



YLIOPISTOTENTTILOMAKEPOHJA / UNIVERSITY EXAM TEMPLATE

Koskee tiedekuntia LuTK, OyKKK, KaTK, TTK, TST ja BMTK (Linnanmaan tentit) /
Concerns Faculties SCI, OBS, OMS, TECH, ITEE and BMM (Linnanmaa campus)

Tentin päivämäärä / Date of exam: 23.11.2015	Tentin kesto tunteina / Exam in hours: 4
Tiedekunta / Faculty: OBS	
Opintojakson koodi, nimi ja tentin numero / The code and the name of the course and number of the exam: 721333S, Industrial Organization (2)	
Tentaattori(t) / Examiner(s): Maria Kopsakangas-Savolainen	Sisäinen postios. / Internal address OBS
Sallitut apuvälineet / The devices allowed in the exam:	
<input checked="" type="checkbox"/> Nelilaskin / Standard calculator	<input checked="" type="checkbox"/> Funktiolaskin / Scientific calculator
<input type="checkbox"/> Ohjelmoitava laskin / Programmable calculator	
<input checked="" type="checkbox"/> Muu materiaali, tarkennettu alla / Other material, specified below: Sanakirja	
Tenttiin vastaaminen / Please answer the questions:	
<input checked="" type="checkbox"/> Suomeksi / in Finnish	<input checked="" type="checkbox"/> Englanniksi / in English
Kysymyspaperi on palautettava / Paper with exam questions must be returned:	
<input checked="" type="checkbox"/> Kyllä / Yes	<input type="checkbox"/> Ei / No

Answer all questions. Each question gives you max 6 points



1. Consider the following game depicted the process of standard setting in highdefinition television (HDTV). The United States and Japan must simultaneously decide whether to invest a high or a low value into HDTV research. Each country's payoffs are summarized in figure below.

		<i>Japan</i>	
		Low	High
<i>U.S.</i>	Low	4, 3	2, 4
	High	3, 2	1, 1

- a) Are there any dominant strategies in this game? What is the Nash equilibrium of the game? What is the rationality assumption implicit in this equilibrium?
 - b) Suppose now that the United States has the option of committing to a strategy before Japan's decision is reached. How would you model this new situation? What are the Nash equilibria of this new game?
 - c) Comparing the answers to a) and b), what can you say about the value of commitment for the United States?
2. Two firms produce a homogenous product. Let p denote the product's price. The output level of firm 1 is denoted by q_1 , and the output level of firm 2 by q_2 . The aggregate industry output is denoted by Q , $Q = q_1 + q_2$. The aggregate industry demand curve for this product is given by $p = \alpha - Q$. Assume that the unit cost of firm 1 is c_1 and the unit cost of firm 2 is c_2 , where $\alpha > c_2 > c_1 > 0$. Perform the following:
- a. Solve for a competitive equilibrium.
 - b. Solve for Cournot equilibrium.
 - c. Solve for the sequential-moves equilibrium, assuming that firm 1 sets its output level before firm 2 does.
 - d. Solve for Bertrand equilibrium.
- (Note: Make sure that you solve for the output level of each firm and the market price.)
3. In a market with annual demand $Q = 100 - p$, there are two firms, A and B, that make identical products. Because their products are identical, if one firm charges a lower price than the other, all consumers will want to buy from the lower-priced firm. If they charge the same price, consumers are indifferent and end up spitting their purchases about evenly between the firms. Marginal cost is constant and there are no capacity constraints. (Assume marginal costs to be 10).
- a. What are the single-period Nash equilibrium prices, p_A and p_B ?
 - b. What prices would maximize the two firms' joint profits?

Assume now, that one firm cannot observe the other's price until after it has set its own price for the year. Assume further that both firms know that if one undercuts the other, they will revert forever to the noncooperative behavior you described in a).

- c. If the interest rate is 10%, is one repeated-game Nash equilibrium for both firms to charge the price you found in part b)? What if the interest rate is 110%? What is the highest interest rate at which the joint profit-maximizing price is sustainable?

4. Explain what we mean by two-part tariffs in general and by using some example. Discuss also what kind of welfare implications two-part tariffs may cause.

5. Consider a situation where an authority wants to regulate a firm but it does not know the true costs of the firm. Explain what kind of economic mechanism would give the firms sufficient incentive to report its true costs.

