

考 試 科 目	經濟學	所 別	商學院相關系所	考 試 時 間	2 月 27 日(日) 第 1 節
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Multiple Choice (1.7 points each) 選擇題請在答案卡上作答，否則不予計分。
Identify the letter of the choice that best completes the statement or answers the question.
Mark each answer clearly with a No. 2 pencil on the Scantron form.

1. When a firm is operating at efficient scale, average total cost will
 - (a) fall as output is increased.
 - (b) fall as output is decreased.
 - (c) be at its maximum.
 - (d) none of the above.

2. If marginal cost exceeds marginal revenue, then
 - (a) the firm must be experiencing losses.
 - (b) the firm may still be earning a profit.
 - (c) the firm is most likely to be at a profit maximizing level of output.
 - (d) a profit maximizing firm should increase the level of production.

3. When a competitive market that is comprised of firms that have identical cost structures experiences a sudden yet persistent increase in demand, which of the following are most likely to happen?
 - (i) New firms will enter the market.
 - (ii) In the long-run all firms will be producing at their efficient scale.
 - (iii) The price will return to the level before the changes in demand in the long-run.
 - (a) (i) and (ii) only
 - (b) (i) and (iii) only
 - (c) (ii) and (iii) only
 - (d) (i), (ii) and (iii)

4. Excessive monopoly profits themselves represent
 - (a) a deadweight loss.
 - (b) a shrinkage in total surplus.
 - (c) a shrinkage in consumer surplus.
 - (d) all of the above.

5. Since natural monopolies have a declining average cost curve, regulating a natural monopoly by setting price equal to marginal cost would

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<p>(a) cause the monopolist to operate at a loss.</p> <p>(b) maximize producer surplus.</p> <p>(c) result in a less than optimal total surplus.</p> <p>(d) achieve the optimal output level as in the competitive market in the long-run.</p> <p>6. Consider the Chamberlin's monopolistic competition model. In the short-run equilibrium, the price of a firm must</p> <p>(a) equal to the marginal cost</p> <p>(b) equal to the marginal cost times the markup and be smaller than the average cost.</p> <p>(c) equal to the marginal cost times the markup and be greater or equal to the average cost.</p> <p>(d) be smaller than the marginal cost.</p> <p>7. Suppose there are only two firms supplying in the market and they produce a homogeneous good. Two firms produce the good with the same constant marginal cost. There is no other cost of production. Firms compete by setting price simultaneously. Consumers maximize their utilities. The equilibrium price of both firms must</p> <p>(a) equal to the marginal cost times the markup.</p> <p>(b) equal to the marginal cost</p> <p>(c) be greater than the marginal cost but smaller than the marginal cost times the markup.</p> <p>(d) equal to the average cost.</p> <p>8. Everything is the same as previous question, but one firm (firm A) has higher marginal cost than the other (firm B.) The equilibrium price must</p> <p>(a) equal to the marginal cost of firm A</p> <p>(b) equal to the marginal cost of firm B</p> <p>(c) be slightly below the marginal cost of firm A or equal to the optimal price of firm B as it has the monopoly power.</p> <p>(d) equal to the average cost of firm A.</p> <p>9. Suppose in a country, there is a sector where producers produce a homogeneous good with an increasing constant marginal cost. There is a negative externality when producing the good. Suppose the country is a small open economy, which means it can import the good with a constant price. Suppose also that it does not have comparative advantage in producing the good and there is no complete specialization under free trade. In the following choices, what is the best policy to resolve the problem of externality?</p> <p>(a) Using an import subsidy.</p> <p>(b) Using a production subsidy.</p> <p>(c) Using a tariff.</p> <p>(d) Using a production tax.</p>					
備註	試題隨卷繳交				

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10. In a Ricardian trade model with two countries and two goods, suppose one country has absolute advantage in producing both goods. Goods are traded freely. The country with lower productivity must produce at least one good because
- both countries enjoy gains from trade.
 - otherwise, the factor market cannot be clear.
 - two countries complete specialize in a sector at equilibrium.
 - both goods are demanded.
11. A simple linear demand function may be stated as $Q = a - bP + cI$ where Q is quantity demanded, P is the product price, and I is consumer income. To compute an appropriate value for c , we can use observed values for Q and I and then set the estimated income elasticity of demand equal to:
- $c(I/Q)$
 - $c(Q/I)$
 - $-b(I/Q)$
 - $Q/(cI)$
12. Use the following two statements to answer this question:
- If utility is ordinal, a market basket that provides 30 utils provides twice the satisfaction of a market basket that provides 15 utils.
 - When economists first studied utility it was believed that utility was cardinal, but it was later discovered that ordinal preferences are sufficient to explain how most individual decisions are made.
- Both I and II are true.
 - I is true, and II is false.
 - I is false, and II is true.
 - Both I and II are false.
13. Which of the following demand functions represents a price elasticity of demand equal to -0.33 and an income elasticity of demand equal to 0.8 at all points along the curve?
- $Q = 3 - 0.33P + 0.8I$
 - $Q = 4.5 - 0.33\log(P) + 0.8I$
 - $\log(Q) = 1.34 - 0.33\log(P) + 0.8I$
 - $\log(Q) = 2.34 - 0.33 \log(P) + 0.8 \log(I)$
14. Bob views apples and oranges as perfect substitutes in his consumption, and $MRS = 1$ for all combinations of the two goods in his indifference map. Suppose the price of apples is \$2 per pound, the price of oranges is \$3 per pound, and Bob's budget is \$30 per week. What is Bob's utility maximizing choice between these two

請注意：背面還有試題。

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goods?

