※ 注意：請於答案卷上依序作答，並應註明作答之部份及其題號。

選擇題

請寫下對的答案，不需提供解釋。

Part I 每題 8 分，全對才給分。

Part II 每題 6 分，全對 6 分，錯一個扣 3 分，錯一個以上 0 分。 例如，正確答案為 (a)(b) 而答成 (a)(c)，則少答 (b) 多答 (c)，故該題 0 分。空白則 0 分。

Part I

1. A firm has the production function $f(x,y)=x+y^{1/2}$, where x, y are production factors. Which statement(s) is (are) correct in the following?
   (a) Its corresponding isoquants are concave to the origin.
   (b) Its corresponding isoquants are convex to the origin.
   (c) If you draw a horizontal line through two or more isoquants, they will have the same slope where they meet this line.
   (d) If you draw a vertical line through two or more isoquants, they will have the same slope where they meet this line.
   (e) None of the above.

2. A competitive firm has a long-run total cost function $C(y)=2y^2+162$, where y is output and c is total cost. Its long-run supply function is described as follows. Which statement(s) is (are) correct?
   (a) $y=\frac{p}{4}$ if $P>46$; $y=0$ if $P<46$
   (b) $y=\frac{p}{3}$ if $P>46$; $y=0$ if $P<46$
   (c) $y=\frac{p}{4}$ if $P>36$; $y=0$ if $P<36$
   (d) $y=\frac{p}{3}$ if $P>36$; $y=0$ if $P<36$
   (e) None of above

3. "Information" is produced, distributed and consumed in the information economy. Which statement(s) is (are) correct in describing the property of "information"?
   (a) have a low fixed cost of production but a high marginal cost of reproduction.
   (b) have a high fixed cost of production but a low marginal cost of reproduction.
   (c) Its value negatively depends on number of users.
   (d) Its value positively depends on number of users.
   (e) None of above.

4. A monopolist has a cost function given by $C(y)=2y^2$ and faces a demand curve

接背面

given by $P(y)=120-y$ Which statement(s) is (are) correct in the following?

(a) If there is no tax on this monopolist, its profit-maximization level of output would be 25.

(b) If there is no tax on this monopolist, the monopolist would charge the price \$100 per unit to maximize its profit.

(c) If there is a lump sum tax of \$100 on this monopolist, its output would be 20 to maximize its profit.

(d) If there is a specific tax on the monopolist of \$30 per unit output, its output would be 15 to maximize its profit.

(e) None of above.

5. Int and Ace are the only sellers of CPUs. They are Stackelberg competitors. Ace chooses her profit-maximizing number of CPUs to sell, q_1 ,based on the number of CPUs that she expects Int to sell. Int knows that how Ace will react and chooses the number of CPUs that she herself will sell, q_2 ,after taking this information into account. The inverse demand function for CPUs is $P(q_1+q_2)=1000-2(q_1+q_2)$. It costs \$300 to manufacture a CPU to sell. Which statement(s) is (are) correct in the following?

(a) If Ace expects Int to sell q_2 units of CPUs, her marginal revenue will be $MR(q_1+q_2)=1000-4q_1-2q_2$, if she sells q_1 units of CPUs.

(b) If Ace expects Int to sell q_2 units of CPUs, her marginal revenue will be $MR(q_1+q_2)=1000-4q_2-2q_1$, if she sells q_1 units of CPUs.

(c) Ace's reaction function is $R(q_2)=180-0.5\,q_2$

(d) Ace's reaction function is $R(q_2)=170-0.5\,q_2$

(e) None of above.

Part II

1. There are only two goods in the universe, x and y. Mr. E lives on earth, Mr. M lives on moon and Mr. J lives on Jupiter. We say that two persons have the same preference if whenever one weakly prefers a bundle to another, so does the other. E, M, J *all have the same preference*. In the following, let (a,b) denote the basket where $x=a$ and $y=b$.

Which statement(s) is (are) correct in the following?

(a) If E's preference is strictly convex and he is indifferent between baskets $(1,8)$ and $(3,4)$, then M cannot be indifferent between baskets $(2,6)$ and $(4,2)$.

