

考試科目	經濟學	系所別	國貿、會計、財管、風管 (二年級)	考試時間	7月3日(三) 第二節
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I. Multiple Choice (3 points each)

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

1. Jason says that he will spend exactly \$25 each month on new apps for her mobile device, regardless of the price of the apps. Jason's demand for apps is

- A. perfectly inelastic.
- B. unit elastic.
- C. perfectly elastic.
- D. More information is needed.

2. Most economists prefer corrective taxes to regulation as a way to correct the problem of pollution because the market-based solution

- A. balances the demand and supply for pollution.
- B. can result in a more significant increase in pollution.
- C. increases revenue for firms.
- D. is less costly to society.

3. Excessive use exists in Taiwan's health care system. Which of the following terms describes the problem correctly?

- A. the free-rider problem
- B. the tragedy of the commons
- C. a public good
- D. cost-benefit analysis

4. Which combination is NOT compatible with a monopolist's profit-maximizing behavior?

- A. slope of demand = -5, price = 5, quantity = 1
- B. slope of demand = -5, price = 1, quantity = 5
- C. slope of demand = -3, price = 7, quantity = 2
- D. slope of demand = -3, price = 2, quantity = 7

5. A monopolistically competitive firm is currently producing 23 units of output. At this output level, the firm charges the highest price it can at \$25, has a marginal revenue equal to \$19, has a marginal cost equal to \$19, and has an average total cost equal to \$22. From this information, we can infer that

- A. firms are likely to leave this market in the long run.
- B. the firm is earning zero profit.
- C. increasing the quantity produced will raise per-unit costs.
- D. the firm is currently maximizing its profit.

備	註	一、作答於試題上者，不予計分。 二、試題請隨卷繳交。
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6. Consider the following game

<i>A</i>	<i>B</i>		
	Left	Center	Right
	<i>A</i> = 1, <i>B</i> = 4	<i>A</i> = 6, <i>B</i> = 2	<i>A</i> = 3, <i>B</i> = 1
	<i>A</i> = 2, <i>B</i> = 2	<i>A</i> = 4, <i>B</i> = 6	<i>A</i> = 5, <i>B</i> = 7
Down		<i>A</i> = 3, <i>B</i> = 2	<i>A</i> = 5, <i>B</i> = 5
A		<i>A</i> = 4, <i>B</i> = 3	

Which of the following statements regarding this game is true?

- A. Player *A* has a dominant strategy.
- B. Player *B* has a dominant strategy.
- C. If player *A* chooses Down, player *B* should choose Right.
- D. (Middle, Right) is the Nash Equilibrium.

7. A rise in the price of imported final goods in a country will

- A. lead to a rise in both the country's GDP deflator and the CPI.
- B. lead to a rise in the country's GDP deflator.
- C. lead to a rise in the country's CPI.
- D. leave both the country's GDP deflator and CPI unchanged.

8. Assume Country *A* has 5 people, all of whom are between the ages of 16 and 50. One of them is in jail, one is a househusband, one just graduated from school and is seeking a job, and the remaining two are currently employed by a company. What is the labor participation rate of Country *A*?

- A. 60%
- B. 67%.
- C. 75%.
- D. 100%.

9. Which of the following situations will lead to the short-run Phillips curve shifting to the right?

- A. The actual price level is higher than the consumers' expected price level.
- B. The actual price level is lower than the consumers' expected price level.
- C. The menu costs are large.
- D. The consumers' expectation has changed.

10. Other things being equal, in the long run, a capital flight from Ukraine to the U.S.A. will lead to a/an _____ of the real exchange rate of the U.S. dollar, measured by how many Ukrainian hryvnias (UAH) per U.S. dollar and a/an _____ of the real interest rate in the U.S.A.

- A. depreciation; increase

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B. depreciation; decrease
C. appreciation; increase
D. appreciation; decrease

11. Assume the PPFs of Country A and Country B are both straight lines with negative slopes in the first quadrant of an X-Y plane, and Country A's PPF is steeper than Country B's PPF. Which of the following statements is correct when two countries move from autarky to free trade?

