

國立成功大學
111學年度碩士班招生考試試題

編 號：339

系 所：經濟學系

科 目：個體經濟學

日 期：0219

節 次：第 2 節

備 註：不可使用計算機

※ 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。

There are in total 5 sets of questions. Full points will be awarded only based on the appropriate solving process.

1. (20%) Consider a differentiated duopoly where each firm bears only a constant marginal cost of \$50 to produce each unit of its own products. Suppose firms are engaged in price competition. For the pair of prices p_i , $i = 1, 2$, the quantity demanded for each firm's product can be summarized by the following system:

$$\begin{cases} q_1^D(p_1, p_2) = 200 - 2p_1 + p_2 \\ q_2^D(p_1, p_2) = 200 - 2p_2 + p_1 \end{cases}$$
 - a. (5%) Find the Nash equilibrium price of each firm.
 - b. (5%) Find the **deadweight loss** caused by the duopoly.
 - c. (5%) If the **two firms merge into one**, find again the **prices** that will be charged by this merged monopoly.
 - d. (5%) If the two firms merge into one, find the **additional profit** the merging can bring to the two firms.

2. (20%) A monopolist serves two consumers with their individual demands separately as $q_1^D(p) = 200 - 3p$ and $q_2^D(p) = 200 - 2p$ when asked a price of p per unit. Suppose it produces with the constant marginal cost of \$20 without any other cost.
 - a. (5%) If the monopoly sells with the same uniform price p to both consumers, find its optimal price.
 - b. (10%) If the monopoly cannot distinguish the two consumers so that it offers them the same **two-part tariff** scheme, $A + pq_i$, where A is an upfront fixed fee and p is the per unit price. Each consumer then determines her quantity to buy, q_i , for $i = 1, 2$. Find the monopoly's **optimal A and p**.
 - c. (5%) Find the **deadweight loss** under the two-part tariff.

3. (20%) Consider a competitive industry with the market demand $Q^D(p) = 1,000 - 4p$. Each firm produces with identical cost function $C(q) = 400 + 10q + q^2$. Originally the market is in **long run (LR) equilibrium**.
 - a. (5%) Find the **LR equilibrium price** in this industry.
 - b. (5%) If the government has imposed a **specific tax of \$12 per unit** on the sellers, find the **price paid by the consumers** at the **after-tax short run (SR) equilibrium** of the market.
 - c. (5%) If the government has imposed a **specific tax of \$12 per unit** on the sellers, find the **price paid by the consumers** at the **after-tax LR equilibrium** of the market.
 - d. (5%) Find the **deadweight** caused by the **specific tax** at the after-tax **LR equilibrium** of the market.

4. (20%) Consider a two-individual (A and B) and two-good (1 and 2) economy. The utility functions are $U^A(x_1, x_2) = x_1^\alpha x_2$ for individual A who has endowments (100, 100) for the two goods and $U^B(x_1, x_2) = x_1 x_2^\beta$ for individual B who has endowment (100, 100) where $\alpha, \beta > 0$. Suppose the two markets are both competitive.
 - a. (10%) Find the condition for $x_1^A > x_2^A$ to hold at Pareto set where x_k^A is A's allocation for commodity $k = 1, 2$.
 - b. (10%) Find the condition for the relative competitive equilibrium prices P_1^*/P_2^* to be greater than 1.

5. (20%) Suppose Grace's utility function over food (F) and cloth (C) is $U(F, C) = \min\left(\frac{F}{2}, C\right)$ and her income is $Y = 30$ while prices are $p_F = 2$ for food (F) and $p_C = 2$ for cloth (C) respectively. (Assume any commodity can be purchased in decimal units).
- (10%) Suppose the government offers Grace a food stamp of 60 units of food which could **NOT** be resold in the market. How much additional money should the government also give to Grace along with the food stamp so that the total effect is equivalent to the food stamp of 60 units of food that **could be resold in the market**?
 - (5%) **If the government only offers Grace money**, how much money should the government offer to Grace so that its effect is equivalent to the 60 units of Food that could **NOT** be resold in the market?
 - (5%) **If the government only offers Grace money**, how much money should the government offer to Grace so that its effect is equivalent to a **subsidy of \$1 per unit on the food that Grace purchases**?