

# 銘傳大學八十九學年度經濟學研究所碩士班招生考試

## 第一節

### 個體經濟學 試題

- 一、 An enterprising entrepreneur purchases two firms to produce widgets. Each firm produces identical products and each has a production function given by

$$q_i = \sqrt{K_i * L_i}$$
$$i = 1, 2$$

The firms differ, however, in the amount of capital equipment each has. In particular, firm 1 has  $K_1 = 25$ , whereas firm 2 has  $K_2 = 100$ . The marginal product of labor is  $MPL = 5 / (2\sqrt{L})$  for firm 1, and  $MPL = 5\sqrt{L}$  for firm 2. Rental rates for K and L are given by  $w = v = \$1$ .

- If the entrepreneur wishes to minimize short-run total costs of widget production, how should output be allocated between the two firms?
- Given that output is optimally allocated between the two firms, calculate the short-run total and average cost curves. What is the marginal cost of the 100<sup>th</sup> widget? The 125<sup>th</sup> widget? The 200<sup>th</sup> widget?
- How should the entrepreneur allocate widget production between the two firms in the long run? Calculate the long-run total and average cost curves for widget production.
- How would your answer to part c change if both firms exhibited diminishing returns to scale?

(20 分)

- 二、 Elizabeth M. Suburbs makes \$200 a week at her summer job and spends her entire weekly income on new running shoes and designer jeans since these are the only two items that provide utility to her. Furthermore, Elizabeth insists that for every pair of jeans she buys, she must also buy a pair of shoes (without the shoes, the new jeans are worthless). Therefore, she buy the same number of pairs of shoes and jeans in any given week.

- If jeans cost \$20 and shoes cost \$20, how many will Elizabeth buy of each?
- Suppose that the price of jeans rises to \$30 a pair. How many shoes and jeans will she buy?
- Show your results by graphing the budget constraints from parts a

and b. Also draw Elizabeth's indifference curves.

- d. To what effect (income or substitution) do you attribute the change in utility levels between parts a and b?

(20 分)

- 三、 Suppose these are two firms selling ice cream cones in a small town. The prices charged by the firms are given by  $P_1$  and  $P_2$ . Because the firms sell different types of cones, their goods are only partial substitutes for one another. The demand facing firm 1 is given by

$$q_1 = 10 - P_1 + 0.5P_2$$

and that facing firm 2 is

$$q_2 = 10 - P_2 + 0.5P_1$$

Both firms have a constant marginal cost of \$2 per cone.

- Suppose each firm sets a price equal to marginal cost. How many cones will each sell and what will each firm's profits be?
- Suppose firm 1 believes firm 2 will have a price of \$2 per cone. How much should this firm charge to maximize profits? (Hint: Price should be halfway between  $P = MC$  and the price for which  $q_1 = 0$ .) What will this firm's profit be if  $P_2 = 2$ ?
- Suppose firm 2 also follows the strategy described in part b. What price will it charge and what will its profits be if  $P_1 = 2$ ?
- Are the decisions in parts b and c consistent with each other? How might the firms choose their prices in a consistent way?
- Suppose the two firms merged. What pricing policy would maximize their total joint profits? (Hint: Assume they should each charge the same price.)

(25 分)

- 四、 A firm in a perfectly competitive industry has patented a new process for making widgets. The new process lowers the firm's average costs, meaning this firm alone (although still a price taker) can earn real economic profits in the long run.

- If the market price is \$20 per widget and the firm's marginal cost curve is given by  $MC = .4q$  where  $q$  is the daily widget production for the firm, how many widgets will the firm produce?
- Suppose a government study has found that the firm's new process is polluting the air and estimates the social marginal cost of widget production by this firm to be  $MCS = .5q$ . If the market price is still \$20, what is the socially optimal level of production

for the firm? What should the amount of a government-imposed excise tax be in order to bring about this optimal level of production?

c. Graph your results.

(15 分)

五、 Suppose the production possibility frontier for cheeseburgers(C) and milk-shakes(M) is given by

$$C + 2M = 600.$$

a. Graph this function.

b. Assuming that people prefer to eat two cheeseburgers with every milk-shake, how much of each product will be produced? Indicate this point on your graph.

c. Given that this fast food economy is operating efficiently, what price ratio (PC / PM) must prevail?

(20 分)

試題完