EC3322
Industrial Organization I
Semester 2, 2013-2014
Midterm
March 6, 2014

MATRICULATION/REGISTRATION NUMBER: _____

TUTORIAL GROUP: _____

Instructions

1. 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.
2. This exam will last 90 minutes.
3. There are a total of 7 questions on 16 pages, including this front page.
4. Write your answers in the answer boxes provided for each question.
5. Include all work and derivations that you wish to be graded in the space provided after each question.
6. You MAY NOT use calculators. If you have a calculator on your desk, you will receive a 10 mark penalty.

Questions 1, 2, and 3 are multiple-choice questions. In the answer box below, circle your answer to each question.

1. (5 points) Disney creates films like *Planes* which lowers the cost of advertising *Planes* toys. This is called:

   (a) economies of scale

   (b) economies of scope

   (c) diseconomies of scale

   (d) diseconomies of scope

2. (5 points) Marginal revenue $= \dfrac{\partial p}{\partial q} q + p$. Under perfect competition, $\dfrac{\partial p}{\partial q}$ is

   (a) positive

   (b) negative

   (c) positive or negative depending on the elasticity of demand

   (d) zero

3. (5 points) Referring to the previous question, under monopoly, $\dfrac{\partial p}{\partial q}$ is

   (a) positive

   (b) negative

   (c) positive or negative depending on the elasticity of demand

   (d) zero

Question 4 is a True-False question. In the answer box below, circle your answer and provide a *brief* explanation for full credit.

4. (10 points) Market demand is $Q = 200 - 2p$. A monopolist would never set $p = 20$.

5. (15 points) A monopolist sells a product to two groups: people age 65 and older, denoted S for seniors, and everyone else, denoted E. The total demand for group E is $Q_E = 100 - 2P$ and total demand for group S is $Q_s = 80 - 2P$. The cost function of the monopolist is $C(Q) = 5Q$.

   Assume that the monopolist cannot tell the groups apart.

   (a) (5 points) What is aggregate demand? What is marginal revenue?

   (b) (4 points) Find the optimal price and quantity.

   Assume now that the monopolist can determine each person's age by looking at their driver's license or IC and can thus apply third-degree price discrimination.

   (c) (3 points) What price does the monopolist charge group E?

   (d) (3 points) What price does the monopolist charge group S?

6. (25 points) This question considers a dominant firm model with entry. Aggregate market demand is $Q = 50 - P$.

   (a) (5 points) Each fringe firm has a cost function $C(q) = 100 + 10q + q^2$. What is the long run supply function of a fringe firm?

   Graph your answers to questions (b), (c), and (e) in two graphs as was done in the lecture slides (in the box on the next page).

   (b) (5 points) Graph long-run *aggregate* supply of the fringe.

   (c) (5 points) Graph market demand and the dominant firm's residual demand.

   (d) (5 points) Suppose that the dominant firm's cost function is $C(q) = 20q + \frac{1}{2}q^2$. What is the optimal output of the dominant firm? How much does the fringe supply? What is the equilibrium price?

   (e) (5 points) Graph your answers from part (d).

7. (35 points) In a monopoly market there are 2 "low-demand" people and 1 "high-demand" person. Each low-demand person has demand $P = 12 - Q$. The high-demand person has demand $P = 16 - Q$. The monopolist's cost function is $C(Q) = 8Q$.

   Assume that the monopolist is not able to distinguish between the low-demand people and the high-demand person, and offers two different packages, one targeted to each type of person. A package consists of a fee for a given number of units. That is, the monopolist uses block pricing.

   (a) (10 points) What is the package targeted to low-demand people?

   (b) (10 points) What is the package targeted to the high-demand person?

   (c) (5 points) What are the monopolist's profits?

   (d) (10 points) Draw a graph of your answers to parts (a) and (b). Be sure that all the relevant parts of the problem are clearly labeled.