

注意：考試開始鈴響前，不得翻閱試題，  
並不得書寫、畫記、作答。


國立清華大學 112 學年度碩士班考試入學試題

系所班組別：經濟學系

科目代碼：4702

考試科目：總體經濟學

### — 作答注意事項 —

1. 請核對答案卷（卡）上之准考證號、科目名稱是否正確。
2. 考試開始後，請於作答前先翻閱整份試題，是否有污損或試題印刷不清，得舉手請監試人員處理，但不得要求解釋題意。
3. 考生限在答案卷上標記「由此開始作答」區內作答，且不可書寫姓名、准考證號或與作答無關之其他文字或符號。
4. 答案卷用盡不得要求加頁。
5. 答案卷可用任何書寫工具作答，惟為方便閱卷辨識，請儘量使用藍色或黑色書寫；答案卡限用 2B 鉛筆畫記；如畫記不清（含未依範例畫記）致光學閱讀機無法辨識答案者，其後果一律由考生自行負責。
6. 其他應考規則、違規處理及扣分方式，請自行詳閱准考證明上「國立清華大學試場規則及違規處理辦法」，無法因本試題封面作答注意事項中未列明而稱未知悉。

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Part 1

Section 1: MULTIPLE CHOICE. (24 points)

Choose the one alternative that best completes the statement or answers the question.

- (1) In a given year, the government of Cooland announces the following items with figures (in million):

GDP = \$20

Net factor payments from abroad = \$3

Taxes = \$3,

Transfers received from the government = \$1.5,

Interest payments on the government's debt = \$0.5,

Consumption = \$13

Government purchases = \$3.

Cooland's government saving is \_\_\_\_\_, and national saving is \_\_\_\_\_.

- A. \$2 million; \$7 million  
B. \$4 million; \$8 million  
C. -\$2 million; \$6 million  
D. -\$2 million; \$7 million
- (2) You have just purchased a home that cost \$200,000. The nominal mortgage interest rate is 7% per annum, mortgage interest payments are tax deductible, and you are in a 20% tax bracket. The expected inflation rate is 5%. Maintenance and other expenses are 6% of the initial value of the house. What is the real user cost of your house?
- A. \$16,000  
B. \$13,200  
C. \$24,000  
D. \$26,000
- (3) Janet is a forward-looking consumer with no borrowing constraints. Janet originally planned to have no assets for the future; i.e., she planned to spend all her original assets and all her income when she was young, and planned to consume an amount equal to her future income when she was old. Recently, the real interest rate rises from its original level. What will happen to Janet's current consumption and saving?

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- A. Both Janet's current consumption and saving would increase.
  - B. Both Janet's current consumption and saving would decrease.
  - C. Janet's current consumption would decrease and saving would increase.
  - D. Janet's current consumption would increase and saving would decrease
- (4) Suppose the U.S. government changes the tax code so that business firms face higher tax rates on their revenue, while the tax code changes are offset by other lump-sum tax changes so there is no overall change in tax revenue. As a result, the real interest rate \_\_\_\_\_, investment \_\_\_\_\_, and saving \_\_\_\_\_ in the goods market equilibrium.
- A. increases; declines; increases
  - B. decreases; declines; declines
  - C. decreases; increases; increases
  - D. is unaffected; does not change; does not change.
- (5) The massive outbreak of *coronavirus (COVID-19)* causes many people to retire or quit their jobs. In the meantime, there is no shortage of vaccines and medicines, as a result, the level of labor productivity sustains as usual. What will happen to the employment and the real wage in labor market equilibrium?
- A. Both employment and the real wage would be higher.
  - B. Both employment and the real wage would be lower.
  - C. Employment would be lower, while the real wage would be unaffected.
  - D. Employment would be lower, and the real wage would be higher.
- (6) The central bank of Taiwan announced its forecast for Taiwan's 2023 gross domestic product (GDP) growth after a quarterly policymaking meeting held on December 15, 2022. The GDP growth forecast for 2023 has been cut from 2.90 percent to 2.53 percent, referring that the worldwide inflation is expected to continue to pose uncertainty in the global economy in 2023. If consumers believe that a recession will occur in 2023 (in a closed economy), then the real interest rate \_\_\_\_\_ and investment \_\_\_\_\_ in the goods market equilibrium.
- A. falls; declines
  - B. falls; increases

