Econ 210, Final, Fall 2006.

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Instructions. You have 3 hours to complete the exam. There are 65 points available. Please write your responses on the exam itself in the space provided. If you require additional space, write on the back of the page. You may refer only to your own handwritten, “cheat sheet”. Calculators and all other references materials are not allowed. If a question asks for a numeric quantity you may leave your answer in expression form for full credit. (e.g. "40−30" would be perfectly acceptable in place of “2”.) Be sure to label any diagrams you draw, to show your work and to explain your reasoning. You may keep your cheat sheets. Thank you and good luck!

Name:

Pledge:
SHORT ANSWER (25 Points)

1. (4 Points) Define *conditional factor demands* and describe how to derive them from a production function.

2. (2 Points) What is the relationship between conditional factor demands and the cost function?

3. (4 Points) Given a production function $f(L, K)$, how would you find the profit-maximizing level of output in the short run when $K$ is fixed at $\bar{K}$?

4. (2 points) In order for a natural monopoly to develop, it
   
   (a) is important that the firm be very large.
   (b) is important that the firm prices its product below cost.
   (c) must have large fixed costs relative to the total market demand.
   (d) must be in the presence of government intervention.

5. (3 points) For a single price monopoly, the profit maximizing price will be ______ than marginal revenue and ______ than marginal cost.
   
   (a) greater; greater
   (b) greater; less
   (c) less; greater
   (d) less; less
6. (3 points) Define *Marginal Rate of Substitution* from consumer theory.

7. (5 Points) Paul and Carol face the same prices for pizza and beer. Paul drinks 5 beers per week and eats 5 pizzas. Carol drinks 15 beers per week and eats 3 pizzas. Is Paul's Marginal Rate of Substitution of Pizza for Beer greater than, less than or equal to Carol's. Explain.

8. (2 Points) A firms technology has *constant returns to scale*. Describe the shape of its *long run marginal cost curve*. Explain.
9. (25 Points) The Gamma Tire Company is expected to earn net revenue of $1,000,000 in each
of the next two years. (The first earnings would be realized in one year.) Sarah’s annual
opportunity cost of capital (i.e. the interest rate she faces) is .08. After two years Gamma
Tire is expected to have net revenue of zero due to increased foreign competition.

(a) (5 Points) Write down an expression for $V_0$, the maximum Sarah should be willing to
pay for Gamma Tire.

(b) (5 Points) Suppose that with probability .4, Gamma Tire will experience a fire and earn
zero in the second year. Write down an expression for $V_1$, the most Sarah should be
willing to pay acknowledging this possibility. Assume that Sarah is *risk neutral*. 
(c) (10 Points) John is risk averse and faces the same interest rate as Sarah. How does John’s maximum willingness to pay for Gamma Tire differ from Sarah’s? Explain using a diagram. Be sure that your diagram labels $V_0$, $V_1$ and difference in the two investors’ willingness to pay.

(d) (5 Points) How does your answer depend on the existence of a competitive insurance industry? What would the price of coverage have to be for John’s maximum bid to be the same as Sarah’s? (Assume that the insurance premium would be due up front and that in the event of the fire the claim would be settled in two years.)
10. A GAS TAX. (15 Points) The production and consumption of gasoline has many negative side effects whose costs are paid neither by producers or consumers of gasoline. Assume that every gallon has a marginal external cost of $2 and that it does not matter how the gasoline is produced or consumed.

(a) (5 Points) Draw a diagram showing an efficient gasoline tax.

(b) (2 Points) Label an area in your diagram indicating the loss in consumer surplus resulting from the tax.

(c) (3 Points) Label the net social welfare change. Is it a net gain or loss?

(d) (5 Points) Explain - perhaps using an example - the importance of the assumption that it does not matter how the gasoline is produce or consumed.