

注意：本試卷共有三頁。請考生答題前，務必閱讀每大項的注意事項說明！

第一部份：填充題（每題 5 分，共 50 分）

(1) Part I 有 10 題填充題，請自行製作答題區。規定如下：請於考試試卷作答區

第一頁「選擇題作答區」的下方製作第 1 - 10 格答題區。

第 1 格	第 2 格	第 3 格	第 4 格	第 5 格
第 6 格	第 7 格	第 8 格	第 9 格	第 10 格

(2) 每格答對得 5 分，答錯或未作答 0 分。

(3) 答題不要求任何計算過程，只依答案格內的答案對錯給分。

(4) 如果沒有特別指示，請將答案約分至最簡分數表示。

Part I：填充題（每格 5 分，共 50 分）

- A. “As the price of a commodity declines, quantity demanded for the commodity increases” is called (1).
- B. (2) means households can ordinally rank a set of commodity bundles to maximize their satisfaction of wants given their limited resources.
- C. When all inputs are variable, it is called (3).
- D. As more of a variable input is added to a constant amount of the fixed inputs, the marginal product of the variable input will eventually decline. This is called (4).
- E. “Every perfectly competitive allocation is Pareto efficient” is called (5).

(請翻次頁，繼續作答)

F. A production function is defined as: $q = f(K, L) = aK + bL$, where a and b are constants; and K and L are capital and labor, respectively. This production function exhibits (6) returns to scale and its elasticity of substitution is (7).

G. Suppose the elasticity for demand for duck meat is unitary. If a H5N1 avian influenza were to occur in Taiwan, the quantity demanded would normally (8); the price of duck meat would (9) and the total revenue would (10) (increase, decrease, or remain the same).

第二部份：計算說明題 (50 分)

(1) Part II 有三題計算說明題，請標示清楚，並將所有過程、步驟交代清楚。

(2) 如果沒有特別指示，請將答案約分至最簡分數表示。

Part II：計算說明題

1. Suppose that a monopolist faces the inverse demand curve $P(Q) = \begin{cases} 10 - Q & \text{if } Q \leq 10; \\ 0 & \text{if } Q > 10. \end{cases}$

The monopolist's production function is $f(K, L) = \sqrt{K \cdot L}$, which is a function of the amount of labor L and capital K . Suppose that the price of labor per unit and the price of capital per unit both are 2.

(1) What are the monopolist's profit-maximizing price and quantity? What is the resulting profit? (10 points)

(2) Suppose that a government regulatory agency sets a price ceiling of p_R per unit. What quantity will be produced by the monopolist, and what will the firm's profit be? Moreover, what price ceiling yields the largest level of output? What is that level of output? (10 points)

(請翻次頁，繼續作答)

2. Consider a Cournot duopoly model with inverse demand function given by $P(Q) =$

$$\begin{cases} 10 - Q & \text{if } Q \leq 10; \\ 0 & \text{if } Q > 10, \end{cases} \text{ where } Q = q_1 + q_2 \text{ is the market's aggregate quantity.}$$

- (1) Suppose that firm 1's cost function is $c_1(q_1) = 2q_1$, and firm 2's cost function is

$c_2(q_2) = 3q_2$. All of this is common knowledge: firm 1 knows that firm 2 has superior information, firm 2 knows that firm 1 knows this, and so on. What are the Nash-Cournot equilibrium quantities and price? (10 points)

- (2) Suppose that firm 1's cost function is $c_1(q_1) = 2q_1$. Firm 2's cost function, however, is

$c_2(q_2) = 3q_2$ with probability 0.4 and $c_2(q_2) = q_2$ with probability 0.6. Moreover, information is asymmetric: firm 2 knows its cost function and firm 1's, but firm 1 knows its cost function and only that firm 2's marginal cost is 3 with probability 0.4 and 1 with probability 0.6. All of this is common knowledge. What are the Bayesian Nash-Cournot equilibrium quantities and price? (10 points)

3. Consider the following insurance problem: there is a strictly risk-averse decision maker, who has the Bernoulli utility function on wealth: $u(W) = -e^{-aW}$, where $a > 0$, and an initial wealth of \$100 but who runs a risk of a loss of 60 dollars. The probability of the loss is $\frac{1}{3}$. It is possible, however, for the decision maker to buy insurance. One unit of insurance costs \$0.5 and pays 1 dollar if the loss occurs. Thus, if $k \geq 0$ units of insurance are bought, the wealth of the individual will be $\$(100 - 0.5k)$ if there is no loss and $\$(100 - 0.5k - 60 + k)$ if the loss occurs. The decision maker's problem is to choose the level of insurance k to maximize his expected utility. What is the decision maker's optimal level of insurance k^* ? Moreover, find $\frac{dk^*}{da}$. (10 points)