

國立中山大學九十一學年度轉學生招生考試試題

科目：微積分【政經系二年級】

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1. (10分, 每小題5分) (a) Find $\lim_{x \rightarrow 3} \left(\frac{x}{x+3} + \frac{x-3}{x^2-9} \right)$ (b) Find $\lim_{x \rightarrow 1^-} \frac{|x-1|}{x-1}$.

2. (10分, 每小題5分) Find the indicated derivatives in the following problems:

(a) $f'(x)$ for $f(x) = \frac{2}{\sqrt{x^2-1}} - x^3$ (b) $\frac{d}{dx} \sqrt[3]{3x^2+1}$.

3. (10分, 每小題5分) In the following problems, find the derivate and simplify:

(a) $\frac{d}{dx} \frac{\ln(2x+1)}{e^x+3}$ (b) $\frac{d}{dx} e^{2x+3x^2-1}$.

4. (10分) The total cost (in hundreds of dollars) of producing x cameras per week is

$$C(x) = 10 + 3\sqrt{4x+7} + 2x.$$

Find the marginal cost at a producing level of x cameras.

5. (10分, 每小題5分) In the following problems, find each indefinite integral:

(a) $\int (\sqrt[3]{x^2} - \frac{4}{x^3}) dx$ (b) $\int \frac{(\ln x)^3}{x} dx$

6. (10分, 每小題5分) Evaluate the integrals in the following problems:

(a) $\int_0^1 6(x^2+4)^3 x dx$ (b) $\int_0^1 (e^{2x}-2x)^2 (e^{2x}-1) dx$.

7. (10分, 每小題5分) In the following problems, find the absolute extremum, if it exists, for each function. (You must perform the second-derivate test for absolute maximum and minimum.)

(a) $f(x) = 4 + 6x - 3x^2$ (b) $f(x) = 7 + 3x + \frac{12}{x^2}, x > 0$.

8. (10分) Find the partial derivatives, second partial derivatives, and the cross partial derivative of each function.

$$y = -x_1 x_2^2 + 2x_2^{-1}.$$

9. Find local extrema for the following function:

$$f(x, y) = 2x^2 + y^2 + 6x - 2y + 7.$$

10. (10分) A company manufactures and sells x television sets per month. The monthly costs and price-demand equations are

$$C(x) = 72,000 + 60x, \quad p = 200 - \frac{x}{30}, \quad 0 \leq x \leq 6,000.$$

(a) Find the maximum revenue. (b) Find the maximum profit, the production level that will realize the maximum profit, and the price the company should charge for each television set.

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科目：政治學【政經系二年級】

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一、名詞解釋：(每題五分，共二十五分)

(一)、政治社會化

(二)、多元政體

(三)、民族國家

(四)、利益團體

(五)、左右共治

二、請討論文化民族主義與政治民族主義的論述要義，並試著說明民族主義作為一種理論觀點，在我們理解台灣之政治實踐困局上所具備的解釋力。(二十五分)

三、西方自由主義思潮的基本信念為何？請討論之。(二十五分)

四、請各舉一個西方國家為例，比較內閣制、總統制與雙行政首長制的基本差異。(二十五分)

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科目：經濟學【政經系二年級】

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I. MULTIPLE-CHOICE QUESTIONS (40%)

1. The Phillips curve suggests that
 - a. an increase in inflation temporarily increases unemployment.
 - b. a decrease in inflation temporarily increases unemployment.
 - c. inflation and unemployment are unrelated in the short run.
 - d. none of the above.
2. Positive statements are
 - a. microeconomic.
 - b. macroeconomic.
 - c. statements of prescription that involve value judgments.
 - d. statement of description that can be tested.
3. According to the principle of comparative advantage,
 - a. countries with a comparative advantage in the production of every good need not specialize.
 - b. countries should specialize in the production of goods that they enjoy consuming.
 - c. countries should specialize in the production of goods for which they use fewer resources in production than their trading partners.
 - d. countries should specialize in the production of goods for which they have a lower opportunity cost of production than their trading partners.
4. *Ceteris paribus* means
 - a. before this, therefore because of this.
 - b. whatever will be, will be.
 - c. other things being equal.
 - d. cents per exchange.
 - e. none of the above.
5. If the cross-price elasticity between two goods is negative, the two goods are likely to be
 - a. luxuries.
 - b. necessities.
 - c. complements.
 - d. Substitutes.
6. A binding price ceiling creates
 - a. a shortage.
 - b. a surplus.
 - c. an equilibrium.
 - d. a shortage or a surplus depending on whether the price ceiling is set above or below the equilibrium price.
7. Adam Smith's "invisible hand" concept suggests that a competitive market outcome
 - a. minimizes total surplus
 - b. maximizes total surplus.
 - c. generates equality among the members of society.
 - d. none of the above.
8. The reduction of a tax
 - a. could increase tax revenue if the tax had been extremely high.
 - b. will always reduce tax revenue regardless of the prior size of the tax.
 - c. will have no impact on tax revenue.
 - d. causes a market to become less efficient.
9. The most efficient pollution control system would ensure that
 - a. each polluter reduce its pollution an equal amount.
 - b. the polluter with the lowest cost of reducing pollution reduce their pollution the greatest amount.
 - c. no pollution of the environment is tolerated.
 - d. the regulators decide how much each polluter should reduce its pollution.
10. Public goods are difficult for private market to provide due to
 - a. the public goods problem.
 - b. the rivalness problem.
 - c. the Tragedy of the Commons.
 - d. the free-rider problem.
11. An efficient tax
 - a. rises revenue at the smallest possible cost to taxpayer.
 - b. minimizes the deadweight loss from the tax.
 - c. minimizes the administrative burden from the tax.
 - d. does all of the above.

