國立中山大學105學年度碩士暨碩士專班招生考試試題

科目名稱：管理學【企管系企管甲班碩士班甲組選考、乙組選考、丙組選考】 題號：441004

※本科目依簡章規定「不可以」使用計算機(混合題)

※請勿於試題紙上作答

一、單選題，每題2.5分，不倒扣，合計50分

1. Wim took over as manager of a group of medical transcribers about a month ago. While their performance is satisfactory, he has noticed that the group seems to squash any new ideas about how they might do their work more effectively. What should Wim do?
   A) Take steps to increase the cohesion of the group
   B) Order the group to accept some of the new ideas
   C) Set up an incentive system for employees' suggestions about changes to procedures
   D) Create competition between members of the group
   E) Discipline the group

2. Which of the following is the correct order of the stages of group development?
   A) Forming, storming, performing, norming, adjourning
   B) Forming, storming, norming, performing, adjourning
   C) Forming, norming, storming, performing, adjourning
   D) Forming, performing, norming, storming, adjourning
   E) Forming, performing, storming, norming, adjourning

3. Halifax Insurance Company has just opened a new office in Newtown, and Barry has been appointed manager of the new group of five claims adjusters at the office. Barry thinks about what he learned in school about the stages of group development. After a couple of weeks, he observes that some of the group members seem to be forming friendships, the group seems to have identified Kathy as their informal leader, and is starting to accomplish its goals on a regular basis. How should Barry manage the group at this point?
   A) He should focus on motivating the group
   B) He should strive to make each member feel that he/she is a valued member of the group
   C) He needs to keep conflict under control
   D) He needs to leave the group entirely alone
   E) He should make sure that group members are working independently

4. TWA gives its gate supervisors the authority to decide when to give a free ticket for a future flight to a passenger who has volunteered to give up his seat when a flight has been overbooked. This is an example of:
   A) facilitation
   B) leader substitution
   C) bureaucracy
   D) charisma
   E) empowerment

5. Eileen is dean of the College of Business at her University. She enjoys the pace of her work and the feeling of accomplishment she gets when she is able to initiate a new program to help students. The salary she receives is attractive and allows her to travel abroad on her vacations. Eileen is:
   A) intrinsically motivated
   B) extrinsically motivated
   C) has high needs for power and achievement
   D) experiencing overpayment inequity
   E) both intrinsically and extrinsically motivated

6. Professor Bean offers his students $10 if they can run around the classroom building in 2 minutes. None of his students take him up on his offer. Which of the following statements reflects the idea of expectancy?
   A) Charise thinks $10 is not very much money
   B) Peter would rather stay in the classroom and study for a test next period
   C) Winnie thinks Professor Bean is kidding
   D) Ariel doesn't want to look silly
   E) Harry doesn't believe he can run around the building that fast

7. TAWA Insurance sets up a management information system (MIS) that gives its regional managers information about changes in the task environment that may affect the organization at some future time. This is an example of:
   A) feedforward control
   B) concurrent control
   C) feedback control
   D) bureaucratic control
   E) MBO control

8. The manager of a 7-11 convenience store keeps track of the average sale amount for each customer as a way of deciding on the product mix to be carried in the store. This is an example of:
   A) output control
   B) bureaucratic control
   C) feedforward control
   D) input control
   E) MBO control

9. Volvo Motor Co. brings together senior managers from marketing, R&D, manufacturing, accounting, and finance to work together on a project team to design a new type of sport utility vehicle. This is an example of:
   A) a cross-functional team
   B) a mass-production team
   C) a continuous-process team
   D) a standing committee
   E) a small-batch team

10. Companies from the nation of Atlantis are more efficient in the production of certain types of apparel, while U.S. companies are more efficient in the production of certain types of computers. Which economic theory predicts that the production of these types of apparel would shift to Atlantis, and the production of these types of computers would shift to the U.S.?
   A) Collectivism
   B) GATT
   C) NAFTA
   D) The free-trade doctrine
   E) Individualism

11. Jacques, a French national, is the CEO of French Global Empire with significant operations in Japan and the United States. Jacques recently announced that all employees of the company, no matter which part of the world they may be in, must learn French and communicate in French only. This represents an example of:
    A) cultural flexibility
    B) cultural relativism
    C) ethnocentrism
    D) collectivism
    E) individualism

12. In general, which of the following is typically NOT included in an organization's mission statement:
    A) Customers
    B) Competitors
    C) Philosophy
    D) Self-concept
    E) Products or services

13. On the most basic level, corporate-level strategy is concerned with ____ and how to manage these businesses:
    A) whether the firm should invest in global or domestic businesses
    B) what product markets and businesses the firm should be in
    C) whether the portfolio of businesses should generate immediate above-average returns
    D) whether to integrate backward or forward
    E) whether the portfolio of businesses should be restructured

14. Rivalry between fast food restaurants is intense due in part to:
    A) the existence of many, non-differentiated competitors
    B) the high differentiation between competing outlets
    C) the low threat of suppliers' forward integration
    D) low geographic saturation of the market
    E) high entry barriers

15. Mintz's Motor Repair is moving its location to a larger community 100 miles away. Mintz would like for its mechanics to move with the company but realizes that there will be some hardships associated with the move. Mintz has decided to use Lewin's three-step model in order to make the change. He counsels each employee individually, trying to lessen each person's fears about the move. This is an example of:
    A) removing driving forces
    B) increasing driving forces
    C) brainwashing
    D) removing restraining forces
    E) increasing restraining force

16. One of the major reasons cited for the problems of BenQ's acquisition of Siemens mobile device business is:
    A) financial incompatibility
    B) product line incompatibility
    C) culture clash
    D) goal incompatibility
    E) the size of the organizations