A. Country A exports the good on X-axis.
B. The price of the good on X-axis will drop.
C. Country A's PPF will shift out.
D. Country A's opportunity cost in producing X will drop.

12. Which of the following policies will directly lead to the long-run Phillips curve shifting to the right?

A. The central bank sells government bonds.
B. The government raises the sales tax.
C. A tariff is imposed on the country's export goods.
D. The government increases unemployment insurance benefits.

13. According to liquidity preference theory, if the price level decreases, then

A. the interest rate falls because money demand shifts right.
B. the interest rate falls because money demand shifts left.
C. the interest rate falls because the quantity of money demanded decreases due to a movement up and to the left along the money demand curve.
D. the interest rate falls because the quantity of money demanded increases due to a movement down and to the right along the money demand curve.

14. Given a nominal interest rate of 6 percent, in which of the following cases would you earn the highest after-tax real rate of interest?

A. Inflation is 2.5 percent; the tax rate is 25 percent.
B. Inflation is 3 percent; the tax rate is 20 percent.
C. Inflation is 2 percent; the tax rate is 30 percent.
D. The after-tax real interest rate is same for all of the above.

15. When the economy goes into recession, those in favor of 'leaning against the wind policies' would advocate

A. increasing the money supply and cutting taxes.
B. decreasing the money supply and cutting taxes.
C. decreasing the money supply and raising taxes.

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D. increasing the money supply and raising taxes.

16. Other things the same, if technology improves, then in the long run

- A. both output and prices are higher.
- B. output is higher and prices are lower.
- C. output is lower and prices are higher.
- D. both output and prices are lower.

II. Problems

1. The market demand and supply functions for eggs are:

$$Q^d = 55 - P \quad \text{and} \quad Q^s = 0.5P - 20.$$

(i) (6 points) Calculate the market equilibrium and the producer surplus.

(ii) (5 points) Now suppose this market is monopolized. The monopoly firm faces the same market demand curve and produces with the same cost function. Calculate the monopoly price, quantity, and consumer surplus.

(iii) (5 points) Compare (i) and (ii). What is the deadweight loss in the monopoly egg market?

2. Suppose a small country, *A*, has the following demand curve for good *X*:

$$Q = 1,212 - P,$$

where *Q* is quantity and *P* is the market price. The world price of good *X* is \$10. Please answer the following questions in detail.

(i) (4 points) Suppose Country *A* has 100 identical firms. The supply curve of each firm is:

$$q = P.$$

Is Country *A* an importer or exporter of good *X*? What amounts does it import or export?

(ii) (6 points) Continuing from the previous question, with Country *A* subsidizing its producers by one dollar per unit of output, is Country *A* an importer or exporter of good *X*? By how much does it import or export? What is the total amount of subsidies?

(iii) (6 points) Continuing from the previous question, instead of using subsidies, the government now wants to use a tariff to achieve the same quantity of imports or exports as in question (ii). What is the per-unit tariff?

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3. Consider a simple Keynesian model in which the aggregate expenditure consists only of consumption and government spending. The consumption function can be written as:

