

國立中山大學九十三年度轉學生招生考試試題

科目：微積分【政經系三年級】

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Denotations: P : the price; Q : the amount of output; L : the amount of labor input; K : the amount of capital input; w : the (real) wage paid to labor; r : the rent paid to capital; C : the cost of inputs.

1. (10 points) Find the partial derivatives, second partial derivatives, and the cross partial derivative of the following function.

$$y = 2 \ln(x_1 x_2) + 4x_2^{-2}$$

2. (20 points) In the following problems, find each indefinite integral:

$$(a) \int \left(-\frac{1}{2x^3}\right) dx \quad (b) \int \frac{(\ln x)^3}{3x} dx$$

3. (20 points) Find local extrema for the following function. The second-derivative test must be performed (That is, you must consider the second-order condition).

$$f(x, y) = x^2 + y^2 + 2x - 4y + 5$$

4. (20 points) Suppose the production function of a firm takes the Cobb-Douglas form $Q = AK^\alpha L^{1-\alpha}$. This firm faces a linear cost-of-input function $C = wL + rK$. Set up a Lagrangian function reflecting the constrained optimization problem of obtaining the most output given a budget \bar{C} to spend on inputs. Solve this for the optimal levels of capital and labor.

5. (20 points) The demand function facing a monopolist is given by

$$P = a - bQ,$$

where both a and b are positive parameters. This firm's total cost function is linear in quantity with constant marginal cost c per unit of output and fixed costs of F .

- (a) Assume that the government imposes a tax t per unit of output sold by the firm. Obtain the profit-maximizing levels of price and output.
 (b) Assume the government decides to choose t so that it maximizes the tax revenue, tQ . What level of t should the government choose?

6. (10 points) Plot the phase diagram for the following equation.

$$\dot{s}(t) = -4(s(t)^2) + 8s(t)$$

Identify the steady state points and characterize them as stable or unstable.

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以下申論題共 4 題，請詳答

1、請說明以下主要政府制度之中，30%

- (1) 何種情形下，總統制的運作順暢度優於內閣制？
- (2) 何種情形下，內閣制的運作順暢度優於總統制？
- (3) 何種情形下，半首長制最不容易運作？

2、選舉制度的設計影響選舉結果，請試說明 25%

- (1) 主要選舉制度有哪些？
- (2) 我國立委選舉制度為何？其優缺點何在？

3、「這是一個已經全球化的世界」——25%

- (1) 請試說明這句敘述所指意義為何？
- (2) 你是否同意這個說法？

4、媒體可能如何參與、影響、甚至主導政治？請試由理論與實例說明之。20%

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科目：經濟學【政經系三年級】

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Economics

Multiple Choice

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

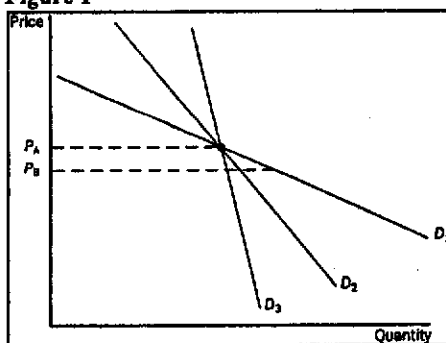
1. In the short run, the Phillips curve illustrates
 - a. the tradeoff between inflation and unemployment.
 - b. the tradeoff between equity and efficiency.
 - c. labor productivity in an economy.
 - d. the level of government intervention in a market economy.
2. The circular-flow diagram is a
 - a. visual model of how the economy is organized.
 - b. mathematical model of how the economy works.
 - c. model that shows the effects of government on the economy.
 - d. visual model of the relationship among money, prices, and businesses.

Table 1

	Labor Hours Needed to Make One Unit of:		Amount Produced in 24 Hours:	
	Baskets	Birdhouses	Baskets	Birdhouses
Montana	6	2	4	12
Missouri	3	4	8	6

3. Refer to Table 1. If Montana and Missouri trade based on the principle of comparative advantage, Montana will export
 - a. baskets and Missouri will export birdhouses.
 - b. birdhouses and Missouri will export baskets.
 - c. neither good and Missouri will export both goods.
 - d. both goods and Missouri will export neither good.

Figure 1



4. Refer to Figure 1. As price falls from P_A to P_B , which demand curve is most elastic?
 - a. D_1
 - b. D_2
 - c. D_3
 - d. All of the above are equally elastic.

