

Part A. 獨立選擇題 (選出「唯一」正確的敘述，每題五分。請於試卷上「選擇題作答區」依序作答。)

1. (5%) Which of the following statements is correct?
  - (a) A steady state represents a competitive equilibrium of the economy.
  - (b) In a steady state, investment is equal to zero.
  - (c) An economy always converges to a steady state.
  - (d) If two economies are identical, but one economy has a higher saving rate, then the steady-state level of per capita output in the economy with the higher saving rate will be at a higher level than in the steady state of the low-saving economy.
2. (5%) In the Solow growth model, others being equal, an economy with a higher population growth rate:
  - (a) has the same living standard as other countries.
  - (b) tends to be the high-income-producing countries in the world.
  - (c) faces capital dilution, thereby having a lower level of income per worker.
  - (d) has a higher steady-state saving rate.
3. (5%) Which of the following statements is correct?
  - (a) In a closed economy, introducing a pay-as-you-go social security system increases the incentive of saving, thereby raising the capital stock.
  - (b) In equilibrium, an increase in the marginal tax rate on labor income increases the demand for capital.
  - (c) An increase in the marginal tax rate on asset income reduces investment in the short run and therefore reduces real GDP in the long run.
  - (d) The average income tax is the change in income taxes when income changes one dollar.
4. (5%) Which of the following statements is incorrect?
  - (a) The real return on money at hand (cash) is the negative inflation rate.
  - (b) In a closed economy, it is the interest rate adjustment that brings the money market into an equilibrium.
  - (c) If the real interest rate increases, the demand on money declines.
  - (d) The natural rate of interest is the real interest rate at which the demand for goods and services equals the natural rate of output.
5. (5%) In an open-economy framework:
  - (a) If the home inflation rate is 5% and the foreign inflation rate is 2%, then the relative purchasing power parity implies that the home country would expect its currency to appreciate by 3%.
  - (b) If a country adopts the fixed exchange rate regime, it gives up the control of its money supply.
  - (c) The law of one price prohibits price discrimination.
  - (d) The terms of trade are the amount of home goods that can be exported for each unit of foreign goods imported.
6. (5%) Regard to the Ricardian Equivalence Theorem, which of the following statement is incorrect?
  - (a) It implies that a tax cut is not a free lunch.
  - (b) It holds by assuming a perfect credit market.
  - (c) It implies that government saving declines but private saving goes up when there is a tax cut in the current period.
  - (d) It still holds even if people could pass away in the future period.
7. (5%) Regard to a competitive equilibrium in an economy, which of the following statement is incorrect?
  - (a) Prices are exogenous.
  - (b) The representative consumer makes his optimal decisions.
  - (c) The perfectly competitive firm maximizes its profit.
  - (d) All markets clear.

見背面

8. (5%) Consider a representative agent who can live for two periods. In each period, he/she has one unit of time and allocates his/her time on working ( $h_i$ ) and leisure ( $l_i$ ). The agent's life-time utility is given by:

$$U = \sum_{i=1}^2 \beta^{i-1} [\log c_i + \log(1 - h_i)],$$

where  $i$  denotes the period of time;  $\beta$  is the subjective discount factor; and  $c_i$  represents consumption in period  $i$ . Furthermore, we denote the interest rate as  $r$ ; the wage rate of working in period  $i$  as  $w_i$ ; and the saving in period 1 as  $s$ . Which of the following statement is correct?

- (a) The life-time budget constraint is given by:

$$c_1 + \frac{c_2}{1+r} = w_1 h_1 + \frac{w_2 h_2}{1+r}.$$

- (b) The optimal consumption in period 1 is:

$$c_1 = \frac{w_1 + \frac{w_2}{1+r}}{2(1+\beta)}.$$

- (c) The optimal decision on leisure in period 2 is:

$$l_2 = \frac{\beta(1+r)c_1}{w_2}.$$

- (d) All of the above.

9. (5%) Following Question 8, now suppose that the government introduces a policy: imposing a lump-sum tax ( $T_1$ ) on agents who are in their first period of life but giving a lump-sum transfer ( $T_2$ ) to agents who are in their second period of life. Which of the following statement is correct?

- (a) If  $T_1 = T_2$ , there is no effect on the representative agent's optimal decisions.  
 (b) If  $T_1 > T_2/(1+r)$ ,  $c_1$  increases.  
 (c) If the interest rate is zero, the life-time budget constraint is unchanged.  
 (d) If  $T_1 < T_2/(1+r)$ , the representative agent benefits from the policy.

10. (5%) To maximize profit, a firm should rent capital until

- (a) the marginal product of capital is zero.  
 (b) the marginal product of capital begins to fall.  
 (c) the marginal product of capital equals the rate of return of capital.  
 (d) the capital-labor ratio is optimal.

Part B. 題組選擇題 (單複選混和，每題五分。請於試卷上「選擇題作答區」依序作答。)

Excerpts of “實名制口罩 2 週 10 片 40 元 12/31 藥局搶先開賣” (2020/12/09)<sup>1</sup>

指揮中心今天宣布，未來實名制口罩將由廠商統一包裝，從現行 14 天 9 片增至 10 片，價格從新台幣 45 元降至 40 元，藥局 12 月 31 日先行開賣，超商等販售通路明年 1 月 4 日起上路。國內武漢肺炎(2019 冠狀病毒疾病，COVID-19)疫情平穩，口罩庫存充足、貨源穩定，政府研議放寬實名制口罩片數並降低價格，由廠商統一包裝，...

