

國立中山大學 108 學年度 碩士暨碩士專班招生考試試題

科目名稱：經濟學【企管系企管甲班碩士班甲組、乙組、丙組】

— 作答注意事項 —

考試時間：100 分鐘

- 考試開始響前不得翻閱試題，並不得書寫、劃記、作答。請先檢查答案卷（卡）之應考證號碼、桌角號碼、應試科目是否正確，如有不同立即請監試人員處理。
- 答案卷限用藍、黑色筆(含鉛筆)書寫、繪圖或標示，可攜帶橡皮擦、無色透明無文字墊板、尺規、修正液（帶）、手錶(未附計算器者)。每人每節限使用一份答案卷，不得另攜帶紙張，請衡酌作答。
- 答案卡請以 2B 鉛筆劃記，不可使用修正液（帶）塗改，未使用 2B 鉛筆、劃記太輕或污損致光學閱讀機無法辨識答案者，其後果由考生自行負擔。
- 答案卷（卡）應保持清潔完整，不得折疊、破壞或塗改應考證號碼及條碼，亦不得書寫考生姓名、應考證號碼或與答案無關之任何文字或符號。
- 可否使用計算機請依試題資訊內標註為準，如「可以」使用，廠牌、功能不拘，唯不得攜帶具有通訊、記憶或收發等功能或其他有礙試場安寧、考試公平之各類器材、物品（如鬧鈴、行動電話、電子字典等）入場。
- 試題及答案卷（卡）請務必繳回，未繳回者該科成績以零分計算。
- 試題採雙面列印，考生應注意試題頁數確實作答。
- 違規者依本校招生考試試場規則及違規處理辦法處理。

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共 4 頁第 1 頁

壹、單選題〈1 至 10 題為中文題，每題 4 分；11 題至 20 題為英文題，每題 4 分；總計 80 分〉

1. 下列何者總體變數不是流量變數？
 - a. 1 張 10 元美鈔
 - b. 儲蓄
 - c. 財政赤字
 - d. 存貨變動
2. 利率有好幾種算法，下列何者觀念是最精確的利率衡量？
 - a. 債券的到期收益率(yield to maturity)
 - b. 債券的票面利率(coupon rate)
 - c. 債券的報酬率(rate of return)
 - d. 債券的資本利得率(rate of capital gain)
3. 下列有關投資函數之敘述何者為偽？
 - a. 投資函數為行為方程式
 - b. 若投資函數為 $I=I_0+I_1*r$ ，其中 r 為實質利率，則 I_0 為自發性投資支出， I_1*r 為因為實質利率而誘發的投資支出
 - c. 若投資函數為 $I=I_0+I_1*r$ ，其中 r 為實質利率，則參數 I_1 為正值
 - d. 若投資函數為 $I=I_2+I_3*i$ ，其中 i 為名目利率，則參數 I_3 為負值
4. 貨幣市場均衡式 $M/P = L(i, Y)$ ，其中 M 為貨幣供給， P 為一般物價， i 為名目利率， Y 為 GDP。 P 、 i 、 Y 三者變數調整速度快慢順序為
 - a. $i>Y>P$
 - b. $P>Y>i$
 - c. $Y>i>P$
 - d. $Y>P>i$
5. 如果貨幣需求的利率彈性趨近於無窮大時，
 - a. LM 線接近水平，財政政策有效
 - b. LM 線接近垂直，貨幣政策無效
 - c. IS 線接近垂直，貨幣政策無效
 - d. IS 線接近水平，貨幣政策有效
6. 下列何者因素變動會使 LM 曲線移動，但不會使 AD 曲線移動？
 - a. 預期通膨加劇
 - b. 一般物價飆高
 - c. 金融市場恐慌
 - d. 貨幣供給寬鬆
7. 中古時代歐洲人口因為黑死病而大量減少，此事件使中古歐洲的
 - a. 資本邊際生產力上升
 - b. 資本租賃價格上升
 - c. 實質工資上升
 - d. 以上皆非

