Written Exam for the B.Sc. in Economics summer 2013

Microeconomics A

Final Exam

6. June 2013

(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 4 pages in total including this page.

Exercise 1

State for each of the claims below whether they are false or true. Explain.

1) A consumer will always choose to consume such that the absolute value of her marginal rate of substitution between two goods equals the price ratio of the two goods, independently of her preferences/utility function.
2) The firm's supply curve will always be identical to the marginal cost curve.
3) In the long run, the price of the output from a competitive industry will have a tendency towards the minimal average costs.

Exercise 2

Consider a consumer, Hanne, with a sweet tooth for chocolate (good 1) and then spends the rest of her income on other goods (good 2). Hanne has preferences for chocolate and other goods represented by a utility function given by

$$u(x_1, x_2) = 100\ln(x_1) + x_2$$

for every positive amounts of each good. Hanne earns each 300 euros each month from her disability pension scheme.

The government plans to impose a 50 per cent tax on chocolate, which will increase the price of chocolate from 2 euros to 3 euros. Let the price of other goods be 1.

1) What quantity of chocolate is Hanne's choice before the planned tax on chocolate?
2) What quantity of chocolate is Hanne's choice after the tax has increased the chocolate price?
3) What amount of euros could the government tax Hanne as a lump-sum leaving her as well off as imposing the tax on chocolate?
4) What is the deadweight loss from the chocolate tax?

Exercise 3

Consider an economy in which butter (good 1) and bread (good 2) are the only goods available. The quantity amount of butter available in the economy is 10 pounds and bread is available in the quantity of 20 loafs. There are two consumers, Adam and Eve, who both enjoy bread and butter, but who have different preferences. Adam has preferences represented by a utility function $u_A(x_1, x_2) = x_1 + x_2$ and Eve has preference represented by $u_E(x_1, x_2) = \ln x_1 + x_2$.

Assume that there is private ownership in the economy, and that Eve owns 4 pounds of butter and 10 loafs of bread. Adam owns the rest of the total endowment.

1) Identify the Pareto efficient allocation of bread and butter in which Eve obtains the same utility level as she would obtain consuming her initial endowment.
2) Identify the Pareto efficient allocation of bread and butter in which Adam obtains the same utility level as he would obtain consuming his initial endowment.
3) Find the allocations from which Adam and Eve cannot find mutually agreeable improvements given their individual endowments.
4) Can any of the allocations in the core be obtained by a market equilibrium through a suitable lump-sum redistribution of endowments?

Exercise 4

Consider the market for cigarettes. The inverse market demand is given by $P_D(x) = min\{0, a - bx\}$ where a,b>0 and x is the quantity of cigarettes, while the inverse market supply is given by $P_S(x) = c + dx$ where c,d>0.

1) Assume that *a-c>0*. Interprete this assumption.
2) Derive the equilibrium price of cigarettes and the quantity sold

The biannual wage bargains of cigarette workers have just concluded and resulted in an increase in the annual wage rate. Assume that no worker at the cigarette factory smokes.

3) How does the wage increase alter the market for cigarettes? What is the effect on the equilibrium price and quantity?

Exercise 5

A producer of jelly beans, JB inc., uses labour (*l*) and capital (*k*) to produce, having the production function

$$f(l,k) = l^{\alpha} k^{\beta}$$

where $\alpha, \beta > 0$ and $\alpha + \beta \leq 1$. The firm can rent capital at the rate r and labour at the rate w. JB inc. is contractually bounded to the leasing arrangement of capital in a period of 6 months.

The government suddenly increases the corporate tax rate. This increases the cost of capital and thus raises the rental rate of capital from r to r^*.

1) What is the effect on the short run costs of JB inc.?
2) What is the long run effect on the cost function of JB inc.?
3) Explain the effects on employment in JB inc. in the short resp. the long run?
4) How would a tax on profits affect the costs of the firm, as an alternative to the corporate tax?