Written Exam for the B.Sc. in Economics 2010-I-RE

Microeconomics 2

Final Exam

17 February 2010

(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.

If you are in doubt about which title you registered for, please see the print of your exam registration from the students' self-service system.

Question 1

The tele company *Totalk* is considering introducing *free talk* between its elite customers (e.g. customers that have been especially faithful). If the new service is launched the elite consumers will have a fundamental value $a_i n$ of this new service where n is the number of elite consumers signing on the new service and a_i varies uniformly between the 50 elite customer from 1 to 50. *Totalk* can produce the service at (constant) marginal costs c.

a) Find the optimal number of customers and the price of the new service when $c=225$. Discuss the result.

b) What will happen if the marginal costs are higher? And lower? Explain.

Question 2

There are 10 households living on *Union Street*. Each household lives in an individual house, but there are three different types of households. The first 4 are tenants, 4 are semi-detached house owners and the remaining 2 are detached house owners. The households are considering getting help to take care of the common green area in the centre of the street. The three types of households have preferences for the maintenance of the green area (G) and other consumption goods (x_i, $i=t,s,d$) that can be described by the utility functions $u_i(x_i,G)=x_i+a_i ln(G)$. The maintenance can be acquired at the price 5 per unit.

a) What is the Pareto optimal amount of green maintenance? What are the Lindahl prices? Explain why the Lindahl equilibrium leads to the optimal quantity and relate the answer to the parameters a_i.

The landowner's association that regulates the entire area thinks that a lawn mover may be the right solution for the occupants of *Union Street*. The lawn mover can be bought for 5,000 Kr. Assume that the reservation prices for the three types of occupants are $r_t=200$, $r_s=600$, $r_d=1,600$. The chairman of the landowner's association is also a professor of economics and suggests using a Clarke mechanism to avoid potential *free riders*.

b) Should the lawn mover be bought?

c) Explain how a Clarke mechanism can be set up for this particular problem.

d) Find the payments from each type of household and explain why this is a truth revelation mechanism.

Question 3

Pierre has a son that enjoys sitting on the couch and play Playstation. However, the son also likes to consume other goods. Pierre wants his son to take over growing tomatoes in the garden, which can be sold at the Saturday market at price *p* per kilo. If the son contributes to growing the tomatoes he is investing an effort, *e*, which leads to *f(e)* kilo tomatoes being produced, but also reduces how much Playstation the son can play which causes a loss in utility by *c(e)*. However, if he contributes to growing the tomatoes he receives a payment that can be described as *s(y)*. Hence, we assume that the son's utility function can be written as *u(y,e)=s(y)-c(e)*.

a) What can Pierre do to make his son make the desired effort. Assume that the effort can be controlled and verified. What is the optimal effort and which 'payments' can Pierre consider and why they lead to the optimum.

b) What if Pierre cannot control or verify the effort that his son is undertaking. What can Pierre then do?

c) Now we in addition have uncertainty about the amount of tomatoes that can be produced from the invested effort. How does that influence the proposal you gave in b)? What can Pierre now do?

Question 4

Assume that the producer of electric vehicles *iThink* is the only purchaser of batteries for electric vehicles. Explain why there may be a good reason for the Energy authorities to intervene in the market for batteries for electric vehicles and explain what this intervention should do.

Question 5

a) What are the reasons for regulating in economies with externalities and describe what the potential regulating instruments could be.

b) In some cases it is not possible to implement certain regulations. Is it thus always a good idea to implement the instruments you have described in a) in markets with externalities?