考 試 科 目	經濟學	系所別	商學院共同科	考試時間	1月 6日(二)第二節

Multiple Choice (1 point each)

Identify the letter of the choice that best completes the statement or answers the question.

1. A consumer's utility function is $U(x,y,z) = 5y + \min\{x, 2z\}$. Now, at $p_x = 1, p_y = 5$, and $p_z = 2$, which of the following descriptions is correct as p_z marginally decreases.
    A. The income effect increases the consumption of y.
    B. There is no substitution effect.
    C. There is no income effect.
    D. The substitution effect increases the consumption of z.

2. Suppose a consumer with a monotonic preference consumes only two goods. Then,
    A. both goods need to be normal goods.
    B. two goods are substitutes for each other.
    C. if she has a downward sloping demand on one good, so as on another good.
    D. None of the above is correct.

3. Ann's preferences can be represented by the utility function $U(x,y) = (x-3)^2 + (y-4)^2$, then which of following is correct?
    A. Her preference is convex.
    B. Her preference is monotonic.
    C. Commodity x is a "bad" for Ann.
    D. If Ann has 10 dollars and $p_x = p_y = 1$, then Ann will consume $x = y = 5$.

4. Consider a monopolistic competition market with a limited number of licenses that can be traded. In the long run, which of the following statements is incorrect?
    A. All firms in the market earn zero profit.
    B. Some firms have incentives to sell their licenses.
    C. The potential entry firms will be indifferent between entering the market or not.
    D. All firms produce at a quantity with decreasing average cost.

5. Consider a market with demand, $Q_D = 200 - 5P$ and supply, $Q_S = 5P - 75$. The production process causes pollution for the environment as a negative external cost per unit is represented as $E_C = Q_S/5 + 10$. If the government plans to levy a Pigouvian ad valorem tax, which of the following is the correct tax rate?
    A. 45%
    B. 66%
    C. 75%
    D. 100%

備　　　註	一、作答於試題上者，不予計分。 二、試題請隨卷繳交。

考 試 科 目	經濟學	系所別	商學院共同科	考試時間	2月 6日(二)第二節

6. What is the producer surplus of the monopoly when it conducts perfect price discrimination, given the demand function and marginal cost as $Q = 10 - P$ and $MC = 5$, respectively?

    A. 3.125

    B. 6.25

    C. 12.5

    D. 25

7. Among the following total cost functions of firms in a perfectly competitive market, which one has a meaningful shutdown point $(Q_{shutdown} > 0)$?

    A. $5Q^3 + 20Q^2 + 50Q + 100$

    B. $5Q^3 - 20Q^2 + 50Q + 100$

    C. $5Q^3 + 20Q^2 + 50Q - 400$

    D. $5Q^3 + 2Q^2 - 100Q + 100$

8. The long-run total cost function of a firm in a monopolistic competitive market is $TC(Q) = 7700Q - 100Q^2 + 1/3Q^3$. Which of the following represents a possible long-run equilibrium price and output?

    A. $(P, Q) = (100, 100)$

    B. $(P, Q) = (200, 150)$

    C. $(P, Q) = (500, 120)$

    D. $(P, Q) = (500, 180)$

9.

<div align="center">Player 2</div>

Player 1		A	B	C
	A	(1,2)	(2,1)	(1,0)
	B	(0,5)	(1,2)	(7,4)
	C	(-1,1)	(3,X)	(2,2)

Which of the following values of X yields the above game exactly two pure strategy Nash equilibria?

    A. 0

    B. 1

    C. 1.5

    D. 3

10. Suppose a market has the following well-defined market supply curve: $Q = P + 3$. The market structure of this market could be:

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(i) Perfect competition.
(ii) Monopolistic competition.
(iii) Monopoly.
(iv) Oligopoly.
    A. (i) only
    B. (ii) and (iii)
    C. (ii), (iii), and (iv)
    D. (i), (ii), (iii), and (iv)

11. Suppose Iran has a comparative advantage over other countries in producing pistachios, but other countries have an absolute advantage over Iran in producing pistachios. If trade in pistachios is allowed, Iran
    A. will import pistachios.
    B. will export pistachios.
    C. will have nothing to gain either from exporting or importing pistachios.
    D. will either import or export pistachios, but it is not clear from the given information.

12. In the Unites States, the CPI was 100 in 1983 and is 250 in 2018, then $100 in 2018 purchases the same amount of goods and services as
    A. $25 purchased in 1983.
    B. $40 purchased in 1983.
    C. $100 purchased in 1983.
    D. $250 purchased in 1983.

13. Seeing a looming credit crunch, banks choose to hold more excess reserves relative to their deposits. This action
    A. does not change the money multiplier, but increase the money supply.
    B. does not change the money multiplier, but decrease the money supply.
    C. increases the money multiplier, and increase the money supply.
    D. decreases the money multiplier, and decrease the money supply. .