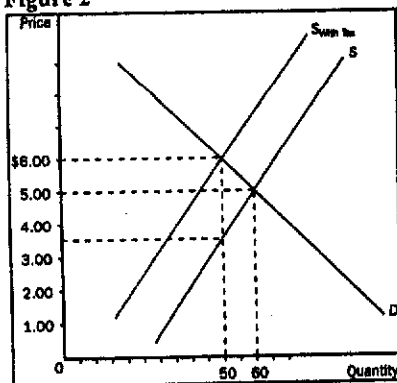
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5. A key determinant of the elasticity of supply is
 - a. the ability of sellers to change the price of the good they produce.
 - b. the number of firms in the market.
 - c. how responsive buyers are to changes in sellers' prices.
 - d. the ability of sellers to change the amount of the good they produce.
6. An increase in farm technology which increases market supply is
 - a. good for farmers because it raises prices for their products, but bad for consumers because it raises prices consumers pay for food.
 - b. bad for farmers because total revenue will fall, but good for consumers because prices for food will fall.
 - c. good for farmers because it raises prices for their products, and also good for consumers because more output is available for consumption.
 - d. bad for farmers because total revenue will fall, and bad for consumers because farmers will raise the price of food to increase their total revenue.
7. Muriel's income elasticity of demand for football tickets is 1.50. All else equal, this means that if her income increase by 20 percent, she will buy
 - a. 150 percent more football tickets.
 - b. 50 percent more football tickets.
 - c. 30 percent more football tickets.
 - d. 20 percent more football tickets.
8. A price ceiling that is not binding will
 - a. cause a surplus in the market.
 - b. cause a shortage in the market.
 - c. cause the market to be less efficient.
 - d. have no effect on the market price.
9. If a tax is levied on the seller of a product the demand curve
 - a. will not change.
 - b. will shift downward.
 - c. will shift upward.
 - d. may shift up or down, depending on the amount of the tax.

Figure 2



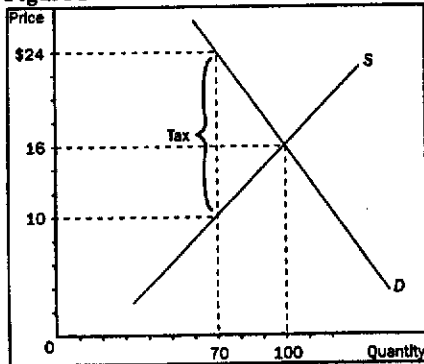
10. Refer to Figure 2. The price buyers will pay after the tax is imposed is
 - a. \$1.00.
 - b. \$3.50.
 - c. \$5.00.
 - d. \$6.00.

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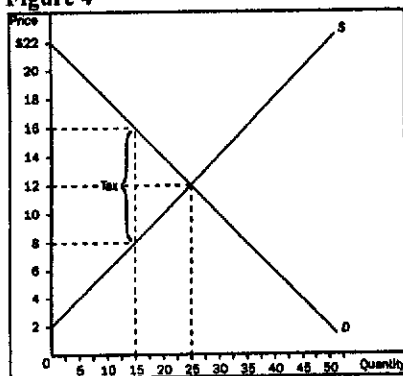
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Figure 3



11. Refer to Figure 3. The per unit burden of the tax on the sellers is
 - a. \$16.
 - b. \$14.
 - c. \$8.
 - d. \$6.
12. If the government allowed a free market for transplant organs (such as kidneys) to exist
 - a. the shortage of organs would be eliminated.
 - b. those with the greatest need would be first to receive an organ.
 - c. organs would be distributed more fairly.
 - d. only the very rich in a society would receive a transplant.