17. Robert Katz identified three essential skills that managers need to have in order to reach their goals. What are these skills?
   A) conceptual, communication, and networking
   B) technical, decisional and interpersonal
   C) interpersonal, informational and decisional
   D) technical, human, and conceptual
   E) human, informational and communication

18. Top executives at Acme Co. Ltd. are concerned because the company takes so long to bring new products to market. Which of the following approaches would the executives identify as most likely to help resolve this problem?
   A) reduction of cross-functional work teams
   B) reduced diversity within the company's work force
   C) decentralization of the decision-making process
   D) increased formalization of policies and procedures
   E) increased work specialization

19. Last month, Jennifer's department experienced constructive conflict during a meeting. Which of the following is NOT an outcome of this functional conflict?
   A) The quality of decisions is improved
   B) Creativity and innovation are stimulated
   C) Tensions are released
   D) Interest and curiosity are encouraged
   E) Groupthink is increased

20. Leadership is best defined as ________.
   A) keeping order and consistency in the midst of change
   B) the ability to influence a group in goal achievement
   C) implementing the vision and strategy provided by management
   D) coordinating and staffing the organization and handling day-to-day problems
   E) not a relevant variable in modern organizations

二、簡答題，不倒扣，合計 25 分

請以中文扼要但精準地回答下列問題：

1. Please contrast job enlargement and job enrichment. (5%)
2. According to Herzberg's Two-Factor Theory, how might a manager motivate employees? (5%)
3. Compared with the trait theories, what are the key implications of the behavioral theories of leadership? (5%)
4. 近幾年，台灣媒體與企業界非常關心「紅色供應鏈」相關議題，企業領袖對這個議題也發表了甚多看法。請從管理或策略的角度扼要論述您的看法，並說明企業可以採行的因應措施。(10%)

三、個案分析題，不倒扣，合計 25 分

請在讀完以下個案後，以中文回答下列問題：

1. This case details three ethics scandals at UBS in recent years. What does that tell you about UBS? (6%)
2. Given the UBS ethics failings, who is to blame? The CEO? The board of directors? Please provide reasoning to support your opinions. (9%)

3. What can UBS do to: (a) avoid more ethics scandals in the future (5%) and (b) repair its damaged reputation? (5%)

Case title: UBS's Billion-Dollar Ethics Scandals
(資料來源：Strategic Management, Frank Rothaermel, McGraw Hill International Edition 2015)

UBS's Billion-Dollar Ethics Scandals

UBS WAS FORMED in 1997 when the Swiss Bank Corporation merged with the Union Bank of Switzerland. After acquiring Paine Webber, a 120-year-old U.S. wealth management firm in 2000, and aggressively hiring for its investment banking business, UBS soon became one of the top financial services companies in the world and the biggest bank in Switzerland.

Between 2008 and 2012, however, UBS's standing was harmed by a series of ethics scandals, detailed next. These scandals cost the bank billions of dollars in fines and lost profits, and severely damaged its reputation (Exhibit MC20.1).

Ethics Scandal #1: U.S. Tax Evasion

Swiss banks have long enjoyed a competitive advantage brought by the Swiss banking privacy laws, making it a criminal offense to share clients' information with any third parties. The exceptions are cases of criminal acts such as accounts linked to terrorists or tax fraud. Merely *not* declaring assets to tax authorities (tax evasion), however, is not considered tax fraud.

After the acquisition of Paine Webber, UBS entered into a Qualified Intermediary (QI) agreement with the Internal Revenue Service (IRS), the federal tax agency of the U.S. government. Like other foreign financial institutions under a QI agreement, UBS agreed to report and withhold taxes on accounts receiving U.S.-sourced income. Reporting on non-U.S. accounts with U.S.-sourced income is done on an aggregate basis. This in turn protects the identity of the non-U.S. account holders.

In mid-2008, it came to light that since 2000, UBS had actively participated in helping its U.S. clients evade taxes. To avoid QI reporting requirements, UBS's Switzerland-based bankers had aided U.S. clients in structuring their accounts to divest U.S. securities and set up sham entities offshore to acquire non-U.S. account-holder status. Aided by Swiss bank privacy laws, UBS successfully helped its U.S. clients conceal billions of dollars from the IRS. In addition, UBS aggressively marketed its "tax saving" schemes by sending its Swiss bankers to the U.S. to develop clientele, even though those bankers never acquired proper licenses from the U.S. Securities and Exchange Commission (SEC) to do so.

