YLIOPISTOTENTTI - UNIVERSITY EXAM

Opiskelijan nimi / Student name:	Opiskelijanumero / Student number:

Opintojakson koodi and nimi / The code and the name of the course:

721345S

Intermediate Microeconomics

Tiedekunta / Faculty: Oulun yliopiston kauppakorkeakoulu / Oulu Business School

Tentin pvm / Date of exam: 19.10.2016	Tentin kesto tunteina / Exam in hours: 3
Tentin nro / No. of the exam: 1st exam	Opintopistemäärä / Credit units: 6
Tentaattori(t) / Examiner(s): Juha Teirilä	Sisäinen postios. / Internal address: 6 OyKKK

Sallitut apuvälineet / The devices allowed in the exam:

☒ Nelilaskin / Standard calculator ☒ Funktiolaskin / Scientific calculator ☐ Ohjelmoitava laskin / 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

Please answer all 5 questions (6 points each).

Question 1.

Consumer has the following utility function $U(x_1, x_2) = x_1 + x_2$, where x_1 and x_2 are the amounts of consumed goods 1 and 2.

The price of good 1 is $p_1 = 4$ and the price of good 2 is $p_2 = 2$. Consumer has a disposable income of $m = 8$.

a) What kind of preferences does the utility function represent?
   Draw indifference curves for utility levels $U' = 2$, $U'' = 4$ and $U''' = 6$.

b) Draw also the budget line in the figure.
   Mark the utility-maximizing point (x_1^*, x_2^*) in your figure.
   What is the highest level of utility the consumer can achieve?

c) Does the utility function $V(x_1, x_2) = x_1^2 + 2x_1x_2 + x_2^2$ represent the same preferences as $U(x_1, x_2)$? Explain.

Question 2.

Ms. Fogg is planning an around-the-world trip on which she plans to spend 10000 €. The utility from the trip is a function of how much she actually spends on it (Y), given by

$$U(Y) = \ln Y.$$

a) If there is a 25 percent probability that Ms. Fogg will lose 1000 € of her cash on the trip, what is the trip's expected utility?

b) Suppose that Ms. Fogg can buy full insurance against losing the 1000 € (say, by purchasing traveler's checks) at an actuarially fair premium of 250 €. What is her expected utility if she purchases this insurance?

c) Does Ms. Fogg buy the insurance or face the chance of losing the 1000 € without insurance? Is she risk loving, risk averse, or risk neutral? Why?

d) What is the maximum amount that Ms. Fogg would be willing to pay to insure her 1000 €?

Question 3.

Suppose the demand curve *D(p)* and the supply curve *S(p)* for the market are given by the following equations:

D(p) = 300 - p
S(p) = 1/2p - 30

a) What is the equilibrium price and quantity in this market? Calculate consumer and producer surplus.

b) Suppose that government imposes a quantity tax *t = 15* on firms. Solve the new market equilibrium.

c) Calculate the effect of the tax on the consumer and producer surplus.

d) Calculate the social welfare deadweight loss due to the tax policy.

Question 4.

A competitive firm has a following short-run cost function: $c(y) = y^2 - 2y + 4$.

a) What is the marginal cost function *MC(y)*?

b) What is the average cost function *AC(y)*?

c) What is the average variable cost function *AVC(y)*?

d) What is the supply function *S(p)* w.r.t. the market price *p*?

e) What is the profit function *π(p)*?

f) What is the producer surplus *PS(p)*?

Question 5.

Aggregate market demand for milk is given by $q(p) = 50 - (p/2)$, where *q* is the amount of milk and *p* is the market price. The total cost function for any firm in the industry is $c(q) = 4q$.

a) Assume that there is only one milk producing firm in the market. Write down the monopoly's profit function $\pi(q)$.

3

What is the profit maximizing level of output q^m for the monopolist?
What would be the market price?

b) Assume there are two Cournot firms (i.e. quantity competition) operating in the market.
What would be the reaction functions $R_1(q_2)$ and $R_2(q_1)$?
What would be the Cournot-Nash equilibrium quantities q_1^* and q_2^*?
What would be the market price?

c) Assume there are two Bertrand firms (i.e. price competition) operating in the market.
What is the Nash equilibrium market price? Explain the adjustment process of price setting.
What would be the market demand?