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第一部分：單選題(共 75 分)。請於試卷內之「選擇題作答區」依序作答。

<u>請注意</u>：本部分每題只有<u>一個</u>正確答案。不必提供理由或過程。共 15 題，每題 5 分。

1. Lucy obtained daily sales of gasoline and its prices in Taipei city for a period of 6 months (so she has around 180 observations of price-quantity pairs). She can use these data to
   (A) estimate the demand curve for gasoline at some local points.
   (B) estimate the price elasticity of demand for gasoline at some local points.
   (C) estimate the entire demand curve for gasoline.
   (D) estimate the price elasticity of the entire demand curve for gasoline.
   (E) None of the above.

2. Dwayne consumes 3 different goods and his utility function is $u(x, y, z) = xyz$, where x, y and z denote the quantities of these 3 different goods. Dwayne has a weekly income of $12, and the price of each good is $1. It is clear that Dwayne optimal consumption is an interior solution. Suppose that the price of x rises from $1 to $8. To keep Dwayne's utility the same as before, how much money does he need to be compensated?
   (A) 12.
   (B) 6.
   (C) 16.
   (D) 4.
   (E) 24.

3. There are a number of coffee shops in the city. Now the price of milk goes up. Which of the following statements is FALSE?
   (A) The price of cappuccino (using milk) increases.
   (B) The price of espresso (without milk) increases.
   (C) Considering that all other shops will increase the price of cappuccino, each shop owner will increase the price of cappuccino.
   (D) Part (C) constitutes a collusion case, which should be fined by the Fair Trade Committee.
   (E) None of the above.

4. Eggs currently sell for $10 per egg. Suppose that the government imposes both a sales tax of $1 per egg (on buyers) and an excise subsidy of $5 per egg (on sellers). The resulting price of an egg will be between (choose the most accurate answer):
   (A) $6 and $10.
   (B) $4 and $9.
   (C) $5 and $9.
   (D) $9 and $10.
   (E) $4 and $5.

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5. The following question refers to the accompanying diagram which shows the effects of a price ceiling. The initial price and quantity are P_0 and Q_0, respectively, and the price ceiling is imposed at the price P_1. Assume that none of the potential deadweight loss can be avoided.
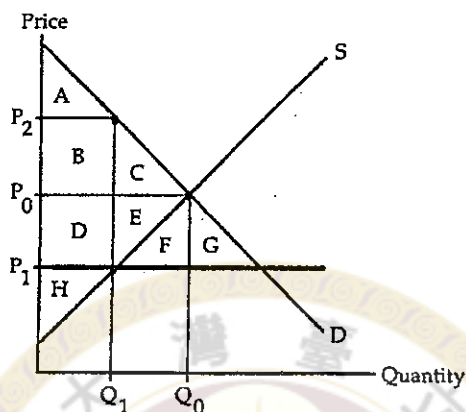
After the price ceiling is imposed:
(A) the deadweight loss is equal to the area $F + G$.
(B) the deadweight loss is equal to the area $B + C + D + E$.
(C) the consumer's surplus is equal to the area $A + B + C$.
(D) the consumer's surplus is equal to the area $A + B + D$.
(E) the consumer's surplus is equal to the area $A + B + C + D + E + F + G$.

6. Ten people with different incomes have applied for membership of an exclusive club. One of the club's criteria in deciding whom to accept is to favor those applicants whose incomes are high relative to other applicants'. Each applicant knows his own income and can reveal it voluntarily by submitting his income tax returns to the club. Also, everyone happens to know that there is exactly one applicant whose income is \$10,000, one whose income is \$20,000, and so forth up to \$100,000. How many applicants will decide to reveal their incomes?
(A) 10.
(B) 9.
(C) 5.
(D) 1.
(E) None.

7. Regarding welfare, which of the following statements is TRUE?
(A) The Pareto criterion is positive, not normative.
(B) The Pareto criterion is a criterion under which any proposal that can be unanimously defeated should be rejected.
(C) In an Edgeworth box, all Pareto-optimal allocations lie within the region of mutual advantage.
(D) A country will gain from international trade whenever the world relative price differs from the autarkic relative price.
(E) The price of a good accurately reflects the total value it creates for the society.

