

Name: _____

FINAL EXAM
Economics 115b, Spring 2000

Instructions: No books, notes, or calculators may be used. The exam is designed to take 2 hours, but you may have up to three hours to complete it. There are 7 questions and 120 total points on the exam. Use 3 bluebooks and this page for your answers.

Read the questions carefully and think before writing. If you draw graphs as part of your answer, be sure to completely and carefully label and explain them. Concise answers will be favored over long-winded ones.

1. State whether the following statements are true or false and briefly (2 sentences or less) explain why. Answer this section in the space provided. (5 pts each)

a. The maturity date of a bond tells us how long it will be before any coupon payments are made to the bond holder.

b. In the long-run under monopolistic competition marginal revenue is equal to marginal cost and so there will be positive economic profits.

c. The price elasticity of demand is not sensitive to the units in which price or quantity are measured.

d. In a two-person, non-cooperative game, a Nash equilibrium can exist only if both players have dominant strategies.

Answer questions 2 and 3 in a bluebook.

2.(12 pts) a. Define price discrimination.

b. Explain *why* and *under what conditions* differences across groups in the price elasticity of demand can result in price discrimination by a profit-maximizing monopolist.

3.(16 pts) Individual demand functions for a good are given by $Q = a - bP$. The marginal cost of producing this good is c . There are 100 identical individuals in this market.

a. If the good in question is a private good, what is the market demand curve? Derive an expression describing the efficient amount of the good (Q) that should be produced.

b. If the good described in part a is a public good, derive an expression for the efficient amount of the public good (Q) that should be produced. Briefly explain how you derived this expression.

Answer questions 4 and 5 in a NEW bluebook.

4.(18 pts) a. What is a natural monopoly?

b. Illustrate a case of natural monopoly on a graph, including demand, marginal revenue, average cost and marginal cost curves. Label the monopolist's desired output level and price.

c. In the case of a natural monopoly, should the government regulate the monopolist by requiring price to be set equal to marginal cost. Why or why not?

5.(18 pts) Consider an individual who is allocating her total income, I , between consumption of food and consumption of housing. The price of food is 1, and the price of housing is P_h . Both food and housing are normal goods and are substitutes for one another.

a. Use indifference curves to illustrate the quantities of food and housing consumed by this individual. (*Put food on the horizontal axis and housing on the vertical axis.*) What are the intercepts and slope of the budget line?

b. Suppose the price of housing doubles, but the price of food remains unchanged. Show how the quantities of food and housing change. Illustrate and label the income and substitution effects of this price change on the quantity of housing consumed.

c. Now (from the original prices) suppose that the prices of both food and housing double. Draw the new budget line. What is the substitution effect from this price change? Why?

Answer questions 6 and 7 in a NEW bluebook.

6.(18 pts) Two duopolists produce identical goods and face a total market demand curve given by $Q = 108 - 3P$. Firm one has marginal costs that are constant at \$4; firm two has marginal costs that are constant at \$5.

- Assuming the two firms compete as Cournot duopolists (by choosing a quantity, assuming their rival's quantity is fixed), find the reaction functions of the two firms, total market output, and the equilibrium price.
- Consider a monopolist with marginal cost of \$4 who faces the same market demand curve. How much will be produced, and what price will be charged?
- Compare total quantity produced under parts a and b. Provide an intuitive explanation for the relative quantities produced under duopoly versus monopoly production.

7.(18 pts) Assume that Yale University is a monopsonist in the hiring of teaching assistants (TAs). The demand for TAs is given by $W = 30,000 - 125L$, where W is the annual wage paid and L is the number of TAs hired. The supply of TAs is given by $W = 1000 + 75L$.

- If Yale behaves as a profit-maximizing monopsonist, illustrate on a graph the number of TAs that will be hired and the wage that they will be paid. (For part a. you do not need to solve for the exact L and W .)
- Is the marginal cost of hiring an additional TA in this case equal to, less than, or greater than, the wage? Explain.
- Write down expressions for the total cost of labor and the marginal cost of labor for the monopsonist facing the supply and demand curves above. Solve for the equilibrium wage and number of TAs that will be hired by a profit maximizing monopsonist in this case.

**BE SURE TO WRITE YOUR NAME ON THE FIRST PAGE OF THIS EXAM,
AND ON ALL 3 BLUEBOOKS.**

**IF YOU ARE A SENIOR, PLEASE WRITE SENIOR ON THE FRONT OF YOUR
EXAM BOOKS AND HAND YOUR COMPLETED EXAM DIRECTLY TO THE
PROCTOR.**

HAVE A GREAT SUMMER!