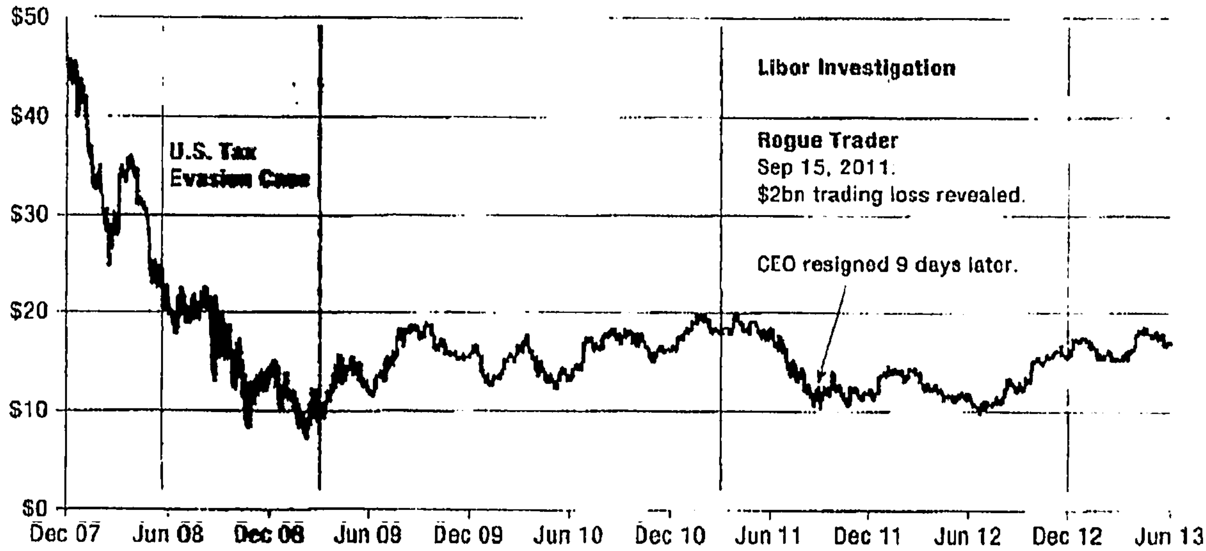
The U.S. prosecutors pressed charges on UBS for conspiring to defraud the United States by impeding the IRS. In a separate suit, the U.S. requested UBS to reveal the names of 52,000 U.S. clients who were believed to be tax evaders. In February 2009, UBS paid $780 million in fines to settle the charges. Although it initially resisted the pressure to turn over clients' information, citing the Swiss bank privacy laws, UBS eventually agreed to disclose 4,450 accounts after intense negotiations involving officials from both countries. Clients left UBS in droves: Operating profit from the bank's wealth management division declined by 60 percent or $4.4 billion in 2008; it declined another 17 percent ($504 million) in 2009.

The UBS case has far-reaching implications for the bank's wealth management business and the Swiss banking industry as a whole, especially for the bank secrecy in which the industry takes such pride. To close loopholes in the QI program and crack down on tax evasion in countries with strict bank-secrecy traditions, President Obama signed into law the Foreign Account Tax Compliance Act (FATCA) in 2010. The law requires all foreign financial institutions to report offshore accounts and activities of their U.S. clients with assets over $50,000, and to impose a 30 percent withholding tax on U.S. investments or

Frank T. Rothaermel and Carrie Yang (GT MBA, MSc.) prepared this MiniCase from public sources. It is developed for the purpose of class discussion. It is not intended to be used for any kind of endorsement, source of data, or depiction of efficient or inefficient management. All opinions expressed, and all errors and omissions, are entirely the authors'.

背面有題

Exhibit UBS Share Prices (12/31/2007-07/02/2013, in US$)



to exit the U.S. business altogether. Switzerland has agreed to implement the FATCA. The annual compliance cost for each Swiss bank is estimated to be $100 million.

Ethics Scandal #2: Rogue Trader

On September 15, 2011, UBS announced that a rogue trader named Kweku Adoboli at its London branch had racked up an unauthorized trading loss of $2.3 billion over a period of three years. Nine days later, UBS's CEO Oswald Grübel resigned "to assume responsibility for the recent unauthorized trading incident."[1]

After more than a year of joint investigation by the UK and Swiss regulators, the case was concluded with findings that systems and controls at UBS were "seriously defective."[2] As a result, Mr. Adoboli, a relatively junior trader, was able to take highly risky positions with vast amounts of money. More alarmingly, all three of Mr. Adoboli's desk colleagues admitted that they knew more or less of his unauthorized trades. Moreover, Mr. Adoboli's two bosses had shown a relaxed attitude toward breaching daily trading limits. UBS was fined $47.6 million in late 2012.

Ethics Scandal #3: Libor Manipulation

Libor, or the London Interbank Offered Rate, is the interest rate at which international banks based in London lend to each other. Libor is set daily: A panel of banks submits rates to the British Bankers' Association based on their perceived unsecured borrowing cost; the rate is then calculated using a "trimmed" average, which excludes the highest and lowest 25 percent of the submissions. Libor is the most frequently used benchmark reference rate worldwide, setting prices on financial instruments worth about $800 trillion.

UBS, as one of the panel banks, was fined $1.5 billion in December 2012 by the U.S., the UK, and Swiss regulators for manipulating Libor submissions from 2005 to 2010. During that period, UBS traders acted on their own or colluded with interdealer brokers and traders at other panel banks to adjust Libor submissions to benefit UBS's own trading positions. In addition, during the second half of 2008. UBS instructed its Libor submitters to keep low to make the bank look stronger. At least 40 people, including several senior managers at UBS, were involved in the Libor manipulation. In addition to the fine, UBS Japan pleaded guilty to U.S. prosecutors for committing wire fraud. UBS ended the year 2012 with a loss of almost $ 3 billion, compared with a profit of $4.5 billion for 2011.

