

選擇題共 20 題，每題 5 分。請選出敘述為真的答案，需就所選的答案簡述理由，答案與理由全對才給分。請於試卷上「非選擇題作答區」依序作答，並應註明作答之題號。

### Part I 單選題

1. 最近不少國內電子公司除了本業外，還想跨入新興領域例如太陽能光電，假設有一家電子公司只有本業的晶圓製造，其成本函數為  $c(y_1, 0)$ 。若它只生產太陽能矽晶圓的成本函數為  $c(0, y_2)$ 。這家公司若同時進行本業的晶圓製造和太陽能矽晶圓製造，則其成本為  $c(y_1, y_2)$ 。在下列何種情況下，這家公司會決定同時生產兩種產品？

(A)  $\frac{c(y_1, 0) + c(0, y_2) - c(y_1, y_2)}{c(y_1, y_2)} > 0$  ;

(B)  $\frac{c(y_1, 0) + c(0, y_2) - c(y_1, y_2)}{c(y_1, y_2)} < 0$  ;

(C)  $\frac{c(y_1, 0) + c(0, y_2) + c(y_1, y_2)}{c(y_1, y_2)} = 1$  ;

(D)  $\frac{c(y_1, 0) + c(0, y_2) + c(y_1, y_2)}{c(y_1, y_2)} > 1$  .

2. 有一獨占廠商之長期成本函數為  $C = 10Y$ 。它所面對的市場需求線為  $P = 110 - Y$ 。Y 是其產量(以萬為單位)，P 是價格。下列何者為真？

(A) 此獨占廠商在追求利潤極大化下的生產量為 55 萬；

(B) 此獨占廠商在追求利潤極大化下的生產量為 60 萬；

(C) 若政府向此廠商課徵 500 萬元的定額稅，其稅後利潤為 \$2250 萬元；

(D) 若政府向此廠商課徵 500 萬元的定額稅，其稅後利潤為 \$2000 萬元。

3. 承續上題，若此獨占廠商可鑑別每個消費者的消費情形而採行第一級差別定價，則下列何者為真？

(A) 其社會福利水準會低於完全競爭時的社會福利水準；

(B) 社會總福利為 4000 萬元；

(C) 社會總福利為 5000 萬元；

(D) 消費者剩餘為 1000 萬元。

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4. 在一完全競爭市場中，市場需求函數為  $P=P(Y)$ ，個別廠商  $i$  的生產函數為  $c=c(y_i)$ ，下列何者為真？

- (A) 政府課徵從價稅  $t_1$  時，廠商  $i$  的利潤函數為  $\pi_1 = py_i - c(y_i) - t_1 y_i$ ；  
 (B) 政府課徵利潤稅  $t_2$  時，廠商  $i$  的利潤函數為  $\pi_2 = [py_i - c(y_i)] \cdot t_2$ ；  
 (C) 政府進行從量補貼  $s_1$  時，廠商  $i$  的利潤函數為  $\pi_3 = py_i - c(y_i) + s_1 \cdot y_i$ ；  
 (D) 政府進行從價補貼  $s_2$  時，廠商  $i$  的利潤函數為  $\pi_4 = (1 - s_2)p \cdot y_i - c(y_i)$ 。

5. 最近媒體報導一家印刷工廠的經理因表現優異，老闆送給他的年終獎金是一輛賓士轎車和 100 萬元現金。他接受採訪表示，自己雖在傳統產業工作，但每天要花三小時學習新技術，他印刷書籍的主要原料投入為無毒碳粉(E)和再生紙(F)。假設每印一套書籍平均要消耗三單位的無毒碳粉和五單位的再生紙，且缺一不可。則下列何者為真？

- (A) 該印刷工廠的生產函數為  $\max\left[\frac{E}{3}, \frac{F}{5}\right]$ ；  
 (B) 該印刷工廠的生產函數為  $\min\left[\frac{E}{5}, \frac{F}{3}\right]$ ；  
 (C) 若這個月決定印裝 100 份書籍，則無毒碳粉和再生紙的消耗量分別為 300 和 500 單位；  
 (D) 若這個月決定印裝 100 份書籍，則無毒碳粉和再生紙的消耗量分別為 500 和 300 單位。

