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Notes:

※ 注意：請於試卷內之「選擇題作答區」依序作答。

- Answer ALL the 25 questions.
- For each multiple-choice question, select only ONE answer that you consider as the most appropriate.
- Total marks is 100. 4 points for each question.

Scenario A

Consider the following two-year model: Suppose you have $100 today and will receive another $120 next year. Your savings account pays an annual interest rate of 25%; namely, if you save $1 today, you will obtain $1.25 next year. Also, your bank is willing to lend you money at that same interest rate to the extent that you can pay the loan back next year. Your life ends at the end of next year; no saving or loan goes beyond that point.

1. What is the maximum amount of money you can borrow this year?
   (a) 120
   (b) 100
   (c) 96
   (d) 80
   (e) None of the above

2. Suppose your original optimal consumption bundle is $C_1^* = 100$ and $C_2^* = 120$. What will happen to your utility if the interest rate increases to 30%?
   (a) It will increase.
   (b) It will decrease.
   (c) It remains unchanged.
   (d) The provided information is not sufficient enough to answer the question.
   (e) None of the above

Scenario B

Suppose a monopolist sells in two distinct markets. The inverse demand function for the first market are given by $P_1 = 120 - Q_1$, where Q_1 is the quantity demanded and P_1 is the price in the first market. The inverse demand function for the second market are given by $P_2 = 60 - 0.5Q_2$, where Q_2 is the quantity demanded and P_2 is the price in the second market. The monopoly's marginal cost is given by $MC = (2/9)Q$, where $Q = Q_1 + Q_2$.

3. What are the profit-maximizing quantities (Q_1^* and Q_2^*) of the first and second markets?
   (a) $Q_1^* = 50$ and $Q_2^* = 40$
   (b) $Q_1^* = 25$ and $Q_2^* = 50$
   (c) $Q_1^* = 25$ and $Q_2^* = 40$
   (d) $Q_1^* = 40$ and $Q_2^* = 25$
   (e) $Q_1^* = 50$ and $Q_2^* = 25$

4. What are the price elasticities of demand in absolute value for both markets at the corresponding profit-maximizing points?
   (a) $|\varepsilon_1| = 1$ and $|\varepsilon_2| = 1.5$
   (b) $|\varepsilon_1| = 2$ and $|\varepsilon_2| = 1.5$
   (c) $|\varepsilon_1| = 1.5$ and $|\varepsilon_2| = 2$
   (d) $|\varepsilon_1| = 2.5$ and $|\varepsilon_2| = 1$
   (e) $|\varepsilon_1| = 1.4$ and $|\varepsilon_2| = 2$

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Scenario C

Suppose a gasoline company is facing an inverse demand as $P = 6 - 0.2Q$ per week, where P is the price and Q is the quantity in gallon. Gasoline can be produced at a constant marginal cost of $2 per gallon.

5. Suppose the company is running as a monopoly in the market, what are the optimal quantity and price of the company?

   (a) $P^* = 3$ and $Q^* = 12$

   (b) $P^* = 2$ and $Q^* = 12$

   (c) $P^* = 4$ and $Q^* = 10$

   (d) $P^* = 4$ and $Q^* = 12$

   (e) $P^* = 2$ and $Q^* = 10$

6. Now, suppose a war breaks out, the government takes over the company and makes it operate as a competitive market firm. However, due to shortage, the government temporarily limits the total amount of gasoline available for civilian use to 15 gallons per week. In the interest of fairness, the government allocates an equal amount per week to each of the randomly selected consumer at the market price and forbids barter in gasoline. How much is the deadweight loss caused by the distribution plan?