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8. Suppose that a cost-minimizing firm only use two inputs: labor (L) and capital (K). Let w be the wage rate and r be the cost of capital. Its demand function for labor is $L(w,r) = a_L\left(\frac{w}{r}\right) + b_L$ and that for capital is $K(w,r) = a_K\left(\frac{w}{r}\right) + b_K$, where a_L, a_K, b_L and b_K are all constants. Suppose that the technology which the firm uses is convex.

Which of the following statements is TRUE?

(A) Both a_L and a_K should be positive.

(B) When the output level is positive, it is still possible that b_L and b_K are both zero.

(C) A Cobb-Douglas production function can generate this kind of factor demand functions.

(D) The demand curve for labor is negatively sloping in terms of w.

(E) L and K must be complements.

9. Consider an exchange economy in which there are two agents, A and B, and two goods, x_1 and x_2. The preference of each agent is the following:
$$U^A(x_1^A, x_2^A) = x_1^A + 2x_2^A,$$
$$U^B(x_1^B, x_2^B) = x_1^B + x_2^B.$$
Agent A has an endowment $(e_1^A, e_2^A) = (1, 0)$ and agent B has an endowment $(e_1^B, e_2^B) = (0, 1)$. Let the price of x_1 be p and the price of x_2 be 1. Which of the following statements is TRUE?

(A) The endowment point belongs to the set of Pareto optima.

(B) There are multiple competitive equilibrium prices p.

(C) In the Edgeworth box, the contract curve is the diagonal line.

(D) The equilibrium allocation after the exchange is $(x_1^A, x_2^A) = (0, 1)$.

(E) The First Theorem of Welfare Economics does not hold in this case.

10. Three agents live in a community. They want to build a park, which costs \$9,000. In order to build this public good, they each need to make a contribution. Let c_i denote the amount of agent i's contribution, $i \in \{1,2,3\}$. They choose the contributions simultaneously. If the total amount of contributions is higher than the cost, the park will be built; otherwise, there will be no park. The net utility of agent i derived from the park is $v_i - c_i$. If the park is built, then $v_1 = \$4,500$, $v_2 = \$4,000$, and $v_3 = \$2,500$. If the park is not built, then $v_i = 0$ for any i and the contributions will be refunded. Let c_i^* denote the equilibrium contribution made by agent i.

In a Nash equilibrium, which of the following statements is TRUE?

(A) There is an equilibrium where the park is not built but someone still makes a positive contribution in the beginning (which will be refunded later).

(B) The case of equal sharing (i.e., $c_1 = c_2 = c_3 = 3000$) can constitute a Nash equilibrium.

(C) In any equilibrium where the park is built, c_3^* is the lowest among all c_i^*.

(D) In the case where the park is built, $c_i^* = v_i$ can constitute a Nash equilibrium.

(E) In any equilibrium, the net utility obtained by agent 1 is the highest among all the agents.

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11. Consider the following normal-form game:

		2		
		X	Y	Z
1	A	4, 1	1, x	2, 5
	B	5, 3	0, 1	3, 2

Assume that $x \geq 0$. Which of the following statements is TRUE?

(A) Y can be a dominant strategy.

(B) There is a unique pure-strategy Nash equilibrium no matter what x is.

(C) There can be many mixed-strategy Nash equilibria.

(D) In a mixed-strategy Nash equilibrium, player 2 must play X and Y with positive probabilities and play Z with zero probability.

(E) In a mixed-strategy Nash equilibrium, player 1 must play A with probability $1/5$.

12. Consider an economy with two goods, x_1 and x_2. x_1 is produced by a monopolist, while the market for x_2 is perfectly competitive. There are n consumers, each of whom has the same utility function $u(x_1, x_2) = \alpha\sqrt{x_1} + x_2$ and has income I. Let the price of x_1 determined by the monopolist be p and the price of x_2 be normalized as 1. The marginal cost for the monopolist to produce x_1 is c, which is a constant.

Which of the following statements is TRUE?

(A) The price elasticity of the market demand is dependent of n..

(B) When x_1 is more important to the consumer (i.e., α becomes higher), the monopolist will charge a higher p.

(C) When every consumer becomes richer (i.e., I is higher), the monopolist will charge a higher p.

(D) When there are more consumers in the market (i.e., n is higher), it is still possible that the equilibrium quantity will be lower in some range.

(E) The profit that the monopolist earns is always decreasing in c.

13. Which of the following statements regarding different market structures is TRUE?

(A) In the case of natural monopoly, the firm may not produce on the elastic part of the demand curve.

