

EC3322
Industrial Organization I
Semester 1, 2011-2012
Midterm
September 29, 2011

MATRICULATION/REGISTRATION NUMBER: _____

TUTORIAL GROUP: _____

Instructions

1. Do NOT start reading the questions until you are told to do so.
2. Write your matriculation number and your tutorial group number (or time and day) in the space provided above RIGHT NOW. Do not write your name on the exam.
3. This exam will last 75 minutes.
4. There are a total of 9 pages, including this front page.
5. This exam consists of FIVE (5) questions. Answer ALL FIVE questions. You must include your work in order to receive full marks.
6. Write your answers in the answer boxes provided for each question.
7. Include all work and derivations that you wish to be graded in the space provided after each question.
8. You MAY NOT use calculators. If you have a calculator on your desk, you will receive a 10 mark penalty.

1. (15 points) Suppose that the demand function is

$$Q = 100 - P.$$

At what output level is the price elasticity of demand equal to -1 ?

1. Write your answer in this box.

Q =

2. (15 points) The demand curve for senior citizens for showings at a local movie theater has a constant price elasticity of -4 . The demand curve for all other customers has a constant elasticity of -2 . If the marginal cost per customer is \$1, how much should the theater charge each group?

2. Write your answers in this box.

senior citizens $p^* =$

all others $p^* =$

3. (20 points total) Suppose a perfectly price discriminating monopolist faces inverse demand for each customer of

$$P = 100 - 10Q$$

and has constant marginal cost $MC = 20$ (and no fixed costs).

- (a) (5 points) How much does the monopolist sell to each customer?
- (b) (5 points) What is the monopolist's profit per customer?
- (c) (10 points) Is the outcome efficient?

3. Write your answers in this box.

a) $Q^* =$

b) $\pi^* =$

c) yes or no

4. (20 points total) Assume a monopolist has four consumers with reservation prices for each of two goods as described by the table below. The marginal cost of good 1 is \$200. The marginal cost of good 2 is \$300. There are no fixed costs.

| <i>Consumer</i> | <i>Reservation Price for Good 1</i> | <i>Reservation Price for Good 2</i> |
|-----------------|---|---|
| A | 100 | 900 |
| B | 500 | 550 |
| C | 600 | 440 |
| D | 900 | 100 |

- (a) (5 points) Determine the prices the monopolist will charge if she sells the goods unbundled and adopts simple monopoly pricing for each good. How much profit does the firm earn?
- (b) (5 points) What price will the monopolist charge if she sells the two goods as a bundle? How much profit does the firm earn?
- (c) (10 points) What prices will the monopolist choose if she uses a mixed bundling strategy that sells each good separately as well as a bundle? How much profit does the firm earn?

4. Write your answers in this box.

a) $p_1^* =$

$p_2^* =$

$\pi^* =$

b) $p_b^* =$

$\pi^* =$

c) $p_1^* =$

$p_2^* =$

$p_b^* =$

$\pi^* =$

5. (40 points total) Assume firms have zero marginal cost and zero fixed costs and inverse demand is given by

$$P = 90 - \frac{1}{4}Q.$$

For each of the following market structures determine the price, quantities, and profits in equilibrium:

- (a) (5 points) perfect competition
- (b) (5 points) Bertrand duopoly
- (c) (5 points) Cournot duopoly
- (d) (5 points) monopoly
- (e) (20 points) Compare the deadweight loss associated with the outcomes in (a), (b), (c), and (d).

5. Write your answers in this box.

| | p* | q* | Q* | π^* | DWL |
|---------------------|----|----|----|---------|-----|
| Perfect Competition | | | | | |
| Bertrand duopoly | | | | | |
| Cournot duopoly | | | | | |
| Monopoly | | | | | |