Written Exam for the B.Sc. in Economics winter 2013-14

Microeconomics B

Final Exam

19/02/2014

(3-hour closed book exam)

Please note that the language used in your exam paper must correspond to the language of the title for which you registered during exam registration. I.e. if you registered for the English title of the course, you must write your exam paper in English. Likewise, if you registered for the Danish title of the course or if you registered for the English title which was followed by "eksamen på dansk" in brackets, you must write your exam paper in Danish.

This exam question consists of 3 pages in total

Problem 1

Consider a market for oranges, in which the market demand is given by

$$D(p) = \max\{2000 - 100p, 0\}$$

The supply in the short run is given by a fixed amount equal to 1000. To collect an extra revenue and cover the public deficit, the government imposes a tax of DKK 2 per orange produced and sold.

a) What is the effect on the price and quantity by imposing the tax? What is the revenue of the government, and how large is the deadweight loss?

Assume that in the long run the supply is given by a the minimal average cost equal to DKK 10.

b) What is the long run effect of the imposed tax on the price and quantity?
c) Derive the revenue and the deadweight loss of the tax in the long run. Comment.

Problem 2

Consider a competitive insurance industry supplying insurance to two types of potential insured consumers: a high risk and a low risk. However, the supplier of insurance cannot observe the type of a given consumer. The insurance company only knows the share of high risk respectively the low risk consumers.

a) Explain why the actuarial fair insurance contracts cannot be offered in equilibrium.
b) Explain when and when not a separating equilibrium can exist.

Problem 3

Consider the monopolist, Sanafortis, the sole producer of a patented medical product, HeadAcheDisappearium. The cost of producing a single package of the product is constant and equal to DKK 5.

There are two types of consumers buying the medical product: the young who has a demand function given by

$$D_Y(p) = \max\{30 - p, 0\}$$

And the elderly who has a demand function given by

$$D_E(p) = \max\{75 - p, 0\}$$

a) Assuming that the monopolist is not allowed to charge different prices dependent on the age of the buyer, determine the optimal price and quantity.
b) Assuming that the monopolist can charge different prices dependent on the age, what will be the optimal pricing policy of the monopolist?
c) Comment on the monopolist's willingness to serve both types of consumers.

Problem 4

Two roommates share a common television and they consider buying a new to replace the old black-white television. Roommate A has a money income of 10 and a utility function

$$u_A(x_A, G) = \ln x_A + \ln G$$

Roommate B has a money income of 20 and a utility function

$$u_B(x_B, G) = x_A + G$$

The price of buying a television of level G in terms of the private good is $4G$. The current level of the public good is equal to $\bar{G} = 0$.

a) Determine the optimal level of the public good associated with the Pareto efficient allocation that makes A as well off as possible.
b) Find the Lindahl-equilibrium that implements the allocation in a).