



MICROECONOMICS

MICROECONOMICS C30.0001

FINAL EXAMINATION SPRING 2011

PROFESSORS COLLARD-WEXLER AND SKRETA

NAME + ID:.....

Skreta 9:30 Collard-Wexler 9:30

Skreta 11:00 Collard-Wexler 2:00

Skreta 3:30

INSTRUCTIONS: YOU ARE NOT ALLOWED TO USE A CALCULATOR. THE USE OF CLASS NOTES, TEXTBOOKS IS NOT PERMITTED. PLEASE WRITE LEGIBLY. READ THE QUESTIONS CAREFULLY AND PROVIDE CONCISE BUT JUSTIFIED ANSWERS. YOU HAVE 1 HOUR AND 40 MINUTES. ALWAYS LABEL YOUR AXIS AND CURVES. SHOW ALL YOUR WORK. KEEP PAGES STAPLED TOGETHER! GOOD LUCK!

PART I:SHORT ANSWER QUESTIONS [13 QUESTIONS 40 POINTS TOTAL]

1. [3pts.] The price elasticity of demand for gasoline is -2. If the government wants to reduce gasoline consumption by 20% how much should it increase the price of gasoline?
2. [3pts.] The cross-price elasticity of good x as a consequence of an increase in the price of good y is -0.5. Are goods x and y substitutes or complements?
3. [3pts.] What is the difference between the concept of returns to scale and the one of economies of scale?

4. [3pts.] In the following game identify the Nash Equilibria.

ann / bob	work	shirk
work	1, 1	-1, 2
shirk	2, -1	0, 0

Do you notice anything disturbing about this equilibrium?

5. [3pts.] Suppose that 2 identical firms produce the same good at marginal cost c and they compete a la Bertrand. Draw the best response of Firm 1.

6. [3pts.] When do we say that a firm has market power? Can you name two sources of market power?

7. [3pts.] State the 3 main reasons for why competitive markets may be inefficient.

8. [3pts.] Using a diagram, show that a risk-loving individual is someone who prefers a risky income over a certain income with the same expected value.
9. [3pts.] Male peacocks are known to have particularly beautiful and colorful tails, which are critical in attracting a female mate. What would be a reason for the evolution of these very costly, and useless, tails?
10. [3pts.] An insurance company wants to insure houses against avalanche risk in the mountains. It looks at historical data and finds that every year 5% of houses are destroyed by avalanches. Give two reasons why the number of *insured* houses destroyed by avalanches could be higher than 5%.
11. [3pts.] Suppose that the price elasticity of demand for Mercedes in Germany is -2 and -3 in the U.K., while the marginal cost of these cars is \$20,000. How will prices differ in Germany and the U.K?

12. [3pts.] The government in Indonesia subsidizes gasoline purchases so that a gallon of gasoline in Indonesia is much cheaper than in the U.S.. What is the effect of this subsidy on social welfare?

13. [4pts.]

Ann/Bob	Sushi	<i>BBQ</i>
Sushi	5, 1	0, 0
<i>BBQ</i>	0, 0	2, 4

Which strategy pairs amount to Nash Equilibria in **PURE** strategies? Which strategy pair amounts to Nash Equilibrium in **MIXED** strategies?

PART II: PROBLEMS [2 PROBLEMS 60 POINTS TOTAL]

MONOPOLY, COURNOT AND STACKELBERG

The market demand function for gelato in Summersville is

$$Q^d = 70 - \frac{P}{2}$$

Its cost function for producing gelato is $TC = 5 + 20Q$.

1. [3pts.] What is fixed cost, the variable costs, average costs and marginal costs of producing gelato? Does the cost function of gelato have economies or diseconomies of scale?

2. [5pts.] Suppose that there is only ONE producer of bathing suits. Find the profit-maximizing quantity and price for bathing suits.

3. [6pts.] Suppose that the firm can perfectly price discriminate (first degree price discrimination). How much will it produce? How much will its profits be?

4. [8pts.] What will be the equilibrium prices and quantities, if there are TWO identical firms (same costs) that choose quantities simultaneously? (**Cournot Competition**).

5. [8pts.] Now assume that the first firm gets to choose quantity before the entrant. What are the quantities that these firms will produce and what is the price in the market? (**Stackelberg Competition**) Why are these quantities different?

3. [3pts.] Why do these two utility functions lead to differing choices?

4. [10pts.] Now let's suppose that effort on the part of the CEO can change the outcome of the firm. Specifically, suppose that the firm's profits are now given by:

	Low Demand	High Demand
Low Effort ($e = 0$)	100,000	400,000
High Effort ($e = 1$)	400,000	625,000

However, the CEO has a cost of effort of 50 if high effort is exerted (zero if low effort is exerted). The utility function is

$$U(W) = \sqrt{W} - 50 \cdot e.$$

Which package will the CEO choose and why?

Now suppose that there are two CEO's (like at Google) named A and B, with the same utility function;

$$U(W) = \sqrt{W} - 50 \cdot e.$$

Everything is the same except the firm's outcome now depends on the effort of both CEO's.

	Low Demand	High Demand
Low Effort ($e_A = 0, e_B = 0$)	100,000	400,000
High Effort (only one CEO exerts effort)	144,000	625,000
High Effort for both CEO's ($e_A = 1, e_B = 1$)	400,000	625,000

The rule is that they BOTH have to agree on whether to take Package A or Package B. CEO's choose efforts simultaneously and independently from one another.

5. [2pts.] What is the expected utility if they choose Package A?

6. [8pts.] What is the expected utility if they choose Package B? Which package will the CEO's choose?