(B) In the Stackelberg model, the key factor that the leader can earn a higher profit is that it can commit to producing a larger output. If the leader cannot commit and can also react to the output chosen by the follower, he can be worse off.

(C) The assumption of free entry implies that every firm earns zero profit in the long run. Therefore, every firm staying in the market will produce an output which is determined at the minimum point of its long-run average cost curve.

(D) In a duopoly market, both firms will produce more when they engage in Bertrand competition than when they engage in Cournot competition.

(E) The social welfare loss caused by a price-discriminating monopoly is higher than that caused by a single-pricing monopoly.

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14. Consider the following four lotteries:

Lottery A: it pays $40 for sure.

Lottery B: it pays $100 with probability 1/4 and $20 with probability 3/4.

Lottery C: it pays $40 with probability 4/5 and $20 with probability 1/5.

Lottery D: it pays $100 with probability 1/5 and $20 with probability 4/5.

Suppose that a person has a utility function $u(x)$ with $u'(x) > 0$, where x is the money he receives. He is an expected utility maximizer.

Which of the following statements is FALSE?

(A) If he prefers lottery A to lottery B, then he is risk averse.

(B) If $u(x)$ is strictly concave (i.e., $u''(x) < 0$), then he is risk averse.

(C) Even if we know that he prefers lottery A to lottery B, we cannot tell whether he prefers lottery C to lottery D or not.

(D) He prefers lottery A to lottery C regardless of his risk attitude.

(E) If he is a risk lover, then he prefers lottery B to lottery C.

15. There are many consumers who live in a street, represented by the interval [0,1]. Consumers are distributed uniformly on this interval. There are 2 stores, A and B, located at points 0 and 1/2 (as shown in the following figure), who sell the same good. For simplicity, suppose that the marginal cost to produce the good is 0.
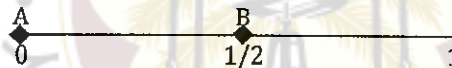
Each consumer chooses one store to shop and buys at most one unit of the good. However, to purchase the good, everyone needs to pay a transportation cost tx, where x is the distance from where he lives to the store he shops, and t is the unit cost. Stores A and B first simultaneously decide their prices, p_A and p_B, and then consumers decide which store to shop. Suppose that every consumer's willingness to pay for the good is θ, which is large enough to cover the price he pays. Let (p_A^*, p_B^*) denote the Nash equilibrium prices.

Which of the following statements is TRUE?

(A) There can be an equilibrium where some consumers living in [1/2, 1] buy the good from store A and some other consumers live in the same area buy it from store B.

(B) When t becomes higher, the difference between p_A^* and p_B^* must be higher.

(C) p_A^* can be higher than p_B^*.

(D) In equilibrium, the market for store A is larger than that for store B.

(E) When t becomes higher, store A's market share in equilibrium will be lower.

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第二部分：問答題(共 25 分)。請於試卷內之「非選擇題作答區」作答，並註明作答之題號。

1. **[15 points]** Please read the following article before you answer the following questions (1)-(3).

Give Your Cabdriver a Fat Tip!
(by Michael A. Salinger, from *The Wall Street Journal*, 06/24/2006)

I have been director of the Bureau of Economics at the Federal Trade Commission over the past year. For a college professor, it's been a fascinating opportunity to confront how textbook theories match market reality, and to get an insider's view of how policy is made. The enduring uproar over gasoline prices provides a perfect case in point.

After two decades of about $1.00 per gallon gasoline prices in the United States, prices started to rise in 2002 and reached about $2.00 per gallon around Memorial Day last year. Then, during the summer, prices rose an additional 50 cents per gallon. In response, Congress mandated that the FTC study whether the increase was due to market manipulation.

At the end of the summer, Hurricane Katrina made land, followed a month later by Hurricane Rita. In addition to the tragic loss of life and personal property, both hurricanes damaged a substantial portion of U.S. crude oil and petroleum refining capacity. They also damaged two major pipelines that carry gasoline from the Gulf to the East Coast. Prices again rose, and Congress mandated that the FTC study post-hurricane price gouging.

Just before Memorial Day, the FTC submitted its report to Congress. While the investigation found some instances of price gouging as defined by Congress, the staff concluded that virtually all the cases meeting the statutory definition were the result of competitive market forces, not market manipulation. More generally, the FTC staff concluded that the market worked much as one would expect a competitive market to respond to a shortage.