   (a) 5

   (b) 2.5

   (c) 10

   (d) 7

   (e) None of the above

Scenario D
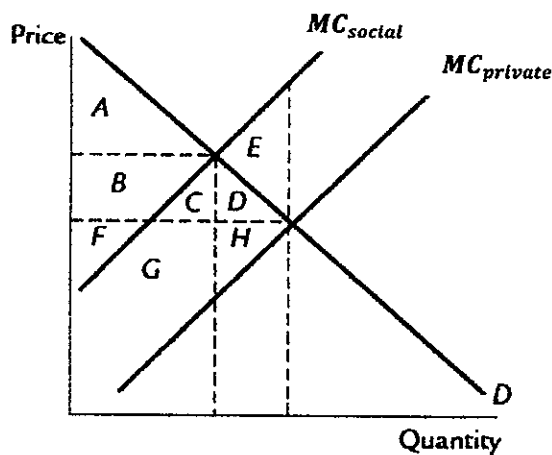
The chemistry industry is competitive and a source of localized air pollution (the pollution affects only people who live near the factories). The graph above shows the demand and the private and social marginal cost curves of a chemical firm.

7. Suppose the government does not impose any tax and the transaction cost between the firm and neighbors is little, what is the total externality caused by the production?

   (a) E

   (b) C+G

   (c) C+D+G+H

   (d) C+D+G+H+E

   (e) E+D+H

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8. Suppose there has always been a Pigou tax, and that people have always lived near the firm. One day the Pigou tax is eliminated, and all these neighbors move away. Fill in these blanks: The cost of moving must be greater than___X___but less than___Y___.
    (a) $X = A$ and $Y = A + B + C + D$
    (b) $X = F$ and $Y = F + G + H$
    (c) $X = C + G$ and $Y = C + G + D + H$
    (d) $X = C + D + E$ and $Y = C + D + E + G + H$
    (e) None of the above

Scenario E

A and B are both producers of apple in a competitive market. Their total cost functions are respectively $TC_a = 100Q_a$ and $TC_b = 30 + 5Q_b^2$, where TC_a and TC_b are total costs in terms of money and Q_a and Q_b are quantities. Alternatively, A's and B's inputs can be used to produce oranges, also in a competitive market.

9. As long as the production efficiency is concerned, what are the optimal quantities of apple to be produced by A and B if the goal is to produce 25 apples in total and inputs for production are unlimited?
    (a) $Q_a^* = 15$ and $Q_b^* = 10$
    (b) $Q_a^* = 20$ and $Q_b^* = 5$
    (c) $Q_a^* = 10$ and $Q_b^* = 15$
    (d) $Q_a^* = 5$ and $Q_b^* = 20$
    (e) None of the above

10. What is the shape of the production possibility curve (PPC) for B if orange is on the Y axis and apple is on the X axis?
    (a) It is a horizontal line
    (b) It is a vertical line
    (c) It is a downward-sloping straight line
    (d) It is a non-linear curve
    (e) There is no sufficient information to determine the shape of the PPC

Scenario F

The government is considering installing streetlights in a village, which has only two residents: A and B. Streetlights are public goods, meaning that once installed, both A and B can benefit from the lighting service without having to pay for it. A's and B's demand functions for streetlights are as follows:

- $Q_a = 100 - P_a$
- $Q_b = 50 - 0.5P_b$

where P_a, P_b, Q_a and Q_b represent the prices and quantities demanded for streetlights for A and B, respectively. The supply function for streetlights is given as $P = 2Q$, where P and Q represent the price and quantity supplied, respectively.

11. What is the optimal quantity of streetlights?
    (a) 12
    (b) 20
    (c) 300/17
    (d) 40
    (e) 50

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12. Following the previous question, suppose the optimal quantity of streetlight is x, how much in total are A and B willing to pay for the xth streetlight?
   (a) 80
   (b) 100
   (c) 200-(900/17)
   (d) 125
   (e) 175

13. What is the total surplus at the optimal quantity of streetlights?
   (a) 1250
   (b) 2500
   (c) 32500/17
   (d) 4750
   (e) None of the above

Scenario G

An apartment was built at the beginning of 2021 and sold at 5 million dollars immediately. At the beginning of 2022, Trump purchased the apartment at the price of 6 million dollars. After the purchase, he immediately rent it to Biden and the annual rent is set at 100 thousand dollars.