(b) If E's preference is strictly convex and he is indifferent between baskets $(1,8)$ and $(3,4)$, then J can be indifferent between baskets $(2,6)$ and $(4,2)$.

(c) If E is indifferent between baskets $(1,8)$ and $(3,4)$, then M cannot be indifferent between baskets $(2,6)$ and $(4,2)$.

(d) If E is indifferent between baskets $(1,8)$ and $(3,4)$, then J can be indifferent between baskets $(2,6)$ and $(4,2)$.

接次頁

2. Continue from 1. If you observe E's demand function for x is $x = 20 - p_x$ (where p_x is the price of x on earth) when his income is 200 in earth dollars and the price of y on earth is 8. Suppose E's preference is strictly monotonic.

   Which statement(s) is (are) correct in the following?

   (a) When $p_x = 4$, E consumes 17 units of y.

   (b) If the price of x on moon is 8 and that of y on moon is 16, when M has income of 400 in moon dollars, M consumes 16 units of x.

   (c) If the price of x on Jupiter is 10 and that of y on Jupiter is 16, when J has income of 400 in Jupiter dollars, J consumes 15 units of x.

   (d) If the price of x on Jupiter is 10 and that of y on Jupiter is 16, when J has income of 400 in Jupiter dollars, J consumes 0 unit of x.

3. Continue from 1. You observe the following. The price of x on moon is higher than that on earth. The prices of x on earth and Jupiter are the same. The prices of y on earth, moon and Jupiter are all the same. E's income in earth dollars and M's income in moon dollars are the same. J's income in Jupiter dollars is low enough so that he is indifferent between his optimal choice and M's optimal choice.

   Which statement(s) is (are) correct in the following?

   (a) E's optimal consumption of x can be less than M's optimal consumption of x if x is an inferior good.

   (b) E's optimal consumption of x can be less than M's optimal consumption of x if x is a normal good.

   (c) M's optimal consumption of x must be less than J's optimal consumption of x.

   (d) J's optimal consumption of x must be less than E's optimal consumption of x no matter whether x is an inferior or normal good.

4. Continue from 1. The prices on earth, moon and Jupiter are as follows.

	Earth	Moon	Jupiter
p_x	2	1	3
p_y	1	2	1

   E's unique optimal consumption is $(2, 4)$, M's unique optimal consumption is $(4, 2)$, and J's unique optimal consumption is $(3, 2)$.

   Which statement(s) is (are) correct in the following?

   (a) If you only observe E's and M's choices, you conclude that their behaviors are consistent with the weak axiom of revealed preference.

   (b) If you only observe M's and J's choices, you conclude that their behaviors are consistent with the weak axiom of revealed preference.

   (c) If you observe E's, M's and J's choices, you conclude that their behaviors are consistent with the strong axiom of revealed preference.

   (d) If you observe E's, M's and J's choices, you conclude that their behaviors are not consistent with the strong axiom of revealed preference.

5. Continue from 1. Suppose E's utility function is

$$U(x, y) = xy.$$

   E's income is 1000 in earth dollars, the price of x on earth is 4, and that of y on earth is 2.

   Which statement(s) is (are) correct in the following?

   (a) The optimal consumption is the same as that when the utility function is $x^{\frac{1}{3}}y^{\frac{2}{3}}$.

   (b) The optimal consumption is $(125, 250)$.

   (c) Because of an earthquake, a ration system is now in use. E is issued 2500 ration points and must pay 5 points for each unit of x and 10 points for each unit of y. These ration points must be paid *in addition* to the dollar prices indicated. The consumption bundle $(125, 250)$ is still affordable to E.

接背面

(d) Because of an earthquake, a ration system is now in use. E is issued 2500 ration points and must pay 5 points for each unit of x and 10 points for each unit of y. These ration points must be paid *in addition to* the dollar prices indicated. The optimal consumption bundle is $(\frac{500}{3}, \frac{500}{3})$.