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共 4 頁第 2 頁

8. 國際資料顯示，民主程度(橫軸)與經濟成長(縱軸)之圖形為
- 負斜率
 - 正斜率
 - U 字型
 - 倒 U 字型
9. 下列何者無法成為內生經濟成長的機制來源?
- 完全競爭市場
 - 外部性
 - 人力資本累積
 - 不完全競爭市場
10. 若某國於某年經常帳餘額為大幅盈餘(current account surplus)，下列相關敘述何者為偽?
- 此國該年之對外國淨債權增加
 - 此國該年之貿易帳餘額為盈餘
 - 此國該年之資本及金融帳為盈餘
 - 不計算統計誤差，此國該年之國際收支帳上經常帳餘額與資本及金融帳餘額加總為 0
11. This year, the U.S. government plans to impose heavy tariffs on communication devices imported from China. Many Chinese firms use chips made in Taiwan to produce communication devices. What will happen to the equilibrium price and quantity in the market for chips made in Taiwan after the U.S. government imposes this tariff?
- The equilibrium quantity will increase but the equilibrium price will decrease.
 - The equilibrium quantity will decrease but the equilibrium price will increase.
 - The equilibrium quantity and price will both decrease.
 - The equilibrium quantity and price will both increase.
12. Imported soybeans from the U.S. account for around 30% of soybean domestic consumption in China, and most of soybean consumption in China is for pig feed. After the Chinese government imposes a heavy tariff on soybeans from the U.S., who will be benefited by this policy?
- Pig consumers in China
 - Pig farmers in China
 - Soybean farmers in China
 - Soybean importers in China
13. If the quantity supplied for LED lamps is greater than the quantity demanded by 2%, the price will decrease by around 5%. What does this statement mean?
- LED lamps are luxury goods.
 - LED lamps are normal goods.
 - The absolute value of own-price elasticity of demand for LED lamps is greater than one.
 - If the price of LED lamps increases, the total revenue ($P*Q$) for LED lamp producers will increase.
14. Assume that the utility function for Butt-head (大頭蛋) is $U(X, Y) = \min\{3X, 5Y\}$. He has income \$510. The price for X is \$5/unit, and the price for Y is \$3/unit. Which statement below is CORRECT?
- He should buy only 102 units of X.
 - He should buy only 170 units of Y.
 - He should buy 75 units of X and 45 units of Y.
 - He should buy 51 units of X and 85 units of Y.

背面有題

試題請隨卷繳回

國立中山大學 108 學年度碩士暨碩士專班招生考試試題

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共 4 頁第 3 頁

15. The demand for tea increases and tea producers begin earning economic profits. Assume the tea industry is perfectly competitive. **Compared to this new situation, in the long run** how are the price of tea and economic profits for tea producers most likely to change?
- The price of tea and economic profits for tea producers will both decrease.
 - The price of tea and economic profits for tea producers will both increase.
 - The price of tea will decrease, but economic profits for tea producers will increase.
 - The price of tea will increase, but economic profits for tea producers will decrease.
16. U is a monopoly producer for a special tool; yet, they do not have a sales department. U proposes a take-it-or-leave-it offer for D, who is the only retailer in a small town. The demand in this town for the special tool is $Q(P) = 300 - 3P$. The average variable cost for U to produce this tool is 30. While selling tools, D will not incur additional cost. No fixed cost for U and D. What is the retail price in which D sells this special tool?
- 30
 - 65
 - 70
 - 82.5
17. Refer to Problem 16. Which statement below is **CORRECT**?
- If U acquires D, U will keep using the old retail price that D set before.
 - If U acquires D, the consumer surplus for the tool buyers in this town will decrease.
 - If U acquires D, the retail price for this tool in this town will decrease.
 - If U sets their own store in this town (while U keeps selling D this tool), the retail price for this tool in this town will not change.
18. Firm H used 400 units of labor and 100 units of machines in the last month, and their output is 100 units. This month, Firm H is using 300 units of labor and 150 units of machines, and they find that their output is still 100 units. If the price of using one unit of machine is \$400, and the price of using one unit of labor is \$100, which statement below is **CORRECT**?
- The slope of isoquant for Firm H is 5/14
 - The marginal rate of technical substitution (marginal product of labor/marginal product of capital) for Firm H is 2.
 - Firm H should use more labor.
 - Firm H should use more capital.
19. Two shops, L and R, sell bubble tea in a small village. Shop L usually puts more ice cubes in their bubble tea than Shop R. However, most **villagers do not care how many ice cubes added in their bubble tea**. All other features of the bubble tea they sell are similar. Two shops **compete on price**. Assume that the marginal cost for L to produce each additional cup of bubble tea, MC_L , is NT32, and the marginal cost for R to produce each additional cup of bubble tea, MC_R , is NT30. What are the **possible prices of a cup of bubble tea for L and R in the Nash equilibrium**?
- $(P_L^*, P_R^*) = (30, 30)$
 - $(P_L^*, P_R^*) = (34, 34)$
 - $(P_L^*, P_R^*) = (33, 32)$
 - $(P_L^*, P_R^*) = (38, 36)$

