選擇題：請於『答案卡』作答。每題均至少有一個正確答案。不必提供理由或過程。共 10 題，每題 10 分。

計分方式：各題所有選項均答對者，得10分。每答錯一個選項扣4分，未作答者或答錯超過二個選項者，該題以零分計算。例如某題正確答案為(A)(B)(C)，而某考生所選之答案為(A)(C)(E)，則該考生答錯兩個選項，包括(B)選項應選而未選、(E)選項不應選而選，因此該考生該題得2分。其餘情況以此類推。各題分數均獨立計算，不影響其他題分數。

1. Penny consumes three goods, beverages (x_1), dresses (x_2) and shoes (x_3). Her preference can be represented by the following utility function:

$$u(x_1, x_2, x_3) = 4x_1 + \min[x_2, 2x_3].$$

The prices of these goods are P_1, P_2, and P_3, respectively. Penny has an income Y.

Which of the following statements regarding her optimal choice is (are) TRUE?

(A) She will spend all her income in buying beverages when $P_1 = 3$ and $P_2 = 1$.

(B) She will buy all the three goods if she has a sufficiently high income Y.

(C) There can be many optimal solutions.

(D) Other things being the same, if beverages become cheaper, she will buy more beverages.

(E) Other things being the same, if dresses become more expensive, she will buy fewer shoes.

2. Sheldon (player 1) and Raj (player 2) are deciding whether or not to enter a contest. The prize for the winner is ω and 0 for the loser. Player i's utility function is:

$$u_i = p_i \cdot \omega - ke_i - \lambda.$$

p_i is the probability that player i wins the contest, which depends on the effort levels, $e_1, e_2 \in [0, \infty)$, made by each player. Specifically, let $p_i = \frac{e_i}{e_1+e_2}$ if both players enter the contest. It means that it is more likely that player i wins if he makes more efforts or his opponent makes less efforts. On the other hand, if there is only one player entering the contest, he wins the prize with probability 1, i.e., $p_i = 1$, and the other player who stays out of the contest obtains 0. If neither player enters the contest, they each obtain 0. $k > 0$ is the marginal effort cost, and λ is the fee that each player needs to pay to enter the contest. We assume that $\omega > \lambda > 0$. The game contains two stages: in the first stage, players simultaneously decide whether or not to enter the contest. If one does, he needs to pay the fee λ. In second stage, players simultaneously choose the effort levels, e_1 and e_2. The equilibrium effort levels are denoted by (e_1^*, e_2^*).

Which of the following statements regarding the pure-strategy subgame perfect Nash equilibrium in this game is (are) TRUE?

(A) Both players always make efforts, i.e., $e_1^* > 0$ and $e_2^* > 0$.

(B) There is only one equilibrium.

(C) Each player wins the contest with equal probability, i.e., $p_1 = p_2 = 1/2$.

(D) When k is smaller, other things being the same, the equilibrium payoff for the winner is larger.

(E) Even when λ is very high, the case where neither one enters the contest never happens.

見背面

3. The Cheesecake factory is a monopoly in a small town which sells cakes in two periods. In the first period, the market demand is

$$P_1 = 120 - Q_1,$$

and in the second period, the market demand is

$$P_2 = 120 + \phi - Q_2,$$

where ϕ is a shock on the demand side. The firm's total cost function is

$$TC(Q) = Q^2,$$

where $Q = Q_1 + Q_2$. In the beginning of the first period, the firm has to choose Q_1 and Q_2 to maximize the total profit in two periods:

$$\pi = P_1Q_1 + P_2Q_2 - (Q_1 + Q_2)^2.$$

Let the optimal prices and outputs in the two periods be (P_1^*, Q_1^*) and (P_2^*, Q_2^*), respectively. Consider the case where they are all positive.

Which of the following statements regarding the monopolist's optimal decisions is (are) TRUE?

(A) Q_1^* is not affected by the shock ϕ because it happens in the second period.

(B) Both P_1^* and P_2^* are greater than 100.

(C) If the shock is negative, i.e., $\phi < 0$, then the price is increasing over time, i.e., $P_2^* > P_1^*$.

