EC3322
Industrial Organization I
Semester 1, 2013-2014
Midterm
October 3, 2013

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 8 questions on 14 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 and 2 are multiple-choice questions. In the answer box on the next page, circle your answer to each question.

1. (5 points) In the dominant firm model, the smaller firms are

   (a) oligopolists.

   (b) monopolists.

   (c) monopolistic competitors.

   (d) perfect competitors.

2. (5 points) The following relationship must hold between the average cost (AC) curve and the marginal cost curve (MC):

   (a) If MC is rising, AC must be rising.

   (b) If AC is rising, MC must be less than AC.

   (c) If AC is rising, MC must be greater than AC.

   (d) If MC is rising, AC must be greater than MC.

Questions 3 and 4 are True-False questions. In the answer box on the next page, circle your answer to each question and provide a brief explanation for full credit.

3. (5 points) Consider the following payoff matrix. Both firms A and B have dominated strategies.

		Firm B	
		L	R
Firm A	D	1000, 150	700, 100
	U	800, 50	500, 75

4. (5 points) Suppose that the fixed costs of a monopolist doubles. This would lead to an increase in the profit-maximizing price charged by the monopolist.

For the remaining questions you must show your work to receive full marks.

5. (10 points total) Suppose you know the market shares of 3 of the 5 total firms in some industry: $s_1 = 20$, $s_2 = 20$, and $s_3 = 20$. Although you do not possess sufficient information to compute the HHI, you can find a lower and an upper bound for it. That is, based on the given information, you can find the minimum HHI possible and the maximum HHI possible. What are the lower and upper bounds?

6. (20 points total) John and Bill are roommates. Both would like to have a TV in the room, but neither has one. If they had a TV, the enjoyment they would get from watching would be worth \$50 to each of them. They can find a used TV for \$80. However, they don't get along so well and can't agree to share the cost, so if the TV is purchased one of them will have to pay for it by himself. Thus, John and Bill have the options of: Buy and Don't Buy.

   (a) (10 points) Write down the normal form representation of this game. Assume that John and Bill have to make their decisions simultaneously. Also assume that having two TVs does not provide any more enjoyment than having one TV.

   (b) (10 points) Find the Nash Equilibrium (or equilibria).

7. (20 points total) Consider the Hotelling model of horizontal product differentiation that was discussed in lecture. We will interpret the line as a street of length one. Due to the local geography, the street slopes down at a consistent rate with the highest point at $x = 0$ and the lowest point at $x = 1$. As such, the cost of a customer traveling from left-to-right to the shop is t per unit of distance but the cost of a customer traveling from right-to-left to the shop is t^2 per unit of distance. Decide where the social planner will locate a single shop by minimizing total transportation costs.

8. (30 points total) Suppose that you manage a cafe. You have estimated the demand for drinks for each customer to be:

$$Q = 1 - P.$$

That is, if you charge a price of P, then each customer will purchase $1 - P$ drinks. The marginal cost of a drink is c.

Thinking back to your days attending EC3322 lectures, you remember that profit is greatest under a two-part tariff $\{F, P\}$, where F is an entry fee and P is the price per drink. Although you recall being told what the optimal F and P are, you want to derive the result yourself just in case your prof was mistaken.

(a) (10 points) Write the entry fee F as a function of P.

(b) (10 points) What is the per-customer profit function? The profit function should include P but not F since F can be substituted out using what you derived in part (a).

(c) (5 points) Maximize the profit function to find the optimal P.

(d) (5 points) What is the optimal F?