國立中興大學97學年度碩士班招生考試試題

科　目：經濟學　　所　別：財務金融學系甲乙組

本科目試題共4頁

答案本上已註明題號，請將各題答案填入正確位置。
答案若寫在未註明題號之空白頁，視同未作答。
未註明題號之空白頁可供計算用。
你可以中文或英文作答。

Questions 1-4. A person consumes two goods: goods 1 and 2. The amounts of goods consumed are x_1 and x_2. Suppose that the person's utility function is $u(x_1, x_2) = 0.5(\ln x_1) + \ln x_2$. The prices of the two goods are p_1 and p_2, and the person's income is w.

1. What is the person's demand function for good 2?

2. Suppose that the government imposes a quantity tax on good 1. The tax rate is t per unit of good 1 consumed. The person has to pay $p_1 + t$ for each unit of good 1. What is the person's demand function for good 1?

3. Suppose later that the government changes the quantity tax to an income tax, and asks the person to pay the same amount of tax as he pays in question 2. So the person has to pay a fixed amount of tax no matter what amount of good 1 he consumes. What is the person's demand function for good 1 under this income tax?

4. Would the person prefer the quantity tax or the income tax? Explain briefly your answer.

Questions 5-6. A person has a Bernoulli utility function $u(W) = \sqrt{W}$, where W is his final wealth. His initial wealth is M. There is a lottery L that offers a payoff of G with probability p and a payoff of B with probability $1 - p$.

5. If the individual owns the lottery, then his final wealth will be either $M + G$ or $M + B$. What is the minimum price R_s that he would sell it for? (Write down the equation that defines R_s. You do not need to solve it.)

6. If he does not own the lottery, what is the maximal price R_b he would be willing to pay for it? (Write down the equation that defines R_b. You do not need to solve it.)

Questions 7-11. Suppose that the production function for rice is $f(L, Z) = L^{1/2}Z$, where L is the amount of labor hours, and Z the amount of land. The wage rate of labor is fixed at \$1 per hour. All the land for growing rice belongs to Ann, who owns 100 units of land. The rental price of land is r per unit of land, and r will be determined by Ann. To grow rice, a farmer

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must rent Z units of land from Ann and hire L hours of labor. The market demand for rice is $Q = 102 - P$, where Q is the total amount of rice produced and P is the unit price of rice. The market for rice is perfectly competitive. A farmer's profit would be $PL^{1/2}Z - L - rZ$, if he hires L hours of labor and rents Z units of land.

7. Suppose that Ann rents each farmer 1 unit of land for free: $r = 0$. So there are 100 farmers. What would be the price of rice?

8. Suppose that Ann rents each farmer 1 unit of land and the rent is $r > 0$. What would be the amount of r that makes each farmer earn a zero profit?

9. Suppose that Ann rents each farmer Z units of land. So there are $100/Z$ farmers, and each farmer pays rZ to Ann. What would be the market price of rice? (The price is a function of Z.)

10. Continue from question 9. Write down the profit function of each farmer; it should depend on Z and r only.

11. Continue from questions 9 and 10. Suppose that Ann charges the rent r at the level that makes each farmer earn a zero profit. To maximize her total rent revenue, what is the optimal Z for Ann?

Questions 12-13. A monopolist is facing two consumers with the following two demand curves for its product: $Q_1 = 50 - P/4$ and $Q_2 = 20 - P/6$. The monopolist does not have fixed cost, and the marginal cost of producing the product is constant, which equals 8.

12. If the monopolist sets a single price to both consumers, what would be the price that maximizes its total profit?

13. Suppose that the monopolist is considering a two-part tariff. Under the tariff, a consumer needs to pay a fixed amount of A first, and then the consumer pays a price t for each unit purchased. So to purchase Q units, a consumer needs to pay a total of $A + tQ$. If a consumer decides to buy nothing ($Q = 0$), then he does not need to pay anything. What will be the maximal profit the monopolist can get from using a two-part tariff? (Remember to consider the production cost.)

Questions 14-18. The production function in an economy is

$$Y = 10N - 0.005N^2,$$

where N is the number of labor employed. The labor supply curve is

$$N_S = 55 + 5w,$$

where N_S is the amount of labor supplied, and w is the real wage rate. The consumption function is

$$C = 300 + 0.8(Y - T) - 200r,$$

where T is the tax payment and r is the real interest rate. The investment function is

$$I = 258.5 - 250r.$$

Taxes are

$$T = 20 + 0.5Y,$$

and government purchases are $G = 50$. Money demand is

$$\frac{M^d}{P} = 0.5Y - 250(r + \pi^e),$$

where π^e is the expected rate of inflation. Assume that $\pi^e = 0.02$. The nominal money supply is $M = 9150$.

14. What is the equilibrium value of N?

15. What is the equilibrium value of r?

16. What is the equilibrium price level?

17. If the government purchases increase to $G = 72.5$, what will be the new equilibrium value of GDP?

18. Compare the equilibrium level of investment when $G = 50$ and the level when $G = 72.5$, how large is the crowding out effect?

Questions 19-21. Consider the following classical (flexible prices) economy:

$$\begin{aligned} C &= 300 + 0.5Y - 200r \\ I &= 200 - 300r \\ G &= 100 \\ NX &= 150 - 0.1Y - 0.5e \\ e &= 20 + 600r \\ Y &= 900, \end{aligned}$$

where NX is net export (= export − import), and e is the real exchange rate.

19. What is the equilibrium value of r?

20. Now suppose that Y increases to $Y = 940$. What is the equilibrium value of e?

21. Suppose that $Y = 940$ and that the government purchases increase to $G = 132$, what will be the equilibrium value of NX?

Questions 22-23. Suppose that the nominal exchange rate between the U.S. dollar and the Japanese yen is 110 yen per dollar. Suppose that a hamburger in Japan's McDonald's costs 1100 yen, and a hamburger in an American McDonald's costs 2 dollars.

22. The real exchange rate between hamburgers in the U.S. and hamburgers in Japan is e, which means that 1 hamburger in the U.S. can exchange for e hamburgers in Japan. What is the value of e?

23. Suppose that next year there is an inflation of 10% in Japan, and an 5% inflation in the U.S. Suppose that the real exchange rate does not change. What would be the nominal exchange rate next year?

Questions 24-25. The money supply of an economy is \$6,000,000. Currency held by the public is \$2,000,000. The required reserve ratio is 0.25. There is no excess reserve.

24. What is the value of the money multiplier in the economy?

25. During the new year holidays, people withdraw cash from their bank accounts for buying gifts. How would this event affect the money supply?