YLIOPISTOTENTTI - UNIVERSITY EXAM

Opiskelijan nimi / Student name:	Opiskelijanumero / Student number:

Opettaja täyttää / Lecturer fills in:

Opintojakson koodi and nimi / The code and the name of the course:	
Koodi / Code 721333S **Tentin nimi / Exam name Industrial Organization**	
Tiedekunta / Faculty: Business School (OBS)	
Tentin pvm / Date of exam: 3.12.2018	**Tentin kesto tunteina / Exam in hours: 3 h**
Tentaattori(t) / Examiner(s): **Maria Kopsakangas-Savolainen**	**Opintopistemäärä / Credit units: 6** **Sisäinen postios. / Internal address:**

Sallitut apuvälineet / The devices allowed in the exam:

☒ Funktiolaskin /　　　　　　☐ Ohjelmoitava laskin /
Scientific calculator　　　　　Programmable calculator

☐ Muu materiaali, tarkennettu alla / Other material, specified below:

Tenttiin vastaaminen / Please answer the questions:
☒ Suomeksi / in Finnish　　　☒ Englanniksi / in English

Suomenkielisessä tutkinto-ohjelmassa olevalla opiskelijalla on oikeus käyttää arvioitavassa opintosuorituksessa suomen kieltä, vaikka opintojakson opetuskieli olisi englanti. Tämä ei koske vieraan kielen opintoja. (Kts. Koulutuksen johtosääntö 18 §)

In a Finnish degree programme a student has a right to use Finnish language for their study attainment, even though the language of instruction is English, (excluding language studies) even when the language of instruction is other than Finnish. (See the Education Regulations 18 §)

Kysymyspaperi on palautettava / Paper with exam questions must be returned:
☒ Kyllä / Yes　　　　　　　☐ Ei / No

Answer all questions. Each question gives you max 6 points.

721333S, Industrial Organization
Maria Kopsakangas-Savolainen
(Each question gives you max 6 points)

1. Figure below represents a series of two-player games that illustrate the rivalry between *Time* magazine and *Newsweek*. Each magazine's strategy consist of choosing a cover story: "Impeachment" and "Financial Crisis" are the two choices.

Game 1

Newsweek

		Impeachment	Financial Crisis
Time	Impeachment	35, 35	70, 30
	Financial Crisis	30, 70	15, 15

Game 2

Newsweek

		Impeachment	Financial Crisis
Time	Impeachment	42, 28	70, 30
	Financial Crisis	30, 70	18, 12

Game 3

Newsweek

		Impeachment	Financial Crisis
Time	Impeachment	42, 28	70, 50
	Financial Crisis	50, 70	30, 20

For each three version of the game

a. Determine whether the game can be solved by dominant strategies.
b. Determine all Nash equilibria.
c. Indicate clearly which assumptions regarding rationality are require in order to reach the solutions in a) and b)
d. Can you tell something about the market conditions which the games illustrate (hint: use the information provided by payoffs.)

2. Suppose there are two types of demand for Kärpät hockey tickets. Real fans have demand equal to $p_f(q_f) = 100 - q_f$, while students have demand $p_s(q_s) = 20 - 0.1q_s$. Suppose the marginal cost of ticket is zero.

a. How many tickets of each type should Kärpät sell and what is the total profit?

b. Now, suppose that the ice hockey arena's capacity is exactly 151 seats (don't ask why, this is just for the sake of argument), and that all seats must be sold. Should the remaining seat be sold to fans or students?

3. Consider a market for computer systems. A computer system is defined as a combination of two complementary products called computers (denoted by X), and monitors (denoted by Y). We denote p_X the price of one computer and by p_Y the price of a monitor. Therefore, since a system consists of one computer and one monitor, the price of a system is given by $p_S = p_X + p_Y$. Let Q denote the quantity of systems purchased by all consumers, and assume that the aggregate consumer demand is given by

$$Q = \alpha - p_S. \quad \text{where } Q = x = y.$$

We denote by x the amount of computers sold to consumers and by y the amount of monitors sold.

Answer the following questions assuming that production is costless.

   a. Suppose that the X producer and the Y producer are independent. Solve for the Nash-Bertrand equilibrium in prices. Calculate the equilibrium prices and quantity produced of each product and firms' profit levels.

   b. Now suppose that firms X and Y merge under a single ownership. Calculate the monopoly equilibrium prices, the quantity produced of each product, and the monopoly's profit.

   c. Is this merger welfare improving? Compare system price and profits of the firms before and after the merger.

4. Give short answer to the following questions

a. What we mean by drastic innovation and by non-drastic innovation?

b. Explain when does the Stackelberg competition give first mover advantage and when second mover advantage.

c. Explain what we mean by subgame perfect equilibrium?

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.