國立中央大學 107 學年度碩士班考試入學試題

所別: 經濟學系碩士班 不分組(一般生)

共之頁 第/頁

科目: 總體經濟學

本科考試禁用計算器

*請在答案卷(卡)內作答

請依題號寫下答案

- 一、是非不定繪圖題:每題 8 分,共 48 分。請先回答是或非,再繪圖並說明理由; **沒寫理由或沒繪圖均以零分計**。
 - 1. The recent tax reform of the US will cause Taiwan's short-run equilibrium output level in the AD-AS model to increase.
 - 2. Suppose that unemployment results from the minimum-wage law. Other things equal, the higher the labor-force participation rate, the higher the unemployment rate.
 - 3. In the IS-LM and AD-AS models, an increase in the expected inflation rate causes both the short-run equilibrium interest rate and equilibrium general price level to rise.
 - 4. Consider the market for loanable funds. Other things equal, the domestic investment increases when people value future consumption more.
 - 5. Suppose that the money supply remains fixed. Other things equal, the value of money increases with the interest rate.
 - 6. According to the PPP theory and AD-AS model, other things equal, the currency of country A appreciates against that of country B if the natural rate of unemployment of country A rises.



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二、問答題: 共52分。沒有推導過程或沒寫理由均以零分計。

7. The IS and LM curves for the economy have the following equations:

$$IS: Y = A - 50 r$$

LM: Y = 5 (M/P) + 50 r

where Y is real output, r is interest rate, A is autonomous spending, M is nominal monetary aggregate, and P is price level. Suppose that P=1.0, A=250, and M=20.

- (a) (4分) Find the equilibrium real output and the equilibrium interest rate.
- (b) (4 %) What are the equilibrium real output and equilibrium interest rate when the price level P changes to 2.0?
- (c) (4分) Plot the IS-LM diagram and the aggregate demand (AD) curve based on your answers in (a) and (b).
- (d) (4%) A Pigou Effect is introduced into this model by allowing the autonomous spending A to become price-dependent. We now have:

IS:
$$Y = A - 50 r$$

 $LM: Y = 5 (M/P) + 50 r$
 $A = 140 + 60/P$

P = 1, M = 20

Find the equilibrium real output and the equilibrium interest rate.

- (e) (4 %) Continue from (d). Find the equilibrium real output and equilibrium interest rate when the price level P changes to 2.0? Is the AD curve in this case flatter or steeper than the AD curve without the Pigou Effect? (Note: AD curve has prices on the vertical axis and real output on the horizontal axis)
- 8. Consider the following growth model, where Y is output, K is capital, I is investment, S is saving, L is the number of population (or labor), and E is the efficiency of labor. The capital depreciation rate δ and the saving rate x are constant.

$$K_{t+1} = (1-\delta) K_t + I_t$$

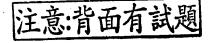
(capital accumulation)

$$I_t = S_t = x Y_t$$

(investment = saving)

$$Y_t = K_t^{1/2} (E_t \cdot L_t)^{1/2}$$

(production function)





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(a) (5 \Re) Based on the production function, write the output per-capita ($y \equiv Y/L$) as a function of capital per-capita ($k \equiv K/L$) and efficiency of labor (E).

- (b) (4 %) Suppose that the capital depreciation rate is $\delta = 0.05$, saving rate is x=0.1, and the population size is fixed (i.e. no population growth). Derive the steady-state capital per-capita (k) as a function of the efficiency level E. Derive the steady-state output per-capita (y) as a function of E.
- (c) (4 %) All conditions in (b) remain the same except that the population growth rate (n) is n=3%. Derive the steady-state capital per-capita (k) as a function of the efficiency level E.
- (d) (4 分) If the growth rate of the labor efficiency is 6% per year and the population growth rate is 3% per year. What is the growth rate of the capital per capita (k) in the steady-state? What is the growth rate of capital (K) in the steady-state?
- Onsider a two-period model in which each individual maximizes his lifetime utility U, with C_1 and C_2 being the consumption levels in the first and second periods, respectively. The individual has income Y in the first period and no income in the second period. Let r denote the interest rate. All variables are in real terms. Suppose that the utility function has the following form:

$$U = -\frac{(4-C_1)^2}{2} + C_2$$

In the first period, the individual saves S and consumes C_1 :

$$S = Y - C_1$$

In the second period, the individual consumes the principal and interest on its saving:

$$C_2 = (1+r) S$$

- (a) (5 \mathcal{H}) Derive the individual's saving as a function of Y and r.
- (b) (5 \mathcal{D}) Suppose the government starts to levy lump-sum tax T_1 in the first period and gives transfer payment T_2 to individual in the second period. Revise this individual's life-time budget constraint and derive for the saving function.
- (c) (5 \mathcal{H}) Continue from (b). Suppose the interest rate remains unchanged. When the government raises T_1 and reduces T_2 , how wwould C_1 and S change?