Examination: ECONOMICS IV (5026) Summerterm 2005

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The following aids can be used: calculator

Examination questions: 5

Question 1:

Suppose that vegetarians in Magdeburg only have two restaurants to choose from – "Veggie Hut" (restaurant A) and "Evergreen" (restaurant B). Suppose further that these two restaurants serve the same delicious food, so that their meals can be thought of a homogeneous good. The restaurants are aware that they share the market for vegetarian meals in Magdeburg, and that together they are subject to the following daily town demand curve for vegetarian meals: $P(Q) = 340 - 10Q$, where P is the price of a meal, and $Q = q_A + q_B$ is the total quantity demanded of meals. Assume that "Veggie Hut" and "Evergreen" both have a marginal cost of \$40 per meal.

a) Write an expression for each restaurant's *best response function.*

b) Graph each of the best response functions on a graph with q_B on the vertical axis and q_A on the horizontal axis.

c) Solve for the Cournot-Nash equilibrium output combination and mark this output combination on your graph. Determine what each restaurant's profit will be at the Cournot-Nash equilibrium.

d) Suppose now the market is a Stackelberg market, with "Veggie Hut" as the leader. Solve for the Stackelberg equilibrium output combination and mark this output combination on your graph. Determine what each restaurant's profit will be at the Stackelberg equilibrium.

e) Discuss your results.

Question 2:

a) Explain the term "moral hazard". Name one real-life example and explain it shortly.

b) Are there any reasons for making insurances compulsory? Give a detailed explanation for your answer.

Question 3:

A chemical plant produces upstream of a fishery's catch. Assume that the chemical plant faces a prevailing market price of $P = €30$. Its production function is given by $X_c = 6 \cdot l_c$, where l_c is the labor input of the chemical plant. Its cost function is given by $C = l_c^2$. Suppose that each unit of chemical output produces 2/3 units of waste water, that is, $S = 2/3 \cdot X_c$. The fishery's catch has to protect the fishes from the waste water of the chemical plant and this increases its costs. The cost function of the fishery's catch is given by $C = 1/2 \cdot l_c^2 + S$, where l_c is the labor input of the fishery's catch. Its production function is given by $X_F = 4l_F$. A kilo of fish sells for \$20. Both firms face a competitive market.

a) If each firm individually maximizes its own profit, what will be the input, the output, and the profit of each firm?

b) What will be the efficient input and output levels? Discuss your results.

c) Name and discuss three mechanisms that can be implemented in order to obtain the efficient solution.

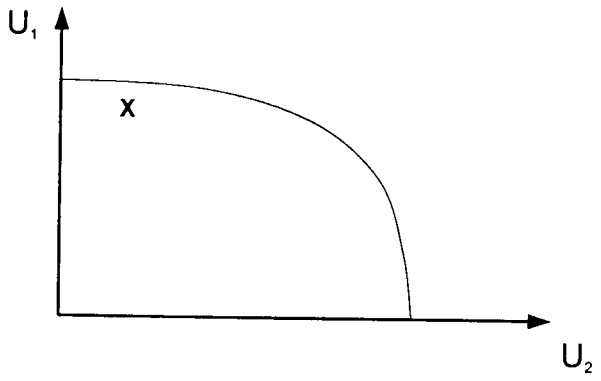
Question 4:

The following graph displays a utility possibility curve of two individuals $i = 1,2$. Each point in the U_1–U_2 space depicts one allocation of utility between both individuals, only allocations below and on the utility possibility curve are achievable. Let the X denote the present situation.

a) Mark the set of achievable Pareto-improvements as compared to X.

b) Choose one Pareto-optimal allocation, denote it with "*". Give one example of an allocation which creates more welfare assuming an utilitarian welfare function, label it with a "+". Please ensure that the superiority of "+" is clearly visible.

c) Explain the Kaldor-Hicks criterion and compare it to the Pareto criterion. Give at least one reason why the Kaldor-Hicks criterion is no way out to the social problem of choosing between different social states.



Question 5:

A household derives utility from leisure (R) and a bundle of consumption goods (C) with price p=1. The household is able to freely choose between Leisure and Labor. The household's income (in EURO) equals the labor income, given a wage w.

a) Show graphically the effect of a proportional wage tax on the labor supply of the household assuming that preferences are homothetic (C and R are – if households are free to choose – always proportional to each other)

b) Assume now that the household has a utility function of $U(C,R) = 2*C*R$. The wage rate is 0.25 EURO per hour, NO labor tax applies. Total available time is 24 hours. Compute the optimal labor supply of the household.

c) Now, social politicians decide that poor households receive a social allowance, that guaranties a total income (labor income + social allowance) of 5 EURO.

   i. Give a functional expression for the budget constraint of the household.

   ii. Draw a diagram with the budget constraint in the (C,R) space.

   iii. How does the optimal labor supply of the household alters?