Figure 4



13. Refer to Figure 4. The total surplus with the tax would equal
 - a. \$240.
 - b. \$230.
 - c. \$220.
 - d. \$210.

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14. Suppose that policymakers are considering placing a tax on either of two markets. In Market A, the tax will have a significant effect on the price consumers pay, but it will not affect equilibrium quantity very much. In Market B, the same tax will have only a small effect on the price consumers pay, but it will have a large effect on the equilibrium quantity. In which market will the tax have a larger deadweight loss?
- Market A
 - Market B
 - Deadweight loss will be the same in both markets.
 - There is not enough information to answer the question.
15. Market failure can be caused by
- foreign competition.
 - externalities.
 - low consumer demand.
 - government intervention.
16. Since almost all forms of transportation produce some type of pollution
- the government should ban all transportation.
 - society has to weigh the cost and benefits and decide how much pollution to allow.
 - corporations should voluntarily reduce pollution levels with new car models.
 - the government should tax the types of transportation that pollute most to eliminate it altogether.
17. Two firms, A and B, each currently dump 50 tons of chemicals into the local river. The government has decided to reduce the pollution and from now on will require a pollution permit for each ton of pollution dumped into the river. The government gives each firm 20 pollution permits, which it can either use or sell to the other firm. It costs Firm A \$100 for each ton of pollution that it eliminates before it reaches the river and it costs Firm B \$50 for each ton of pollution that it eliminates before it reaches the river. After the two firms buy or sell pollution permits from each other, we would expect that Firm A will dump
- 10 fewer tons of pollution into the river and Firm B will dump 50 fewer tons of pollution into the river.
 - 50 fewer tons of pollution into the river and Firm B will dump 10 fewer tons of pollution into the river.
 - 30 fewer tons of pollution into the river and Firm B will dump 30 fewer tons of pollution into the river.
 - 10 more tons of pollution into the river and Firm B will dump 50 fewer tons of pollution into the river.
18. If the government imposes a tax of \$3,000 on everyone, this tax would best be described as a(n)
- income tax.
 - consumption tax.
 - lump-sum tax.
 - marginal tax.
19. Susan used to work as a telemarketer, earning \$25,000 per year. She gave up that job to start a catering business. In calculating the economic profit of her catering business, the \$25,000 income that she gave up is counted as part of the catering firm's
- total revenue.
 - opportunity costs.
 - explicit costs.
 - All of the above are correct.
20. Suppose Jan is starting up a small lemonade stand business. Variable costs for Jan's lemonade stand would include the cost of
- building the lemonade stand.
 - hiring an artist to design a logo for her sign.
 - lemonade mix.
 - All of the above are correct.

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Use the following information to answer the following questions.

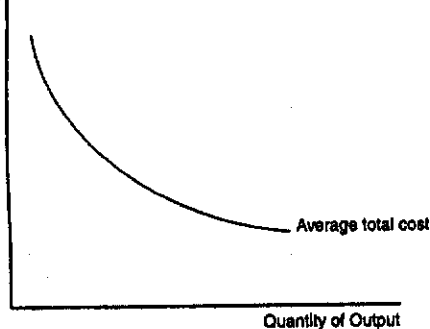
Scenario 1

As part of an estate settlement Mary received \$1 million. She decided to use the money to purchase a small business in Anywhere, USA. If Mary would have invested the \$1 million in a risk-free bond fund she could have made \$100,000 each year. She also quit her job with Lucky.Com Inc. to devote all of her time to her new business; her salary at Lucky.Com Inc. was \$75,000 per year.

21. Refer to Scenario 1. At the end of the first year of operating her new business, Mary's accountant reported an accounting profit of \$150,000. What was Mary's economic profit?
- \$25,000 loss
 - \$50,000 loss
 - \$25,000 profit
 - \$150,000 profit

Use the figure to answer the following questions.

Figure 5
Costs (\$)



22. Refer to Figure 5. The shape of the average total cost curve reveals information about the nature of the barrier to entry that might exist in a monopoly market. Which of the following monopoly types best coincides with the figure?
- ownership of a key resource by a single firm
 - natural monopoly
 - government-created monopoly
 - None of the above are correct.
23. A monopoly firm can sell 200 units of output for \$36.00 per unit. Alternatively, it can sell 201 units of output for \$35.80 per unit. The marginal revenue of the 201st unit of output is
- \$35.80.
 - \$4.20.
 - \$4.20.
 - \$35.80.

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24. Which of the following explains why oligopolies often fail to maintain cooperation?
- (i) the story of the prisoners' dilemma
 - (ii) game theory
 - (iii) the fact that self-interest is not always consistent with collective group interest
- a. (i) and (ii)
 - b. (ii) and (iii)
 - c. (i) and (iii)
 - d. All of the above are correct.
25. Which of the following is necessarily a problem with the antitrust laws?
- a. They may target a business whose practices appear to be anti-competitive but in fact have legitimate purposes.
 - b. They promote competition.
 - c. They limit monopoly power.
 - d. All of the above are correct.
26. Because a monopolistically competitive firm has some market power, in the long-run the price of its good exceeds its
- a. average revenue.
 - b. average total cost.
 - c. marginal cost.
 - d. profit per unit.
27. If hiring more workers results in each additional worker contributing successively smaller amounts of output, then
- a. diminishing profitability is present.
 - b. diminishing marginal cost is present.
 - c. diminishing marginal product is present.
 - d. increasing marginal product is present.