14. By how much does the GDP in 2022 increase?
   (a) 100 thousand dollars
   (b) 6 million dollars
   (c) 6.1 million dollars
   (d) 1 million dollars
   (e) 1.1 million dollars

15. How did the sale of the newly-built department in 2021 contribute to the GDP in 2021?
   (a) It increased consumption by 5 million dollars.
   (b) It increased consumption by 0.1 million dollars.
   (c) It increased investment by 5 million dollars.
   (d) It increased investment by 5 million dollars and consumption by 0.1 million dollars.
   (e) It increased consumption by 5.1 million dollars.

Scenario H

If the financial system has only one commercial bank as the financial intermediary, and assuming households do not hold any cash but deposit all their money into the bank, the current balance sheet of the bank is as follows:

Balance sheet			
Required Reserve	600	Deposit	15000
Excess Reserve	150		
Loan	14250		

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16. How much money was inserted into this economy (by central bank) initially?
    (a) 15000
    (b) 600
    (c) 14250
    (d) 150
    (e) None of the above

17. How much is the money supply if the required reserve rate is changed to 0.03?
    (a) 12500
    (b) 16500
    (c) 18750
    (d) 21000
    (e) 25000

Scenario I

Assuming that Taiwan's aggregate production function is $Y = A K^{1/3} H^{2/3}$, where Y denotes total output, A denotes the level of technology, K denotes the capital stock and H denotes the number of efficiency units of production.

18. The US-Sino trade war helped expel physical capital from China to Taiwan. Assuming that as a result K in Taiwan increases by 6% in 2018, but the capital influx was only a one-time shot, which did not happen in 2019. Assuming that the capital depreciation rate is always zero, by how much did the capital influx boost the GDP growth in 2019?
    (a) 6%
    (b) 4%
    (c) 2%
    (d) 0%
    (e) 1%

19. Assuming that, K increased by 3% in Taiwan 2020, and at the same time the trade war shifted technology from China to Taiwan, making A increase by 2% in 2020, by how much will Y increase in the same year holding H constant?
    (a) 2%
    (b) 3%
    (c) 5%
    (d) 1%
    (e) None of the above

Scenario J

Assuming that at equilibrium real money supply (M^s/P) is equal to real money demand (M^d/P), which is assumed to be a function of real income (Y), nominal interest rate (R), and technology (A) as follows:

$$\frac{M^s}{P} = \frac{M^d}{P} = A\frac{Y}{R}$$

Assuming that the growth rate of Y is 4%, the growth rate of R is 0, and the growth rate of A is -1%, you can draw a diagram to indicate the relation between growth rate of M^s (on the X-axis) and inflation rate (on the Y-axis).

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20. What are the intercept on Y-axis and the slope of the curve?
    (a) 1%, 0.5
    (b) -3%, 0.5
    (c) -2%, 1
    (d) -1%, 1
    (e) None of the above

21. Which of the following is likely to happen when electronic payment tools, such as LINE pay and Apple Pay, become more widely used?
    (a) Money demand will decrease because consumers do not need to use as much cash
    (b) Money demand will increase because consumers tend to purchase more
    (c) Money demand will remain unchanged because electronic payment tools, just like credit cards, are not cash
    (d) Money demand will decrease because nominal interest rate will increase, supressing money demand
    (e) None of the above

Scenario K

Assume that a firm's production function is $Y = AK^{0.5}L^{0.5}$, where A refers to production technology, K and L are respectively capital and labor inputs. Assuming that wage rate is w, interest rate is r, and the product price p is set to be 1. You can derive the labor demand function of the firm using these parameters.

22. If r increases by 10%, by how much does the labor demand change?
    (a) +10%
    (b) -10%
    (c) +5%
    (d) -5%
    (e) None of the above

23. If w increases by 10%, by how much does the labor demand change?
    (a) +10%
    (b) -10%
    (c) +5%
    (d) -5%
    (e) None of the above

Scenario L

Read the following article 'Power in reserves', copied from *The Economist* on May 27, 2021, and answer Questions 24 and 25.

