EC101 DD/EE. Problem Set 10

*Multiple Choice [MC] questions have only one correct answer. Other kinds of questions may have more than one correct answer. You should understand **why** your answers are correct. If you don't understand the meaning of a question, you may write to your own TF, but do not expect him/her to give you answers. The problem set will not be graded, but the way you discuss the problems in your discussion section will affect your discussion-section score.*

1. Are the following statements true or false? Explain.
    i.   Monopolies are inefficient because they restrict production below the optimal level in order to extract rents.
    ii. We can remove all monopoly inefficiencies by allowing monopolies to perfectly price discriminate.
    iii. With perfect price discrimination we maximize social surplus and both consumers and producers are better off.

For the next two questions, two players, **1** and **2**, have to simultaneously decide whether to play A or B. The payoffs depend on each other's behavior, and are shown in the following picture. (Numbers to the bottom left represent the payoffs for player **1**, and numbers to the right represent playoffs for player **2**).


2. *[MC]* For Player 1, playing B is:
    a. A mixed strategy
    b. A dominant strategy
    c. None of the above
    d. A dominated strategy

3. *[MC]* How many Nash Equilibria does this game have and what are they?
    a. None
    b. One (A, a)
    c. One (B, b)
    d. Two (A, a) and (B, b)

4. Due to recent events, there is increasing tension between the free city of Karalis and the evil kingdom of Tiscali. Both Karalis and Tiscali are considering attacking the other city to solve the dispute. If Karalis attacks and Tiscali does not, Karalis gets 100 units of cork from Tiscali. If Tiscali attacks and Karalis does not, Tiscali obtains 150 units of cork from Karalis. If they both attack, they fight and 50 units of cork are destroyed for each party. If no party attacks, no cork is destroyed.
    i.   Represent the situation as a normal form game.
    ii. Find the dominant strategy for Tiscali, if any.
    iii. Find the Nash equilibrium/equilibria of the game.
    iv. Is the equilibrium/equilibria of the game Pareto efficient?

5. From the point of view of consumers, is there anything beneficial about price discrimination? Explain your answer.

6. Suppose the following graph represents a natural monopoly.
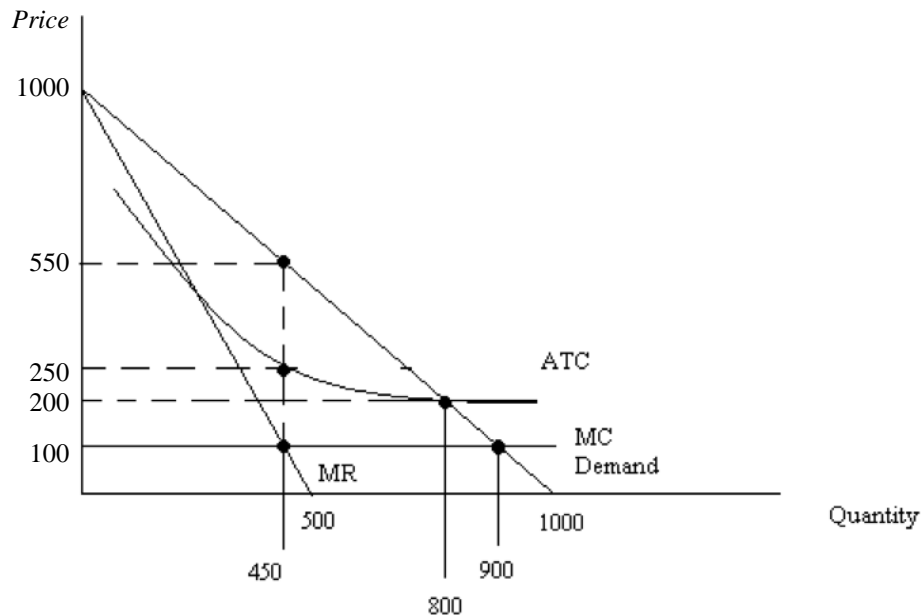
i. Suppose this natural monopoly is allowed to act as a non discriminating monopolist without regulation. What will be the monopolist's price for the good, its total output, and its profit?

ii. Suppose this natural monopoly is regulated so that it produces the socially optimal amount of output. What will be the monopolist's price for the good, its total output, and its profit if it is regulated in this manner? Will the monopolist be willing to produce under this regulatory program?

