

## MICROECONOMICS – Test 27\_06\_2017

Fist name

second name

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Time: 70 minutes - For type A questions (open questions) use the space in the box below - For each type B question (multiple choice) there is a single correct answer. - Answers that are not motivated by calculation, graphics or other will not be taken into account - Only use this sheet for calculations and graphs using any white space if necessary -

**1a. Provide the definitions of ‘Giffen good’, and ‘inferior good’. Explain why, if consumer’s money income is given, a Giffen good is necessarily an inferior good, but an inferior good may not be a Giffen good.**

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**1b.** A consumer buys only two goods,  $x$  and  $y$ . Initially, at income  $m$  and prices  $[1, 1]$ , the consumer chooses the basket  $(3, 3)$ . At income  $m'$  and prices  $[2, 1]$ , the consumer chooses the basket  $(4, 2)$ . You can state that:

- a) consumer’s choices violate the weak axiom of revealed preference (WARP)
- b) consumer’s choices do not violate the weak axiom of revealed preference
- c) without knowledge of consumer’s preferences, it is impossible establishing whether consumer’s choices do, or do not, violate WARP
- d) none of the other statements is correct

**2.a** An economy consists of two consumers A, B, allocating their income to private consumption  $c$  (with price  $p_c = 1$ ), and/or to a discrete public good  $G$ , supplied by a competitive industry at price  $p_G$ . A’s and B’s reservation price for  $G$  are  $r_A = 8$ ,  $r_B = 12$ . Indicate the maximum price  $p_G^*$ , such that the provision of  $G = 1$  is Pareto efficient at  $p_G \leq p_G^*$ , and discuss your answer.

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**2b.** A consumer has utility function  $u(x, y) = 2x^{1/2} + y$ . Her income is  $m = 240$ . The prices of goods are respectively  $[1, 1]$ . If the price of good  $x$  decreases at  $p_x = 1/4$  (with the price of  $y$  fixed at  $p_y = 1$ ), what can you say about the substitution effect for good  $x$ ?

- a)  $\Delta x^s = + 8$
- b)  $\Delta x^s = + 15$
- c)  $\Delta x^s = + 12$
- d)  $\Delta x^s = - 12$
- e)  $\Delta x^s = + 16$
- f) none of the other answers is correct

**3a.** Discuss how a Pareto inefficient production of pollution by one firm, causing a profit loss to a second firm, may be avoided through ‘internalization of externalities’.

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**3b.** A perfectly competitive economy consists of two agents A and B, with utility functions in terms of two goods  $x$  and  $y$ :  $u_A(x, y) = x_A + 2y_A$ ;  $u_B(x, y) = x_B^{1/2} y_B^{1/2}$ . The initial endowments of goods  $x$  and  $y$  are  $(80, 40)$  for A and  $(40, 80)$  for B. Determine which the following allocations is Pareto efficient, and explain why.

- a)  $x_A = 40, y_A = 40 \quad x_B = 80, y_B = 80$
- b)  $x_A = 60, y_A = 60 \quad x_B = 60, y_B = 60$
- c)  $x_A = 40, y_A = 80 \quad x_B = 80, y_B = 40$
- d)  $x_A = 80, y_A = 40 \quad x_B = 40, y_B = 80$
- e) none of the other answers is correct.

**4a. A consumer is prepared to sell a lottery ticket  $L$  yielding prize  $L_1 = 0$  euro with probability 0.9, and prize  $L_2 = 100$  euro with probability 0.1 at a minimum price  $p = 5$  euro. Discuss whether she is risk lover, risk neutral or risk averse, and explain why.**

**4b. Anna's wealth is  $W_1 = 0$ , if state 1 occurs,  $W_2 = 120000$  if state 2 occurs. The two states occur with probability  $(1/4, 3/4)$ . Her utility function for wealth is  $U(W) = \log W$ . Paying an insurance premium  $\gamma = 1/2$  for each unit of insured wealth, Anna can buy insurance  $K$ ,  $0 \leq K \leq 120000$  from an insurance company. Indicate Anna's optimal choice of insurance  $K$ , providing an accurate motivation of the answer.**

- a)  $K = 60000$
- b)  $K = 120000$
- c)  $K = 90000$
- d)  $K = 40000$
- e) none of the other answers is correct

**5a. Explain the notion of adverse selection, and provide examples in the insurance market, or in the labor market.**

**5b.** In a Cournot duopoly, market demand is  $y = 50 - p$ , where  $p$  is price. Firms 1 and 2 have identical cost function  $c_i(y_i) = 2 y_i$ ,  $i = 1, 2$ . Determine the market price in a Cournot equilibrium.

- a)  $p = 12$
- b)  $p = 32$
- c)  $p = 8$
- d)  $p = 18$
- e) none of the other answers is correct

**6a.** Define and provide an accurate graphical description of the notion of ‘monopolist’s net surplus’.

**6b.** A perfectly competitive industry has market demand  $y = 366 - \frac{1}{2} p$ , and every firm  $i$  in this industry has cost function  $C(0) = 0$ ,  $C(y_i) = y_i^2 - 36$ . Determine the long-run number  $n^*$  of firms in this industry.

- a.  $n^* = 20$
- b.  $n^* = 40$
- c.  $n^* = 60$
- d.  $n^* = 80$
- e.  $n^* = 36$
- f. none of the other answers is correct

replies to type b questions:

- 1.  $b = a$
- 2.  $b = e$
- 3.  $b = c$
- 4.  $b = a$
- 5.  $b = d$
- 6.  $b = 60$