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12. If all firms in a market have identical cost structures and if inputs used in the production of the good in that market are readily available, then the long-run market supply curve for that good should be
- perfectly elastic.
 - downward sloping.
 - upward sloping.
 - perfectly inelastic.
13. The purpose of antitrust laws is to
- regulate the prices charged by a monopoly.
 - increase competition in an industry by preventing mergers and breaking up large firms.
 - increase merger activity to help generate synergies that reduce costs and raise efficiency.
 - create public ownership of natural monopolies.
 - do all of the above.
14. GDP would include which of the following?
- housework.
 - illegal drug sales.
 - intermediate sales.
 - consulting services.
 - all of the above.
15. If the supply of loanable funds is very inelastic (steep), which policy would likely increase saving and investment the most?
- an investment tax credit
 - a reduction in the budget deficit
 - an increase in the budget deficit
 - none of the above
16. Which of the following types of unemployment will exist even if the wage is at the competitive equilibrium?
- unemployment due to minimum-wage law
 - unemployment due to unions
 - unemployment due to efficient wages
 - frictional unemployment
17. The three main tools of monetary policy are
- government expenditures, taxation, and reserve requirements.
 - the money supply, government purchases, and taxation.
 - coin, currency, and demand deposits.
 - open market operations, reserve requirements, and the discount rate.
 - fiat, commodity, and deposit money.
18. The quantity theory of money concludes that an increase in the money supply causes
- a proportional increase in velocity.
 - a proportional increase in prices.
 - a proportional increase in real output.
 - a proportional decrease in velocity.
 - a proportional decrease in prices.
19. Suppose, due to political instability, Mexicans suddenly choose to invest in U.S. assets as opposed to Mexican assets. Which of the following statements is true regarding the value of the dollar and U.S. net exports?
- The dollar appreciates and U.S. net exports fall.
 - The dollar depreciates and U.S. net exports fall.
 - The dollar appreciates and U.S. net exports rise.
 - The dollar depreciates and U.S. net exports rise.
20. When an increase in government spending causes firms to purchase additional plant and equipment, we have seen a demonstration of
- the multiplier effect.
 - the investment accelerator.
 - the crowding-out effect.
 - supply-side economics.
 - none of the above.

II. TRUE/FALSE QUESTIONS (45%)

- () 1. Adam Smith's "invisible hand" concept describes how corporate business reaches into the pockets of consumers like an "invisible hand".
- () 2. If an economy were experiencing substantial unemployment, the economy is producing inside the production possibilities frontier.

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- () 3. If Taiwan has an absolute advantage in the production of an item, it must also have a comparative advantage in the production of that item.
- () 4. The long-run market supply curve is the horizontal summation of the supply curves of individual firms.
- () 5. The demand for aspirin this month should be more elastic than the demand for aspirin this year.
- () 6. The ultimate burden of a tax lands most heavily on the side of the market that is less elastic.
- () 7. The two types of market failure are market power and externalities.
- () 8. A tax on cigarettes would likely generate a larger deadweight loss than a tax on luxury boats.
- () 9. An import quota that restricts imports to the same degree as a tariff raises more government revenue than the equivalent tariff.
- () 10. According to the Coase theorem, an externality always requires government intervention in order to internalize the externality.
- () 11. If someone owned the property rights to clean air, that person could charge for the use of the clean air in a market for clean air and, thus, air pollution could be reduced to the optimal level.
- () 12. The efficient scale for a firm is the quantity of output that minimizes marginal cost.
- () 13. A competitive firm's short-run supply curve is the portion of its marginal cost curve that lies above its average-total-cost curve.
- () 14. The supply curve for a monopolist is always positively sloped.
- () 15. There is a constant tension in an oligopoly between cooperation and self-interest because after an agreement to reduce production is reached, it is profitable for each individual firm to cheat and produce more.
- () 16. For a competitive profit-maximizing firm, the demand curve for a factor is the value of the marginal product curve for that factor.
- () 17. If permanent income were utilized to measure the income distribution instead of current annual income, the income distribution would appear to be wider.
- () 18. The more difficult it is to substitute one good for another, the more bowed inward indifference curves become.
- () 19. If Taiwan GDP exceeds Taiwan GNP, then the foreigners produce more in Taiwan than Taiwan citizens produce in the rest of the world.
- () 20. If lenders demand a real rate of return of 4% and they expect inflation to be 5%, then they should charge 9% interest when they extend loans.
- () 21. An increase in the rate of savings and investment permanently increases a country's rate of growth.
- () 22. An increase in the budget deficit that causes the government to increase its borrowing shifts the demand for loanable funds to the right.
- () 23. Paying efficient wages tends to increase worker turnover because workers can get continually higher wages if they "job hop."
- () 24. An increase in the reserve requirement increases the money multiplier and the money supply.
- () 25. An increase in the price level is the same as a decrease in the value of money.
- () 26. If Italy's money supply grows faster than Germany's, the value of the lira should rise relative to the value of the mark.
- () 27. A country's net foreign investment (*NFI*) is always equal to its net exports (*NX*).
- () 28. If the central bank increases the money supply, the aggregate-demand curve shifts to the left.
- () 29. Crowding out occurs when an increase in government spending increases income, shift money demand to the right, raises the interest rate, and reduces private investment.
- () 30. When actual inflation exceeds expected inflation, unemployment exceeds the natural rate.

III. SHORT-ANSWER QUESTIONS (15%)

1. What are some problems associated with regulating the price charged by a natural monopoly?
2. If the supply of money doubles, what must happen in the long run to the quantity of money demanded and the price level?
3. Explain how an increase in government spending may lead to crowding out.