Written Exam for the B.Sc. or M.Sc. in Economics autumn 2012-2013

Mikroøkonomi A

Final Exam

23 January 2013

(3-hour closed book exam)

Problem 1

A consumer, consuming two goods, both in strictly positive, and continuous quantities, has preferences which can be represented by the utility function $u(x_1,x_2) = x_1^a \cdot x_2^{(1-a)}$, where $0 < a < 1$.

- Show that the consumer's elasticity of substitution is 1

Problem 2

- 2a) Define and describe the Hicksian compensated demand function for a consumer who has the strictly quasi-concave and monotonically increasing utility function u.
- 2b) For which purposes can the Hicksian demand function be used by economists?

Problem 3

Consider a Koopmans economy with one consumer whose 24 hours can be used as labor in the manufacturing unit producing a consumption good (good 2) or enjoyed as leisure (good 1). The manufacturing unit has the production function $x = l$, with l being the number of labor hours (input), and x being the output quantity of the consumption good. The consumer's consumption plan consists of leisure, f, and the consumption good.

- 3a) Find the efficient (Pareto Optimal) allocation(s) if the consumer has the utility function $u(f,x) = f \cdot x$, where f and x indicate the quantities of leisure and consumption good
- 3b) Find the efficient (Pareto Optimal) allocation(s) if the consumer has the utility function $u(f,x) = f$
- 3c) Find the efficient (Pareto Optimal) allocation(s) if the consumer has the utility function $u(f,x) = x$
- 3d) Find the efficient (Pareto Optimal) allocation(s) if the consumer has the utility function $u(f,x) = f + x$

Comment on the results found.

Problem 4:

Consider a consumer who has the utility function $u(x_1,x_2) = x_1^{½} + x_2$, has the exogenously given money income I and meets the market prices (p_1,p_2).

- 4a) Present the Lagrange problem corresponding to utility maximization, and solve the problem, hence finding the Marshall demand function (barring corner solutions and focusing solely on interior solutions).

- 4b) Present the Lagrange problem corresponding to expenditure minimization, and solve the problem, hence finding the Hicksian compensated demand function (barring corner solutions and focusing solely on interior solutions).

Problem 5:

Explain and comment on the Second Welfare Theorem.

Problem 6:

Consider an Edgeworth economy with two consumers, Arnie and Bernie, having the utility functions, $u_A(x_{1A},x_{2A}) = x_{1A}^{a}\cdot x_{2A}^{(1-a)}$ and $u_B(x_{1B},x_{2B}) = x_{1B}^{b}\cdot x_{2B}^{(1-b)}$, with $0 < a,b < 1$.
The economy is characterized by private ownership, Arnie owning the initial endowment (e_{1A},e_{2A}) and Bernie owning (e_{1B},e_{2B}).

- 6a) Identify the Walrasian equilibrium, using good 2 as numeraire, find the equilibrium value for the price of good 1.

- 6b) Will the Walrasian equilibrium allocation be efficient (Pareto Optimal)?

- 6c) What happens with the equilibrium price, if e_{1A} increases? Is this intuitive?

Ref.: mtn 25. november 2012