- (a) 4 pounds of apples and 6 pounds of oranges
- (b) 5 pounds of apples and 5 pounds of oranges
- (c) 10 pounds of oranges and no apples
- (d) 15 pounds of apples and no oranges

15. Assume that we have a demand curve of the form:

$$\log(Q) = a - b \log(P) + c \log(I),$$

where Q = quantity, P = price, I = income, and a , b , and c are positive constants. The income and price elasticities for the demand curve represented above are always

- (a) equal to one.
- (b) equal to zero.
- (c) equal (i.e., income elasticity always equals price elasticity).
- (d) constant but not necessarily equal to one another.

16. Let P denote the price of goods in the Taiwan, P^W denote the price of goods in the foreign country, and E the exchange rate, measured as the number of units of foreign currency that can be purchased with one NTD.

According to the law of one price,

- (a) $P = EP^W$.
- (b) $P^W = EP$.
- (c) $E = P/P^W$.
- (d) $P^W = E + P$.

17. Purchasing-power parity describes the forces that determine

- (a) prices in the short run.
- (b) prices in the long run.
- (c) exchange rates in the short run.
- (d) exchange rates in the long run.

18. If a McDonald's Big Mac cost \$3.06 in the United States and 3.21 euros in the Euro area, then

purchasing-power parity implies the nominal exchange rate is how many euros per dollar (approximately)?

- (a) 1.05. If the value is less than this, it costs more dollars to buy a Big Mac in the U.S. than in the Euro area.
- (b) 1.05. If the value is less than this, it costs fewer dollars to buy a Big Mac in the U.S. than in the Euro area.
- (c) .95. If the value is less than this, it costs more dollars to buy a Big Mac in the U.S. than in the Euro area.
- (d) .95. If the value is less than this, it costs fewer dollars to buy a Big Mac in the U.S. than in the Euro area.

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19. Which of the following does the level of real GDP measure?
- total real income
 - productivity
 - the standard of living
 - All of the above are correct.
20. "When workers have a relatively small quantity of capital to use in producing goods and services, giving them an additional unit of capital increases their productivity by a relatively large amount." This statement
- is an assertion that production functions have the property of constant returns to scale.
 - is consistent with the view that capital is subject to diminishing returns.
 - is inconsistent with the view that it is easier for a country to grow fast if it starts out relatively poor.
 - All of the above are correct.
21. If an unemployed person quits looking for work, then, other things the same, the unemployment rate
- decreases and the labor-force participation rate is unaffected.
 - and the labor-force participation rate both decrease.
 - is unaffected and the labor-force participation rate decreases.
 - and the labor-force participation rate are both unaffected.
22. Suppose that efficiency wages become more common in the economy. Economists would predict that this would
- increase the quantity demanded and decrease the quantity supplied of labor, thereby decreasing the natural rate of unemployment.
 - decrease the quantity demanded and increase the quantity supplied of labor, thereby increasing the natural rate of unemployment.
 - increase the quantity demanded and decrease the quantity supplied of labor, thereby increasing the natural rate of unemployment.
 - decrease the quantity demanded and increase the quantity supplied of labor, thereby decreasing the natural rate of unemployment.
23. An increase in the money supply
- and an investment tax credit both cause aggregate demand to shift right.
 - and an investment tax credit both cause aggregate demand to shift left.
 - causes aggregate demand to shift right, while an investment tax credit causes aggregate demand to shift left.

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(d) causes aggregate demand to shift left, while an investment tax credit causes aggregate demand to shift right.

24. Sticky nominal wages can result in

- (a) lower profits for firms when the price level is lower than expected.
- (b) a decrease in real wages when the price level is lower than expected.
- (c) a short-run aggregate-supply curve that is vertical.
- (d) a long-run aggregate-supply curve that is upward-sloping.

25. Which of the following would cause prices and real GDP to rise in the short run?

- (a) an increase in the expected price level
- (b) an increase in the money supply
- (c) a decrease in the capital stock
- (d) None of the above is correct.

26. Which of the following monetary policy violates Taylor principle?

- (a) The central bank raises the federal funds rate from 1% to 2% when inflation goes from 2% to 2.5%.
- (b) The central bank raises the federal funds rate from 1% to 2% when output gap goes from 2% to 3%.
- (c) The central bank raises the federal funds rate from 1% to 2% when inflation goes from 2% to 3%.
- (d) The central bank raises the federal funds rate from 1% to 2% when output gap goes from 2% to 2.5%.

27. The M1 money multiplier will shrink due to

- (a) smaller excess reserves ratio.
- (b) smaller currency ratio.
- (c) greater time deposits ratio.
- (d) greater required reserves ratio.

28. A higher growth rate of money supply causes

- (a) lower interest rates if liquidity effect is larger than income and expected inflation effects.
- (b) higher interest rates if liquidity effect is larger than income and expected inflation effects.
- (c) lower interest rates if liquidity effect is smaller than income and expected inflation effects and the adjustment of expected inflation is slow.
- (d) lower interest rates if liquidity effect is smaller than income and expected inflation effects and the adjustment of expected inflation is fast.

29. Nowadays, most countries do not adopt monetary targeting since

- (a) the public do not understand how monetary targeting works.
- (b) the velocity of money is unstable and quite volatile.

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- (c) the relationship of output and money aggregates is weak.
- (d) inflation and money aggregates have inverse relationship.

30. Which of the following statements is true?

- (a) The conventional Phillips curve has microeconomic foundation.
- (b) The New Keynesian Phillips curve is merely a statistical relation.
- (c) The New Keynesian Phillips curve describes how current inflation depends on future expected inflation and unemployment.
- (d) The New Keynesian Phillips curve describes how current inflation depends on future expected inflation and real marginal cost.

Numerical/algebraic problems and short-essay questions

Please answer the following questions IN SEQUENCE. All questions may be answered in EITHER Chinese OR English.