Power in reserves

Asia's soaring trade inflows put currency intervention in the spotlight

It might seem cause for celebration. Taiwan was already a standout economic performer in a pandemic-plagued world, and its good run, fuelled by semiconductor sales, is continuing. Orders for its exports rose by an eye-watering 49% in the first two months of 2021 compared with a year earlier, according to data released on March 22nd. There is just one snag: export strength has become awkward for officials in Taipei, for it attracts unwanted attention. America's Treasury has already placed Taiwan on its "monitoring list" for countries that manipulate their exchange rates and the boom only adds to the harsh glare.

If it is any solace to Taiwan, it is far from alone in drawing such scrutiny. Across Asia foreign-exchange reserves-a good proxy for currency intervention-have jumped. Excluding China (where the data are trickier to interpret), reserves in the next ten largest Asian

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economies increased by about \$410bn last year, the biggest annual jump on record, according to calculations by The Economist.

Some of the other countries are, like Taiwan, part of the Asian manufacturing complex which has benefited from resilient overseas demand for electronics and consumer goods amid covid-19 lockdowns. In Vietnam, for example, exports grew by 6.5% last year. With its currency, the dong, loosely pegged to the dollar, much of those trade receipts wound their way into official foreign-exchange reserves (the central bank issues dong to buy excess dollars from commercial banks at a quasi-fixed exchange rate).

Other countries recorded big net currency inflows in tougher circumstances. In the Philippines and India exports slumped, but imports fell more sharply. Both countries swung from current-account deficits to large surpluses last year.

The controversial question is whether the build-up in reserves is, from a global perspective, bad. The case against reserves is that, since they stem from efforts to suppress currency appreciation, they represent a beggar-thy-neighbour trade policy: boosting your exports at the expense of others. Yet there is also a case for reserves. For small open countries, the goal may be to minimise disruptive exchange-rate swings, not to keep a currency cheap. And for developing countries, reserves are a liquidity backstop if foreign capital dries up, as it did for many last year.

That distinction matters in Asia. It seems absurd to fault some of the poorer countries. During the "taper tantrum" of 2013, when emerging markets sold off over fears of American monetary tightening, India and Indonesia were among those seen as vulnerable because of their reliance on external financing. Bigger buffers should make them more stable. If they can wrestle the pandemic under control this year, it is likely that their imports will rebound and their current-account surpluses will diminish. The increase in their reserves would end up looking like a healthy aberration, not a malign trend.

The gains in richer countries-especially China, South Korea and Taiwan- look more objectionable. They themselves seem to be aware of this. Most notable is China, which appears to have taken steps to conceal its good fortune. Its central bank's foreign reserves have risen by \$97bn since the start of 2020, making for a relatively modest increase of 3%. But there has been a marked jump in net foreign-currency assets in its banking system, which are up by \$133bn, or 80%, in the first nine months of 2020 (see chart). One possibility is that the commercial lenders have acted as proxies for managing reserves. Currency traders in China say big state-owned banks have indeed been major buyers of dollars at moments of maximum yuan strength.

The best defence for these three countries is that they have wanted to check the speed at which their currencies appreciate, particularly given the uncertainties of the pandemic. Even with their bigger reserves, the currencies of China, South Korea and Taiwan are all up by about 5% against the dollar since mid-2020. They will face more upward pressure if the export boom continues. The pandemic promises to leave a key oddity of the world economy intact: treasure chests of reserves in Asia that are accumulated, held and spent in order to insulate economies from currency markets that policymakers don't trust.

24. Why would the increase in poor countries' foreign reserves during the pandemic be a minor concern for the US?
    (a) Because they are not weighty enough to cause harm
    (b) Because they need to build up foreign reserves to hedge against bad times
    (c) Because they do not exercise the beggar-thy-neighbour trade policy
    (d) Because they already suffered from the "taper tantrum"
    (e) None of the above

25. How did Chinese government hide its foreign reserves?
    (a) By cooking books
    (b) By asking its central bank to reduce buying foreign reserves
    (c) By asking large commercial banks to buy and hold foreign reserves
    (d) By asking currency traders to reduce buying foreign reserves
    (e) None of the above

試題隨卷繳回