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- C. rises; declines
- D. rises; increases
- (7) Assume the markets for labor, goods, and assets are in equilibrium for Smileland (closed economy). Now suppose that Smileland is likely to have a severe recession, resulting in higher riskiness of stocks and bonds. In addition, consumers and firms could reduce their inflation expectation since Smileland's economy may soon experience a major slowdown. If the central bank of Smileland does not change the nominal money supply, what will happen to the real money demand and the value of current price level in asset market equilibrium?
- A. Both the real money demand and the price level would increase.
- B. Both the real money demand and the price level would decrease.
- C. The real money demand would increase, and the price level would decrease.
- D. The real money demand would decrease, and the price level would increase.
- (8) Assume the markets for labor, goods, and assets are in equilibrium for Smileland (closed economy). Now suppose that the real output of Smileland is expected to grow by 5% over the next year, and the real interest rate is expected to be constant over the next year. Moreover, a macroeconomist found that the real-world income elasticity of money demand for Smileland is estimated to be 0.6. If Smileland's central bank announces that inflation rate will stay at 2% over the next year, and everyone in Smileland believes this announcement, what growth rate of the nominal money supply should the central bank choose?
- A. 5%
- B. 4%
- C. 3%
- D. 0%

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Section 2: Numerical and analytical Problems (26 points)

(1) (14 points) Productivity, output, and employment

Suppose an economy has an aggregate production function, given by:

$Y = AK^\alpha N^{1-\alpha}$ , where  $A$  is the total factor productivity,  $\alpha$  is a fixed parameter,  $K$  represents capital, and  $N$  represents labor. The price level is 1.

- (a) (4 points) Assuming that the labor market is competitive, and firms maximize their profits, use the production function to derive an algebraic expression for the demand curve for labor in the form of  $N^D = N(w)$ , where  $w$  is the real wage.
- (b) (6 points) Now suppose that the labor supply curve is upward sloping and has the following form:

$$N^S = Bw^2,$$

where  $B$  is a fixed parameter, and  $w$  is the real wage.

Assuming that  $\alpha=0.5$  and  $B=0.25$ , derive an algebraic expression for the real wage and employment in the labor market equilibrium.

- (c) (4 points) Many economists believe that technology progress is more effective than capital accumulation in raising the living standard in terms of output per capita. Do you agree or disagree with this argument? Briefly explain your reasoning.

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(2) (12 points) Long-run economic growth

Suppose Smileland (closed economy) has a per-worker production function:

$$y = Ak^\alpha h^\beta,$$

where  $A$ ,  $\alpha$ , and  $\beta$  are fixed parameters,  $y$  is per-worker output,  $k$  is capital-labor ratio, and  $h$  is human capital per worker representing a measure of skills and training of an average worker.

Assuming that both population and the workforce of Smileland grow at a constant rate,  $n$ . Smileland's saving rate is  $s$ , and all saving is used to build physical capital, which depreciates at rate  $d$ . To reflect the idea that the more capital used by workers, the more skills they acquire, we can assume that  $h = \theta k$  where  $\theta$  is a fixed parameter.

- (a) (6 points) If  $\alpha + \beta < 1$ , find the algebraic expression for capital-labor ratio,  $k$ , in the steady state. What is the effect of an increase in  $s$  on the long-run growth rates of total physical capital, total human capital, and total output in Smileland?
- (b) (6 points) If  $\alpha + \beta = 1$ , repeat Part (a) and compare and briefly explain your results.

