



Stockholm
University

Department of Economics

Course name: Intermediate microeconomics
Course code: EC2101
Examiner: Jonas Vlachos
Number of credits: 7,5 credits
Date of exam: Sunday 11 May 2014
Examination time: 5 hours [09:00-14:00]

Write your identification number on each paper and cover sheet (the number stated in the upper right hand corner on your exam cover).

Use one cover sheet per question. Explain notions/concepts and symbols. If you think that a question is vaguely formulated, specify the conditions used for solving it. Only legible exams will be marked. **No aids are allowed.**

The exam consists of 4 questions. Each question is worth 25 points, 100 points in total. For the grade E 45 points are required, for D 50 points, C 60 points, B 75 points and A 90 points. You also have credit from the assignment that will be added to your score.

Your results will be made available on your "My Studies" account (www.mitt.su.se), on Friday the 30th of May at the latest.

Good luck!

Question 1 (25 credits)

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Carmela's pasta factory employs workers and pasta machines according to the following production function: $f(L, K) = L^{1/2}K^{1/2}$.

The hourly cost of capital is \$10 and the hourly cost of workers is \$40.

- a) Derive the optimal capital to labor ratio and describe the long-run output expansion path.
- b) Suppose Carmela wishes to produce 1000 units of pasta. How much labor and capital should she employ? How much will it cost to produce?
- c) An order arrives doubling the amount of pasta Carmela needs to produce. Assuming she is unable to purchase more capital, how much will it cost to meet the new production level?

In the long-run, Carmela will be able to employ more capital as well as labor. If Carmela continues to produce 2000 units of output, how much will it cost in the long run? Why are long run costs different from short run costs?

Question 2 (25 credits)

Erika can consume two goods, x_1 and x_2 , that cost p_1 and p_2 , respectively. Erika is a well-behaved person with well-behaved preferences. Her utility function is given by $u(x_1, x_2) = x_1^2 x_2$. Erika's income is given by m .

- a) Derive Erika's Marshallian demand functions for the two goods by solving the utility maximization problem.
- b) What share of her income does Erika spend on each good?
- c) Is good 1 a normal good?

Now assume that the price of good 1 decreases from p_1 to p'_1 .

- d) The decrease in price has two effects on demand for good 1. What are these two effects called? Provide a verbal explanation for these two effects.
- e) Illustrate in a figure, with the quantities of the goods on each axis, these two effects when p_1 decreases.

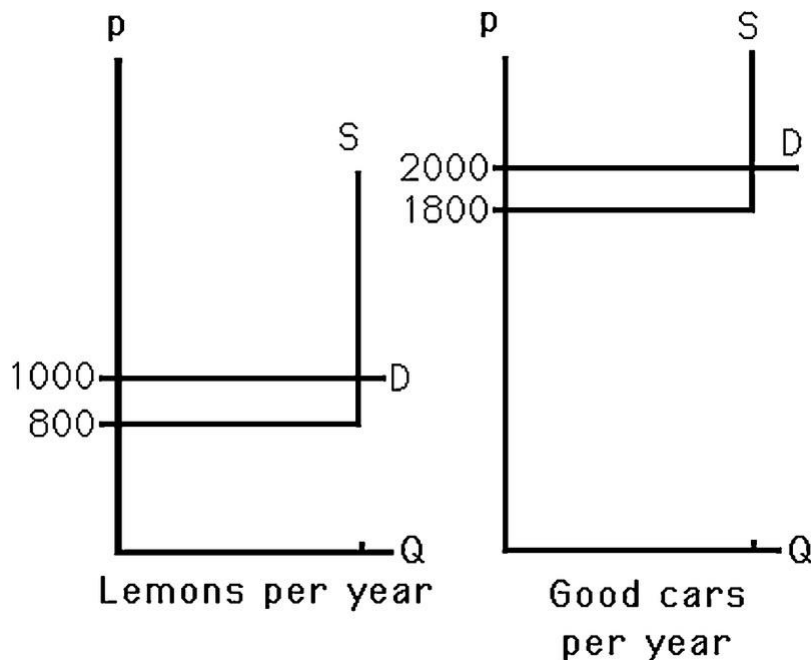
Question 3 (25 credits)

A monopolist faces the (inverse) demand for its product: $p = 50 - 2Q$. The monopolist has a marginal cost of 10/unit and a fixed cost given by F .

- a) Assume that F is sufficiently small such that the monopolist produces a strictly positive level of output. What is the profit-maximizing price and quantity?
- b) Compute the maximum profit for the monopolist in terms of F .
- c) For what values of F will the monopolist's profit be negative.
- d) Consider now the possibility that the monopolist can perfectly price discriminate. What will the output level be?
- e) Usually, perfect price discrimination is not possible. Briefly discuss two other types of price discrimination that are possible and what is required for them to be potentially successful

Question 4 (25 credits):

The graph below shows the demand and supply of bad (lemons) and good used cars. Sellers know if their car is a lemon or not, but buyers cannot distinguish one type of car from the other.



- Say that the share of all cars that are lemons is S . What value of S is such that makes all cars sold?
- Assume now that ten percent (10%) of all cars are lemons. A mechanic is offering to inspect a car for sale and certify that a car is not a lemon. If car sellers are risk neutral, what is the highest price that a car seller would pay for such a service? Who would buy this service?
- How can a warranty at the seller's expense signal that a product is of high quality?
- In a system where you privately buy health insurance, what would the implications be if people, but not health insurance providers, were given the opportunity to test for various genetic diseases? Briefly discuss ways of dealing with potential problems?

If you were to empirically test for the potential problems discussed in d), how would you go about doing it?