背面有[illegible]

國立中山大學105學年度碩士暨碩士專班招生考試試題

科目名稱：微積分　【企管系企管甲班碩士班甲組選考、乙組選考、丙組選考】題號：441003

※本科目依簡章規定「不可以」使用計算機(問答申論題)　　共1頁第1頁

答案請按題號順序寫，並列出計算過程。

1. Find $\dfrac{dy}{dx}$ where

   a. $y=(\frac{1}{x}-x)^2$

   b. $x^{2/3}+y^{2/3}=3$,

   c. $y=e^{\sqrt{x}}+e^{-\sqrt{x}}\quad x>0$.　　15%

2. Graph the function $f(x)=1-(x-2)^{1/3}$. State all the extrema, critical points, increasing and decreasing, concave up and/or down intervals. 15%

3. Find the following definite and indefinite integrations.　25%

   a. $\int_1^4 \frac{dx}{\sqrt{x}}$　b. $\int_0^3 \frac{dx}{(2x-1)^{2/3}}$　c. $\int x\ln x\,dx$

   d. $\int \frac{dx}{x^2-x-6}$　e. $\int_0^2\int_{y/2}^1 ye^{x^3}\,dxdy$

4. Determine the following converge. If yes, please find the limit(s). 15%

   a. $\lim_{x\to 2^-}\sqrt{x^2-4}$　b. $\sum_{n=1}^{\infty}\frac{1}{\sqrt{n}+n}$　c. $\lim_{x\to\infty}\frac{e^{3x}-e^{-3x}}{5x}$

5. Estimate $\ln 1.1$ to the third decimal place.　10%

6. Use power series to estimate $\int_0^1 e^{-x^2}\,dx$ to the fourth decimal point. 10%

7.有一 APP 在 2015 年一月有 25 萬個使用者，十個月後（2015 年十月）使用人數增到 30 萬人。假設使用人口呈指數增長，增長的速率是常數的話 (grow exponentially with a constant rate)， 那麼到 30 個月後（2017 年六月）此 APP 使用人數會有多少? 10%

試題隨卷繳回

科目名稱：經濟學【企管系企管甲班碩士班甲組、乙組、丙組】　題號：441001
※本科目依簡章規定「不可以」使用計算機(混合題)

壹、單選題〈1至10題為中文題，每題3分；11題至20題為英文題，每題4分；總計70分〉

1. 下列何者總體經濟變數為存量(stock)變數？
   a. 可貸資金
   b. 資產
   c. 投資
   d. 儲蓄
   e. 以上(a) (b)(c)(d)敘述都不是存量變數

2. 張三以10萬元向李四購買2張未上市股票，另外付給會計師費用共1萬元，請問此交易對GDP的貢獻為何？
   a. 11萬元
   b. 10萬元
   c. 6萬元
   d. 5萬元
   e. 1萬元

3. 若P_x為商品X的價格，P_Y為商品Y的價格，則$\frac{P_x}{P_Y}$為
   a. 名目變數
   b. 一單位X可以換到Y的單位數
   c. 一單位Y可以換到X的單位數
   d. 一元可以換到X和Y的單位數
   e. 以上(a)(b)(c)(d)敘述都不正確

4. 對於貸款者(borrower)而言，當利率下降時，下列何者敘述正確？
   a. 因所得效果而當期消費減少
   b. 因所得效果而未來消費增加
   c. 因替代效果而當期消費減少
   d. 因替代效果而未來消費增加
   e. 以上(a)(b)(c)(d)敘述都不正確

5. 長期下，貨幣供給增加將使實質利率＿＿，物價水準＿＿，實質產出＿＿。
   a. 下降，增加，增加
   b. 增加，下降，下降
   c. 下降，增加，不變
   d. 不變，增加，不變
   e. 不變，增加，下降

6. 金融危機會使
   a. 貨幣需求增加，LM曲線右移
   b. 貨幣需求增加，AD曲線右移
   c. 貨幣需求增加，AD曲線左移
   d. 貨幣需求減少，短期總合供給(SRAS)曲線左移
   e. 貨幣需求減少，IS曲線左移

試題隨卷繳回　背面有題

7. 下列敘述何者正確？
   a. 政府支出增加直接使總合需求增加；此舉可能會排擠私人投資，但也可能會吸引私人投資
   b. 因政府購買增加使利率上升，所造成的總合需求減少為排擠效果
   c. 稅收變動對總合需求的影響只有乘數效果，不會有排擠效果
   d. 凱因斯學派主張政府應調整貨幣政策與財政政策以抵銷社會大眾態度突然轉變對總合供給的影響
   e. 以上(a)(b)(c)(d)敘述都不正確

8. 對一封閉經濟體系而言，下列何者模型的政府購買乘數最大？
   a. Keynesian-Cross model
   b. IS-LM model
   c. 具有水平短期總合供給曲線的 AD-AS model
   d. 具有正斜率短期總合供給曲線的 AD-AS model
   e. 無法比較判斷上述模型中何者模型的政府購買乘數為最大

9. 長期恆久性(permanent)的總要素生產力(total factor productivity; TFP)衝擊會透過影響短期總合供給曲線的哪一部份而使短期總合供給(SRAS)曲線移動?
   a. 物價預期
   b. 自然產出
   c. 供給面衝擊
   d. 長期利率
   e. 恆久性的 TFP 變動不會使 SRAS 曲線移動

10. 一小型開放經濟體系若經由增加政府預算赤字而使全國儲蓄下降，此將使國際利率_，此經濟體經常帳餘額___
   a. 上升；下降
   b. 下降；上升
   c. 不變；下降
   d. 不變；上升
   e. 下降；下降。

11. Suppose the government imposes a price ceiling for the market of baby-sitters (保姆) in Taipei: a price higher than NT 20,000 is not allowed; the equilibrium price was NT 22,000 without this ceiling. A college student majoring in child development can be a baby-sitter or a kindergarten teacher; a baby-sitter provides services for **children aged 0-4 years**, and a kindergarten teacher provides services for **children aged 2-6**. How will this rule affect the **market of kindergarten teachers** in Taipei?
   a. The equilibrium quantity will increase but the equilibrium price will decrease.
   b. The equilibrium quantity will be uncertain and the equilibrium price will decrease.
   c. The equilibrium quantity and price will both decrease.
   d. The equilibrium quantity will decrease but the equilibrium price will be uncertain.