1. A video game producer has costs of \$25,000 per month that are fixed with regard to output. The firm has a flat marginal cost at \$5 per unit of output for output between 1 and 16,000 units. The firm **cannot** produce more than 16,000 units. Information from the market research group indicates that the demand for the video game can be represented by the following $P = 9.8 - 0.0002Q$.

(a) (3 points) What price should be set to maximize profit? How many units of the game are sold? What are the profits of the firm?

The firm has the opportunity to sell in a second market that is separated from the first. For the second market the market research group has estimated the demand relationship to be $P_2 = 7 - 0.0001Q_2$.

(b) (5 points) The firm believes that this second market offers an opportunity for additional profit. Should it sell only units that would not be absorbed in the primary market at the profit-maximizing price or should it divert some units from the primary to the secondary market? What price would you set in each market? What is the profit of the firm?

2. Suppose there is a country producing two goods with the following technology

$$Q_x = L_x$$

$$Q_y = K_y$$

Suppose that the labor supply is fixed at 50 units and the capital supply is fixed at 100 units. Consumers spend

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half of their income on good X and the rest of income on good Y. All markets are perfectly competitive. Let good Y be the numeraire. Answer the following questions

- (a) (3 points) Derive the equilibrium price of X relative to Y.
- (b) (3 points) Suppose there is another country producing two goods with the same technology and consumers in that country also evenly spend their income on both goods. In this country, the supply of labor is fixed at 100 units and the supply of capital is fixed at 50 units. Derive the equilibrium price of X relative to Y if two countries trade freely.
- (c) (3 points) What is the good the capital abundant country exports? How many quantities of that good does it export?
3. Chester lives in a dormitory that offers soft drinks and chips for sale in vending machines. His utility function is $U = 3SC$ (where S is the number of soft drinks per week and C the number of bags of chips per week), so his marginal utility of S is $3C$ and his marginal utility of C is $3S$. Soft drinks are priced at \$0.50 each, chips \$0.25 per bag.
- (a) (3 points) Write an expression for Chester's marginal rate of substitution between soft drinks and chips.
- (b) (3 points) Use the expression generated in part (a) to determine Chester's optimal mix of soft drinks and chips.
- (c) (2 points) If Chester has \$5.00 per week to spend on chips and soft drinks, how many of each should he purchase per week?
4. To catch up with the living standard of the US,
- (a) (4 points) Can a sufficiently poorer country achieve this goal by simply receiving more capital donated by the United Nation on a per-capita basis? Why or why not?
- (b) (4 points) Can a sufficiently poorer country achieve this goal by simply increase her saving rate? Why or why not?
5. Use the model of aggregate demand and aggregate supply to illustrate each of the following event's short-run and long-run impacts on the aggregate price level and aggregate output.
- (a) (4 points) There is an increase in households' wealth due a stock market boom.
- (b) (4 points) The government lowers taxes, leaving households with more disposable income, with no corresponding reduction in government spending.
6. Consider a model that the central bank may have incentives to deviate from a monetary policy rule. The central bank's objective is to maximize the expected value of

$$U = \lambda(y - y_n) - \frac{1}{2}\pi^2,$$

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where y is output, y_n is the economy's natural rate of output, π is inflation rate, and $\lambda > 0$. The aggregate output is given by a Lucas-type supply function:

$$y = y_n + a(\pi - \pi^e) + e,$$

where π^e is expected inflation, e is a supply shock ($e \sim N(0, \sigma_e^2)$), and $a > 0$. The link between inflation and the monetary policy instrument is given by

$$\pi = \Delta m + v,$$

where Δm is the growth rate of money and v is a velocity disturbance ($v \sim N(0, \sigma_v^2)$). We assume that the central bank can observe π^e and the realization of e but not the realization of v before its choice of Δm . We also assume that two disturbances e and v are uncorrelated.

- (a) (4 points) What is the central bank's optimal choice of Δm ?
- (b) (4 points) Compared to the case that the central bank commits to a rule $\Delta m = 0$, which policy makes the society better off (i.e. higher expected utility)? Show all your work.

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微積分 (科管所甲組 100)

注意事項：1、請將算式以及推導過程臚列清楚。
2、每題 10 分，注意時間的分配。

- 一、 公司生產 x 單位產品的成本是 $C(x) = 0.4x + 600$ ，收入函數則是 $R(x) = 80\sqrt{x}$ ，試求最大利潤時的產量。
- 二、 試求不定積分 $\int \frac{1}{\sqrt{a^2 - x^2}} dx = ?$
- 三、 已知 $y = -\sqrt{x}e^{-\sqrt{x}} - e^{-\sqrt{x}}$ ，試求 $\frac{dy}{dx} = ?$
- 四、 定義 彈性 $e = -\frac{dQ/Q}{dP/P}$ ，試求 $Q = 5 - 2P$ 的彈性為何？
- 五、 一書頁的印刷面積為 S (常數) 平方公分，左右各留空白 A 公分，上下各留 B 公分，請問書頁的長寬各多少時，可以使得用紙量最少？
- 六、 試用牛頓堪根法，求 $\sqrt[3]{1003}$ 的近似值。
- 七、 $z = e^{-x^2 - y^2}$ ， $x = ht$ $y = kt$ ， h, k 為常數，求 $\frac{dz}{dt} = ?$
- 八、 試求 $\int_1^3 \int_0^x \frac{1}{\sqrt{x^2 + y^2}} dy dx$ 的值？
- 九、 請求出以下微分方程的一般解： $\frac{d^2 y}{dx^2} - 3 \frac{dy}{dx} + 2y = 4x$
- 十、 試求 $f(x) = e^{-x}$ 在 $x=2$ 的泰勒展開式。

