

# 國立成功大學

## 112學年度碩士班招生考試試題

編 號：246

系 所：國際企業研究所

科 目：經濟學

日 期：0207

節 次：第 3 節

備 註：不可使用計算機

※ 考生請注意：本試題不可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

**I. True or False (2 points each, 20 points, Please answer each question in either “T” or “F”)**

1. The terms of trade defined as a ratio of the exported goods price over the imported goods price in a country can be employed to measure a country's international competitiveness.
2. The Heckscher-Ohlin model implies that the relative advantages in those goods results from the vested abundance of factors employed to produce those goods.
3. The sustainable rate of economic growth can be gauged through the growth rates of the production factors and their related productivity.
4. The endogenous growth theorem implies that the diminishing return to scale might still drive the economic growth.
5. Economists from the Monetarist school argue that a stable and expected increase in money supply by the money authority could prevent an economy from being in a recession.
6. Deflation means a pattern of persistently decreasing price levels in an economy and could stimulate the economy from its trough since the price level is low and people could buy goods at cheaper prices.
7. The contractionary fiscal policy refers to a situation in which the money authority decreases the money supply in an economy.
8. Inflation could cause a recession in an economy and therefore is shunned by the money authority.
9. Lorenz curve used to portray an observed income distribution in a country shows a more uneven income distribution once the Lorenz curve is further away from the diagonal line.
10. A phenomenon in which an individual makes satisfactory decisions rather than optimal decisions is called the mental account.

**II. Multiple Choice (Choose the Best One, 3 points each, 60 points)**

1. The utility function of Consumption Goods  $x$  and  $y$  for a consumer can be shown as  $U(x, y) = 2x^2y^2$  where  $x$  and  $y$  are consumption quantities of Goods  $x$  and  $y$ , respectively. If the current quantities consumed by this consumer are  $x = 1$  and  $y = 2$ , what are the marginal utilities of  $x$ ,  $MU_x$ , and  $y$ ,  $MU_y$ , respectively, for this consumer?
  - a.  $MU_x=16$  and  $MU_y=8$
  - b.  $MU_x=8$  and  $MU_y=16$
  - c.  $MU_x=8$  and  $MU_y=4$
  - d.  $MU_x=4$  and  $MU_y=8$
  
2. According to Question 1, the price of  $x$ ,  $p_x$ , is equal to 2 and the price of  $y$ ,  $p_y$ , is equal to 3. If the current income of this consumer is 30, what is the maximum utility value of this consumer?
  - a. 2815.5
  - b. 2812.5
  - c. 2825.5
  - d. 2822.5
  
3. According to Question 2, what is the maximum utility value of this consumer if the price of  $x$ ,  $p_x$ , stays as 2 and the price of  $y$ ,  $p_y$ , changes to 4?
  - a. 1540.28
  - b. 1551.12
  - c. 1582.03
  - d. 1593.94
  
4. According to Questions 2 and 3, what is the substitution effect in the quantity consumed in  $y$  once the prices change from Question 2 to Question 3?
  - a. -0.67
  - b. -0.72
  - c. -0.87
  - d. -0.95

5. According to Questions 2 and 3, what is the income effect in the quantity consumed in  $x$  once the prices change from Question 2 to Question 3?
- 1.48
  - 1.37
  - 1.25
  - 1.16
6. The current GDP of a country is made of three major industries for which the agriculture industry has a value of USD 250 million, the textile industry has a value of USD 325 million and the machinery industry has a value of USD 450 million while the total value of these three industries was USD 885.43 million for the same weights in these three industries three years ago. What is the compound annual price level (GDP deflator) of this country?
- 5%
  - 6%
  - 7%
  - 8%
7. Based on Question 6, what was the compound annual growth rate of real GDP over the two-year period if the GDP value three year ago was USD 850 million and GDP value one year ago was USD 985 million?
- 2.61%
  - 2.52%
  - 2.43%
  - 2.34%
8. The current world-wide sales of smartphones are dominated by two companies, Fruit (F) and Star (S), assuming consumers are indifferent about their smartphones. They engage in price competition (not quantity competition). The current inverse market demand is  $p = 102 - q_F - 2q_S$ , where  $p$  is the price of goods,  $q_F$  is the demand quantity of the Fruit company, and  $q_S$  is the demand quantity of the Star company. The marginal production cost of the Fruit company is  $MC_F = 2 + 4q_F$ . What is the production quantity of Company Fruit,  $q_F$ , if the production quantity of Company Star,  $q_S$ , is 20?
- 14
  - 13
  - 12
  - 11