One of the purposes of the report, which is available at www.ftc.gov, was to document objectively what happened in gasoline markets after the hurricanes. I hope that college economics professors will assign portions of the report to their classes, because it provides a real example of how markets respond to shocks...[omitted].

Americans are plainly angry about gasoline prices. Polls indicate that they are. I try to ask as many people as I can about what they think about gasoline prices. It does not surprise me when taxi drivers are upset. They buy their own gas and price regulations prevent them from passing the higher cost on to their customers. I am more surprised by the vehemence of parents (many of whom drive very large SUVs) on the sidelines of soccer fields in affluent suburbs. Convinced that current prices reflect manipulation by "Big Oil," they are almost as angry as the taxi drivers. High profits reported by oil companies and the very large compensation package given former Exxon/Mobil CEO Lee Raymond

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have contributed to this perception. If the public is convinced that current gasoline prices reflect market manipulation, then I expect that Congress will pass some form of price gouging legislation.

If the public were to ask my advice on the wisdom of price gouging legislation, however, I would counsel against it. When disasters like Katrina and Rita occur, prices must go up.

The difficulty is that without knowing the details of a disaster, it is impossible to specify in advance how much prices need to rise. As result, price-gouging legislation -- particularly if penalties are severe and enforcement is aggressive -- will pose two distinct risks. One is that prices will not rise to market-clearing levels and gas stations will run out of gasoline. As unpleasant as high-priced gasoline is, running out will be even worse.

The other is that gas stations will shut down rather than risk an allegation of price gouging. In the wake of major market disruptions, it is always going to be possible in hindsight to identify companies that raised the price the most and to label them as "gougers." But gasoline stations do not set prices in hindsight. A vague definition of price gouging will make it difficult for gas station owners to know what price they can charge and stay within the law. Indeed, the FTC investigation uncovered examples of gas stations that shut down rather than risk a suit under a state price-gouging statute.

Professional economists are, of course, accustomed to giving unheeded advice. In a way, that is liberating, so I will offer one further piece of unsolicited advice. When you take a taxi and if you can afford it, give the driver a bigger tip than you usually would. As much as higher gasoline prices are hurting you, they are hurting the taxi drivers more.

(Mr. Salinger is the director of the Bureau of Economics at the Federal Trade Commission and is on leave from the Boston University School of Management, where he is professor of economics.)

(1) According to this article, why did some gas stations shut down after Hurricane Katrina hit the US? [Answer in 20 words. Penalty applies to exceeding words]

(2) Oil industry critics argue that lower inventory holdings have left the industry more vulnerable to supply disruptions. Does "price gouging" legislation (that is, a law preventing price from increasing after disasters) increase or decrease the incentive to hold additional inventories to sell during shortages? Why? [Answer in 20 words. Penalty applies to exceeding words]

(3) Does "price gouging" legislation prolong or shorten the time needed for the damaged area to recover from the shortage of goods caused by a natural disaster? Why? [Answer in 20 words. Penalty applies to exceeding words]

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2. **[10 points]** There are n firms in a product market competing in Cournot fashion. The demand function facing the firms is
$$P = a - bQ.$$
The production function of firm $i \in \{1, 2, \ldots, n\}$ is
$$q_i = f(L_i) = \theta\sqrt{L_i},$$
where q_i is firm i's output, L_i is the number of workers that firm i hires, and θ is a parameter that measures the productivity of workers, which is assumed to be the same across all firms. Suppose that the wage rate is fixed at w and no firm or worker is large enough to change that.

(1) Considering the symmetric equilibrium, find out the equilibrium quantity and price in the product market.

Now consider the same situation as above, except that workers in the labor market are organized to form a union, which has the control right to set the wage rate w. Suppose that the objective function for the union is to maximize the value:
$$w \cdot L + y \cdot (\bar{L} - L),$$
where $L = \sum_{i=1}^{n} L_i$ is the number of employed workers, and $\bar{L}$ is the number of all workers in the labor market. That is, $\bar{L} - L$ is the number of unemployed workers. y is the unemployment benefit received by an unemployed worker. We assume that $y < w$. Again, consider the symmetric equilibrium.

(2) What are the equilibrium wage rate chosen by the union and the total employment? How will they be affected by y? Explain your finding.

試題隨卷繳回