考試科目	企業管理個案	所別	科技管理研究所/ 學士後乙組	考試時間	2月27日(日) 第三節
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閱讀以下的四個個案，並各回答兩個問題

一、別小看孩子的力量

十歲左右的小學生，足以促成什麼？可以改變什麼？

身材嬌小、說話快速、笑容燦爛的印度河濱小學校長吉蘭·貝兒·瑟西，用她極具感染力的熱情和行動力，讓以孩子為中心的「Design for Change」行動，從印度西部城市阿默特巴德的河濱小學，擴散到全印度三萬所小學，如今全球已有二十四個國家共同參與。台灣也在今年以「孩子行動，世界大不同」為主軸，首度加入這個跨國性活動。

瑟西主張打破生活與學習之間的界線，一如「Design for Change」鼓勵孩子「感受」生活周遭的問題，「想像」有哪些解決方法，並透過實際「行動」嘗試解決問題，將成果「分享」給更多人，這項行動在印度推動三年多來，孩子自發性發掘並解決的問題，包括清潔居家周圍垃圾、教導家中不識字的長輩閱讀、向鄰里鼓吹不用雇用童工，甚至還阻止了十六對孩子陷入童婚的命運。

提出「每個孩子都是主角(a protagonist in every child)」的「aProCh」主張，是瑟西帶給孩子的另一份禮物。aProCh目前也是致力於推廣「友善兒童城市」的非政府組織。

過去，阿默特巴德的孩子根本沒有地方可以安心玩耍，但河濱小學兩百名學童跨出學校，結合其他學校的三萬名學童，讓當地有了全印度第一條花朵繽紛的兒童斑馬線。如今每隔兩個月，會有一天的下午四點到七點，市府會關閉全市最繁忙的街道，讓兒童在這段時間可以安心的在街道上溜直排輪、觀賞街頭表演、玩耍嬉戲。

去年，瑟西在一場「如何讓孩子發揮影響力」演說中，短短八分鐘的分享，讓聽眾為之動容。今年十一月初，歐巴馬在孟買宴請二十位印度創業家，十年前才從設計領域轉投入教育的她，也是備受推崇的座上賓。

在這次不到兩天的來台行程中，她分享在「Design for Change」運動中，印度孩子如何透過行動改變大人的想法，也提到十年來她在河濱小學所堅持的教學理念。她主張，教育思維應從「老師告訴我」轉移到「讓我親自作作看」；從「以科目為中心」轉為「更貼近孩子」；從過去用「你有多『聰明』(how SMART are you)」來評價孩子，轉為從「『如何』發揮才智(How are you smart)」的角度來啟發孩子；更應該讓孩子從「我行嗎?(Can I?)」的自我懷疑，到透過實際行動，從而建立「我可以!(I Can!)」的自信心。

1. 如果十歲小孩可以促成個案中的改變，那 20 歲的大學生呢？
2. 若從印度發起的概念可成為全球運動，那台灣曾作過什麼影響全球的事情？

備註 試題隨卷繳交

請注意：背面還有試題。

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- 二、
1. 電子書的創作、生產、流通行銷和傳統出版有何不同?
 2. 不同的出版品(文學、財經、童書、教科書)的 e 化速度會有什麼不一樣?為什麼?

The seminar title below is absurd, says panellist Richard Charkin. Trade publishers in particular need to move beyond the 'fuss' about e-books and start experimenting with new digital business models

Will all books be 'e'?

I'm almost certain more words have been written about e-books than have been read digitally. Newspaper articles, radio pieces, even TV debate the future of books intensively and earnestly.

The debates usually begin with absurd statements or questions such as the headline above. The counter-argument is that books are cuddly, technologically sound and simple to use, great value, make great gifts, and are culturally significant. They've been around for 500 years and will continue for another century or so.

The truth is that digital delivery of information (forget the term "e-book" for a moment) has already transformed much of publishing. Financial publishing was transformed in the 1980s by the emergence of Bloomberg, preceded in 1970 by the establishment of Lexis-Nexis for lawyers. Then in the late 1980s and early 1990s, scientific publishers joined the digital party with Science Direct, BioMedNet, SpringerLink, etc. These publishing businesses are now to all intents and purposes 100% digital and all the better for it. Customers get better quality service at a better price; intermediaries such as librarians have a new and invaluable role; publishers are making money; and authors are reaching their audience faster and more effectively than ever before.

So why all the fuss about the "e-booking" of general publishing—literature, commercial fiction and non-fiction, children's books and reference? Does it matter whether people buy digital words or printed words? The key for our business is not how readers want to read but that they *do* read and that we can make money for our authors and ourselves. Compared with the successful financial, legal and scientific models, general publishing has many obstacles to overcome—copyright, territoriality, libel, contract reversion, distribution agreements, formatting, interoperability, library and public lending rights, digital to audio, royalty rates, cannibalisation, pricing, author fears, reader indifference, and the rest.

Lessons learned

In spite of the differences between professional and general publishing there may be one lesson that general publishers can learn and that is to experiment. In the early days of digital science, publishing the "standard" model was to offer a combined print and electronic subscription at 10% more than the print alone. This worked successfully in attracting new users to the digital version but it did not reflect the true value of electronic search, retrieval and navigation. After a few years this "standard" model was replaced by the site licence model where the price of the electronic subscription was not fixed in relation to the print, but to the size of the university subscribing, the



number of students, the number of researchers, the amount of usage and the number of journals acquired in total—a completely new way of funding the business.