6. Suppose that individual 1's demand function is  $D_1(p) = \max\{20 - p, 0\}$  and individual 2's demand function is  $D_2(p) = \max\{7 - 2p, 0\}$ . Let  $D(p)$  be the market demand function. If price  $p^*$  maximizes the market revenue, then

- (A)  $p^* = 20$ ,  
 (B)  $12 \leq p^* < 20$ ,  
 (C)  $6 \leq p^* < 12$ ,  
 (D)  $0 \leq p^* < 6$ .

7. Suppose that two goods X and Y are perfect complements. The substitution effect and the income effect for good X when the price of X increases are denoted by  $\Delta X^S, \Delta X^I$  respectively.

- (A)  $\Delta X^S < 0, \Delta X^I < 0,$
- (B)  $\Delta X^S > 0, \Delta X^I > 0,$
- (C)  $\Delta X^S < 0, \Delta X^I = 0,$
- (D)  $\Delta X^S = 0, \Delta X^I < 0.$

8. John has the utility function  $u(x, y, z) = \sqrt{2}^x \cdot 2^y \cdot 4^{\sqrt{z}}$  and he faces a budget line

$p_x x + p_y y + p_z z = m$ . If  $p_x : p_y : p_z : m = 1 : 1 : 1 : 0.5$ , then John's optional choice satisfies

- (A)  $\frac{MU_x}{p_x} = \frac{MU_y}{p_y} = \frac{MU_z}{p_z},$
- (B)  $\frac{MU_x}{p_x} = \frac{MU_y}{p_y} < \frac{MU_z}{p_z},$
- (C)  $\frac{MU_x}{p_x} < \frac{MU_y}{p_y} = \frac{MU_z}{p_z},$
- (D)  $\frac{MU_x}{p_x} < \frac{MU_y}{p_y} < \frac{MU_z}{p_z}.$

9. Consider an urban pollution problem caused by car traffic, that emits 12 tons of pollution, and factories, that emits another 18 tons. The cost of reducing car

pollution is  $C_c = y_c^2 + 20$  and the cost of reducing factory pollution is

$C_f = 0.5y_f^2 + 10$ , where  $y_c, y_f$  are the reduction (in tons) in car and factory

pollution respectively. The social benefits of reducing pollution are

$B = 0.25y^2 + 2y + 30$ , where  $y$  represents the total reduction in pollution

( $y = y_c + y_f$ ). Suppose that the government uses tradable pollution permits to

achieve the socially efficient reduction and issues  $k$  tons of pollution permits.

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- (A)  $k = 30$ ,
- (B)  $20 \leq k < 30$ ,
- (C)  $15 \leq k < 20$ ,
- (D)  $0 \leq k < 15$ .

10. A worker has the utility function  $U = (1-L)^{2/3}(X-2)^{1/3}$ , where  $L$  is work measured as the proportion of total available time and  $X$  is a basket of consumption goods. The worker receives a wage  $w$  and receives non-labour income 2.5. Suppose the worker wishes to supply a positive amount of labour if and only if  $w > w^*$ .

- (A)  $w^* = 0$ ,
- (B)  $0 < w^* \leq 0.6$ ,
- (C)  $0.6 < w^* \leq 1.2$ ,
- (D)  $w^* > 1.2$ .

**Part II 多重選擇題**

11. Consider the following game describing the situation of two firms which are considering building a new plant.

		Firm 2	
		build	not build
Firm 1	build	(9,6)	(16,5)
	not build	(12,8)	(11,7)

(The numbers in each pair are firm 1's payoff and firm 2's payoff respectively).

