

**Midterm Examination - Microeconomics**

April 2, 1998

**Seating**

Row

Seat

Name:

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**Instructions:**

- You will have the full class period to complete the exam.
- Point values are shown with each question. "New" items are marked with an asterisk (\*). There are 80 points possible on the exam divided equally between "new" and "old" material.
- Answer on the paper provided and only answer one question on a sheet.
- Staple this sheet to your other pages as a cover when you have finished. Please staple your pages in order.
- You may use a calculator. However, the use of books and notes is not allowed.
- I will be in the hall for the first 20 minutes of the exam. Thereafter, I will be in my office (x3974). Call if you have questions. However, **do not take your exam from the room.**

**Pledge:**

I pledge my honor that during this examination I neither gave nor received assistance and that I saw no dishonest work.

Signed: \_\_\_\_\_

1. (10 pts.) One proposal to fund a new baseball stadium in Minneapolis/St. Paul is to place a tax on restaurant meals served in those cities. Show graphically and explain the effects of this proposal on **both** the market for restaurant meals in Minneapolis/St. Paul **and** the market for restaurant meals in their adjacent suburbs.

2. (13 pts.) Public housing projects are one way for the government to ensure housing for the poor. Families with incomes below a certain level are able to rent apartments or townhouses at reduced rates.

Recently, some members of Congress have proposed a program of housing "vouchers" instead. Under a voucher program, qualifying families are given a voucher or coupon that they can use a payment towards their rent. They then rent housing from private landlords and use the voucher to pay part of the rent.

a) (4 pts.) First, provide a graph showing the effect on the market for private rental housing of an increase in public housing.

b) (4 pts.) Then, provide a graph showing the effect on the market for private rental housing of the implementation of a housing voucher program.

c)\* (5 pts.) Which policy would private landlords prefer? Explain

3.\* (10 pts.) The tobacco industry is dominated by two large firms that together control over 75% of cigarette sales. Tobacco products also cause significant adverse health effects. These health costs are an "externality" of tobacco consumption.

Would it be in the public interest to break up the large tobacco firms into many small firms? Explain.

4. (17 pts.) The owners of a grocery store currently have their clerks enter the prices of items into the cash register by hand instead of using scanners. They are considering changing to an automated system where a laser beam would read the Universal Product Code (UPC) from the item and enter it. A clerk would still be needed but he or she would be able to enter prices much more quickly.

Each clerk is able to enter an average of 360 items per hour. The store currently sells 3,600 items per hour and employs 10 clerks. Clerks are paid \$6.00 per hour, including all fringe benefits and payroll taxes. The fixed costs of this system are zero.

a) (3 pts.) Under the current system, what is the average total cost of processing an item of groceries? What is the average variable cost?

A sales representative tells the owners that they can process the same amount of groceries with only 6 clerks if they purchase one of the automated systems. The automated system raises each clerk's output to 600 items per hour. The total cost of the automated system is \$20 per hour. (This is the total cost spread out over the system's life expectancy.) Of course, the owners must pay for the system whether they sell groceries or not.

- b) (4 pts.) Using an automated system, what are the average total cost and average variable cost of processing an item if the store sells 3,600 items per hour?
- c)\* (5 pts.) At the current sales level, should the owners buy the automated system? Explain.
- d)\* (6 pts.) Suppose a new store is expected to open in the area and the owners estimate that their sales will fall to 2,400 items per hour. Does this change your recommendation? Explain.

5. (20 pts.) A small college has heard that none of its close competitors for students will raise tuition this year. Staff in the admissions office estimates that if the college raises its tuition rate by 5%, enrollments of new students will fall by 12%. It is also estimated that the 5% tuition increase will cause a 2% decrease in the number of students who return. Tuition is currently \$10,000 per year.

- a)\* (5 pts.) Does this college have market power? Explain.
- b) (5 pts.) Provide a numerical value and interpretation of the elasticity of demand by new students.
- c) (5 pts.) Provide a numerical value and interpretation of the elasticity of demand by returning students.
- d)\* (5 pts.) The college expects 500 new students and 1500 returning students **if it does not** raise tuition. Will the 5% tuition increase raise or lower the college's total revenues? By how much?

6. (10 pts.) A country with a production possibilities frontier (PPF) as shown currently produces 4000 units of civilian goods and 500 of military goods.

- a) (5 pts.) Provide a numerical estimate of its opportunity cost of military goods in terms of civilian goods.
- b)\* (5 pts.) Suppose that the country can trade with its closest neighbor one unit of civilian goods for one unit of military goods. Should it trade at all? If so, should it export civilian or military goods? Explain using the concept of opportunity cost. (Exporting civilian goods implies importing military goods, and vice versa.)

