

東吳大學 100 學年度碩士班研究生招生考試試題

第 1 頁，共 3 頁

系級	經濟學系碩士班	考試時間	100 分鐘
科目	個體經濟學	本科總分	100 分

1. (14 points) Mary as a consumer is a price taker and she consumes only two goods. One good is food and the other is “other goods.” Food is shown on her budget line as X-good. “Other goods” is shown on her budget line as Y-good.

- 1) (4 points) Suppose that Mary is given by Taipei City government \$3,000 worth of food coupons (食物券) that must be spent on food. Draw (繪圖) Mary’s budget lines *before* and *after* food coupon is given.
- 2) (4 points) Suppose that Mary is given \$3,000 in cash instead of \$3,000 in food coupons. How will this alter (改變) Mary’s budget line?
- 3) (6 points) Is Mary indifferent (無偏好) between the food coupons and cash program (濟助方案), or does she prefer one program over the other? Draw an indifference curve to illustrate (圖解說明) your answer.

2. (12 points) Answer the following questions:

- 1) (6 points) The cost of producing 600 small sailboats per year and the cost of producing sails (帆) and fittings (配件) necessary to make the boats seaworthy (適於航海的) in a single plant are together \$780,000. If produced in separate plants, the boats would cost \$540,000, and the sails and fittings would cost \$180,000. From this information, what can be learned about economies of scope in the production of sailboats, sails, and fittings? Make any necessary calculations and explain.
- 2) (6 points) Davy Container Company produces egg cartons that are sold to egg distributions. Davy has estimated this production function for its carton:

$$Q = 25K^{0.4}L^{0.6},$$

where Q is the output measured in one thousand carton lots, L is the labor measured in person hours, and K is the capital measured in machine hours. Davy currently pays a wage of \$10 per hour and the rental price for capital is \$25 per hour. Determine the optimal capital-labor combination (組合) that Davy should use in the carton production.

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3. (22 points) The market for low-level skilled labor can be described by the following demand and supply functions, respectively:

$$L_D = 32,000 - 4,000W \text{ and } L_S = 8,000 + 6,000W,$$

where L_D and L_S are the quantities of labor demanded and supplied, respectively, in millions of person hours per year; W is the wage in dollars per hour.

- 1) (6 points) Calculate the equilibrium price and quantity that would exist under a free market. What is producer's surplus (i.e., laborer's surplus)?
- 2) (6 points) The government is contemplating to set a minimum wage to \$5.0 per hour. Calculate the impact of the minimum wage on the quantity of labor demanded and supplied. What is producer's surplus after the proposed change?
- 3) (5 points) Comment (評論) on the net effect of the proposed change upon the workers as a whole (勞工市場) and upon individual workers (個別勞工).
- 4) (5 points) 比較上述勞動市場的最低工資政策與農業產品的保證價格政策(support price)，請問政策的效果有何不同？

4. (22 points) The Agricultural Department of a country is considering the introduction of a \$0.40 subsidy (補貼) per unit to its cotton farmers. The economic advisors to the department estimate the demand and supply function, respectively, for cotton as:

$$Q_D = 140,000 - 25,000P \text{ and } Q_S = 20,000 + 75,000P,$$

where Q_D and Q_S are the quantities demanded and supplied, respectively; P is the price per unit.

- 1) (5 points) Calculate the consumer's surplus and producer's surplus in the current environment with no subsidy.
- 2) (8 points) What price and quantity would prevail after the subsidy is implemented (實施)? What portion (部份) of the subsidy would be gained by buyers and sellers, respectively?
- 3) (5 points) Calculate the new level of consumer's surplus and producer's surplus.
- 4) (4 points) Did the increase in consumer's surplus and producer's surplus exceed (超過) the increased government spending necessary to finance the subsidy?

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第 3 頁，共 3 頁

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5. (20 points) The Green-Energy Electric Corporation provides electric power service to a metro city. The annual demand for electric power in this city is given by

$$Q_D = 4,500 - 100P,$$

where quantity (Q_D) is measured in million of kilowatt hours and the price (P) is dollar per kilowatt hour. The firm operates in a decreasing cost industry (成本遞減的產業) (i.e., in an industry of increasing return-to-scale, 規模報酬遞增的產業).

- 1) (5 points) Consider the marginal cost (MC) pricing (邊際成本定價法). If the firm's marginal cost curve crosses the demand curve at $P = 4$, what is the quantity demanded at this price? Would the firm want to operate under the marginal cost pricing.
- 2) (5 points) Consider the average cost (AC) pricing (平均成本定價法). If the firm's average cost curve crosses the demand curve at $P = 5$, what is the quantity demanded at this price? What are the firm's profits under the average cost pricing?
- 3) (10 points) 假設The Green-Energy Electric Corporation考慮依照客戶電力使用量的多寡來差別定價(此法稱the block pricing scheme)。對低用量的客戶，該公司定 $P_1 = \$15$ ；對中用量的客戶，定 $P_2 = \$10$ ；對高用量的客戶，定 $P_3 = AC$ 。請問三種客戶的使用量分別是多少？該公司的利潤將是多少？

6. (10 points) The city zoo's manager recognizes that there are two distinct demand curves for zoo admission (入場). One demand curve applies to those age 12 to 64, while the other is for children and senior citizens. The admission price for those age 12 to 64 is set to \$42 while the price for children and senior citizens is set to \$25. The city's market research indicates a price elasticity of demand for the higher admission price group is -2.0, and the elasticity of demand for children and senior citizens is -4.0. Moreover, the research suggests that both elasticities are constant over broad ranges (大的範圍) of admissions (入場遊客數)。

- 1) (6 points) Are the city zoo's current prices optimal (最適的)?
- 2) (4 points) The zoo's manager considers the \$25 price to be necessary for children and senior citizens. What price should the zoo set for the higher admission price group to be optimal?