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: 721310S

Tentin nimi / Exam name: Economic Theory II

Tiedekunta / Faculty: OBS (kauppakorkeakoulu)

Tentin pvm / Date of exam: 22.2.2018	Tentin kesto tunteina / Exam in hours: 3 h
Tentaattori(t) / Examiner(s): Mikko Puhakka	**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 the questions. You can answer in Finnish. The weight of each question is the same. Good Luck!

1. (6p) Consider the following ISLM model:

(a) $\dfrac{M}{P} = L(r, Y)$
$\quad\quad\quad\; {}_{-\;\;+}$

(b) $Y = E(Y, r, G, T,)$ and with the assumption $0 < E_Y < 1$.
$\quad\quad\;\; {}_{+\;-\;+\;-}$

Equation (a) is the LM curve, where r is the real rate of interest. Equation (b) is the IS curve, where on the left-hand side there is the aggregate output (income) and on the right-hand side total expenditures (consumption, investment, and government expenditures (G)). In the brackets below, the signs of the partial derivatives are shown (the signs of their effect on expenditures (E) and demand for money (L)). Lump-sum taxes are denoted by T. The endogenous variables of the model are aggregate output (Y) and the real rate of interest (r).

(i) What conditions do you need to make sure that the endogenous variables are functions of the exogenous variables?

(ii) What is the effect of a change in taxes (T) on the model's equilibrium with the assumption that public expenditures do not change?

2. (6p) Let the two period lived consumer's lifetime utility function be: $v(c_1, c_2) = \ln c_1 + \beta c_2$, where $1 > \beta > 0$. The lifetime budget constraint is: $c_1 + \dfrac{c_2}{R} \le y_1 + \dfrac{y_2}{R}$. y_1 (y_2) are positive endowments (or incomes) and R is the interest factor. Solve his saving function.

3. (6p) Explain the contents of the Phelps-Koopmans inefficiency theorem.

4. (6p) Consider the following problem: maximize $\sum\limits_{t=0}^{\infty} \beta^t \ln c_t$ subject to $c_t + k_{t+1} = Ak_t^{\alpha}$. $0 < \beta < 1$, $0 < \alpha < 1$ and $A > 0$. Solve the problem with dynamic programming as far as you can. In particular, answer the following questions:

(i) Write down the Bellman equation.
(ii) Characterize the steady state.
(iii) Sketch the dynamics as far as you can.
(Hint: there is the Euler condition somewhere!)

5. (6p) Let the objective function (to be maximized) for the policy authority to be

$$M(y, \pi) = -\dfrac{1}{2}\left[(y - k\bar{y})^2 + a\pi^2\right] \text{ ja } k > 1.$$

a is the weight given to inflation in the objective function. y ($\bar{y}$) is the aggregate output (potential output) and π the rate of inflation. The private sector's behavior is described by the following Phillips curve:

$y = \bar{y} + \gamma(\pi - \pi^e), \gamma > 0$. π^e is the expected inflation. Solve the time consistent equilibrium. Pay attention to the concepts, you use.

6. (6p) Consider the following macro model, where the variables are in logarithms:

(1) $m = p + y$

(2) $p = p^e + a(y - y^*)$, $a > 0$

(3) $m = \overline{m} + \omega$.

Equation (1) is the demand function for money, (2) is the Phillips curve and (3) the monetary policy rule. y^* is the potential output. ω is a shock to monetary policy. Its mean is zero and the variance is finite. $\overline{m}$ is some constant. p^e is the expected price level. Solve the rational expectations equilibrium of the model, i.e. solve the level of aggregate output (y) and price level (p) in that equilibrium. What is p^e, when the economic agents (taloudenpitäjät) have rational expectations?

Return the question sheet!!!