國立雲林科技大學
100學年度博士班招生考試試題

系所別: 財務金融系
科 目: 經濟學

本份試卷共5大題計算問答題，未提供計算過程或說明者不計分。

1. (20 points) Consider the following model with $\theta < 1$.

The quantity of output produced at time t is:

$$Y(t) = A(t) \cdot (1 - a_L) L(t)$$

where,

Y denotes output,

A denotes technology,

L denotes labor,

a_L is the fraction of the labor force used in the R&D sector, and $1 - a_L$ is the fraction of labor force used in the goods-producing sector. a_L and $1 - a_L$ are exogenous and constant.

The production function for new knowledge is:

$$\dot{A}(t) = B \cdot [a_L \cdot L(t)]^{\gamma} \cdot A(t)^{\theta}, \quad B > 0, \quad \gamma \geq 0$$

where B, γ, and θ are parameters.

In addition, population growth is exogenous. Thus,

$$\dot{L}(t) = n \cdot L(t), \quad n \geq 0$$

where n is a constant.

(a) On the balance growth path, $\dot{A} = g^*_A \cdot A(t)$, where g^*_A is the balanced growth-path value of g_A and g_A is the growth rate of A. Use this fact to derive an expression for $A(t)$ on the balanced growth path in terms of B, a_L, γ, θ, n, and $L(t)$.

(b) Use your answer to part (a) and the production function described above, to obtain an expression for $Y(t)$ on the balanced growth path. Find the value of a_L that maximizes output on the balanced growth path.

2. (20 points) Suppose that output at firm i is given by $Y_i = K_i^{\alpha} \cdot L_i^{1-\alpha} \cdot (K^{\phi} \cdot L^{-\phi})$. Here K_i and L_i are the amounts of capital and labor used by the firm; K and L are the aggregate amounts of capital and labor; and $\alpha > 0$, $\phi > 0$, and $0 < \alpha + \phi < 1$. Assume that factors are paid their private marginal products; thus $r = \partial Y_i / \partial K_i$. Assume that the dynamics of K and L are given by $\dot{K} = s \cdot Y$ and $\dot{L} = n \cdot L$, and that K_i / L_i is the same for all firms. s and n are constants.

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(a) What is r as a function of K/L?

(b) What is K/L on the balanced growth path? What is r on the balanced growth path? (i.e., derive a expression for K/L and a expression for r on the balanced growth path in terms of α, ϕ, s, and n.)

3. (10 points) Consider two economies (indexed by i=1,2) described by $Y_i(t) = K_i(t)^\theta$ and $\dot{K}_i(t) = s_i \cdot Y_i(t)$, where $\theta > 1$. Suppose that the two economies have the same initial value of K, but that $s_1 > s_2$. Prove analytically that Y_1/Y_2 is continually rising.

4. (20 points) 請用 30 字以內的字數解釋以下名詞，請勿畫圖或使用任何數學符號及公式。

(a) Price discrimination

(b) Pareto efficiency

(c) Public good

(d) Substitution effect

(e) Income elasticity of demand

5. (30 points) 政府預定於近期內開徵特種貨物及勞務稅(奢侈稅)，將針對持有不動產未滿一年(兩年)的出售人，就銷售價格課徵 15%(10%)的特種銷售稅。

(a) 目前奢侈稅定位為銷售稅，也就是不論賣方出售時有沒有賺錢都要繳稅。假設投資客老王以 2,000 萬元買進台北市大安區的一戶公寓，目前持有未滿一年，另一投資客老張願出 2,300 萬元購買，請問老王會不會賣?

(b) 呈上題，假設老王目前願意用 2,500 萬賣給老張，由目前市場狀況判斷一年內該公寓會漲到 2,800 萬，請問若預期奢侈稅即將開徵，老張會不會買?

(c) 請用圖形分析政府對賣方(出售人)課稅對於房地產市場的供需及價量的影響。(為簡化起見，你的圖形中可以假設奢侈稅為從量稅)

(d) 若政府改向不動產的買方課稅，請問你在(c)小題的答案會不會不同? 為什麼?

(e) 有人覺得應該是賣方出售時有賺錢才應課稅，也就是只針對資本利得課徵奢侈稅。請問你覺得哪一種方式比較能夠有效的抑制房價? 為什麼?