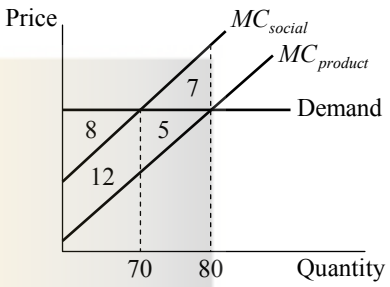
113年 台灣大學 商學所 試題詳解
（甲、乙組）

試題

㈠Scenario A:

A firm generates pollution that creates negative externality on neighboring households. The following graph shows the demand for the firm's product and the social marginal cost curve and the private marginal cost curve, which excludes externality. The numbers in the graph represent the corresponding areas. Please answer the following questions.



1. Suppose that there are no transaction costs, that there is no legal penalty for polluting, and that it is impossible for the neighbors to move away to avoid the pollution. The firm will produce a quantity of 80 to maximize its profit. If the neighbors are contemplating striking a deal with the firm and persuade the firm to reduce the quantity to 70, what is the price range of the deal? ㈠Between 5 and 7 ㈡Between 12 and 24 ㈢Between 8 and 20 ㈣Between 7 and 20 ㈤None of the above. （4分）
2. Following the previous question, how much is the increase in social surplus (the total surplus of consumer, producer, and neighbors) from this deal? ㈠5 ㈡7 ㈢8 ㈣12 ㈤None of the above. （4分）
3. Suppose transaction costs are so high that negotiation is impossible, and that it would cost the neighbors 6 to move away, how much is the resulting social surplus? ㈠5 ㈡12 ㈢17 ㈣20 ㈤None of the above. （4分）

㈡Scenario B:

Suppose that Microsoft is the only producer of operating systems and Netscape is the only producer of Web browsers. Suppose also that nobody wants an

operating system without a Web browser and nobody wants a Web browser without an operating system. Suppose that both firms produce at zero marginal cost and that the demand for a package consisting of an operating system and a browser is given by $Q = 100 - P$.

4. Suppose that Microsoft first announces a price for its operating system, then Netscape takes this price as given and sets a price for its browser. What will be the price of an operating system and the price of a browser, respectively, if both firms maximize profit? (A)100/3 and 100/3 (B)200/3 and 100/3 (C)75 and 50 (D)50 and 25 (E)None of the above. （4分）

5. Suppose that Microsoft merges with Netscape. Now what is the price for a package consisting of an operating system and a browser? (A)50 (B)200/3 (C)75 (D)100 (E)None of the above. （4分）

㈢Scenario C:

Suppose you are the monopoly owner of a movie theatre. You can allow people to enter the theatre at zero marginal cost, and you can provide popcorn at a constant marginal cost of $0.50 per bag. You have two customers, Larry and Terry, who are identical twins. Larry never buys popcorn under any circumstances. If you charge the monopoly price of $1.00 per bag for popcorn, Terry will buy 2 bags of popcorn and earn $0.50 in consumer's surplus, and you will earn $1.00 in profit from popcorn sales. If you charge the competitive price of $0.50 per bag for popcorn, Terry will buy 4 bags of popcorn and earn $2.00 in consumer's surplus, and you will earn no profit from popcorn sales.

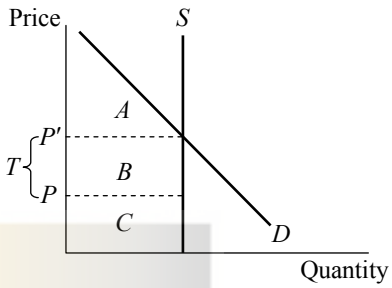
6. Suppose that Larry is willing to pay up to $8.00 to see the movie and Terry is willing to pay up to $5.00 to see the movie. How much should you charge for admission to the theatre and how much should you charge for popcorn, respectively? (A)$4.0 and $0 (B)$4.0 and $1.0 (C)$7.0 and $0 (D)$7.0 and $1.0 (E)None of the above. （4分）

7. Now, suppose that Larry is willing to pay up to $4.00 to see the movie and Terry is willing to pay up to $5.00 to see the movie. How much should you charge for admission to the theatre and how much should you charge for popcorn, respectively? (A)$4.0 and $0 (B)$4.0 and $1.0 (C)$7.0 and $0

(D)$7.0 and $1.0　(E)None of the above.　（4分）

(四)Scenario D:

The National Taiwan University has a fixed number of parking spaces for students on campus. They are currently sold at a price that clears the market. It has been proposed that the price should be lowered and a lottery held to determine who may park on campus. Each winner of the lottery would receive a ticket entitling him to purchase a parking space, and these tickets could be freely bought and sold. The number of winners would be equal to the number of parking spaces. The graph on the right shows the supply and demand for parking spaces, where P' refers to the original market equilibrium price and P is the controlled price set by NTU.