(D) If the shock is positive, i.e., $\phi > 0$, then Q_2^* is greater than 20.

(E) The profit is increasing in ϕ if it is a positive shock.

4. There are two comic book stores operating in a duopolistic market, Stuart's (Store 1) and Jesse's (Store 2). They sell heterogeneous products and engage in price competition. Stuart's store is more popular than Jesse's in that it has a larger demand. Namely, the demand function for each store is the following:

$$Q_1 = 60 - P_1 + \delta P_2.$$
$$Q_2 = 40 - P_2 + \delta P_1,$$

where $0 < \delta < 1$, which captures the level of "differentiation" of these two stores. Assume that the firms have the same marginal cost, $TC(Q_i) = 20Q_i$. They simultaneously choose their prices. The equilibrium prices and outputs are denoted by (P_1^*, Q_1^*) and (P_2^*, Q_2^*).

Which of the following statements regarding the Nash equilibrium outcomes is (are) TRUE?

(A) Since this is a Bertrand-style competition, the equilibrium prices are equal to the marginal cost.

(B) Because Stuart faces a larger market demand, the equilibrium quantity sold by Stuart is always larger than that sold by Jesse.

(C) The reaction functions are positively sloping in that when a store increases its price, it is a best response for its opponent to increase its price as well in order to gain more profit.

(D) When their products are more differentiated, i.e., δ is higher, then other things being the same, each firm can charge a higher price.

(E) It is profitable for them to collude, and then they will do so in equilibrium.

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5. Howard is trying to find the Nash equilibrium in the following normal-form game. However, the number in the ■ is missing. The only condition that he knows is that "M" is a dominated strategy.

		2		
		L	**M**	**R**
1	**A**	2, 6	1, 3	■, 2
	B	3, 3	5, ■	1, 2
	C	5, 1	4, 4	2, 6

Considering only the numbers that satisfy the condition, which of the following statements regarding the Nash equilibrium in this game is (are) TRUE?

(A) "B" is never played in the equilibrium.

(B) It is required that the number in the ■ be smaller than 2.

(C) There is a unique Nash equilibrium.

(D) There is a mixed-strategy Nash equilibrium for some numbers in the ■.

(E) (A, R) can never be played in a Nash equilibrium.

6. Suppose that the market for coffee is perfectly competitive around Pasadena. There are two types of coffee shops, domestic and foreign. Different types of coffee shops have different cost structures, but the ones of the same type are identical. There are currently 30 coffee shops of each type, and an individual firm of each type has the following total cost function in the short run:

$$\text{Domestic shops: } STC_d(q) = 1 + 4q + 3q^2.$$

$$\text{Foreign shops: } STC_f(q) = 2 + 2q + q^2.$$

On the other hand, there are also two types of consumers, residents and tourists. An individual consumer of each type has the following demand function:

$$\text{Residents: } q_w = 1 - 0.1P.$$

$$\text{Tourists: } q_t = 0.8 - 0.2P.$$

That is, residents have a higher demand for coffee than tourists do. There are potentially 200 consumers of each type.

Which of the following statements regarding the short-run market equilibrium is (are) TRUE?

(A) Both domestic and foreign coffee shops keep staying in the market.

(B) The total output in equilibrium is $Q^* = 105/2$

(C) The equilibrium price is $P^* = 41/8$.

(D) Both domestic and foreign coffee shops earn positive profit.

(E) Both residents and tourists buy coffee.

見背面

7. Amy (person A) and Bernadette (person B) work in a lab, both of whom need two kinds of equipment in doing experiments, funnels (f) and test tubes (t). They cannot produce the equipment by themselves and can only exchange what they have in hand. Due to the nature of their own experiments, they have different preferences over the equipment, which can be represented by the following utility functions:

$$\text{Amy: } u_A(f_A, t_A) = \min[f_A, t_A].$$

$$\text{Bernadette: } u_B(f_B, t_B) = 100 - (f_B - 5)^2 - (t_B - 5)^2.$$

Initially, the endowment that Amy has is $(e_A^f, e_A^t) = (4, 8)$, and Bernadette has $(e_B^f, e_B^t) = (6, 2)$. Let the price of funnels be P_f and the price of test tubes be P_t.