So far the book trade seems to be replicating the traditional print model in the digital world. An e-book is typically priced by publishers to match the printed recommended retail price and e-book distributors are demanding and obtaining discounts similar to those for printed books and then passing on much or all of that discount to purchase. This model might work as a starter but I can't help feeling we need to experiment with more and different models which reflect the flexibility of digital delivery. How about a digital library dedicated to, for instance, Thomas Hardy including all his novels, poetry, letters, and biographies, films, TV series, etc, purchased on a subscription basis by individual scholars (or Hardy nuts)? Or projects like the Bloomsbury Library Online (www.exact-editions.com/bloomsbury), where library authorities can purchase titles for everyone in their catchment area and pay in proportion to the population served? Or buy a title for a limited period rather than for ever and pay less?

Who knows which models will turn out to be successful? We'll never find out unless we try. But can we please bear in mind that digital sales are not necessarily incremental. If we treat them as such, our future profits will definitely be excremental.

Richard Charkin has been executive chairman of Bloomsbury since 2007. He was previously c.e.o. of Macmillan and executive chairman of Verlagsgruppe Georg von Holtzbrinck. He started his publishing career in 1972 and has held senior roles at Oxford University Press, Reed International/Reed Elsevier and Current Science Group. He spoke at yesterday's "Will all Books be E?" seminar.

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三、

iPhone 真正的魅力在程式

iPhone 人氣的最大秘密就在於應用程式。筆者在 iPad 登場之前，發表過許多場與 iPhone 相關的演講。演講時曾經以「畫面很漂亮」、「從口袋裡拿出來，隨時都能上網」、「操作很簡單、容易明白」之類的台詞來說明 iPhone 的好處。不過，雖然這樣能讓大部分聽眾理解，但也有不少人難以認同。

但是，就算是這些不認同的人，也會有改變想法、說出「果然還是想要 iPhone」的一刻，而且多半是在實際示範各式各樣的應用程式之後。

在這十八萬五千種應用程式中，有受歡迎的程式，也有專為少數人需求、興趣所開發的程式。舉例來說，有個用手指操作滑桿即可改變倍率的「ICanSee」顯微鏡程式；也有用攝影機拍攝自己的大頭照之後，可以擦上各種顏色的口紅、腮紅的化妝模擬程式「aBeauty Pro」。

另外，還有可以在高爾夫球場內用 GPS (全球定位系統) 顯示目前位置與球洞之間距離的「Golfshot: Golf GPS」程式；有提供瑜珈伸展教學的「Yoga Stretch」程式；有透過影片教導日本料理烹調方法的程式；有英文、資格檢定用的補習程式；有讓小朋友乖乖在候診室玩的遊戲，繪本程式也很豐富，甚至有按壓畫面上的按鈕就能記錄嬰兒哺乳、大便、小便、睡眠等時間的保母程式。

喜歡攝影、喜歡天文、喜歡鐵道的人，不但可以找到不少專用的程式。甚至連冰壺、板球、長曲棍球等小眾運動，也都有相關的應用程式。

這些各式各樣的程式，全部都能從 iPhone 或 iPad 主畫面上的應用程式販售系統—App Store—以簡單的方式取得。

1990 年代，在網路搜尋服務剛普及時，不管想到什麼，都想要在網路上搜尋看看，而且覺得是很有趣的事情，每天都會發現「喔，原來連這種東西都出現在網路上了。」

現在的 App Store 幾乎是一樣的狀況，想到什麼單字都搜尋看看，常常都會驚呼「真的假的？不會吧！」，如此這般地發現到各種五花八門的相關程式。

Apple 自己也很清楚，iPhone 真正的魅力就在於這個長尾般的應用程式陣容。2009 年之後，Apple 開始透過電視廣告介紹 App Store，希望大家在上面自行發掘更多的應用程式。

美國 iPhone 廣告的「In college」篇，從「能在大學附近找到公寓的程式」、「拍攝教科書就能直接查到價格的程式」，到「把一起入鏡的男朋友裁掉，以便將照片寄給父母的程式」，配合旁白的說明，一一示範各種軟體操作。日本也有個相同概念的廣告，旁白一邊依序介紹著各種使用情形，如「出差的時候 iPhone 實在很有幫助，像是臨時需要變更資料、必須在沒有電腦的地方列印文件、還有要再比預定時間提前離開的時候」，畫面上一邊進行著試算表工具、列印工具與飛機時刻表程式等的示範操作。

不管是美國版還是日本版的電視廣告，最後都是以「集合所有能達成不同願望的程式，這就是 iPhone。」的標語作為結尾。

2010 年的廣告則更進一步，講述著這些程式如何改變日常生活的習慣與交友圈。比如說，藉由搜尋程式開始養狗、接著透過社群網路程式與其他愛狗的朋友分享照片、再用搜尋公園的程式出門遛狗、最後是在無論如何都得離家的時候，用 iPhone 透過家裡的 webcam 確認愛犬的狀況等等。

備註 試題 隨卷 繳交

請注意：背面還有試題。

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集合 Android 六倍以上的程式

能這樣安裝、享受各式各樣程式的裝置，當然不只 iPhone 與 iPad。搭載美國 Google 智慧手機作業系統的 Android 手機、搭載美國 Microsoft 智慧手機作業系統的 Windows Mobile 手機、加拿大 Research In Motion 的智慧手機 BlackBerry (黑莓機)……等，都可以執行各自作業系統所開發的程式。

但是，在 2010 年 4 月比較這些平台的程式數量時，相對於 iPhone 的十八萬五千種，號稱 iPhone 對手的 Android 程式數量卻低於三萬種，還不到 iPhone App 的六十分之一，黑莓機的程式就更少了。

iPhone 上市比 Android 早一年左右，所以這樣的數據是理所當然。但真是如此嗎？

事實上，只在歐美五國上市的初代 iPhone (日本未發售) 並沒有 App Store。當時除了 Web 瀏覽器、電子郵件等原廠內建的十四個基本應用程式 (與設定程式) 之外，並沒有開放使用 Apple 公司以外開發的程式。