9. There are two firms, A and B, in an oligopoly market producing products considered homogeneous by consumers. They engage in price competition (not quantity competition). The inverse market demand is  $p = 200 - q_A - q_B$ , where  $p$  is the price of goods,  $q_A$  is the demand quantity of Company A, and  $q_B$  is the demand quantity of Company B. The marginal cost of Company A is  $MC_A = 10 + 4q_A$  and the marginal cost of Company B is  $MC_B = 30 + 4q_B$ . What are the production quantities of Company A,  $q_A$ , and Company B,  $q_B$ ?
- $q_A=26.5$  and  $q_B=20.5$
  - $q_A=28.5$  and  $q_B=22.5$
  - $q_A=30.5$  and  $q_B=25.5$
  - $q_A=32.5$  and  $q_B=27.5$
10. There are two firms, A and B, in an oligopoly market producing products considered homogeneous by consumers. They engage in quantity competition (not price competition). The inverse market demand is  $p = 100 - q_A - q_B$ , where  $p$  is the price of goods,  $q_A$  is the demand quantity of Company A, and  $q_B$  is the demand quantity of Company B. The marginal cost of Company A is  $MC_A = 10 + 4q_A$ . What is the production quantity of Company A once the production quantity of Company B is 30?
- 10
  - 20
  - 30
  - 40
11. Based on Question 10, if Company B is the leader in the market while Company A is the follower in the market, what is the production quantity of Company B once Company B has a fixed production cost of 5?
- 46
  - 48
  - 50
  - 52
12. A country has a total real economic productivity following Cobb-Douglas production function. What is the change in the productivity growth rate once there is a 5.4% increase in capital stock and the productivity elasticity of labor input is 0.25?
- 4.05
  - 4.15
  - 1.35
  - 1.45

13. A country has a total real economic productivity following Cobb-Douglas production function. What is the change in the productivity growth rate once there are a 2.4% increase in capital stock, a 4.12% increase in labor input and the productivity elasticity of capital input is 0.42?
- 3.34
  - 3.37
  - 3.40
  - 3.43
14. A country has a total real economic productivity following Cobb-Douglas production function. What is the change in the total factor productivity (Solow residual) once there are a 5.7% increase in the GDP, a 4.27% increase in capital stock, a 1.22% increase in labor input and the productivity elasticity of capital input is 0.4?
- 3.53%
  - 3.44%
  - 3.35%
  - 3.26%
15. The current production function equals  $q = 2K^{0.25}L^{0.5}E^{0.25}$ , where  $q$  is the production quantity,  $K$  is capital input,  $L$  is the labor input, and  $E$  is the entrepreneurship input. What is the marginal rate of technical substitution between capital and labor ( $\Delta K/\Delta L$ ) once the capital input is 1, the labor input is 4, and the entrepreneurship input is 16?
- 4
  - 3
  - 2
  - 1
16. The current production function equals  $q = 2K^{0.25}L^{0.5}E^{0.25}$ , where  $q$  is the production quantity,  $K$  is capital input,  $L$  is the labor input, and  $E$  is the entrepreneurship input. What is the percentage change in the production quantity once there are a 0.4 increase in the capital input and a 0.6 increase in the entrepreneurship input?
- 0.55
  - 0.45
  - 0.35
  - 0.25

17. Assuming the marginal product of the capital input is  $MP_K = 2K^{-0.5}L^{0.25}E^{0.25}$ , the marginal product of the labor input is  $MP_L = K^{0.5}L^{-0.75}E^{0.25}$ , and the marginal product of the entrepreneurship input is  $MP_E = K^{0.5}L^{0.25}E^{-0.75}$ , where  $K$  is capital input,  $L$  is the labor input, and  $E$  is the entrepreneurship input. What is the production quantity,  $q$ , in the case where  $K$  is 4,  $L$  is 16, and  $E$  is 16 once the production function is a constant return to scale function (Euler's Theorem applies to this case)?
- 32
  - 16
  - 8
  - 4
18. There are three consumers in a market where the inverse demand functions for these three consumers are  $p = 12 - 0.25q$  of Consumer 1,  $p = 16 - 0.5q$  of Consumer 2, and  $p = 10 - 0.1q$  of Consumer 3, respectively. What is the market demand quantity once the price is equal to 10?
- 40
  - 30
  - 20
  - 10
19. According to Question 18, what is the market demand elasticity given that the price equals 5?
- 0.5
  - 0.6
  - 0.7
  - 0.8
20. According to Question 18, what is the value of consumer surplus once the price equals 10?
- 6.25
  - 5.36
  - 4.47
  - 3.58

**III. Computation Question: (10 points each, 20 points)**

1. In a country where the consumption, investments and the real money demand can be represented as follows: (unit: in millions)

$$C = 100 + 0.6(Y - T),$$

$$I = 250 + 0.26Y - 12000i,$$

$$M_r^d = 0.35Y - 4000i,$$

where  $C$  is the consumption,  $Y$  is the GDP,  $T$  is the tax,  $I$  is the investments,  $i$  is the interest rate in terms of percentage, and  $M_r^d$  is the real money demand. The net exports are 300, the government expenditure is 150 and tax revenue,  $T$ , is equal to 10% of  $Y$ .

- (a) Currently, the central bank plans to control the real money supply to be 420. What is the current interest rate? (10 points)
- (b) If the target interest rate set by the central bank is 4%, what is the real money supply level? (10 points)