- (A) Both firms have a dominant strategy.
  - (B) Only one firm has a dominant strategy.
  - (C) (not build, not build) is a Nash equilibrium.
  - (D) The Nash equilibrium does not maximize the firms' joint profit.
12. Consider a two-consumer, two-good exchange economy (with no production). Anna regards tea (T) and biscuits (B) as perfect complements, consuming them in fixed proportions of two biscuits to one cup of tea. Her preference can be represented as:  $U_A = \min\{0.5B_A, T_A\}$ . Claire has the utility function,  $U_C = B_C \cdot T_C$ .
- The total endowment in the economy is 100 biscuits and 100 cups of tea. Anna's initial endowment is 50 biscuits and 30 cups of tea.
- (A) There are gains from trade.

- (B) The contract curve passes through the point  $(B_A, T_A) = (0, 0)$ .
- (C) The contract curve passes through the point  $(B_A, T_A) = (100, 50)$ .
- (D) Both Anna and Claire are made better off than their original endowment when the market is in competitive equilibrium.

13. The total catch of the Pacific blue fin tuna (T) at Oma, Japan in a season is given by  $T = 100n - n^2$ , where  $n$  is the number of licensed tuna fishing boats. The marginal cost to a fisherman of registering a license and going fishing is 500000 yen per season. Regardless of the number of tuna caught, a tuna can be sold at the price 50000 yen.

- (A) More than 50 licenses are approved when the market is perfectly competitive.
- (B) The total number of tuna caught increases when the marginal cost decreases in the competitive equilibria.
- (C) Suppose tuna fishing at Oma is taken by the fishermen's co-op, which pays a fisherman 500000 yen for the season and sell all the tuna caught at the market price of 50000 yen per tuna. The co-op then hires less than 50 fishermen if it wants to maximize its profits.
- (D) Instead of taking over tuna fishing, the co-op can achieve the efficient outcome by requiring the local council to increase the fishing license fee.

14. An individual has initial wealth of 225 and utility function  $U(W) = \sqrt{W}$ . She

faces a 20% chance of the accident A with damage 125 and 25% chance of the accident B with damage 64. Two events A and B are independent. An insurance policy X with full insurance of accident A costs the individual 28 to purchase, and policy Y with full insurance of accident B costs the individual 20 to purchase.

- (A) Her expected wealth is greater than 180 if she has no insurance.
- (B) Her expected utility is greater than 13 if she has no insurance.
- (C) She will purchase only one policy so as to maximize her expected utility.
- (D) She will purchase both policy X and Y so as to maximize her expected utility.

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15. Which of the following statements about an individual consumer's demand is true?

Briefly give reasons for your answer.

- (A) The own-price substitution effect will be negative if the consumer's indifference curves are convex to the origin.
- (B) The ordinary demand for good  $X$  must be decreasing in the price of good  $X$ .
- (C) The compensated demand curves are always downward sloping curves.
- (D) The endowment income effect of normal good  $X$  cannot be negative when the price of good  $X$  increases.

16. Ace Company is a manufacturer of petrochemical products. Its research efforts have resulted in the development of a new auto fuel injector cleaner. Another firm, Best Company, independently developed a very similar product that is as effective as Ace Company's cleaner. To avoid a lengthy court battle over conflicting patent claims, the two firms have decided to cross-license each other's patents and proceed with production. It is unlikely that other petrochemical companies will be able to duplicate the product. The market demand curve for the new cleaner is estimated below:

$$Y = 100 - P$$

where  $P$  = dollars per bottle and

$Y$  = monthly sales in bottles.

Marginal cost is a constant \$10 per bottle for these two firms. If Ace Company and Best Company interact as a Cournot duopoly, which of the following statements are (or is) true?

- (A) The Cournot equilibrium output for each firm is 20 units.
- (B) The Cournot equilibrium price of the new cleaner is \$40 per units.
- (C) The maximized profit for Ace Company is \$900.
- (D) The maximized profit for Ace Company is \$800.