12. Consider the market of luxury apartments (豪宅) in Taipei. To stop speculation (投機炒作), the government imposes a 40% luxury tax (豪宅稅) in the market, which is collected from the sellers. The price elasticity of demand is not equal to zero. Which statement below is **CORRECT**?
    a. After the government imposes this tax, sellers' income from each luxury apartment will decrease by 40%.
    b. The price of houses will decrease after the government imposes this tax.
    c. This policy can efficiently stop all speculation.
    d. After the government imposes this tax, buyers' welfare will also decrease.

13. Manufacturers of cardboard boxes (紙箱) use inputs of wastepaper or wood. Assume that the price elasticity of the demand for wastepaper is around -0.3, while the price elasticity of the supply is 0. If **using wastepaper is subsidized** (補助) by the government (20% of the price), what is the effect of this policy?
    a. These manufacturers will increase their use of wastepaper.
    b. These manufacturers will decrease their use of wastepaper.
    c. These manufacturers will not change the amount of wastepaper.
    d. These manufacturers will decrease their use of wastepaper in the beginning, but their use of wastepaper will return to the original amount later.

14. Assume that you are a sales manager in Canon. If consumers want to get a budget digital camera (廉價數位相機) in Taiwan, there are two brands they can choose: Canon and Nikon. Suppose the demand for Canon has an own-price elasticity of -3.4, and the cross-price elasticity with respect to the price of Nikon of 1.2. The demand for Nikon has an own-price elasticity of -4.2, and the cross-price elasticity with respect to the price of Canon of 1.5. By what percentage will a **2% decrease** in the price of **Nikon** affect total revenue on your company (**Canon**)? (選最接近之答案)
    a. Increasing by 6.2%
    b. Increasing by 4.6%
    c. Decreasing by 2.4%
    d. Decreasing by 8.4%

15. Assume that the utility function for Butt-head (大頭蛋) is U(X, Y) = min{2x,3y}; he has income $120. The price for Y is $3/unit. Which statement below is **CORRECT**?
    a. X and Y are perfect substitutes.
    b. If the price for X is smaller than $2/unit, Butt-head will consume only X.
    c. If the price for X is bigger than $2/unit, Butt-head will consume more X and fewer Y.
    d. If the price for X is bigger than $4.5/unit, Butt-head will consume more Y and fewer X.

16. Butt-head (大頭蛋) has a workshop of furniture. He needs workers (L) and capital (K) to run this workshop, and the production function is $Y = 20\sqrt{KL}$, where Y is the output per month (in units). He can hire his friend, Beavis (癟四), and others. The max wage they can earn from other employers is NT32,000 per month. In this month, he has already rented 2 units of K, and the rental is NT80,000 for each unit of K per month. What is the **average cost function** for Butt-head in this month (**short run**)?
    a. $80Y + 160000/Y$
    b. $40Y + 160000/Y$
    c. $80Y$
    d. $40Y$

背面有題

17. Refer to Problem 16. Assume that Butt-head's workshop faces a **perfectly competitive market**. If the price of the furniture is NT4,800 per unit, how much profit will Butt-head earn in this month?
   a. NT 144,000
   b. NT 72,000
   c. NT 0
   d. NT -16,000

18. A huge lake is surrounded by five villages. No village owns the lake now. Each village can establish an agriculture cooperative (農業合作社) that earns $10 million per year, **or** set up a fishery cooperative (漁業合作社) that works on the lake. The value of fishes they can catch every year depends on the number of fishery cooperatives operating on the lake, as shown in the following table. Which statement below is **CORRECT**?
   a. If no village owns the lake, and each cooperative can freely works on the lake, ALL villages will set up fishery cooperative working on the lake.
   b. The SOCIALLY optimal number of cooperatives operating on the lake is 4.
   c. If one of the villages owns the lake, and charges a uniform fee on cooperatives operating on the lake, TO MAXIMIZE THEIR REVENUE, the fee should be set 11 million.
   d. If one of the villages owns the lake, and charges an OPTIMAL uniform fee on cooperatives operating on the lake to maximize their revenue, there will be 3 cooperative working on the lake.

Number of fishery cooperatives	The value of fishes each cooperative can catch
1	30 million
2	21 million
3	15 million
4	12 million
5	9 million

19. Two shops, C and F, sold ice cream in a small village. The taste (味道) of ice cream sold by C and F was the same, and they were also located at the same place; therefore, **ice cream sold by C and ice cream sold by F were homogeneous products for consumers**. They competed on price. Assume that the marginal cost for C, MC_C, was NT30 for each additional cup of ice cream, and the marginal cost for F, MC_F, was NT35. What was the equilibrium market price for a cup of ice cream in this market?
   a. $P^* = 25$
   b. $P^* = 30$
   c. $P^* = 35$
   d. $P^* = 40$

20. Refer to Problem 19. Recently, a veteran worker joined the shop C, and has modified the taste of ice cream sold by C; **the ice cream sold by C becomes sweeter than that sold by F**. Consumers can distinguish between ice cream sold by C and F. They still competed on price; MC_C = NT30 and MC_F = NT35. What are the **possible prices of a cup of ice cream for C and F in the Nash equilibrium** now?
   a. $(P_C^*, P_F^*) = (30, 30)$
   b. $(P_C^*, P_F^*) = (30, 35)$
   c. $(P_C^*, P_F^*) = (35, 35)$
   d. $(P_C^*, P_F^*) = (35, 40)$

貳、填充題(每小格5分,共20分;只需填寫答案)

1. 有一凱因斯經濟體系(Keynesian economy)由以下方程式描述:

產品市場均衡:　$Y=C+I+G=[250+0.5(Y-T)-250r]+[250-250r]+G$;

貨幣市場均衡:　$M/P=0.5Y-500r$;

$G=300, T=300, M=3{,}000, Yn=1{,}250$;

其中Y為實質產出，C為消費支出，I為投資支出，G為政府購買，T為稅收，r為利率，M為名目貨幣，P為一般物價，Yn為充分就業產出。

a. 請問此經濟體系在長期(即充分就業狀態)下的利率r=__(1)__， 一般物價P=__(2)__。

b. 如果政府將政府購買G永久性增加為350，請問此經濟體系在短期的利率r=__(3)__，實質產出Y=__(4)__。

參、計算申論題〈共計10分；請簡附計算或推導過程〉

1. （10分）設若兩間公司H與L正在同時考慮切入自行車用GPS市場，每間公司皆有兩種策略選擇：發展平價機種或發展高端機種。若H與L皆選擇發展平價機種，則最終將形成價格戰爭，雙方利潤皆為零。而若一方選擇平價機種，另一方選擇高端機種，則選擇平價機種的公司將取得高市占率，獲取可觀利潤；但發展高端機種的公司只能攻占利基市場，獲得小額利潤。若兩方皆發展高端機種，則雙方各擅勝場，平分市場，也都能得到不錯的利潤。相關的報酬矩陣如下表。請找出此標準型賽局 (normal form game) 的所有納許 (Nash) 均衡 (含混合策略的納許均衡，Mixed Strategy Nash Equilibrium)？

		H公司	
		高端機種	平價機種
L公司	高端機種	(15,15)	(10,20)
	平價機種	(25,5)	(0,0)

國立中山大學105學年度碩士暨碩士專班招生考試試題

科目名稱：商用統計學【企管系甲班碩士班選考】　　　　題號：441002
※本科目依簡章規定「不可以」使用計算機(選擇題)　　　　共4頁第1頁

選擇題(僅有單一正確答案，40題，每題2.5分，共計100分)

註1：P[|Z|>1.282]=0.20; P[|Z|>1.645]=0.10;P[|Z|>1.96]=0.05; P[|Z|>2.576]=0.01, Z呈標準常態分配；

( )1. 航空公司評估超賣座位問題時，可採用下列何種機率分配? (A)常態 (B)超幾何 (C)二項 (D)卜瓦松 (E)以上皆非。

( )2.下列何種機率分配可描述有事件? (A)常態 (B)超幾何 (C)二項 (D)卜瓦松 (E)以上皆非。

( )3.當t-分配之自由度趨近無窮大時會近似於何種機率分配? (A)標準常態 (B)卡方 (C)均勻 (D)F (E)以上皆非。

( )4. Excel中的函數Rand()所產生的隨機亂數會符合下列何種機率分配？ (A)標準常態 (B)隨機 (C)二項 (D)0~1間均勻 (E)以上皆非。

( )5.試求2.5在資料組{4.2, 2.1, 2.5, 2.7, 3.7, 4.4}的百分位等級(percentrank)？(A)0.2 (B)0.4 (C)0.5 (D)0.6 (E)以上皆非。

( )6.試求資料組{4.2, 2.1, 2.5, 2.7, 3.7, 4.4}的50百分位(percentile) ？(A)2.1 (B)2.7 (C)3.2 (D)3.7 (E)以上皆非。

( )7.擲兩個公正骰子的隨機試驗中，令隨機變數Y表兩個骰子出現點數差之絕對值，則P[Y=1]? (A)0/36 (B)3/36 (C)6/36 (D)10/36 (E)以上皆非。

( )8.欲檢定兩個以上獨立常態母體之平均值是否相等前應先檢定下列何者是否相等? (A)變異數 (B)中位數 (C)百分位 (D)全距 (E)以上皆非。

( )9.假設檢定中 H_0 vs H_1，令A表接受區、R表棄卻區，則 $P[A|H_1]$=? (A)型一誤機率α (B)型二誤機率β (C)檢定力 (D)誤判力 (E)以上皆非。

( )10.令顯著水準為α，則雙尾檢定中判定為棄卻虛無假設的標準為何? (A)雙尾p-value>α (B)雙尾p-value<α (C)單尾p-value<α (D)單尾p-value>α/2 (E)以上皆非。

( )11.假設檢定中，當其他條件保持固定，令 H_0 與 H_1 的距離增加時，會使下列何者變大? (A)標準誤 (B)檢定力 (C)信賴區間 (D)型二機率 (E)以上皆非。

( )12.假設母體呈均勻分配且其平均值為 μ 變異數為 σ^2，今抽取n=50的隨機樣本並計算其樣本平均值，令N表常態分配，則 $\overline{X}_n$ 的抽樣分配近似於? (A) $N(0,1)$ (B) $N(\mu,\sigma^2)$ (C) $N(\mu,\sigma^2/n)$ (D) $N(\mu,\sigma^2/\sqrt{n})$ (E)以上皆非。

( )13. 上題的結論是依據下列何定理? (A)均勻定理 (B)中央極限定理 (C)隨機定理 (D)直交分解定理 (E)以上皆非。

( )14.由常態分配 $N(\mu,\sigma^2)$ 中抽取隨機樣本 $x_1,x_2,\ldots,x_n$，樣本變異數為 $S^2=\sum_{i=1}^{n}(x_i-\bar{x})^2/(n-1)$，且 $E(S^2)=\sigma^2$，則 S^2 稱為 σ^2 的何種估計量? (A)有效(B)無效(C)無偏(D)有偏 (E)以上皆非。