Which of the following statements regarding the competitive equilibrium between these two persons is (are) TRUE?

(A) $(f_A, t_A) = (4, 4)$ is a Pareto optimal allocation.

(B) There are more than one competitive equilibrium.

(C) The equilibrium price must be $\frac{P_f}{P_t} = 1$.

(D) After the trade, the equilibrium allocation must be $(f_A, t_A) = (6, 6)$.

(E) The First Theorem of Welfare Economics must hold.

8. A firm uses three kinds of factors: low-skilled workers (L), high-skilled workers (H) and capital (K). Its production function is:

$$f(L, H, K) = \sqrt{LH} + \sqrt{KH}.$$

Suppose that w is the wage for low-skilled workers, h is the wage for high-skilled workers, and r is the cost of capital. In the short run, both the low-skilled workers and high-skilled workers can be adjusted, while capital is not adjustable and fixed at $K = 1$. By contrast, in the long run, all factors are adjustable.

Which of the following statements regarding the cost function using this technology is (are) TRUE?

(A) This technology exhibits economies of scale.

(B) In the short run, both the average variable cost and the marginal cost functions are linear in the output level q.

(C) In the short run, the average cost function is monotonically increasing in the output level q.

(D) Both in the short run and long run, the costs spent in paying the low-skilled and high-skilled workers are indeed the same, i.e., $wL^* = hH^*$, where L^* and H^* are the optimal amounts of labor of each kind, respectively.

(E) In the long run, the optimal amount of capital is not affected by the wage of either kind of labor.

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9. Which of the following statements regarding the labor market is (are) TRUE?
   (A) In the labor market, the marginal revenue product of labor is always lower than or equal to the value of marginal product of labor as long as the demand curve in the product market is downward sloping.
   (B) Consider a labor market that was perfectly competitive. Now all workers in this market are organized to form a union. With a strong bargaining power, the union can set a higher wage than before. Then all workers will be better off.
   (C) Regardless of the market structure in the product market, when an effective minimum wage policy is imposed on the labor market, it will force firms to hire fewer workers because of the increased wage.
   (D) Consider a worker who consumes only food and leisure. She has two sources of income: labor income and non-labor income. Then other things being the same, when the non-labor income increases, she will reduce the working hours.
   (E) Suppose that a firm is the only buyer in a labor market. Then under the same technology and market demand, the firm can always set a lower wage than that in a competitive labor market.

10. Leonard (player 1) and Tam (player 2) want to build up a playground which is a public good for them. Player i has income Y_i, and Leonard has more money than Tam does, i.e., $Y_1 > Y_2$. Each player can spend the money in a private good x_i and the contribution g_i to build up the playground. The size of the playground is $G = g_1 + g_2$. Their utility functions are:

$$\text{Leonard: } u_1(x_1, G) = \sqrt{x_1} + \sqrt{G}.$$
$$\text{Tam: } u_2(x_2, G) = \sqrt{x_2} + 2\sqrt{G}.$$

That is, Tam cares more about the playground than Leonard does although he is poorer. Define G^* to be the socially optimal public good level that maximizes the total utility of both players, $u_1 + u_2$, and $G^{**} = g_1^{**} + g_2^{**}$ to be the public good level in the game where they simultaneously choose g_i to maximize their own utility u_i.

Which of the following statements regarding the public good provision is (are) TRUE?

   (A) The efficient level of public good is equal to the average income level, i.e., $G^* = (Y_1 + Y_2)/2$.
   (B) Tam is always a free rider by contributing nothing.
   (C) The public good must be under-provided if it is provided through personal contributions, i.e., $G^* > G^{**}$.
   (D) It is not necessary that the richer person contributes more, i.e. $g_1^{**} > g_2^{**}$ if and only if $Y_1 > 2Y_2$.
   (E) Leonard always makes positive contributions, i.e., $g_1^{**} > 0$.

試題隨卷繳回