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\*請在【答案卷、卡】作答

Part 2

一. 單選題與填充題 (每題 3 分)

1. Which of the following would not act as an automatic stabilizer?
  - A) Unemployment insurance
  - B) Government purchases
  - C) Personal income taxes
  - D) Corporate income taxes
  
2. For a given real exchange rate, a nominal appreciation of the domestic currency will result from
  - A) a decline in the terms of trade.
  - B) an increase in the price of the foreign good.
  - C) an increase in the price of the domestic good.
  - D) an increase in the domestic rate of inflation.
  
3. The Lucas critique is an objection to the assumption that
  - A) inflation is always and everywhere a monetary phenomenon.
  - B) there is a negative relationship between inflation and unemployment.
  - C) historical relationships between macroeconomic variables will continue to hold after new policies are in place.
  - D) people form expectations rationally.
  
4. Which of the following macroeconomic variables is acyclical?
  - A) Real interest rates
  - B) Unemployment
  - C) Money supply
  - D) Consumption
  
5. Consider a country such as USA. According to the classical model, an increase in the nominal money supply would cause the nominal exchange rate to \_\_\_ and the real exchange rate to \_\_\_.
  - A) depreciate; appreciate

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\*請在【答案卷、卡】作答

- B) appreciate; depreciate
- C) depreciate; remain unchanged
- D) appreciate; remain unchanged

6. Based on the expectations-augmented Phillips curve, if the natural rate of unemployment is 0.06, and if the actual inflation rate exceeds the expected inflation rate, then the unemployment rate is

- A) less than 0.06.
- B) 0.06.
- C) more than 0.06.
- D) 0.06 plus 0.5 times the difference between actual and expected inflation.

7. When actual inflation is less than expected inflation,

- A) the natural rate of unemployment falls, according to Phillips-curve analysis.
- B) cyclical unemployment falls, according to Phillips-curve analysis.
- C) there are transfers from borrowers to lenders.
- D) there are transfers from lenders to borrowers.

8. A one-year bond has an interest rate of 5% today. Investors expect that in one year, a one-year bond will have an interest rate equal to 7%. According to the expectations theory of the term structure of interest rates, in equilibrium, a two-year bond today will have an interest rate equal to \_\_\_\_%.

9. Consider the IS-LM model:

$$C = 100 + 0.5(Y - T),$$

$$I = 100 - 10r,$$

$$NX = -50,$$

$$G = 100,$$

$$T = 100,$$

$$M = 5000,$$

$$P = 100, \text{ and}$$

$$L(Y, r) = 0.5Y - 10r,$$

where C, I, G, T, NX, M, P, r and L respectively denotes consumption, investment, government purchases, tax, net exports, money supply, price level, real interest rate,



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and liquidity demand function. The equilibrium value of  $Y$  will be \_\_\_\_\_.

10. Suppose that real GDP is 10,000 and remains constant, nominal GDP is initially 50,000, inflation is 2%, and the debt-GDP ratio is 0.5. The largest nominal deficit that the government can run without raising the debt-GDP ratio will be \_\_\_\_\_.

## 二. 簡答題 (總分 20 分)

我國中央銀行於 2022 年 12 月 15 日宣布升息半碼，未再搭配提高存款準備率。央行預測 2022 年 CPI、核心 CPI 年增率為 2.93%、2.59%，並下修 2022 年經濟成長率預測值為 2.91%。此外，央行指出 2022 年美國公債殖利率曲線出現倒掛，而且其他經濟指標亦呈趨緩，隱含明年美國經濟陷入衰退機率上升，甚至有陷入停滯性通膨(Stagflation)之虞。請針對上段文字回答下列題(1)到(6)。

- (1) 請說明升息半碼是將什麼利率升高多少%? (3 分)
- (2) 央行為了達成升息半碼的目的，主要的貨幣政策操作方式為何? (3 分)
- (3) 央行提高存款準備率對於金融市場可能產生什麼影響? (3 分)
- (4) 請說明 CPI 和核心 CPI 在反映物價水準的功能方面有何不同? (4 分)
- (5) 為何公債殖利率曲線倒掛會隱含經濟陷入衰退的機率上升? (4 分)
- (6) 何謂停滯性通膨? (3 分)