

# 國立臺北大學九十七學年度碩士班招生考試試題

系(所)別：經濟學系  
科目：個體經濟學

組別：  
第 1 頁 共 2 頁  
可 不可使用計算機

## I. (10 points) Multiple Choice Questions

1. Use the following two statements to answer this question:

- I. Increasing returns to scale cause economies of scale.
- II. Economies of scale cause increasing returns to scale.

(A) Both I and II are true. (B) I is true and II is false. (C) I is false and II is true. (D) Both I and II are false.

2. When people pay a monthly fee to have a hookup to the local telephone company's line plus a fee for each call actually made, we should say that the telephone company is using

- (A) limit pricing. (B) a two-part tariff. (C) second-degree price discrimination. (D) bundling.
- (E) intertemporal price discrimination.

3. Consider a perfectly competitive market for a good whose price elasticity of demand is  $-1.5$  and price elasticity of supply is  $0.5$ . The fraction of a specific tax that is borne by producers is:

- (A) 0. (B) 0.25. (C) 0.5. (D) 0.75. (E) 1.

4. The problem of adverse selection in health insurance leads to a situation in which

- (A) people choose inappropriate or inadequate coverage because they do not understand the complex information in the insurance policies.
- (B) people choose too much coverage because they do not understand the complex information in the insurance policies.
- (C) the percentage of the premium-paying population that is healthy rises, squeezing unhealthy individuals out of the market.
- (D) the percentage of the premium-paying population that is unhealthy rises, squeezing healthy individuals out of the market.

5. Let a firm's production function be  $Q = \min\{L, K\}$ , where  $Q$  is the level of output,  $L$  is the labor input, and  $K$  is the capital input. Let the wage rate be  $w = 1$  and the rental rate of capital be  $r = 1$ . Which of the following is true?

- (A) The total cost function of the firm is  $TC(Q, r, w) = wrQ$ .
- (B) The total cost function of the firm is  $TC(Q, r, w) = (w + r)Q$ .
- (C) The minimum efficient scale is zero.
- (D) Both (A) and (C).
- (E) Both (B) and (C).

## II. (40 points) Fill in the following blanks.

1. Let a firm's production function be  $Q = L^{1/3}K^{2/3}$ , where  $Q$  is the level of output,  $L$  is the labor input, and  $K$  is the capital input. Let the wage rate be  $w$  and the rental rate of capital be  $r$ . Find the firm's long-run input demand function for labor.

\_\_\_\_\_ (1) \_\_\_\_\_

2. Sam's utility function of income is  $U(I) = 20\sqrt{I}$ . Sam owns and operates a farm. He is concerned that a typhoon may wipe out his crops. If there is no typhoon, Sam's income is \$360,000. If a typhoon does occur, his income will fall to \$160,000. The probability of a typhoon is  $1/20$ . Calculate the risk premium Sam is willing to pay for typhoon insurance.

\_\_\_\_\_ (2) \_\_\_\_\_

3. Suppose a monopolist faces an inverse demand curve given by  $P = 120 - 3Q$ . The monopolist has two plants. The first has a marginal cost curve given by  $MC_1 = 10 + 20Q_1$  and the second plant's marginal cost curve is given by  $MC_2 = 60 + 5Q_2$ . Find the monopolist's profit-maximizing total output level. \_\_\_\_\_ (3) \_\_\_\_\_

4. Suppose that a firm's production function is  $Q = 5L$ , where  $L$  is the quantity of labor and  $Q$  is the output level. Suppose that

試題隨卷繳交

接背面

# 國立臺北大學九十七學年度碩士班招生考試試題

系(所)別：經濟學系  
科目：個體經濟學

組別：  
第2頁共2頁  
可 不可使用計算機

the firm can sell all its output at a market price of \$10. The firm is a monopsonist in the labor market and it faces a labor supply curve  $w = 2 + 2L$ , where  $w$  is the wage rate. Find the monopsonist's profit-maximizing wage. \_\_\_\_\_ (4)

5. Consider the efficient provision of a public good. Suppose that there are only two consumers in the market. The first consumer's inverse demand for the public good is given by  $P_1 = 100 - Q$  and the second consumer's inverse demand for the public good is given by  $P_2 = 200 - Q$ .
- (a) Suppose the marginal cost of the public good is \$240. What is the efficient level of production of the public good?  
\_\_\_\_\_ (5)
- (b) Suppose the marginal cost of the public good is \$50. What is the efficient level of production of the public good?  
\_\_\_\_\_ (6)
6. Consider a two-player noncooperative game. In this game, player 1 first decides between "out" (O) and "in" (I). If he chooses O, the game ends with a payoff vector (2, 2). If he chooses I, then player 2 is faced with the same two choices. If player 2 chooses O, then the game ends with a payoff vector (1, 3). If she chooses I, then player 1 has another choice to make, between A and B. If player 1 chooses A, then the game ends with a payoff vector (4, 2). If player 1 chooses B, then the game ends with a payoff vector (3, 4). Assume that each player observes all the preceding play before making his or her choice.
- (a) Find all the pure-strategy Nash equilibrium. \_\_\_\_\_ (7)
- (b) Find all the pure-strategy subgame perfect equilibrium. \_\_\_\_\_ (8)

III. (18 points) 某產品的生產函數為  $Q = \frac{1}{2}L^{\frac{1}{2}} + \frac{1}{2}K^{\frac{1}{2}}$ ，式中  $L$  為勞動， $K$  為資本，其價格分別為  $w$  和  $r$ ，求

1.  $L$  與  $K$  的邊際替代率。
2.  $L$  與  $K$  的替代彈性  $\sigma$ 。
3. 擴張線方程式。
4. 長期成本函數。
5. 規模經濟指標  $S = \frac{AC}{MC}$ 。
6. 請判斷此生產技術的規模報酬特性。

IV. (10 points) 假設中油為汽油業的價格領導者，中油的成本函數為  $TC = 15q$ ，其他廠商會依中油訂價決定自己的產量，而其他廠商的供給總和為  $S: P = 3q$ ，且全國汽油業的市場需求函數為  $P = 100 - q$ ，請問

1. 中油的最適訂價、產量與利潤為何？
2. 汽油市場的均衡產量是多少？
3. 請繪圖說明上述問題與解答。

V. (22 points) 假設消費者對  $X$  與  $Y$  的效用函數為  $U(X, Y) = X + \sqrt{Y}$ ， $X$  與  $Y$  的價格為  $P_x$  與  $P_y$ ，消費者的預算為  $M$ ，

1. 求消費者對  $X$  財和  $Y$  財的普通需求函數。
2. 求間接效用函數及支出函數。
3. 請繪出  $Y$  財的所得消費曲線。
4. 請繪出  $Y$  財的恩格爾曲線。
5. 求  $Y$  財的 Hicks 補償需求函數。
6. 若所得  $M$  為 100 元， $P_x$  為 1 元，當  $P_y$  由 1 元漲至 2 元時，求  $Y$  財的 Slutsky 補償需求函數。
7. 若所得  $M$  為 100 元， $P_x$  為 1 元，求  $P_y$  由 1 元漲至 2 元時之補償變量、對等變量以及消費者剩餘的變動為何。

試題隨卷繳交