國立嘉義大學 99 學年度

應用經濟學系碩士班招生考試試題

科目：個體經濟學

1. Sally consumes two goods, X and Y. Her utility function is given by the expression $U = 3 \bullet XY^2$. The current market price for X is \$10, while the market price for Y is \$5.00. Sally's current income is \$500.
   a. Sketch a set of two indifference curves for Sally in her consumption of X and Y. (5 points)
   b. Please write the expression for Sally's budget constraint. (5 points)
   c. Determine the X,Y combination which maximizes Sally's utility, given her budget constraint. (5 points)
   d. Calculate the impact on Sally's optimum market basket of an increase in the price of X to 15. (5 points) What would happen to her utility as a result of the price increase? (5 points)
2. Davy Metal Company produces brass fittings. Davy's engineers estimate the production function represented below as relevant for their long-run capital-labor decisions.

$$Q = 500L^{0.6}K^{0.8}$$

where Q = annual output measured in pounds, L = labor measured in person hours, K = capital measured in machine hours.

The marginal products of labor and capital are:

$$MP_L = 300L^{-0.4}K^{0.8} \qquad MP_K = 400L^{0.6}K^{-0.2}$$

Davy's employees are relatively highly skilled and earn \$15 per hour. The firm estimates a rental charge of \$50 per hour on capital. Davy forecasts annual costs of \$500,000 per year, measured in real dollars.

   a. Determine the firm's optimal capital-labor ratio, given the information above. (5 points)
   b. How much capital and labor should the firm employ, given the \$500,000 budget? Calculate the firm's output. (10 points)
   c. Davy is currently negotiating with a newly organized union. The firm's personnel manager indicates that the wage may rise to \$22.50 under the proposed union contract. Analyze the effect of the higher union wage on the optimal capital-labor ratio and the firm's employment of capital and labor. What will happen to the firm's output? (10 points)

3. John Gardner is the city planner in a medium-sized southeastern city. The city is considering a proposal to award an exclusive contract to Clear Vision, Inc., a cable television carrier. Mr. Gardner has discovered that an economic planner hired a year before has generated the demand, marginal revenue, total cost and marginal cost functions given below:

   P = 28 - 0.0008Q
   MR = 28 - 0.0016Q
   TC = 120,000 + 0.00062
   MC = 0.0012Q

   where Q = the number of cable subscribers and P = the price of basic monthly cable service. Conditions change very slowly in the community so that Mr. Gardner considers the cost and demand functions to be reasonably valid for present conditions. Mr. Gardner knows relatively little economics and has hired you to answer the questions listed below.
   a. What price and quantity would be expected if the firm is allowed to operate completely unregulated? (10 points)
   b. Mr. Gardner has asked you to recommend a price and quantity that would be socially efficient. Recommend a price and quantity to Mr. Gardner using economic theory to justify your answer. (10 points)
   c. Compare the economic efficiency implications of (a) and (b) above. Your answer need not include numerical calculations, but should include relevant diagrams to demonstrate deadweight loss. (5 points)
4. Mitchell Electronics produces a home video game that has become very popular with children. Mitchell's managers have reason to believe that Wright Televideo Company is considering entering the market with a competing product. Mitchell must decide whether to set a high price to accommodate entry or a low, entry deterring price. The payoff matrix below shows the profit outcome for each company under the alternative price and entry strategies. Mitchell's profit is entered before the comma, and Wright's is after the comma.

		Wright Televideo	
		Enter	Don't Enter
Mitchell Electronics	High Price	60, 25	85, 0
	Low Price	30, -20	60, 0

   a. Does Mitchell have a dominant strategy? Explain. (5 points)
   b. Does Wright have a dominant strategy? Explain. (5 points)
   c. Mitchell's managers have vaguely suggested a willingness to lower price in order to deter entry. Is this threat credible in light of the payoff matrix above? (5points)
   d. Please find the Nash equilibrium of this game. (10 points)