

# 國立臺北大學 111 學年度碩士班一般入學考試試題

系(所)組別：經濟學系  
科 目：個體經濟學

第1頁 共2頁

可 不可 使用計算機

It suffices to state answers without providing details for derivations or computations. Good luck!

1. (5%) Suppose a consumer with a monthly income of \$600 is choosing from the following mobile phone plans to maximize his utility.  
Plan 50: \$50 per month to use up to 300 units per month, \$0.5 for each additional unit beyond 300 units, and \$0.2 for each additional unit beyond 500 units.  
Plan 80: \$80 per month to use up to 600 units per month and \$0.4 for each additional unit beyond 600 units.  
Illustrate in a figure a case in which the consumer is better off choosing Plan 80.
2. (a) (3%) Define Weak Axiom of Revealed Preference (WARP).  
(b) (6%) A consumer chooses consumption bundles (17, 8, 5), (10, 5, 10), (12, 1, 20) when facing prices (1, 1, 2), (1, p, 1), (2, 1, 1), respectively. Suppose p is a positive integer, what value should p take to make these data satisfy WARP?
3. Given a production function  $Q = \sqrt{L + K}$ , answer the following questions:
  - (a) (5%) Verify the degree of homogeneity of this production function.
  - (b) (5%) Calculate the elasticity of substitution for this production function.
  - (c) (5%) Let w and r denote the prices for L and K, respectively. Derive the demand function for L (i.e., L as a function of Q, w, and r).
  - (d) (3%) Compare your answer in (c) to a demand function for L derived from a Cobb-Douglas production function (e.g.,  $Q = L^{0.5}K^{0.5}$ ), which demand for L is relatively insensitive to w?
4. Suppose there are 80 identical competitive firms, each faces the same short-run total cost function  $STC(Q) = 96 + 2Q^2$ , and assume all its fixed costs are sunk. Let the market demand equals  $D(P) = 360 - 4P$ , answer the following questions:
  - (a) (5%) What is the producer surplus of an individual firm?
  - (b) (3%) What do you know about the firm's economic profit?
  - (c) (5%) What is the overall producer surplus for the market?
  - (d) (5%) What are your answers to (a) and (c) when the market demand becomes  $D(P) = 150 - 5P$ ?
5. Suppose Max is a profit-maximizing monopoly firm that sells a well-designed chair. The firm faces the demand curve  $P = 28 - 0.5Q$ .
  - I. If the total cost for producing Q units of output is  $TC = 24 + 1.5Q^2$ . The fixed cost is sunk, and the marginal cost curve is  $MC = 3Q$ .
    - (a) (6%) How much extra surplus does the producer capture when it can engage in first-degree price discrimination instead of charging a uniform price?
  - II. If the marginal cost for each chair is  $MC = \$4$ , and there is no fixed cost. Suppose Max wants to improve its profit by implementing block pricing (assuming just 2 blocks), answer the following questions:
    - (b) (6%) Find the profit-maximizing quantity and price for block 1 ( $P_1, Q_1$ ) and for block 2 ( $P_2, Q_2$ ).
    - (c) (3%) What's the firm's producer surplus under the two-block tariff in part b?

試題隨卷繳交

接背面

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科 目：個體經濟學

第2頁 共2頁

可 不可使用計算機

6. Suppose there are 2 firms in oligopoly market, and the market demand is  $P = 50 - Q$ , and  $MC = 10 + Q_i$ ,  $i = 1, 2$ .
- (a) (4%) What are the Cournot equilibrium quantities and price in this market?
- (b) (3%) What would be the equilibrium price in this market if the two firms acted as a profit-maximizing cartel?
- Suppose now the two firms become Stackelberg duopolists in which Firm 1 is a leader and Firm 2 a follower. Assuming that the market demand is the same as before, but the marginal cost for both firms is now  $MC = \$20$ . If the follower takes the leader's output as fixed at  $Q_1$ , answer the following questions:
- (c) (6%) What's the Stackelberg equilibrium quantity for each firm? What's the market price?
- (d) (4%) What's the profit for each firm?
7. Suppose that the market for corn is initially in equilibrium and is perfectly competitive. The demand curve can be expressed as  $P = 10 - Q^d$ ; the supply curve is  $P = 0.25Q^s$ . Quantity is expressed in millions of bushels. Now suppose that the federal government imposes a price floor of \$3 per bushel of corn. Answer the following questions:
- (a) (3%) What is the size of the surplus created by the price floor?
- (b) (3%) Assuming the most efficient producers are active, what's the deadweight loss due to the price floor?
- (c) (6%) Assuming the least efficient producers are active, what's the producer surplus (PS) under the price floor? What's the deadweight loss due to the price floor?
8. Consider a market of risk-averse decision makers, each with a utility function  $U = \sqrt{I}$ . Each decision maker has an income of \$90,000, but faces the possibility of a catastrophic loss of \$50,000 in income. Each decision maker can purchase an insurance policy that fully compensates her loss. This insurance policy has a cost of \$11,600. Suppose each decision maker potentially has a different probability  $q$  of experiencing the loss.
- (6%) What is the smallest value of  $q$  so that a decision maker purchases insurance?

試題隨卷繳交