

Examination: 5024 Economics I (Intermediate Economics)

Summer Term 2007

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Examiner: T. Riechmann

Name, First Name: _____

Immat. No.: _____

Instructions:

- The exam consists of two blocks. Block I contains 15 multiple choice questions yielding 3 points each. Block II contains 5 free-form questions yielding a maximum of 11 points each.
- You have 120 minutes to answer all questions.
- Use only the answer sheet to answer the questions.
- Use of non-programmable calculators is allowed.
- Please put your name on *all* sheets.
- Please hand in *all* exam materials.

Block I: Multiple Choice

Please answer all questions of Block I.

For each question, one and only one answer is correct. Mark the box for the answer you think correct on the answer sheet. Marking the correct answer yields 3 points. Marking the wrong answer, no answer, or more than one answer yields no points.

1. The (inverse) supply curve is ...
 - a) ... the entire MC curve.
 - b) ... the part of the upward sloping branch of the MC curve that is above the AVC curve.
 - c) ... the part of the upward sloping branch of the MC curve that is above the AC curve.
 - d) ... the part of the upward sloping branch of the AC curve that is above the MC curve.

2. In the long run, the profit of a competitive firm ...
 - a) ... attains its maximum possible value.
 - b) ... equals zero.
 - c) ... equals marginal costs.
 - d) ... can be enhanced by increasing the price.

3. The ordinality of the modern concept of utility means that ...
 - a) ... generally, there is no way of telling whether a consumption bundle Y causes higher utility than consumption bundle X .
 - b) ... generally, there is no way of telling whether a consumption bundle Y causes twice as much utility than consumption bundle X .
 - c) ... there is a way of telling whether consumption bundle X causes higher utility to person A than to person B .
 - d) ... there is a way of telling whether consumption bundle X causes twice as much utility to person A than to person B .

4. Imagine a firm with a cost function $c(y) = \frac{2}{3}y^3 - 12y^2 + 36y$ with y giving the firm's output quantity.
At a market price of $p = 36$, what is the output quantity that maximizes the firm's profits?
 - a) $y^* = 12$

- b) $y^* = 0$
 c) Either $y^* = 0$ or $y^* = 12$, as they result in the same profit.
 d) $y^* = 11$
5. For the firm from question 4., determine the supply function $y^* = y(p)$
 a) $y^* = 5p^2 - 30p + 66$
 b) $y^* = 6 \pm \sqrt{36 - 18 + \frac{p}{2}}$
 c) $y^* = 6 + \sqrt{\frac{p}{2} + 18}$
 d) $y^* = p^2 - 12 + 37 - p/2$
6. A firm has the cost function $C(y) = 2y^3 - 12y^2 + 82y$ According to the shutdown condition, in which of the following cases should the firm close down?
 a) $p < 64$
 b) $p > 12$
 c) $p < 11$
 d) $p > 0$
7. A consumer has the utility function $u(x_1, x_2) = \sqrt{x_1 x_2}$.
 What are the demand functions for x_1 and x_2 ?
 a) $x_1 = \frac{m}{p_1}, x_2 = \frac{m}{p_2}$
 b) $x_1 = \frac{m}{2p_1}, x_2 = \frac{m}{2p_2}$
 c) $x_1 = \frac{2m}{p_1}, x_2 = \frac{2m}{p_2}$
 d) $x_1 = \frac{p_1}{m}, x_2 = \frac{2p_2}{m}$
8. For the consumer from problem 7., let the price for the second good rise from $p_2 = 1$ to $p'_2 = 2$, while $p_1 = 1$.
 What is the respective compensating variation?
 a) $\Delta m = 41.421$
 b) $\Delta m = 414.421$
 c) $\Delta m = 14.421$
 d) $\Delta m = 41.241$
9. Consider a firm with globally increasing returns to scale. If this firms splits up into two equally sized firms, total profits will ...
 a) ... decrease
 b) ... increase

- c) ... not change
d) ... It is impossible to answer this question without further information.
10. For the utility function $u = x_1 x_2 + x_1 + x_2$ with u giving utility, x_1 and x_2 quantities of the goods, find the (own-price-) demand function for good 1. Use m to denote the budget.
- a) $x_1 = 2 \frac{p_2}{p_1}$
b) $x_1 = 2 \frac{p_2}{p_1} m$
c) $x_1 = \frac{m - p_1 + p_2}{2 p_1}$
d) $x_1 = 2 \frac{m - p_1 + p_2}{2 p_1}$
11. Assuming that the correct answer to question 10. is $x_1 = 2 \frac{m - p_1 + p_2}{2 p_1}$, the two goods are ...
- a) ... complements
b) ... neutral goods
c) ... substitutes
d) More information is needed in order to answer this question.
12. In a market with eight identical competitive firms which all have the cost function $c(y) = y^2 + 4$, aggregate demand is given by $D(p) = 90 - p$. In the competitive equilibrium the price equals
- a) 72
b) 18
c) 6
d) 60
13. Suppose the production function is $f(x_1, x_2) = x_1^{-\frac{2}{7}} x_2^{\frac{5}{7}}$. The returns to scale of this production function are ...
- a) ... increasing.
b) ... constant.
c) ... decreasing.
d) The function is non-homogeneous.
14. For the production function $f(x_1, x_2) = x_1^2 + x_1 x_2$, the technical rate of substitution at the point $(x_1, x_2) = (3, 4)$ equals
- a) $\frac{dx_2}{dx_1} = -\frac{11}{3}$

- b) $\frac{dx_2}{dx_1} = -\frac{3}{11}$
- c) $\frac{dx_2}{dx_1} = -\frac{3}{10}$
- d) $\frac{dx_2}{dx_1} = -\frac{10}{3}$

15. In a Stackelberg model of duopoly, the equilibrium is such that ...

- a) ... the first player has higher profits.
- b) ... the second player has higher profits.
- c) ... both players have equally high payoffs.
- d) ... payoffs do not matter.

Block II: Free Form

Please answer all questions of Block II.

1. The utility function $u(x_1, x_2) = x_1 - \ln x_2$ is *not* a valid utility function, because it violates a basic assumption on preferences.
Use the respective space on the answer sheet to briefly answer the following questions:
 - a) Which of the assumptions is violated?
 - b) Show (mathematically) that it is violated.
2. Use the picture on the answer sheet (y gives the quantity, MC marginal costs) and
 - a) add equilibrium quantity and price for a perfectly competitive situation (y^c and p^c),
 - b) add equilibrium quantity and price for a monopolist (y^m and p^m),
 - c) mark the deadweight loss.
3. Use the picture on the answer sheet (y gives the quantity, p the price) in order to demonstrate the economic effects of introducing a quantity tax of rate t :
 - a) Add the new supply function to the picture.
 - b) Denote the original equilibrium price p and equilibrium quantity y .
 - c) Add the new price(s) and quantity to the picture.
 - d) Mark the excess burden.
 - e) Describe briefly (in words) what happens to the price(s) in reaction to the introduction of the tax. Use the space on the answer sheet.

4. The demand function is given by

$$x = Ap^{-\gamma}$$

with x giving the demand, p the price and a and γ as positive parameters.

- a) Derive the price elasticity of demand, ϵ . What is the economic meaning of the price elasticity of demand? What is elastic, what is inelastic demand?
 - b) Denote revenues as a function of demand x and price p . How do revenues change as a reaction to an increase of the price, if demand is inelastic?
 - c) Is the good in focus a Giffen good? Explain your answer both verbally and analytically.
5. What is the the difference between Slutsky's and Hicks' definition of the income effect? Use the space on the answer sheet.