The budget line becomes flatter, and the horizontal intercept moves to the right.
c. The budget line becomes steeper, with no change in the vertical intercept.
d. The budget line pivots about the horizontal intercept, with the vertical intercept moving up.

7. Refer to Goods X and Y. How would a budget line be affected if income and both prices all simultaneously doubled?
a. It would shift out so that all quantities are doubled.
b. It would shift in so that all quantities are halved.
c. It would not be affected.
d. The slope would be doubled.

8. Refer to Goods X and Y. Suppose the consumer is spending all of his income buying some of both goods. If the marginal value of X is less than the relative price of X, how can the consumer improve his 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 his level of satisfaction because he is at the optimum.

9. 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.

10. True or False: If the substitution effect is smaller 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. Suppose the price of a good rises. When will the resulting *substitution effect* reduce the quantity demanded of the good?
a. Always.
b. Whenever the good is a non-Giffen good.
c. Only when the good is normal.
d. Only when the good is inferior.

12. Suppose the price of a good rises. When will the resulting *income effect* reduce the quantity demanded of the good?
a. Always.
b. Whenever the good is a non-Giffen good.
c. Only when the good is normal.
d. Only when the good is inferior.

13. Suppose the government increases the annual cost of the liquor permit that a tavern needs to serve alcohol. What effect will this increased cost have on the tavern's production and pricing decisions?
a. None-the tavern will maintain its current prices provided the cost of permit is not too large.
b. The tavern will raise its prices to cover the higher cost.
c. The tavern will scale back its operations.
d. The tavern will cut its prices to increase its sales.

14. If a firm's marginal cost exceeds its marginal revenue, then
a. the firm's profit is negative (i.e., the firm is suffering losses).
b. the firm should shut down its operations.
c. cutting back production will increase the firm's profit.
d. the firm should reduce its per-unit cost by increasing its output.

15. The Cross Price Elasticity for two goods that are SUBSTITUTES is_____

a. Greater than Zero
b. Equal to Zero
c. Less than Zero

Demand and Total Cost of Production

The following questions refer to the following tables which show the demand for a firm's product and the firm's total cost of production.

Demand

Quantity	Price
0 units	$35 per unit
1	30
2	25
3	20
4	15
5	10

Total Cost

Quantity	Dollars
0 units	$ 0
1	4
2	11
3	21
4	34
5	50

16. Refer to Demand and Total Cost of Production. The marginal cost of producing the third unit is
a. $21 per unit.
b. $20 per unit.
c. $10 per unit.
d. $7 per unit.

17. Refer to Demand and Total Cost of Production. The marginal revenue received from selling the fifth unit is
a. $50 per unit.
b. $10 per unit.
c. -$5 per unit.
d. -$10 per unit.

18. Refer to Demand and Total Cost of Production. According to the equimarginal principle, how many units should the firm produce in order to maximize its profit?
a. 2 units.
b. 3 units.
c. 4 units.
d. 5 units.

19. A sunk cost is one that
a. a firm should take into consideration when deciding on its output level.
b. increases as the firm's production increases.
c. measures the value of the firm's self-owned resources.
d. can no longer be avoided.

20. If the marginal rate of technical substitution of labor for capital ($MRTS_{LK}$) ***is less*** than the relative price of labor in terms of capital (P_L/P_K), then
a. the firm's long-run average cost curve is rising.
b. the firm is producing its output at the least possible cost, but the firm should reduce its output level to increase its profits.
c. the firm has increased its output level beyond the point of diminishing marginal returns.
d. the firm needs to use more capital and less labor to reach its expansion path.

21. Does the production function $Q = L^{1/3}K^{1/3}$ exhibit increasing, decreasing, or constant returns to scale?

a. Increasing
b. Decreasing
c. Constant
d. Can't tell

22. The shapes of the total product and marginal product curves are related because
a. an increase in total product pulls marginal product up.
b. marginal product gives the slope of total product.
c. marginal product increases as total product increases.
d. the marginal product curve lies above the total product curve.

Variable Cost of Production

The following questions refer to the following table which shows a firm's variable costs of production.

Quantity (number of units)	0	1	2	3	4	5	6	7	8
Variable Cost (dollars)	0	30	50	60	80	110	160	250	400

23. Refer to Variable Cost of Production. The marginal cost of the fifth unit of output is
a. $22 per unit.
b. $30 per unit.
c. $46 per unit.
d. $50 per unit.

24. Refer to Variable Cost of Production. If the total cost of producing five units of output is $150, fixed costs must be
a. $8.
b. $22.
c. $30.
d. $40.

25. Refer to Variable Cost of Production. If the firm instead has $15 in fixed costs, the average total cost of the third unit of output is
a. $20 per unit.
b. $25 per unit.
c. $30 per unit.
d. $35 per unit.

Part 2: Problems **Name** _____

Problem 1: 14 Points. Be sure to show all of your work .
(Each blank is 2 points each.)

The demand equation is given by Q= -100P + 600
The supply equation is given by Q = 20P

a. What is the equilibrium Price? _____***5***_____

b. What is the equilibrium Quantity? ___***100***_____

Now assume the government institutes a sales tax of 3$ per unit.

c. A sales tax's legal incidence is paid by ___***consumers***_____

d. What is the new price actually paid by consumers? __***$5.50***_____

e. What is the equilibrium quantity?____***50***_____

f. What is the Total ***Revenue*** received by the producers? __***$125***_____

g. With the $3 sales tax, what proportion of the tax is paid by producers?__***2.5/3= 5/6*** _____

SHOW YOUR WORK HERE:

a. 20P= -100P + 600
120P = 600
P = 600/120= 5
b. Q= 20*5= 100
d. 20P = -100(P+3) + 600
120P = -300 + 600
120P = 300
P = 2.5, consumers pay 2.5 + 3 = $5.50
e. Q= 20*2.5 = 50
f. TR= P*Q = 50*2.5 = $125

Problem 2: 18 points. Be sure to show all of your work.
(Each blank is 2 points each)

Utility Function: $U = X^3*Y^2$ where X is the amount of good X consumed and Y is the amount of good Y consumed.
$MUx = 3X^2Y^2$
$MUy = 2X^3Y$
Income (I) = $100
Px = $3
Py = $2

a. What is the Marginal Value of X in terms of Y { $MV_{x/y}$} at the optimal bundle?__***Px/Py=3/2***__

b. Write the equation of the budget constraint: _***3X+2Y=100, or Y=50-3/2X***_____

c. If I purchase no units of X, how much Y can I afford? __***50***_____

d. What is the optimal bundle of good X and Y? X = _***20***__ Y = _***20***___

e. What Total Utility is received at the optimal bundle? __***(20)^3*20^2= 20^5 =3200000***_____

Suppose income increases from $100 to $150.

f. Derive the new optimal bundle of X and Y. X = _***30***__ Y = _***30***___

g. Derive the equation of the Engel curve for good X. __***X=1/5*I***_____. (Note: Assume good X is on the y-axis)

SHOW YOUR WORK HERE:

d. MUx/MUy = Px/Py
3Y/2X = 3/2
6Y=6X
Y=X and 3X + 2Y = 100, so 5Y=100, Y=X=20

e. Y=X, 3X + 2Y = 150, so 5Y= 150, Y=X=30

g. Want to get X= mI + b

Step 1: Get slope (m)
m=slope = rise/run
2 points: (I,X) = (100, 20) and (150, 30)
rise: 10
run: 50
slope= 1/5

X= 1/5*I +b
20= 1/5*100 +b
b=0