Apple 開始 App Store 服務是 2008 年 7 月的事情，相對之下，Android 的軟體販售平台 Android Market 咖使服務的時間，是第一隻 Android 手機在美國上市的 2008 年 10 月，時間跟 iPhone 其實只差了三個月。

那麼，為什麼只有 iPhone (與 iPad) 的 App Store 會有這麼多程式呢？

這是因為 App Store 下了工夫，讓想買程式的使用者很容易購買，也讓應用程式開發者容易銷售程式。

1. Android 系統的程式是否有機會超越 App Store? 為什麼?
2. iPhone 與 iPad 與成功和 iTune 及 App Store 的關係? 是服務裝置化還是裝置服務化?

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四、

1. 文章中給女性領導人的建議，有哪幾條也適用於男性領導人？
2. 行政管理者和領導者的差別在哪？

Through the glass ceiling, to the stars

Women now make up 57 percent of the nation's college students and earn 60 percent of all degrees, but they represent only 26 percent of full professors, according to the 2009 White House Project Report, "Benchmarking Women's Leadership." They also account for fewer than 30 percent of the members on college and university boards, and only 23 percent of college and university presidents — a number that has not changed in the last 10 years.

Providing women with the skills to right this imbalance served as the focus of a two-day workshop held just before APA's Annual Convention in San Diego. Sponsored by APA's Committee on Women in Psychology and the Women's Program Office, the third annual Leadership Institute for Women in Psychology also sought to promote positive changes in institutional and organizational life and to increase the diversity, number and effectiveness of female leaders in the field.

This year, 25 midcareer female psychologists from diverse regions and backgrounds took part in the institute, which featured an address by St. Joseph College President Pamela Trotman Reid, PhD, a developmental psychologist.

Reid spoke about how an absence of female leaders in academia may have far-reaching effects not only on institutions, but also on the scope of research and knowledge available to the larger public. Women can serve as role models and mentors to younger women starting out on their own leadership path, she said, exhorting attendees to reach out to the younger generation of leaders.

She also stressed the importance of building on past experiences to reach one's goals. Reid, for example, worked as a professor at eight institutions and served in administrative roles at four before her 2008 appointment at St. Joseph. With each position, she met new people, adapted to new organizational cultures and learned new leadership skills. But at each of these institutions, Reid encountered similar

challenges — mainly related to juggling work and family life, managing thinning resources and navigating university politics.

She urged attendees to appraise their strengths honestly and to identify the skills they need to develop — a step that may indicate administrative work is not for them.

"You do not have to be an administrator to be a leader in your institution or organization," she said. "You *do* have to be able to understand multiple perspectives so that you can influence others, however."

Reid also shared lessons she's learned in academic leadership and life:

- Set your own goals and remember to dream.
- Develop your skills and your network.
- Adopt a few mentors and cultivate advisers.
- Volunteer and self-nominate.
- Act like a leader, because perception often becomes reality.
- Know the rules and learn the history.
- Learn how to share the work and the credit.
- Seek balance and live by your priorities.
- Make a life, not just a career.

"There are tradeoffs in every position," Reid said. "I suggest that women make clear their goals and try to balance the competing demands so that they can have a good life as well as a successful career." ■

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1. There are three articles in this exam. Several questions are given right after each article.

2. Please answer all questions in English.

Article 1: Unleashing Innovation in China (30%)

By Gordon Orr

Finding ways to spur innovation in product design and business models will be key to sparking Chinese domestic demand.

China's latest five-year plan promises to shift the economy from its dependence on exports toward domestic consumption as an engine of growth. The key to achieving this will be for the nation to enhance the ability of its economy to innovate. Yet China's record on this score is mixed. Understanding why that is, and how to fix it, is important to estimating the likelihood China will succeed in its ambitious goals.

The first step is to appreciate the different kinds of innovation going on right now. When most people hear that word, they think of "inventing things," and on this score China is making progress toward becoming a more innovative economy instead of merely mass-producing goods that are designed elsewhere. China's spending on research and development has risen to 1.5 percent of GDP in 2008, from 1.25 percent in 2004, all the more impressive when you consider that GDP itself dramatically during that period. While China is unlikely to meet the goal of 2 percent set for 2010 in the last five-year plan, it still accounts for 12 percent of global R&D spending.

Significantly, this R&D spending is shifting from government-controlled research institutes to large- and medium-sized enterprises, which accounts for 60 percent of total R&D spending. Despite frequent complaints about lax intellectual property protections, foreign-invested companies account for fully 7 percent of this spending, spread among nearly 1,500 R&D centers established by multinational companies.

In some areas, such as telecommunications and pharmaceuticals, innovation shows through in the market. Local companies and universities have discovered multiple chemical compounds in China. Researchers such as Yi Rao and Shi Yigong, experts in Genetics and structural biology respectively, are regarded as world leaders in their fields. Huawei's and ZTE's global gains in market share have shifted from being solely on the basis of cost to a combination of cost and innovation. For example, Huawei has developed the world's first "100G" technology capable of delivering large amounts of data wirelessly over long distances. Overall, China for the first time is likely to overtake the United States for number of patents files in 2010.

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試題隨卷繳交

請注意：背面還有試題。

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Yet, despite so much progress, all this industrial innovation misses other, potentially more important, forms of inventions. Much of the best innovation in China today is built around developing creative business models in addition to, or instead of, new physical products. Broad Air Conditioning developed a way to commercialize gas-powered air conditioning systems for large buildings. Alibaba built a new business around an online platform to connect smaller Chinese producers with buyer abroad.