( )15. 結合變異數分析與迴歸分析的統計方法稱為? (A)無母數分析 (B)有母數分析 (C)共變異數分析 (D)卡方分析 (E)以上皆非。

( )16.下列何種工具可以協助尋找線性模式中的影響因子(自變數)? (A)散佈圖 (B)流程圖 (C)決策樹 (D)魚骨圖 (E)雷達圖。

試題隨卷繳回　背面有題

科目名稱：商用統計學【企管系甲班碩士班選考】 題號：441002

※本科目依簡章規定「不可以」使用計算機(選擇題) 共4頁第2頁

( )17.無重複兩因子變異數分析中，可將下列何者視為誤差項？ (A)單因子主效果 (B)交互作用 (C)截距 (D)總變異 (E)以上皆非。

( )18.重複試驗雙因子變異數分析中，A 因子有 3 個水準，B 因子有 4 個水準，且有 3 個重複，則 A 與 B 交互作用的自由度為多少? (A)3 (B)6 (C)9 (D)18 (E)以上皆非。

( )19.重複雙因子變異數分析中，繪製平均值的線形圖可觀察因子之間的 (A)常態效果 (B)交互效果 (C)同質效果 (D)獨立效果 (E)以上皆非。

( )20.變異數分析中 Post hoc 檢定可產生下列何者？(A)同質子集 (B)共線子集 (C)共同子集 (D)獨立子集 (E)以上皆非。

( )21.某公司欲檢定 A 產品之硬度在不同生產線是否有差異，今分別從三條生產線各隨機抽取 10 件產品並量測其硬度，經計算後得到總變異平方和 SST=320，誤差平方和 SSE=270，則此樣本所求得變異數分析表中的 F 值=? (A)10 (B)5 (C)2.5 (D)1.5 (E)以上皆非。

( )22. 民意調查中，以卡方檢定九個行政區間有效受訪樣本次數之分配比例是否符合母體人口數的分配比例，則卡方分配自由度為? (A)10 (B)9 (C)8 (D)7 (E)以上皆非。

( )23. 某生選讀 18:30 的課常因交通問題而遲到，為解決此困擾他/她搜集了從辦公室出發到達教室所需總時間共一個月資料，得知其呈常態分配且平均值為 15 分鐘，標準差為 3 分鐘。請問某日他/她因工作忙碌 18:15 才出門，則遲到機率為何? (A)0.01 (B)0.05 (C)0.1 (D)0.5 (E)以上皆非。

( )24. 在投資組合分析中(portfolio analysis), 下列何者可用來表示投資風險? (A)平均值 (B)標準差 (C)百分比 (D)眾數 (E)以上皆非 。

( )25. Which chart is useful for the simple regression analysis? (A)pie (B)histogram (C)scatter (D)line (E)none of above。

( )26. In the simple linear regression analysis, the errors (ε_i) are assumed to be (A)iidN($0,\sigma_{ij}^2$) (B)N($0,\sigma_i^2$) (C)N($0,\sigma_{ij}^2$) (D)iidN($0,\sigma^2$) (E)none of above。

( )27. The regression line fits the data perfectly when the coefficient of determination R^2=? (A)0 (B)0.5 (C)-1 (D)1 (E)none of above。

( )28. Which method is applied to obtain the estimates of intercept and slope by minimizing sum of squared errors? (A)least squares (B)least errors (C)maximum sums (D)minimum means (E)none of above。

( )29. The prediction band of a regression line is narrowest at? (A)X=$\bar{x}$ (B)X=0 (C)X=∞ (D)Y=0 (E)none of above。

( )30. In residual analysis, the model is adequate when the pattern of residual vs X is? (A)linear (B)quadratic (C)increases in X (D)random (E)none of above。

( )31. A diagnosis of multicollinearity in multiple regression analysis can be determined by? (A)Variance inflation factor >10 (B)Condition index>30 (C)eigenvalues are closed to 0 (D)all of above (E)none of above。

( )32. The regression slope in cost analysis is also referred as (A)fixed cost (B)variable cost (C)constant cost (D)mean cost (E)none of above。

背面有題

( )33. In time series, a measure changes over time relative to a specific base period is called (A)index number (B)random number (C)test number (D)fixed number (E) none of above.

( )34. Which test can be used to test first–order autocorrelation of residuals? (A)Durbin–Watson (B)Pearson (C)Kendall tau (D)Normal (E)none of above.

Please answer questions 35-40 based on the results of 【Case Study】:

( )35. Which is the base line category for the dummy variables? (A)year=2 (B)year=4 (C)year=6 (D)size (E)none of above。

( )36. How much difference in R-square between ANCOVA and simple linear regression approximately? (A)0.91 (B)0.26 (C)0.65 (D)0 (E)0.5。

( )37. What is 95% upper confidence interval of size approximately? (A)0.99 (B)3.92 (C)2.45 (D)3.64 (E)1.00。