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17. The Taipower Company has a low demand  $D_1$  during the weekend, but demand increases to  $D_2$  during the weekdays. The associated demand functions are:

$$D_1 = P_1 = 2 - 0.001Y_1 \text{ and}$$

$$D_2 = P_2 = 20 - 0.01Y_2,$$

where  $Y_1$  and  $Y_2$  are the numbers of electricity generated by Taipower each day for weekend and weekdays, respectively. The marginal cost is the same on weekend and weekdays as follows:

$$MC = 1 + 0.004Y_1 = 1 + 0.004Y_2$$

In order to utilize the electricity efficiently, the company use peak-load pricing.

Which of the following statements are (or is) true?

- (A) The optimal peak-load price is \$12.08.
- (B) The optimal non-peak-load price is \$3.83.
- (C) By switching for a uniform price to peak-load pricing, the sum of consumer and producer surplus is increased.
- (D) By switching for a uniform price to peak-load pricing, the sum of consumer and producer surplus is unchanged.

18. Zebra Company produces digital cameras. The company can rent its equipment (K) and hire workers (L) at competitive rates. Equipment can be rented at \$12 per day and labor can be hired at \$3 per day. Its production function can be expressed as

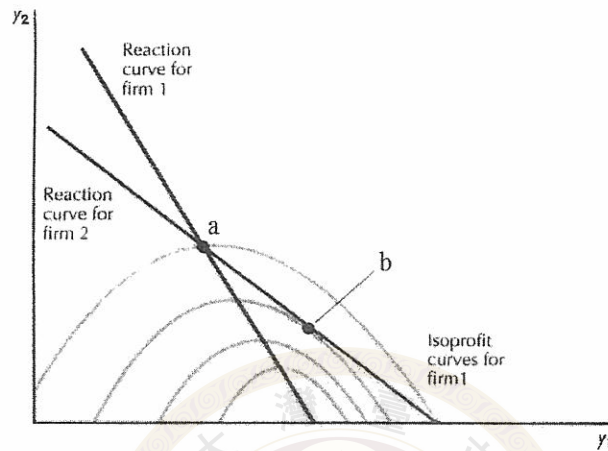
$$Y = K^{\frac{1}{2}} \cdot L^{\frac{1}{2}}$$

The company has to produce 30 units of digital camera per day to meet buyer's order. Which of the following statements are (or is) true ?

- (A) Given 4 units of rental equipment used in the short run, the company will hire 225 workers per day to produce 30 cameras daily. Its short-run cost is \$700 per day.
- (B) Given 4 units of rental equipment used in the short run, the company will hire 200 workers per day to produce 30 cameras daily. Its short-run cost is \$723 per day.
- (C) In the long run, the company will adjust its capital capacity by using 15 units of rental equipment to minimize its production cost of producing 30 units of cameras daily.
- (D) In the long run, the company will adjust its capital capacity by using 10 units of rental equipment to minimize its production cost of producing 30 units of cameras daily.

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19. The reaction functions and isoprofit curves for two oligopolists, firm 1 and firm 2, are shown in the following figure:



which of the following statements are (or is) true?

- (A) Point “a” in the above figure denotes Cournot equilibrium.
  - (B) Point “a” in the above figure denotes Bertrand equilibrium.
  - (C) Point “b” in the above figure denotes Cournot equilibrium.
  - (D) Point “b” in the above figure denotes Stackelberg equilibrium.
20. Which of the following statements on asymmetric information are (or is) true?
- (A) Equilibrium in a market involving hidden action typically involves some form of rationing – firms would like to provide more than they do, but they are unwilling to do so since it will change the incentives of their customers.
  - (B) Equilibrium in a market involving hidden information will typically involve too little trade taking place because of the externality between the “good” and “bad” types.
  - (C) Signaling refers to the fact that when adverse selection or moral hazard are present, some agents will want to invest in signals that will differentiate them from other agents. Investment in signals may be privately beneficial but publically wasteful.
  - (D) Signaling refers to the fact that when adverse selection or moral hazard are present, some agents will want to invest in signals that will differentiate them from other agents. Investment in signals is privately and publically beneficial.