This is all possible because Chinese policy makers have learned some important lessons from earlier innovation failures-the biggest being that it's hard to impose innovation from the top down. This was especially apparent in the attempt to develop an indigenous technological standard for mobile telephony, when serviceable alternatives already existed. After investing billions to develop and commercialize the TD-SCDMA technology, Beijing has found few takers in China elsewhere.

Beijing is also experimenting with a different innovation model that focuses on identifying opportunities earlier and creating incentives for market participants to innovate. Electric vehicles will be an important test here. This is an industry that is still very much open to innovation at the global level. Beijing is planning to invest \$8 billion in R&D at various companies in an attempt to meet a numerical target for market size by 2020. Government commitments to buy the cars for official fleets combined with incentives to consumers will guarantee a certain amount of demand. But, crucially, the actual innovation will be left to the private sector.

Predictably, weak spots remain. In consumer electronics, for example, innovations tend to be derivative-refining products developed in Japan and South Korea instead of developing fundamentally new products. Innovation based on careful study of consumer preferences is rare, especially when the consumers are outside of China. Chinese companies still place too much focus on expanding global market share with just-good-enough products instead of creating markets with totally new products. And in state-dominated service sectors such as banking, there has been limited product or service innovation.

More broadly, there is still the question of how well policy makers will pick the areas where it makes sense to innovate. Although support for electric ares is promising, China is effectively ceding innovation in traditional combustion-engine cars to Indian companies such as Tata. This is a policy gamble given the potential size of China's market for regular cars. Indians are pushing envelop with designs such as the world's cheapest car, the Nano. They are also finding that innovation in a traditional area can lead to innovation closer to the technological edge-for example, the plan to build a battery-powered Nano.

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There is no reason China shouldn't aspire to that kind of innovation as well. The evidence to date shows that, given the right incentives, Chinese scientists, engineers, and entrepreneurs are eager to rise to the challenge of developing products for the global market. The policy challenge will be unleashing that innovation,

QUESTIONS for Article 1: (30%)

1. What does China intend to change according to its latest five-year plan?
2. What are the advantages and disadvantages as China plans to reach above goal based on author's opinion?
3. What is your own thinking to the above question?

Article 2: Technology Overview: The Attacker's Advantage (30%)

By Erica Naone

No one is exempt from cyber attack. In January, Google admitted that its systems had been breached and intellectual property stolen; in April, it was revealed that hackers had stolen military documents from India's government; and stories about the online theft of credit-card numbers and other personal information are constantly streaming in. Why are computer systems so vulnerable?

It comes down to how most software is designed, says Andy Ellis, senior director of information security and chief security architect for Akamai, an Internet infrastructure company based in Cambridge, MA. Companies build systems that often have more functions than users really need. Security is often an afterthought. But if any one of those functions has a mistake in design or implementation, that's all it takes to give attackers the opening they need.

One widely used attack takes advantage of a vulnerability known as a buffer overflow. When information sent to a program over the network exceeds the space that the programmer has set aside for incoming data, the excess is stored in other parts of the computer's memory. Forcing this to happen can change the system's behavior, even inducing it to execute malicious code.

Attackers also trick users into installing malicious software--for example, by using deceptive e-mail messages containing links to bogus websites. And sometimes the attacks come from within: experts say that internal security policies are often lax or poorly implemented, giving people ample opportunity to steal from or sabotage their employers.

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There have been some glimmers of hope. Many programs now install security updates automatically, without requiring user intervention. Antivirus companies have developed ways to recognize the characteristic behavior patterns of malware so that the system can respond more quickly to new breeds of infection. Cloud security providers have begun offering Web application firewalls, which filter Internet traffic before it's allowed to enter a victim's data center (see "Threats Create Opportunities").

However, many organizations don't keep abreast of these improvements. Applications for functions such as payroll are often custom-built and can't easily be upgraded to run on modern systems. - Jeremiah Grossman, founder and chief technology officer of WhiteHat Security, a website risk management company based in Santa Clara, CA, estimates that up to a third of the Web is currently running on systems with known vulnerabilities.

Grossman says researchers are seeking creative solutions, such as systems that wrap outdated software in a protected layer or make it possible to do business safely on infected machines. But as long as new software is written, new vulnerabilities will keep surfacing.

QUESTIONS for Article 2: (30%)

1. How do cyber attackers attack the cyber users?
2. Why are the users and organizations easily attacked by attackers?
3. What are potential solutions suggested by experts for anti-cyber-attack?

Article 3: The Argument over Aging (40%)

By Karen Weintraub

Can a drug extend good health and postpone the effects of aging?

Sirtris Pharmaceuticals was, until recently, the golden child of antiaging research. Founded by Harvard biochemist David Sinclair and venture capitalist Christoph Westphal, it produced research suggesting something almost too good to be true: that a chemical in red wine could help you live a longer, healthier life. With its young, photogenic founders, the startup was a media darling, the subject of dozens of breathless magazine and newspaper articles. Pharmaceutical giant GlaxoSmithKline was so impressed that it spent \$720 million to buy Sirtris in 2008.

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David Stipp's new book *The Youth Pill* traces this meteoritic rise and other events in the history of antiaging research, detailing how the science and personalities came together at just the right moment to create the successful company. In the mid to late 1990s, Stipp explains, what had been considered a fringe field began evolving into a focused attempt to uncover the biochemistry of aging. Scientists including Cynthia Kenyon at the University of California, San Francisco, and Leonard Guarente at MIT began to find genes linked to longevity in lower organisms such as yeast and worms, prompting a conceptual shift in our understanding of aging. Rather than inevitable decay, their work suggested, aging was a genetically controlled process--and thus one that could be manipulated.