Use the following information to answer the following questions.

Scenario 2

Ferris B., a student at a community college, is trying to consider what he should do for summer employment. Two recruiters show up at his school in search of summer workers. Recruiter A is looking for lifeguards to patrol the beach at an exclusive island resort in the Caribbean. Recruiter B is looking for workers to staff positions at a summer youth camp.

28. Refer to Scenario 2. Ferris is carefully considering the options that each recruiter presents. On the basis of knowledge obtained in his economics class, Ferris is likely to conclude that
- a. the lifeguard job is likely to be more fun than the summer camp job, so the wage for that job is likely to be higher than otherwise.
 - b. if the summer camp job doesn't require any special skills, the wage for that job is likely to be lower than otherwise.
 - c. since the summer camp job requires some night shift work, the wage for that job is likely to be lower than otherwise.
 - d. All of the above are correct.
29. From the perspective of market demand, human capital investment is reflected
- a. in an increase in labor demand.
 - b. in an increase in the marginal product of labor.
 - c. in a firm's willingness to pay more for more productive workers.
 - d. All of the above are correct.

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30. When an employer pays the cost of educating a worker, it is likely that the employer
 - a. is demonstrating altruistic motives.
 - b. is pursuing some objective other than profit-maximization.
 - c. hopes to recapture its investment in the form of increased labor productivity.
 - d. receives reimbursement from the government for the cost of the education.
31. Workers whose skills become obsolete as a result of technological change are often paid a lower wage as a result of
 - a. natural ability.
 - b. geographic location of employment.
 - c. chance.
 - d. work effort.
32. Measuring poverty using an absolute income scale (like the poverty line) is likely to be deceptive because
 - a. income measures don't include the value of in-kind transfers.
 - b. money is more highly valued by the poor than by the rich.
 - c. the poor are not likely to participate in the labor market.
 - d. income is not correlated with job satisfaction.
33. As a general rule, anti-poverty programs as a group
 - a. encourage saving among recipient groups.
 - b. impose a very low marginal tax rate on income.
 - c. are only made available to those with no other source of income.
 - d. impose disincentives to work.

Refer to the information and table below to answer the following questions.

Three longtime friends-Sam, Diane, and Cliff-are deciding how they will spend their Saturday evening. They all agree that they should do one of three things: go to a movie, go to a concert, or go out to dinner. They also agree that they will have two pairwise votes to determine how to spend their evening, with the majority determining the outcome on each vote. The first, second, and third choices for each person are as indicated in the table below.

Table 2

	Sam	Diane	Cliff
First choice	Dinner	Concert	Movie
Second choice	Concert	Movie	Dinner
Third choice	Movie	Dinner	Concert

34. Refer to Table 2. Which of the following statements is correct?
 - a. In a pairwise election, "concert" beats "movie."
 - b. In a pairwise election, "dinner" beats "concert."
 - c. In a pairwise election, "movie" beats "dinner."
 - d. All of the above are correct.
35. Which of the following is the correct definition of GDP?
 - a. the market value of all goods produced within a country
 - b. the market value of all final goods and services produced by the citizens of a country
 - c. the market value of all final goods and services produced within a country
 - d. None of the above are correct.

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36. If you buy a burger and fries at your favorite fast food restaurant
- neither GDP nor consumption spending will be affected because you would have eaten at home if you hadn't eaten at the restaurant.
 - GDP will be higher, but consumption spending will be unchanged.
 - GDP will be unchanged, but consumption spending will be higher.
 - both GDP and consumption spending will be higher.
37. If a country reported nominal GDP of 200 billion in 2002 and 180 billion in 2001 and reported a GDP deflator of 125 in 2002 and of 105 in 2001, then from 2001 to 2002 real output
- and prices both rose.
 - rose and prices fell.
 - fell and prices rose.
 - and prices both fell.
38. By not taking into account the possibility of consumer substitution, the CPI
- understates the cost of living.
 - overstates the cost of living.
 - may overstate or understate the cost of living depending on how much prices rise.
 - doesn't accurately reflect the cost of living, but it is unclear if it overstates or understates the cost of living.
39. Which of the following equations represents national saving in a closed economy?
- $Y - I - G - NX$
 - $Y - C - G$
 - $Y - I - C$
 - $G + C - Y$
40. In 1995, Congressperson Bill Archer proposed that the income tax be replaced with a consumption tax. If his program had been passed, then today it is likely that the equilibrium interest rate
- and quantity of loanable funds would be lower.
 - and quantity of loanable funds would be higher.
 - would be higher and the equilibrium quantity of loanable funds would be lower.
 - would be lower and the equilibrium quantity of loanable funds would be higher.
41. Collective bargaining refers to
- the process by which the government sets exemptions from the minimum wage law.
 - setting the same wage for all employees to prevent jealousy among workers.
 - firms colluding to set the wages of employees in order to keep them below equilibrium.
 - the process by which unions and firms agree on the terms of employment.
42. Sectoral changes
- create frictional unemployment. Firms paying wages above equilibrium to attract a better pool of candidates create structural unemployment.
 - create structural unemployment. Firms paying wages above equilibrium to attract a better pool of candidates create frictional unemployment.
 - and firms paying wages above equilibrium to attract a better pool of candidates both create structural unemployment.
 - and firms paying wages above equilibrium to attract a better pool of candidates both create frictional unemployment.
43. If Y and M are constant, and V doubles, the quantity equation implies that the price level
- less than doubles.
 - doubles.
 - more than doubles.
 - might do any of the above; more information is needed.