7. The following graph shows the demand and cost curves for Bubba Lobster, the only seafood restaurant in a small town. The restaurant has a fixed cost of $1000.
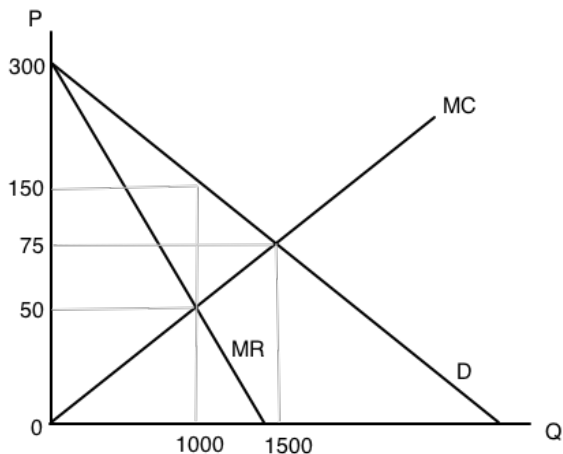
In each of the following situations, state the quantity of lobsters sold and the price(s) charged by the monopolist, and calculate consumer surplus, producer surplus, and profit.

i. The restaurant has to charge the same price to all customers.

ii. The restaurant can exactly guess each customer's WTP from looking at the customers' cars and the way they dress.

iii. The mayor decides to place a price ceiling on lobsters in order to force the restaurant to produce the efficient amount of lobsters.

8. Using what you learned in lecture, discuss:

i. Why do some fast food restaurants provide coupons to customers that they need to print from the website? Why don't they simply lower the price of food on the menus?

ii. Is this an example of perfect price discrimination?

9. Rock-paper-scissors is a hand game usually played between two people, in which each player simultaneously forms one of three shapes with an outstretched hand. These shapes are "rock" (a closed fist), "paper" (a flat hand), and "scissors" (a fist with the index and middle fingers extended, forming a V). Suppose Rock beats Scissors, Scissors beats Paper, and Paper beats Rock. If there is an equilibrium in this game, do you think it is a pure strategy equilibrium? What should each person do? (You can guess without doing any calculation)

10. *[MC]* Which of the following statements about price discrimination is not true? Discuss.
   a. Price discrimination can raise economic welfare.
   b. Perfect price discrimination requires that the seller be able to separate buyers according to their willingness to pay.
   c. Perfect price discrimination reduces output.
   d. Price discrimination increases monopolist's profits.
   e. For a monopolist to engage in price discrimination, buyers must be unable to engage in arbitrage.

11. *[MC]* The Nash equilibrium of the following game is

		Player 1		
		X	**Y**	**Z**
	A	6, 6	8, 20	0, 8
Player 2	**B**	10, 0	5, 5	2, 8
	C	8, 0	20, 0	4, 4

   a. B,Y
   b. C,Z
   c. A,X
   d. A,Y

12. Are the following statements true or false? Explain.
   i. For a perfectly discriminating monopoly, the price is the same as the marginal cost.
   ii. For a non-discriminating monopoly, marginal revenue is less than the price.
   iii. All types of monopolies are likely to engage in rent seeking.
   iv. All types of monopolies produce lower than the socially efficient quantity.
   v. Consumer surplus is higher and total surplus is lower in a market with non-discriminating monopolies than in one with perfectly discriminating ones.

13. Suppose you are in charge of regulating a monopoly, and you have perfect information regarding the demand curve and the marginal revenue and marginal cost curves.
   i. How would you determine what the socially efficient quantity and price are?
   ii. What quantity and price would the monopoly use?
   iii. What is one tool you can think of that could regulate the monopoly (taxes, subsidies, price ceilings or price floors)?
   iv. Why would this lead to the efficient outcome?
   v. In practice, what is a problem you could encounter in carrying out your recommendation?

14. Trump and Kim Jung Un are deciding whether or not to send a tweet. Their payoffs *(Trump's, Kim Jung Un's)* are the following: *(10, 10)* if both don't tweet, *(−10, 0)* if Kim Jung Un tweets and not Trump, *(0, −10)* if Trump tweets and not Kim Jung Un, and *(0, 0)* if both tweet.
   i. Represent the situation as a normal form game.
   ii. Are there dominated strategies in this game?
   iii. What is/are the Nash equilibrium/a?
   iv. Which outcome do you think is most likely to occur? Is it efficient? Explain.