

國立中正大學

108 學年度碩士班招生考試

試題

[第 1 節]

系所組別	經濟學系國際經濟學-甲組
科目名稱	個體經濟學

—作答注意事項—

※作答前請先核對「試題」、「試卷」與「准考證」之系所組別、科目名稱是否相符。

1. 預備鈴響時即可入場，但至考試開始鈴響前，不得翻閱試題，並不得書寫、畫記、作答。
2. 考試開始鈴響時，即可開始作答；考試結束鈴響畢，應即停止作答。
3. 入場後於考試開始 40 分鐘內不得離場。
4. 全部答題均須在試卷（答案卷）作答區內完成。
5. 試卷作答限用藍色或黑色筆（含鉛筆）書寫。
6. 試題須隨試卷繳還。

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科目名稱：個體經濟學

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系所組別：經濟學系國際經濟學-甲組

Part I: 填空題(每格 5 分，共 50 分)

(1) 共有 10 個空格，請不要使用作答區第一頁「選擇題作答區」作答。於「選擇題作答區」下方自行製作如下 1-10 格答題區。

第 1 格		第 6 格	
第 2 格		第 7 格	
第 3 格		第 8 格	
第 4 格		第 9 格	
第 5 格		第 10 格	

(2) 填空題不需計算過程，僅依答案格內的答案對錯給分。

(3) 若無特別說明，請將答案約分至最簡分數。

1. Sean consumes two goods, x_1 and x_2 . His utility function is $U(x_1, x_2) = x_1^2 x_2$. The prices of the two goods are $p_1 = \$2$ and $p_2 = \$2$, and Sean's income is \$30.

(a) Find Sean's optimal consumption bundle $(x_1^*, x_2^*) = \underline{\hspace{2cm}}$ (1).

(b) Suppose that the price of x_1 increases from \$2 to \$4, while the price of x_2 and Sean's income do not change. Find the Slutsky substitution effect and Slutsky income effect of the change in x_1 due to this price change. The substitution effect is $\Delta x_1^S = \underline{\hspace{2cm}}$ (2), and the income effect is $\Delta x_1^I = \underline{\hspace{2cm}}$ (3).

2. Consider a market of automobiles where the inverse supply curve is $P = 10 + 2Q$ and the inverse demand curve is $P = 40 - Q$. Suppose that the government imposes a price ceiling which equals 20. The equilibrium quantity is $\underline{\hspace{2cm}}$ (4). The consumer surplus is $\underline{\hspace{2cm}}$ (5), and the producer surplus is $\underline{\hspace{2cm}}$ (6).

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科目名稱：個體經濟學

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系所組別：經濟學系國際經濟學-甲組

3. In the base period ($t = 0$), the prices of good 1 and good 2 are $p_1^0 = 1$ and $p_2^0 = 2$, and quantities of consumption are $q_1^0 = 20$ and $q_2^0 = 5$. In the current period ($t = 1$), the prices are $p_1^1 = 3$ and $p_2^1 = 4$, and quantities of consumption are $q_1^1 = 10$ and $q_2^1 = 10$. The Paasche price index is _____ (7) _____.

4. Henry has 16 hours of free time every day. He can allocate the 16 hours on either work or leisure. If he works, he can make w dollars every hour. In addition to the income he earns from working, Henry also gets m dollars from his parents every day. His utility function is $U = C^2L$, where C is the money (dollar) spent on consumption, and L is the time (hour) spent on leisure.

(a) Write down Henry's budget constraint (expressed by C , L , w , and m): _____ (8) _____.

(b) If $w = 10$ and $m = 20$, Henry will work _____ (9) _____ hours a day.

5. Jackson's income in the current period ($t = 0$) is \$100, and his income in the next period ($t = 1$) is \$ 150. If the present value of his total income in the two periods is \$225, the interest rate is _____ (10) _____.

Part II: Answer the following 10 questions. Each question accounts for 5 points.

1. Consider a production function for a graduate school applicant, $s = f(x, a)$. s is the student's potential score as a function of her extracurricular activities x and academic works a in college. The corresponding cost function $c(s) = c(t_x, t_a; s)$ is the time this student has to spend to achieve any s , where t_x and t_a are the hours spent on extracurricular activities x and academic works a , respectively.
 - (a) Write down the production function and cost function when the admission committee grade the score based on the worst performance in either extracurricular activities or academic works.
 - (b) Write down the production function and cost function when the admission committee grade the score based on the performance in both extracurricular activities or academic works.
 - (c) Explain duality between production and cost functions using the answers above.
2. Adverse selection for health insurance company means that, everything else equal, people with worse health status are more likely to buy insurance; the most healthy people would be the last one to get covered. Consider each insured person as a product of insurance company. Insuring people with worse health status means this "product" would require higher marginal cost to produce than the other people, because the medical expense for people with worse health status are likely higher.
 - (a) Depict the average cost and marginal cost curve of a health insurance company as their customers increase. Think about the sequence of people to get insured based on their health status.
 - (b) Based on the answers above, propose an empirical test on the existence of adverse selection in a given data with sufficient information.
 - (c) How adverse selection relates to the return to scale of health insurance company?
 - (d) One of the purposes to offer the National Health Insurance in Taiwan is to address adverse selection. Explain how this works with your answers above.

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系所組別：經濟學系國際經濟學-甲組

3. As the owner of the only tennis club in an isolated wealthy community, you must decide on membership dues and fees for court time. There are two types of tennis players. Serious players have demand $Q_1 = 10 - P$, where Q_1 is hours per week and P is the fee per hour for each individual player. There are also occasional players with demand $Q_2 = 4 - 0.25P$. Assume that there are 1000 players of each type. Because you have plenty of tennis courts, the marginal cost of each hour is zero. You have fixed costs of \$10,000 per week, though. Serious and occasional players look alike, so you must charge them the same prices.
- Suppose that to maintain a professional atmosphere, you want to limit membership to serious players. How should you set the annual membership to maximize profits?
 - Following (a), how should you set the court fees each week to maximize profits?
 - A friend tells you that you could make greater profits by encouraging both types of players to join. Is she right? Prove.