6. Consider the private-value English auction (the ascending auction). The rule is as follows. The auctioneer starts with the price of zero. Bidders successively offer higher prices; each bid must exceed the previous bid by the minimal bid increment, say 1 dollar. When no participant is willing to increase the bid further, the item is awarded to the highest bidder. Suppose there are three bidders, their values are v_1, v_2, and v_3 respectively. If bidder i wins the item at price p, his profit is $v_i - p$. Assume that every bidder wants to maximize his profit.

   Which statement(s) is (are) correct in the following?

   (a) If $(v_1, v_2, v_3) = (7, 4, 3)$, then the item is awarded to bidder 1.

   (b) If $(v_1, v_2, v_3) = (7, 4, 3)$, then the item is awarded to bidder 2.

   (c) If $(v_1, v_2, v_3) = (7, 4, 3)$, then the item is awarded to bidder 1, possibly at the price of 5.

   (d) If $(v_1, v_2, v_3) = (7, 4, 3)$, then the item is awarded to bidder 2, possibly at the price of 4.

7. Continue from 6.

   Which statement(s) is (are) correct in the following?

   (a) If bidders 1 and 3 collude, then the item is awarded to bidder 2, possibly at the price of 3.

   (b) If bidders 1 and 3 collude, then the item is awarded to this colluding coalition of 1 and 3, possibly at the price of 5.

   (c) If bidders 1 and 2 collude, then the item is awarded to this colluding coalition of 1 and 2, possibly at the price of 4.

   (d) If bidders 2 and 3 collude, then the item is awarded to bidder 1, possibly at the price of 5.

8. Suppose there are two states of nature. State 1 occurs with probability $p_1 > 0$ and state 2 with $p_2 = 1 - p_1 > 0$. A consumer, Risky, has the utility function of the following

$$U(c_1, c_2, p_1, p_2) = c_1^{p_1} c_2^{p_2},$$

   where c_1 is his consumption at state 1 and c_2 is that at state 2. Another consumer, Safety, has the utility function

$$p_1 \ln c_1 + p_2 \ln c_2.$$

   Which statement(s) is (are) correct in the following?

   (a) Risky's utility function takes the expected utility form.

   (b) Safety's utility function takes the expected utility function form.

接次頁

(c) If Risky and Safety have the same budget set, their optimal choices will be the same.

(d) Facing a risky income stream and the expected value of that income stream, Risky prefers the former to the latter.

9. Continue from 8. It is time to file the tax report. Risky earns 4000 in income. The tax rate for him should be 10%. Risky is thinking whether he will underreport his income to the tax collecting ministry (assume that he cannot overreport). If he underreports, he pays taxes only on the amount that he reports. However, the tax collecting ministry will randomly sample tax payers to audit. If Risky underreports and is audited, he will need to pay the unpaid tax plus a fine of the fixed amount of 1000. Let state 1 be the case where Risky is not audited, let state 2 be that where Risky is audited. Suppose $p_1 = p_2 = \frac{1}{2}$. The price of the consumption good is normalized to 1.

Which statement(s) is (are) correct in the following?

(a) If Risky truthfully reports 4000, no matter in states 1 or 2, his consumption is 3600.

(b) If Risky reports $x < 4000$, his consumption in state 1 is $4000 - 0.1x$.

(c) If Risky reports $x < 4000$, his consumption in state 2 is 2600.

(d) Risky will optimally choose to truthfully report.

10. Continue from 9. But now if Risky underreports and is audited, instead of being fined the fixed amount of 1000, he will be imposed a surcharge of 100% on the unpaid taxes. That is, he will have to pay the unpaid taxes and the surcharge. In other words, he will have to pay 20% on the unreported income if audited.

Which statement(s) is (are) correct in the following?

(a) If Risky truthfully reports 4000, no matter in states 1 or 2, his consumption is 3600.

(b) If Risky reports $x < 4000$, his consumption in state 1 is $4000 - 0.1x$.

(c) If Risky reports $x < 4000$, his consumption in state 2 is $3200 + 0.1x$.

(d) Risky will optimally choose to truthfully report.