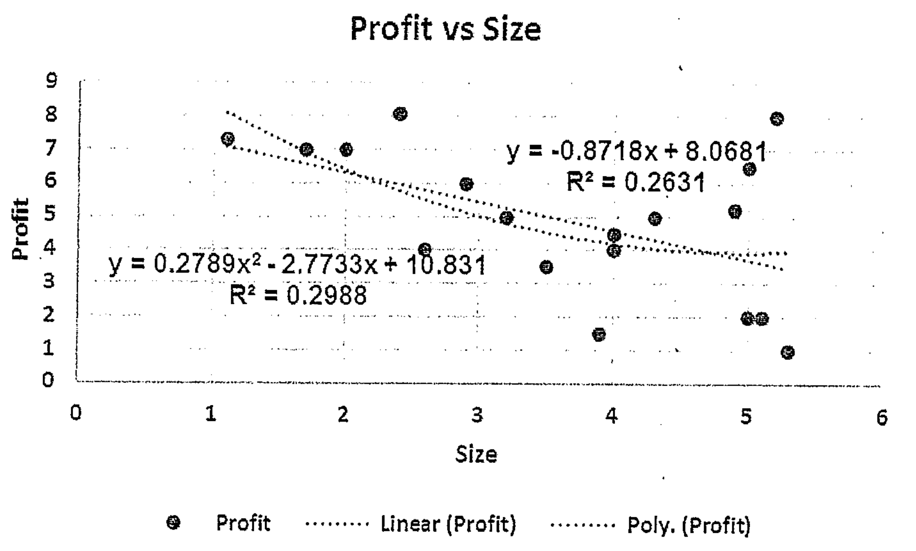
( )38. What is the MS of residual approximately? (A)0 (B)1 (C)0.5 (D)0.64 (E)2。

( )39. What is the difference of slope between year=2 and year=6 ? (A)0 (B)14.4386 (C) -3.3619 (D)2.4528 (E)none of above。

( )40. The intercept and slope of regression line for year=6 are equal to? (A)(14.4386, -3.3719) (B) (11.8497,-3.3619) (C)(-5.6679, 2.4528) (D)(0,1) (E)none of above。

【Case Analysis】 An engineering consulting firm assigned a project director for each project. The company try to increase the project profit (Y: %). Use Fishbone diagram to find out two important factors, the project director's experience (Z: year) and project size of amount (X: thousand), 18 projects data are collected as follow. Please analyze the above information, and propose suggestions for the project management. Given α=0.05, please answer questions 35-40。The Excel outputs are summarized below:

a. The scatter plot of raw data for Profit vs Size.



b. Original Data, Dummy, and Interaction of an analysis of covariance (ANCOVA)

Profit	Year	μ	[year=2]	[year=4]	size	[year=2]*size	[year=4]*size	predict
7.3	2	1	1	0	1.1	1.1	0	7.7597
7	2	1	1	0	1.7	1.7	0	7.2082
7	2	1	1	0	2	2	0	6.9325
8.1	2	1	1	0	2.4	2.4	0	6.5648
6	2	1	1	0	2.9	2.9	0	6.1053
5	2	1	1	0	3.2	3.2	0	5.8296
4	4	1	0	1	2.6	0	2.6	3.8182
3.5	4	1	0	1	3.5	0	3.5	3.0000
1.5	4	1	0	1	3.9	0	3.9	2.6364
2	4	1	0	1	5	0	5	1.6364
2	4	1	0	1	5.1	0	5.1	1.5455
1	4	1	0	1	5.3	0	5.3	1.3636
4	6	1	0	0	4	0	0	4.1434
4.5	6	1	0	0	4	0	0	4.1434
5	6	1	0	0	4.3	0	0	4.8792
5.2	6	1	0	0	4.9	0	0	6.3509
6.5	6	1	0	0	5	0	0	6.5962
8	6	1	0	0	5.2	0	0	7.0868

c. Excel summary output of ANCOVA.

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.9540
R Square	0.9102
Adjusted R Square	0.8727
Standard Error	0.8006
Observations	18

ANOVA

	df	SS	MS	F	Significance F
Regression	5	77.9292	15.5858	24.3186	6.83E-06
Residual	12	7.6908	?		
Total	17	85.62			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-5.6679	3.0925	-1.8328	0.0917	-12.4059	1.0701
[year=2]	14.4386	3.2727	4.4119	0.0008	7.3081	21.5691
[year=4]	11.8497	3.4137	3.4713	0.0046	4.4120	19.2875
size	2.4528	0.6734	3.6425	0.0034	0.9856	?
[year=2]*size	-3.3719	0.8155	-4.1346	0.0014	-5.1488	-1.5950
[year=4]*size	-3.3619	0.7511	-4.4762	0.0008	-4.9983	-1.7255

國立中山大學105學年度碩士暨碩士專班招生考試試題

科目名稱：管理實務【企管系乙班碩士班】 題號：447001

※本科目依簡章規定「不可以」使用計算機(問答申論題) 共1頁第1頁

【簡答題：共五題，25分，每題5分】

一、 何謂X理論、Y理論？

二、 產業環境分析中之特定環境分析有哪些要素？

三、 策略的層級有哪些？

四、 控制程序的四個步驟為何？

五、 Peter Senge 五項修練的學習型組織中，各項修練的內容為何？

【問答題：75分：請針對問題扼要回答，切忌文不對題】

一、 雖然不同的組織有不同的目標，但是管理的目標一般而言分為兩大類，一是提升組織產出的效能，一是提升組織營運的效率。管理者通常會遇到效能與效率組合下不同的四種管理情境，試以智慧型手機製造業角度分析該四種不同情境，以及在不同情境下的因應對策。（20分）

二、 產業結構分析的主要目的是從產業整體面角度來觀察產業內廠商所面臨的競爭壓力，判斷其潛在獲利能力。您若是想要經營一家小型的個人個性咖啡店，試以 Michael Porter 的五力分析架構說明該產業的競爭壓力，以及您有什麼可能的策略選擇來因應該競爭壓力？（25分）

三、 在管理實務上，人通常是最重要的管理對象，人力資源管理的第一步工作就是工作設計與分析，工作設計的動機方法中常用三種方式來提高員工的工作滿意度以及提升員工的素質。請問是哪三種方式？並舉一例說明之。（30分）

試題隨卷繳回