14. Suppose the inflation rate is high, but unemployment is at its natural rate. If the central bank pursues a contractionary monetary policy, which of the following results would be expected in the short run?
    A. The short-run Phillips curve would shift to the left.
    B. The short-run Phillips curve would shift to the right.
    C. The economy would move up and to the left along a given short-run Phillips curve.
    D. The economy would move down and to the right along a given short-run Phillips curve.

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考 試 科 目	經濟學	系所別	商學院共同科	考試時間	二月 6 日(二) 第二節

15. Which of the following would transfer wealth from old to young?
   A. Increases in the budget deficit
   B. Increases in housing prices
   C. More generous education subsidies
   D. Indexation of Social Security benefits to inflation

16. Which of the following results in higher inflation and higher unemployment in the short run?
   A. The Fed institutes an interest rate cut.
   B. The Fed raises interest rates.
   C. The price of oil increases.
   D. All of the above.

17. Other things being equal, as the price level of a country increases,
   A. its real value of money falls and its currency appreciates.
   B. its real value of money rises and its currency appreciates.
   C. its real value of money falls and its currency depreciates.
   D. its real value of money rises and its currency depreciates.

18. Which of the following shifts both the long-run aggregate supply curve and the short-run aggregate supply curve?
   A. a change in the price level
   B. a change in the money wage rate
   C. an advance in technology
   D. All of the above.

19. If the price level is constant and the slope of the aggregate expenditure curve in the Keynesian model is 0.75, a decrease in investment of $100 leads to a(n) _____ in real GDP of _____.
   A. decrease; $75.
   B. increase; $75.
   C. increase; $400.
   D. decrease; $400.

20. Suppose the economy is experiencing an unanticipated event. Real borrowing costs rise for debtors due to the occurrence of this event. What kind of event might it be and what kind of action could the Fed take to help the debtors?
   A. An unexpected fall in price; increase the money supply.
   B. An unexpected fall in price; decrease the money supply.
   C. An unexpected rise in price; decrease the money supply.
   D. An unexpected rise in price; increase the money supply.

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考 試 科 目	經濟學	系所別	商學院共同科	考試時間	2月6日(二) 第二節

Problems and Short-essay Questions

1. David consumes two goods: pencils (x_1) and erasers (x_2). The price of a pencil is P_1 while the price for an eraser is P_2. David has m dollars. David's utility function is

$$u(x_1, x_2) = \min\{6x_1 + x_2, x_1 + 2x_2\}.$$

　a. (7 points) Calculate the marginal rate of substitution ($\frac{dx_2}{dx_1}$) for David.

　b. (7 points) What are David's demand functions in terms of P_1, P_2, and m.

　c. (6 points) Suppose $P_1 = 2, P_2 = 4$, and $m = 40$. Moreover, if one buys 10 pencils or more, he will get 5 erasers for free. What is David's optimal choice now?

2. A perfectly competitive market in a small country has 50 identical firms. Suppose the market demand function is $P = 130 - Q$ and the supply curve of a firm is $P = -50 + 50q$, where P is the market price, Q is the market quantity supplied, and q is a firm's quantity supplied. Please answer the following questions in detail:

　a. (5 points) What is the market supply curve?

　b. (5 points) What is the market equilibrium under autarky?

　c. (10 points) Suppose the world price of the market product is 30, and the small country is currently under free trade. What level of import tariff should the government impose to make consumer surplus equal to 4512.5?

3. Below are some data from the land of milk and honey.

Year	Price of Milk	Quantity of Milk	Price of Honey	Quantity of Honey
2020	7	10	2	15
2021	5	17	5	3
2022	4	30	6	6

　a. (6 points) Compute the percentage change in nominal GDP between 2020 and 2022.

　b. (8 points) Suppose the government adopts the fixed-based approach to measure the real GDP by setting 2020 as the base year. What is the cumulative real GDP growth rate between 2020 and 2022?

　c. (6 points) Suppose the government adopts the chain-linked approach to measure the real GDP. What is the cumulative real GDP growth rate between 2020 and 2022?

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4. Suppose the nominal exchange rate between the dollar and the euro is 2 euros per dollar. Answer the following questions.

　　a. (5 points) The price of a book in Europe is 20 euros. If the purchasing power parity holds, how much will the same book cost in the United States?

　　b. (10 points) If the price level in the U.S. is 120 and the price level in Europe is 150, what is the real exchange rate in terms of European goods per U.S. good? By how much is the Euro undervalued or overvalued than predicted by the purchasing-power parity?

　　c. (5 points) If the nominal exchange rate between the dollar and the euro becomes 1.5 euros per dollar, what will happen to U.S. net capital outflow?

備　　註	一、作答於試題上者，不予計分。 二、試題請隨卷繳交。