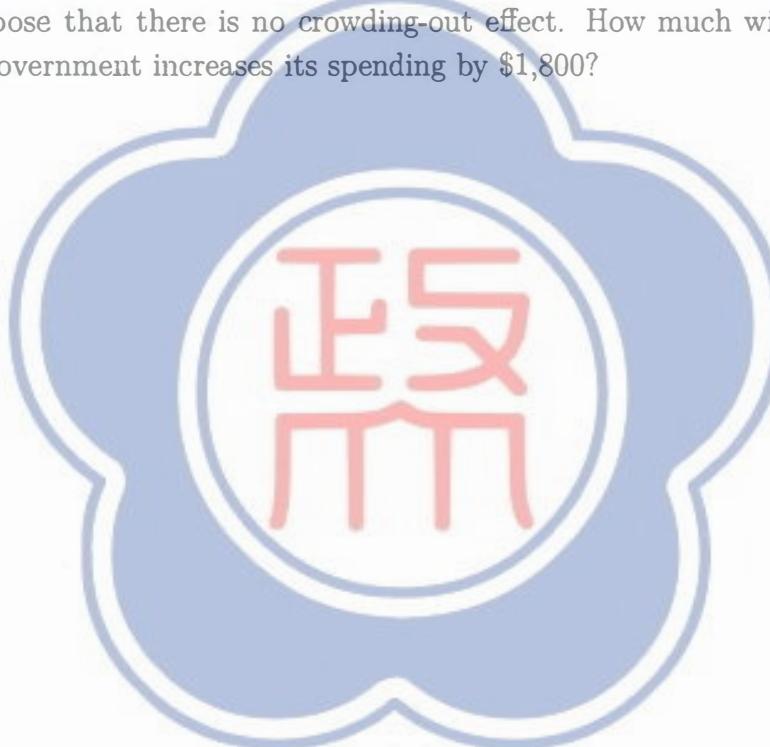
$$C = A + MPC \cdot Y,$$

where C , A , MPC , and Y denote consumption, autonomous consumption, marginal propensity to consume, and output level, respectively. The government spending, $G=2,000$.

(i) (12 points) Suppose that $C=7,000$ when $Y=7,000$ and $C=7,320$ when $Y=7,500$. What are the autonomous consumption and marginal propensity to consume in this economy?

(ii) (4 points) What is the level of output if the economy is in an income-expenditure equilibrium?

(iii) (4 points) Suppose that there is no crowding-out effect. How much will the equilibrium output increase if the government increases its spending by \$1,800?



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A.

Question 1: [5pts] Evaluate

$$\int_0^2 \frac{dx}{(x^2 + 4)^2}$$

by making the substitution $x = 2 \tan u$.

Question 2: [5pts] Starting at the point where $r = 1$, the point P moves counterclockwise along the polar curve $r = e^{\theta/2\pi}$, in such a way that the line segment OP makes one complete revolution. (Here O denotes the origin.) Sketch the curve, and find the total area swept out by OP as it makes the revolution.

Question 3: [10pts] Find all local maxima and minima of the function $f(x) = 2|x| - x^2 - 1$.

Question 4: [10pts] Suppose that $f'(x) = e^{x^2}$, and $f(0) = 10$. One can conclude from the mean value theorem that

$$A < f(1) < B$$

for which numbers A and B ?

Question 5: [20pts] Students studying for an exam get x hours of sleep in the two days leading up to the exam, where x is the range $0 \leq x \leq a$. The number of students who got between x_1 and x_2 hours of sleep is given by

$$\int_{x_1}^{x_2} cx dx; 0 \leq x_1 \leq x_2 \leq a$$

- (a) [10pts] What fraction of the students got less than $a/2$ hours of sleep?
- (b) [10pts] Their scores are proportional to the amount of sleep they got: $S(x) = 100(x/a)$. Find the (correctly weighted) average score in the class.

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B.

Problem 1 Prove or disprove the following statements:

1. (8%) If $\sum_{n=1}^{\infty} a_n = A$ and $\sum_{n=1}^{\infty} b_n = B$ are both convergent, then $\sum_{n=1}^{\infty} a_n b_n = AB$.
2. (8%) Suppose that $\lim_{n \rightarrow \infty} a_n = 0$ and $a_n > 0$ for all $n \in \mathbb{N}$. Then $\sum_{n=1}^{\infty} (-1)^{n+1} a_n$ is convergence.
3. (8%) The series $\sum_{n=3}^{\infty} \frac{1}{\sqrt{n}(\ln n)^2}$ is divergent.

Problem 2 (8%) Evaluate $\iint_R (x+y)e^{x^2-y^2} dA$ where R is the rectangle enclosed by the lines $x-y=0$, $x-y=2$, $x+y=0$ and $x+y=3$.

Problem 3 (8%) Find the extreme value of $f(x, y) = e^{-xy}$ subject to $x^2 + 4y^2 \leq 1$

Problem 4 (10%) Find the sum of the series $\sum_{n=1}^{\infty} n^3 x^n$ for $|x| < 1$.

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