Excerpts of “【零本土破功】口罩買氣瘋 7 倍 國家隊華新將增 5 產線日多 50 萬片” (2020/12/23)<sup>2</sup>

...武漢肺炎 253 天零本土病例破功，許多民眾擔心越冷疫情越嚴重，紛紛開始增加採購口罩數量，原本開始出現口罩滯銷的藥局，也再度有不少民眾上門。員林市日信藥局藥師張維勳說，之前國內疫情趨緩，加上工作量增加，本月 17 日之前，約有 7 成藥局因實名制口罩生意不佳停賣或沒有鋪貨，但其藥局昨天突然湧現購買 50 片盒裝的客人，平常 1 天約只賣出 10 盒，但光是昨天就賣出 70 盒，...(omitted)...口罩國家隊華新醫材公司董事長鄭永柱則表示，因政府將在明年 1 月 1 日，全國原本徵收每日 400 萬片，將增加到 600 萬片，因此該公司原有 20 條產線，日產約 100 萬片、提供實名制口罩為 20 萬到 30 萬片，該公司將增加到 25 條產線，日總產量提升至 150 萬片。...

<sup>1</sup> 張若喧、陳偉婷，中央社：<https://www.cna.com.tw/news/firstnews/202012095005.aspx>

<sup>2</sup> 鄧惠珍，蘋果日報：<https://tw.appledaily.com/life/20201223/6HLAMAKLEBAYZIPDVVELRZZAAI/>

Weekly quantity of facial mask rationing (compiled from 台灣口罩統計資料 on GitHub):<sup>3</sup>

Week	Dates (Mon. to Sun.)	Weekly Quantity	Memo
1	Nov. 30 to Dec. 6	10,263,690	
2	Dec. 7 to Dec. 13	(omitted)	Price change announcement on Dec. 9
3	Dec. 14 to Dec. 20	938,411	
4	Dec. 21 to Dec. 27	(omitted)	New local case discovered on Dec. 22
5	Dec. 28 to Jan. 3	3,696,595	
6	Jan. 4 to Jan. 10	21,100,419	New price implemented (after New Year's weekend)
7	Jan. 11 to Jan. 17	???	

Answer the following questions:

11. (5%) Use the midpoint method to calculate the percentage change in unit price and total expropriation quantity for facial masks before and after January 1, 2021, and then use your answers to calculate the elasticity of demand, assuming the total amount expropriated by the Taiwanese government is the actual quantity demanded for each price, holding other things equal. Which of these statements are true?
- The percentage change in unit price has a magnitude smaller than 20%.
  - The percentage change in total expropriation quantity for facial masks is greater or equal to 40%.
  - The elasticity of demand for facial masks has a magnitude smaller than 2.
  - The demand for facial masks is inelastic.
  - None of the above.
- $$\text{Midpoint Method Percentage Change} = \frac{\text{Endpoint} - \text{Starting Point}}{(\text{Endpoint} + \text{Starting Point})/2}$$
12. (5%) Use the midpoint method to calculate the percentage change in weekly quantity of facial masks rationing between week 6 and week 1, and then use your answers to calculate the elasticity of demand assuming the quantity of facial masks rationed in week 6 and week 1 are the actual quantity demanded for each corresponding price, holding other things equal. Which of these statements are true?
- The percentage change in quantity demanded for facial masks is greater than 70%.
  - The percentage change in quantity demanded is likely smaller if week 7 data were used.
  - The elasticity of demand has a magnitude smaller than 3.
  - The demand for facial masks is elastic.
  - None of the above.
13. (5%) Use the midpoint method to calculate the percentage change in weekly quantity of facial masks rationing between week 5 and week 3, and the percentage change in quantity demanded for boxed facial masks at Yuanlin's Ji-Sin Pharmacy before/after the new local case was announced. Which of these statements are true?
- The demand curve of facial masks shifted to the right after the new local case as announced.
  - The percentage change is larger at Yuanlin's Ji-Sin Pharmacy than from weekly quantity rationed.
  - The percentage change in weekly quantity between week 5 and week 3 is greater than 120%.
  - The percentage change at Yuanlin's Ji-Sin Pharmacy is smaller or equal to 150%.
  - None of the above.

<sup>3</sup> Ricky Teng (using 健保特約機構口罩剩餘數量明細清單): <https://gist.github.com/rickyten/b05cc98f8698aa2316d9be4a7795910a>

14. (5%) Which of the following statement(s) is true?

- a. Announcing a price change in January on December 9 shifts current demand to the left.
- b. Announcing a price change in January on December 9 cause current shortage due to price control.
- c. Implementing a new price and increasing the amount expropriated after New Year's weekend shifts both demand and supply to the right, so equilibrium quantity increases.
- d. After the long weekend of New Year's Day, supply shifts in a magnitude larger than demand.
- e. None of the above.

Part C. 是非題 (每題三分。請於試卷上「非選擇題作答區」依序作答。)

Determine whether these statements are true or false. If it is true, simply state it is true. If it is false, briefly state your reasoning in less than 100 words:

1. (3%) True or False: Perfect competition requires perfect substitutes.
2. (3%) True or False: Free entry and exit causes firms to earn zero profit in the long run.
3. (3%) True or False: Under perfect competition, demand and supply are both perfectly elastic.
4. (3%) True or False: Full information is not required to achieve perfect competition.
5. (3%) True or False: Externalities cause inefficiency only because of incomplete markets. If markets were complete, there would be no market failure.
6. (3%) True or False: Allocation of common resources and public goods are inefficient only because property rights are not well defined. If property rights are well defined, markets of these goods would be efficient.
7. (3%) True or False: Natural monopoly is not a monopoly.
8. (3%) True or False: Most markets in reality are best described as monopolistic competition.
9. (3%) True or False: The Bertrand Nash equilibrium outcome is an example of perfect competition.
10. (3%) True or False: Market competition can fix discrimination by firms, but not discrimination by consumers.

試題隨卷繳回