8. Regarding the effects of the lottery plan, which of the following statement is NOT true? (A)The producer's surplus decreases from $B+C$ to C. (B)The car users' surplus increases from A to $A+B$. (C)The social surplus remains unchanged. (D)The lottery winners gain from the lottery plan. (E)None of the above.　（4分）

9. Now, alternatively, NTU implements the same lottery plan but bans any resale of tickets. Compared to the original lottery plan, which of the following statement is TRUE about the new plan? (A)The producer's surplus remains unchanged (B)The car users' surplus remains unchanged (C)The lottery winners' gain remains unchanged (D)The social surplus remains unchanged (E)None of the above.　（4分）

(五)Scenario E:

10. An influenza wave occurs and 600 people face a risk to die. The CDC offers two programs. The first program has two options: Under A, 200 people will be saved with certainty, while B will save everyone with a probability 1/3 and save no one with a probability 2/3. The second program also has two

options: Under A, 400 people will NOT be saved with certainty, while B will save everyone with a probability 1/3 and save no one with a probability 2/3. More people prefer the first program to the second one because of (A)a nudge effect (B)over confidence (C)a framing effect (D)an endowment effect (E)loss aversion. （4分）

㈥Scenario F (singleton questions):

11. Amy weakly prefers to receive $18 than to play a lottery that gives $200 with a probability of 0.1 and 0 with a probability of 0.9. Terry strictly prefers to receive $50 than to play a lottery that gives $90 with a probability of 0.5 and $10 with a probability of 0.5. Ben strictly prefers to receive $300 today than to play a lottery that gives $3000 tomorrow with a probability of 0.1 and 0 with a probability of 0.9. Name everyone who you are sure is risk-averse. (A)Amy (B)Terry (C)Ben (D)Amy and Terry (E)Amy, Terry, and Ben. （2分）

12. Suppose that the nominal interest rate is 6% in country A and 4% in country B. However, the real interest rate is the same in the two countries. Under purchasing power parity, which one of the following statements is the most accurate? (A)The expected inflation in country A is higher by 2p.p than in country B, and the relative value of the currency of country A to country B will decrease by 2%. (B)The expected inflation in country A is higher by 2p.p than in country B, and the relative value of the currency of country A to country B will increase by 2%. (C)The expected inflation in country A is higher by 2p.p than in country B, and the relative value of the currency of country A to country B will increase by more than 2%. (D)The expected inflation in country A is lower by 2p.p than in country B, and the relative value of the currency of country A to country B will increase by 2%. (E)The expected inflation in country A is lower by 2p.p than in country B, and the relative value of the currency of country A to country B will decrease by 2%. （2分）

13. Country A produces wheat, flour, and bread. In 2023, country A produced $2,000,000 of wheat and sold $1,000,000 of wheat to consumers

and the rest to a flour company. The flour company produced flour and sold $800,000 of flour to consumers and $400,000 of flour to a bakery. The bakery produced bread and sold $2,000,000 of bread to consumers. By how much GDP of country *A* was increased out of the transactions explained above? (A) $5,200,000 (B) $4,000,000 (C) $3,800,000 (D) $3,200,000 (E)$2,000,000. （2分）

14. Which of the following increases money demand?

i. The nominal interest rate increases.

ii. The price level increases.

iii. Real GDP increases.

(A)i, ii (B)i, iii (C)ii, iii (D)ii, iv (E)iii, iv. （2分）

15. If the government begins running a budget surplus, how does this affect the market for loanable funds? (A)The interest rate decreases because of a shift in the supply curve. (B)The interest rate increases because of a shift in the supply curve. (C)The interest rate decreases because of a shift in the demand curve. (D)The interest rate increases because of a shift in the demand curve. (E)There is no direct effect on the market. （2分）

16. In country *A*, a linear Philips curve predicts its economy well and the natural rate of unemployment is 4%. Before 2023, the expected inflation rate was 5% but the actual inflation rate in 2023 turned out to be 6% and the unemployment rate was 2%. Now in 2024, the expected inflation rate has become 6%. What will be the unemployment rate at the end of the year, if the inflation rate turns out to be 4%? (A)2% (B)4% (C)6% (D)8% (E)10%. （2分）

17. Suppose that CD albums were in the consumer's basket in 1983-2021, but the quantity varied from time to time. Referring to the following graph (provided by Statista.com), please choose the most accurate statement.

