

國立中央大學 109 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2頁 第1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. In the IS-LM and AD-AS models, both the short-run equilibrium interest rate and the short-run equilibrium general price level fall if workers become more preferred to leisure.
2. Suppose that unemployment results from the minimum-wage law. Other things equal, the unemployment rate rises if households become more preferred to consumption.
3. In the IS-LM and AD-AS models, other things equal, both the short-run equilibrium interest rate and the short-run equilibrium general price level rise with the expected inflation rate.
4. Other things equal, the current saving increases with the expected future income.
5. In the market for loanable funds, the equilibrium interest rate falls if firms feel more pessimistic about the future.
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 central bank of country A lowers the interest paid on reserves.

參考用

注意：背面有試題

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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. 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 h is human capital. The capital depreciation rate δ and the saving rate z are constant.

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

$$I_t = S_t = z Y_t$$

$$Y_t = K_t^{2/3} (h_t L_t)^{1/3}$$

Denote the population growth rate by n (i.e. $1+n = L_{t+1} / L_t$).

- (a) (2 分) 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 human capital (h).
- (b) (8 分) Suppose that the saving rate is $z=0.4$, the capital depreciation rate is $\delta=0.1$, and the population growth rate (n) is $n=-0.02$ (i.e. population decreases by 2% each year). Derive the steady-state capital per-capita (k) and the steady-state output per-capita (y) as functions of the human capital level h , respectively.
- (c) (6 分) (Continued) Suppose that the growth rate of human capital is 1.5% per year. What is the growth rate of the output per capita (y) in the steady-state? What is the growth rate of output level (Y) in the steady-state?

8. Consider the following Keynesian model:

$$C = 5 + 0.9Y_d$$

$$I = 40 - 5R$$

$$G = 30$$

$$T = -50 + 0.5Y$$

$$NX = 25 - 0.1Y_d$$

$$M = 140$$

$$L = 10 + Y_d - 5R$$

$$P = 1$$

(Price level is fixed at 1)

where Y is real income, C is consumption, Y_d is disposable income, I is investment, G is government spending, T is net tax, NX is net export, R is interest rate, M is nominal money stock, L is the demand for real balances, and P is price, which is fixed at $P=1$.

- (a) (6 分) Derive the IS curve and the LM curve, respectively.

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- (b) (4分) Calculate the equilibrium level of real income and nominal interest rate.
- (c) (4分) Assume that the long-run real income (potential real GDP) is $Y_{LR} = \$150$. The central bank adopts a monetary policy to achieve the long-run real income. What is the target level of money supply M the central bank should set? Calculate the target interest rate R under this policy.
- (d) (4分) Plot the IS-LM diagram in a figure to indicate the original equilibrium and the new equilibrium under the counter-cyclical policy in (c).
9. Consider a two-period model in which each individual maximizes his lifetime utility $U(C_1, C_2)$, where C_1 and C_2 are the consumption levels in the first and second periods, respectively. Suppose that each individual receives income Y_1 in period 1 but nothing in period 2. The lump-sum tax is T_1 in the first period and no tax in the second period. Let the P_1 and P_2 , both exogenous to individuals, be the price level in the first and second periods, respectively. Each individual holds nominal money M in the first period and does not have a demand for money in the second period. Specifically, the individual's constraint in period 1 and 2 are:
- $$C_1 + M/P_1 = Y_1 - T_1$$
- $$C_2 = M/P_2$$
- Each individual's lifetime utility is described as
- $$U(C_1, C_2) = \ln C_1 + b \ln C_2, \text{ where } 0 < b < 1.$$
- (a) (8分) Derive the individual's optimal consumption in the first period in terms of Y_1 , T_1 , P_1 , P_2 , and b .
- (b) (5分) Assumed that P_2 rises while other things remain unchanged. What's the impact on money demand in the first period? What is the intuition behind this result?
- (c) (5分) Continue from (a). Assume that b declines significantly while other things remain unchanged (including P_1 and P_2). What's the impact on the demand for money in period 1? What is the intuition behind this result?

參考用

