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

OULUN YLIOPISTO
UNIVERSITY of OULU

# 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:**<br>**Koodi / Code 721320S**<br>**Tentin nimi / Name Economic Theory I** | |
|---|---|
| **Tiedekunta / Faculty: Oulun yliopiston kauppakorkeakoulu** | |
| **Tentin pvm / Date of exam: 14.3.2016** | **Tentin kesto tunteina / Exam in hours: 4** |
| **Tentin nro / No. of the exam: Tentti**<br>(esim. Tentti, 1. uusinta, 2. uusinta / e.g. Exam, 1. retake, 2. retake) | **Opintopistemäärä / Credit units: 6 cr** |
| **Tentaattori(t) / Examiner(s): Svento Rauli** | **Sisäinen postios. / Internal address:**<br>**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

**Kysymyspaperi on palautettava / Paper with exam questions must be returned:**

☐ Kyllä / Yes ☒ Ei / No

1. How do cost minimization and profit maximization of a firm combine into a dual optimization framework?
2. Consumer has a utility function

$$U(x_1, x_2) = x_1^{1/2} x_2^{1/2}, where\ x_1 > o, x_2 > 0$$

and her budget constrain is $M = p_1 x_1 + p_2 x_2$. Use this information to calculate

a) Marshallian demand functions x(p,M)

b) Indirect utility function v(p,M)

c) Hicksian demand function H(p,U)

d) Expenditure function m(p,U).

3. Consider the Battle of sexes game, which is a two-player coordination game. Imagine a couple that agreed to meet this evening, but cannot recall if they will be attending the ballet or a football match (and the fact that they forgot is common knowledge). The husband would like to go to the football game. The wife would like to go to the ballet. Both would prefer to go to the same place rather than different ones. If they cannot communicate, where should they go? The payoff matrix for this game is:

a. Find all pure Nash equilibria.

b. Are there dominated strategies in this game?

c. Find all mixed strategy equilibria. Illustrate both players' best responses with a figure.

4. How can risk preferences and decision making under uncertainty be described. How can absolute and relative risk aversion be defined and measured?

5. Two firms produce homogeneous outputs with cost functions $C_1 = 2q_1^2, C_2 = q_2^2$ and the inverse market demand function $p = 100 - (q_1 + q_2)$. Show the Cournot-Nash equilibrium and the joint-profit maximizing equilibrium. Explain your results graphically