Sirtris was one of the companies to emerge as this view of aging gained currency. At the heart of its drug development program are a class of enzymes called sirtuins: the molecular signals that they send appear to silence aging-related genes during times of starvation. The sirtuins' role in aging was first identified in 1993 by Guarente and his colleagues. (Sinclair would later join the lab as a postdoc.) As Stipp explains, the role of these enzymes in aging made sense to scientist who had known for years that caloric restriction, or nutritionally adequate diets about 30 percent lower in calories than average, could extend the lives of yeast, worms, and mice (the effect was also later demonstrated in rhesus monkeys.) Realistically, however, few people can stick to this type of diet. So for more than a decade, the primary goal of antiaging researchers has

been to mimic caloric restriction with a pill, a prospect that Stipp describes as "the great free lunch." Such a drug, he writes, would theoretically postpone aging in people, extending their years of good health and limiting their years of decline.

In 2003, Sinclair made headlines around the world when he announced that the red -wine component resveratrol, which had previously been linked to a reduction in heart disease, extended life span in yeast. He argued that the compound activated one of the sirtuins and proposed that it mimicked the effects of caloric restriction. Sinclair and Westphal launched Sirtris in 2004 with the aim of developing molecules that could stimulate the enzyme much more potently. The company is developing treatments not for aging itself--which the U.S. Food and Drug Administration doesn't consider an illness--but for diseases of aging, such as diabetes, Alzheimer's, and cancer. As Stipp recounts, hopes for antiaging drugs captured media attention and investors' imaginations. But a different conversation has played out in the academic community. Some scientists doubted whether resveratrol truly targeted the sirtuins. Researchers at drug maker Pfizer also published a study in January questioning whether one of Sirtris's newer compounds targets the enzyme. The study failed to confirm the health benefits seen in earlier trials. To make matters worse, safety concerns have arisen over one of Sirtris's resveratrol compounds. In May, Glaxo announced that it would not expand a clinical trial for multiple-myeloma patients until it better understood why some participants developed a dangerous kidney ailment.

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The field of antiaging research is littered with failures, and the controversy over Sirtris's compounds highlights just how difficult it has been to transform exciting scientific discoveries about the aging process into useful drugs. As Stipp illustrates, many candidates with promising antiaging benefits later failed to work in mammals or showed conflicting results.

Elixir Pharmaceuticals, which was confounded by Kenyon and Guarente in 1999 to translate their findings on the genetic s of aging into a pill, was once "the leading commercial effort to turn research on aging into antiaging drugs," says Stipp. But the company has been far less successful than Sirtris in generating funding and excitement; today it employs just a handful of people, who are still pursuing sirtuins but have also moved on to developing other types of drugs.(Both Kenyon and Guarente have since left Elixir. Guarente joined Sirtris's scientific advisory board in 2007.) Peter S. DiStefano, chief scientific officer of Elixir, is no fan of the rival company, accusing it of weak science and overzealous claims. "While Sirtris was way more successful than Elixir from a business perspective, at least I have my scientific integrity and can look at myself and say I did the right thing the right way." He says.

Even if Sirtris's compounds don't pan out as safe, effective drugs, the enzymes behind them have great medical potential, says Matt Kaeberlein, an assistant professor in the pathology department at the University of Washington, who is another former student of Guarente's and a consistent critic of Sinclair's work. These enzymes have been highly conserved through evolution, appearing in worms, flies, mice, and primates, and they play a central role in the biochemistry of the cell. Guarente says, "If the whole world gave up on sirtuins, I would still start another company for the next generation of sirtuin drugs based on what I know."

But some scientists doubt that sirtuins hold the key to life extension; for one thing, sirtuin activation hasn't been shown to extend life in healthy animals. A number of other molecular mechanisms are also under close scrutiny for their effects on aging. Kenyon, director of the Hillblom Center for the Biology of Aging at UCSF, points to a different drug, called rapamycin; as Stipp explains, one way it appears to lengthen life is by slowing the production of the proteins needed for cell division. As more proteins are produced, so are more defective proteins, which can accumulate in cells and contribute to the symptoms we see as aging.

Though rapamycin has not gotten nearly the attention or money that sirtuins have, some put far more faith in its age-slowng effects. "I've been in this area for about 35 years, and I honestly have never thought that in my lifetime there would be something like a pill that you could take that would have this impact on aging," Arlan Richardson, director of the Barshop Institute for Longevity and Aging Studies at the University of Texas Health Science Center at San Antonio, says of the drug. Aging" may not be as intractable a problem as I thought," he says. Rapamycin even worked on adult mice equivalent in age to 60-year-old people.

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So why isn't rapamycin more talked about? "The scientists involved with the rapamycin studies have been much less inclined to make bold claims," Kaeberlein says. "That may be in part due to the fact that the mouse rapamycin studies were done as part of [a government] testing program, so there's no commercial interest involved in selling a story." But if sirtuins and rapamycin don't work, researchers say, there are plenty of other possibilities to explore, from insulin signaling to mitochondrial function.

Stipp and others are confident that a "youth pill" is on the horizon-whether it comes from Sirtris or not. But some researchers are far less optimistic. Thomas Perls, for one, thinks it's reckless to suggest that science is anywhere close to such a drug. "I think people just don't get how incredibly complex aging is," says Perls, an associate professor of medicine at Boston University's School of Medicine, who for the last 16 years has run a study on centenarians. "Delivering the message that antiaging works, and that we're now in prime time in producing substances that work, is incredibly irresponsible."

QUESTIONS for Article 3: (40%)

1. What are the major mechanism of anti-aging scientists propose?
2. What are the major arguments (positive vs. negative viewpoints) to the potential anti-aging drug?

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試題隨卷繳交