國立成功大學 106 學年度碩士班招生考試試題

系　　所：經濟學系

考試科目：個體經濟學

考試日期：0213，節次：2

※ 考生請注意：本試題不可使用計算機。　請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

1. (25%) Consider a representative consumer with utility function $u(x,y) = xy$, when consuming x units of good X and y units of good Y. Assume she has income \$200 and is the only consumer in the market (so that the population is normalized to 1).

(a) (5%) Derive her demand for good X as a competitive buyer when the prices for good X, Y are P_X and P_Y separately.

(b) (6%) Suppose the supply function for good X is $X_s(P_X) = P_X$, find the equilibrium price P_X in this competitive market.

(c) (7%) If the consumer is born with 9 units of good X, derive her demand for good X that is net of her endowment.

(d) (7%) If the consumer is born with 9 units of good X, find again the equilibrium price P_X.

2. (20%) Suppose demand for teachers in metropolitan (M) and in rural (R) areas are $L_M = 180 - \frac{W}{2}$ and $L_R = 70 - \frac{W}{4}$ respectively when the wage rate for teachers is W. Teachers who provide their services in this competitive can choose freely to serve either in metropolitan or in rural areas. Assume together they form a supply function as $L_S = \frac{W}{2}$.

(a) (6%) Find the equilibrium wage rate when teachers are paid with the same wage rate.

(b) (7%) Suppose there's an additional cost of \$80 for teachers to work in rural areas. If teachers can be paid differently in those two areas, find the equilibrium wage rate(s).

(c) (7%) Suppose there's an additional cost of \$80 for teachers to work in rural areas. If the wage rate must be the same in both areas, find the unique equilibrium wage rate.

3. (25%) Consider a competitive industry with the inverse market demand $P(Q) = 60 - 0.1Q$. Each firm produces with identical cost function $C(q) = 100 + q^2$.

(a) (7%) Find the long-run (LR) equilibrium price in the market.

(b) (7%) Suppose the government imposes the lump tax of \$300 per firm. Find the government's tax revenue when the industry reaches its new LR equilibrium.

(c) (7%) Suppose the government induce the same market equilibrium price as in (b) by imposing the specific tax. Find again the government's tax revenue when the industry reaches its new LR equilibrium under specific tax.

(d) (4%) Given the same market equilibrium in (b) and (c), explain why there's a difference in the government's tax revenues under these two tax systems.

4. (10%) Consider a monopolist selling to two separate markets with inverse demands as $Q_1(P_1) = 100 - P_1$ and $Q_2(P_2) = 60 - 0.5P_2$ respectively. Suppose the firm produces with the cost function $C(Q) = 600 + 2Q^2$ when producing Q units. If the firm can price discriminate the two markets, find the price(s) the firm will charge in these two markets.

5. (20%) Consider a monopolist facing inverse demands as $Q(P) = 100 - P$ and producing with the cost function $C(Q) = 200 + 1.5Q^2$ when producing Q units.

(a) (5%) Find the firm's maximized profit.

(b) (5%) Suppose the firm can produce at most 10 units, find again the firm's maximized profit.

(c) (5%) Suppose the firm can produce any amount. If the government uses price ceiling to induce an efficient outcome, how much should the government set the price?

(d) (5%) Continue on (c). However, suppose the firm's production imposes external cost to its environment as $10 per unit, how can the government best regulate the monopoly?