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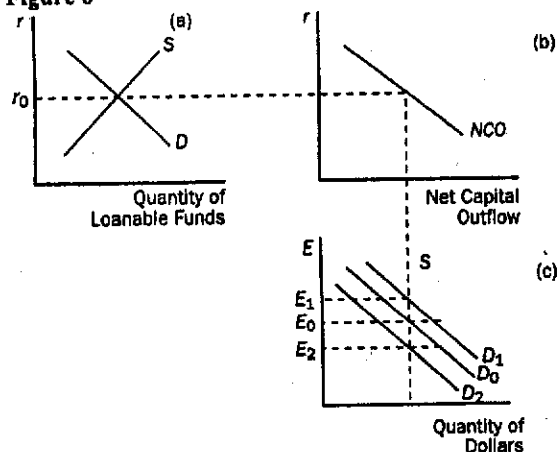
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44. A country's trade balance
 - a. must be zero.
 - b. must be greater than zero.
 - c. is greater than zero only if exports are greater than imports.
 - d. is greater than zero only if imports are greater than exports.
45. If a government started with a deficit and moved to a surplus, domestic investment
 - a. and the real exchange rate would rise.
 - b. and the real exchange rate would fall.
 - c. would rise and the real exchange rate would fall.
 - d. would fall and the real exchange rate would rise.

Use the figure below to answer the following questions.

Figure 6



46. Refer to Figure 6. Which of the following shifts show the effects of an import quota?
 - a. a shift of NCO_0 to the right in Panel B
 - b. a shift from D_0 to D_1 in Panel C
 - c. a shift from D_0 to D_2 in Panel C
 - d. None of the above would show the effects of an import quota.
47. When the dollar depreciates, U.S.
 - a. exports and imports increase.
 - b. exports increase, while imports decrease.
 - c. exports decrease, while imports increase.
 - d. exports and imports decrease.
48. Suppose the economy is in long-run equilibrium. If there is a sharp increase in the minimum wage as well as an increase in pessimism about future business conditions, then we would expect that in the short run, real GDP will
 - a. rise and the price level might rise, fall, or stay the same. In the long run, the price level might rise, fall, or stay the same but real GDP will be unaffected.
 - b. fall and the price level might rise, fall, or stay the same. In the long run, the price level might rise, fall, or stay the same but real GDP will be unaffected.
 - c. rise and the price level might rise, fall, or stay the same. In the long run, the price level might rise, fall, or stay the same but real GDP will be lower.
 - d. fall and the price level might rise, fall, or stay the same. In the long run, the price level might rise, fall, or stay the same but real GDP will be lower.

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49. When the Fed buys government bonds, the reserves of the banking system
- increase, so the money supply increases.
 - increase, so the money supply decreases.
 - decrease, so the money supply increases.
 - decrease, so the money supply decreases.
50. Suppose that Congress changed the laws governing the Fed such that Congress gained control over monetary policy. Shortly after that, Congress decided that it would significantly increase its spending, and it would fund the new spending by printing money. If expectations are completely rational, one might expect that the resulting inflation would
- reduce unemployment substantially in the short run, but not in the long run.
 - probably not have much impact on unemployment in the short run or the long run.
 - reduce unemployment substantially in the short run and in the long run.
 - only reduce unemployment in the long run because it would be anticipated.