$\sqrt{\alpha+w}-2$. If she does not work, her utility is $\sqrt{\alpha}$. Labor demand is a function of the wage. Specifically, labor demand is $1{,}000-2w$.

31. At $w=10$, what will be the labor force participation rate and unemployment rate? （6分）

32. The government enacts the minimum wage law, setting the minimum wage at \$15. How much percent of frictional/structural unemployment will this law create? （4分）

33. Lake Ontario can be freely accessed by fishermen. The cost of sending a boat out on the lake is $r>0$. When b boats are sent out onto the lake, $f(b)=800b-b^2$ fish are caught in total, where $0\le b\le 800$. The price of fish is normalized to be 1, which is unaffected by the level of catch. Note that b is assumed to be a continuous variable.

⑴What is the optimal number of boat to send out from the point of view of a central planner? （3分）

⑵If there is no central planner, how many boats will be sent out? （3分）

⑶Following part ⑵, what per-boat fishing tax (or subsidy) would restore the number of boats to your answer to part ⑴? （4分）

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解答

㈠Scenario A:

1.(A)；

由圖所示，數量由70增加到80單位，對消費者而言將增加7單位的剩餘損失，因此協議的價值最多爲7單位；對生產者則多帶來5單位的剩餘增加，因此對生產者而言，協議至少需要補償5單位，因此能夠達成協議的價值區間爲5到7之間。

2.(B)；

在產量80時外部性的無謂損失爲7。當產量由80減少到70單位，無謂損失可消除下，社會總福利可以提高7單位的剩餘。

3.(E)；

由於交易成本極高導致無法協商，且鄰居的搬家成本6對社會福利爲減

項，即使搬走，由於需求線爲水平線，需求減少水平往左移動也不影響均衡價格與數量，因此均衡產量將維持在80單位，均衡價格即爲需求水平線高度，社會福利則爲：

$CS = 0 - 6 = -6$ ， $PS = 8 + 12 + 5 = 25$ ， $MD = 12 + 5 + 7 = 24$

$SW = CS + PS - MD = -6 + 25 - 24 = -5$

㈡Scenario B:

4.(C)；

依題意假設Microsoft爲上游廠商（ U ），Netscape爲下游廠商（ D ）：

Max $\pi_D = (100 - Q)Q - P_U Q$

F.O.C.：$\frac{\partial \pi_D}{\partial Q} = 0 \quad 100 - 2Q - P_U = 0 \rightarrow P_U = 100 - 2Q$

Max $\pi_U = P_U Q = (100 - 2Q)Q$

F.O.C.：$\frac{\partial \pi_U}{\partial Q} = 0 \quad 100 - 4Q = 0 \rightarrow Q^* = 25$ ， $P_U^* = 50$ ， $P^* = 75$

5.(A)；

上下游合併之後：

Max $\pi = \pi_D + \pi_U = (100 - Q)Q - P_U Q + P_U Q = (100 - Q)Q$

F.O.C.：$\frac{\partial \pi_U}{\partial Q} = 0 \quad 100 - 2Q = 0 \rightarrow Q^* = 50$ ， $P_U^* = P^* = 50$

㈢Scenario C:

6.(B)；

以二部定價之觀念來思考，電影票屬於固定費，而爆米花屬於使用費，在無法區別消費者的前提，只能設定一種固定費與使用費之定價組合，分析以下兩種策略以追求利潤極大。

策略一：兩類消費者都進場

將爆米花訂價\$1，電影票最多能訂到\$4，此時利潤爲

$\pi = 4 \times 2 + 1 = 9$

將爆米花訂價\$0.5，電影票最多能訂到\$4.5，此時利潤爲

$\pi = 4.5 \times 2 + 0 = 9$

將爆米花訂價\$0，電影票最多能訂到\$5，此時利潤爲

$\pi = 5 \times 2 + (-1) = 9$

策略二：僅有一類消費者進場（Larry）

將電影票訂價爲$8，他不會購買爆米花，此時利潤爲

$\pi = 8 + 0 = 8$

應該選擇策略一，並將爆米花訂價$1，電影票訂價$4。

7. (B)；

當爆米花訂價$1，電影票訂價$4，已達成利潤極大，若Larry最高願付價格改變，他仍然可以在不買爆米花的前提下花$4購買電影票，因此兩個消費者仍皆進場，利潤亦不發生改變。

㈣Scenario D:

8. (B)；

由於購買彩券的汽車使用者不必然中獎，中獎者可以用 P 元取得停車位，其消費者剩餘確實會增加，但未中獎者可能需要以 P' 的價格去購買中獎者的停車資格，此時其消費者剩餘就沒有因爲彩券而上升，因此消費者剩餘並非確定由 A 增加至 $A+B$ 。

9. (A)；

不論彩券是否可以轉賣，停車位的供給方都還是以銷售彩券的方式提供停車格，轉賣只是消費者之間的產權移轉行爲，因此對生產者剩餘不因能否轉賣而變化。而消費者剩餘的部分則是在可以轉賣時，願意支付價格較高者，會在市場上盡其所能買進中獎的彩券，因此能確保使用停車位的都是願付代價高者，但不能轉賣時將隨機分配使用者，願付代價高者不必然取得停車位。

㈤Scenario E:

10. (C)；

根據題意，人們更傾向於選擇第一個方案，因爲它以正面方式表述結果（「將會救200人」），相對於第二個方案中負面的表述（「400人將不會被救」），這種傾向顯示人們會受到問題表達方式的影響，即使在平均而言，兩個方案的預期報酬相同，這種現象被稱爲「框架效應」（framing effect），即選項的呈現方式（正面或負面）會影響人們的選擇。

框架效應是指人們做出決策時受到資訊呈現方式的影響。相同的資訊，如果以不同的方式或角度呈現，可能會導致不同的決策。這個概

念來自行爲經濟學，強調了人們在面對選擇時，並非總是符合傳統經濟學的理性假設。框架效應揭示了人們的判斷和決策易受到情境的影響，即使實際的風險或收益沒有改變。

㈥Scenario F:

11.(D)；

對Amy而言，彩券的期望報酬爲 $EY = 0.1\times 200 + 0.9\times 0 = 20$ ，大於確定所得18，但Amy選擇確定所得，表示其爲風險趨避者；對Terry而言，彩券的期望報酬爲 $EY = 0.5\times 90 + 0.5\times 10 = 50$ ，等於確定所得50，但Terry選擇確定所得，因此Terry也必定是風險趨避者；對Ben而言，其選擇今天收到確定的300元而不選明天的期望所得亦爲300的風險事件，是因爲折現的緣故抑或是風險趨避所導致。因此本題能確定是風險趨避者的僅有Amy與Terry。

12.(A)；

根據國際費雪效果：

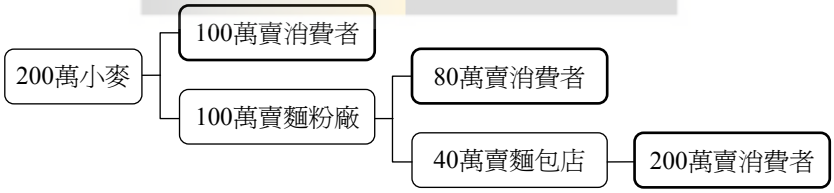
$r_A = r_B \rightarrow R_A - \pi_A^e = R_B - \pi_B^e \rightarrow 6\% - \pi_A^e = 4\% - \pi_B^e$

$\rightarrow \pi_A^e - \pi_B^e = 6\% - 4\% = 2\%$

表示 A 國的預期通膨高於 B 國，未來 A 國的貨幣價值在PPP成立下，將相對於 B 國下降2%。

13.(C)；

$\text{GDP} = 100 + 80 + 200 = 380$ 萬



14.(C)；

根據流動性偏好理論，實質貨幣需求與所得同向變動，與名目利率反向變動，而名目貨幣需求與物價同方向、同幅度變動，因此當物價上漲或實質GDP增加，都有可能導致貨幣需求上升。

15.(A)；

當政府有財政盈餘，政府儲蓄增加將導致國民總儲蓄（National