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共 4 頁第 4 頁

20. Two shops, D and S, also sell bubble tea in another small village. Shop S usually puts more sugar in their bubble tea than Shop D. All other features of the bubble tea they sell are similar. **Residents in this village have similar preferences on sweetness: they all prefer bubble tea with more sugar to general one.** Two shops compete on price. Assume that the marginal cost for D, MC_D , and the marginal cost for S, MC_S , are both NT30 for each additional cup of bubble tea. What are the possible prices of a cup of bubble tea for D and S in the Nash equilibrium?
- $(P_D^*, P_S^*) = (31, 31)$
 - $(P_D^*, P_S^*) = (31, 34)$
 - $(P_D^*, P_S^*) = (34, 31)$
 - $(P_D^*, P_S^*) = (34, 34)$

貳、填充題(每小格 5 分, 共 10 分; 只需填寫答案)

1. 有一經濟體系如下：

產品市場均衡式： $Y=12-r$

貨幣政策(泰勒)法則： $r=1+0.5\pi$

短期總供給曲線： $\pi=2+1.5(Y-Y^P)$

其中 Y 為產出， r 為實質利率， π 為通貨膨脹率， Y^P 為自然產出。

(a) 則 AD 的方程式為__(1)___。

(b) 若自然產出 $Y^P=10$ ，請求出短期產出 $Y=$ __(2)___。

參、計算申論題〈共計 10 分；請簡附計算或推導過程〉

1. (10 pts) A 與 B 正在競標一件古物。賣方以首價密封拍賣法 (first-price sealed-bid) 進行拍賣：A 和 B 先各自同時將自己的願付價格寫在標單上，再密封於信封中交給賣家；賣家開封後以出價最高者得標，出價最高者則以其寫在標單上的價格買下該件古物。若兩人出價皆同時，則抽籤決定誰得標；兩人皆有 $1/2$ 的機率贏得購買權。在標單上寫下的價格只能以萬元為單位。設若 A 取得該古物後，A 會獲得相當於 5 萬元的效用；而該古物對 B 的效用則為 4 萬元。A 與 B 兩人皆知該古物對雙方的價值(或效用)為何。
- 請寫下 A、B 在此拍賣中該如何出價的標準型賽局 (normal form game)。(5 pts)
 - 請找出此賽局中所有單純策略的納許均衡 (pure strategy Nash equilibrium)。(5 pts)

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試題及答案卷（卡）請務必繳回，未繳回者該科成績以零分計算。

試題採雙面列印，考生應注意試題頁數確實作答。

違規者依本校招生考試試場規則及違規處理辦法處理。

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共 8 頁第 1 頁

一、觀念解釋題（共 2 題，每題 5 分，合計 10 分）

1. 在假設檢定中，決策者可能犯的錯誤有兩種：型 I 錯誤和型 II 錯誤。為什麼我們選擇控制型 I 錯誤的機率 α ，而不是控制型 II 錯誤的機率 β ？難道型 I 錯誤比型 II 錯誤嚴重嗎？還是別的原因？以你的理解，請說明。
2. ANOVA 分析中，有哪三個基本假設？以你的理解，請說明為什麼要使用這三個假設？

二、單選題（共 40 題，每題 2 分，答錯不倒扣，合計 80 分）

1. A researcher has collected the following sample data.

5 12 6 8 5
6 7 5 12 4

The 75th percentile is

- A. 7
 - B. 7.5
 - C. 8
 - D. 9
2. The table below shows the population growth rate of a city for the years 2008 through 2012.

Year	Population Growth Factor
2008	0.8923
2009	1.0587
2010	1.1934
2011	1.2345
2012	1.0995

What has been the average growth rate of the city form year 2008 to 2012?

- A. 8.88%
 - B. 13.54.%
 - C. 12,34%
 - D. 1.088%
3. The random variable X is the number of occurrences of an event over an interval of ten minutes. It can be assumed that the probability of an occurrence is the same in any two time periods of an equal length. It is known that the mean number of occurrences in ten minutes is 4. The probability that there are 3 occurrences in five minutes is
 - A. 0.1804
 - B. 0.1721
 - C. 0.1126
 - D. 0.9107
 4. (Continued with problem 3) What is the standard deviation of X ?
 - A. 2.
 - B. 5
 - C. 3
 - D. 16
 5. The following table shows part of the probability distribution for the number of boats sold daily at Boats

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共 8 頁第 2 頁

Unlimited. It is known that the average number of boats sold daily is 1.57.

X	f(x)
0	0.20
1	0.30
2	0.32
3	???
4	0.05
5	0.02

Which of the following is the correct variance?

- A. variance = 1.5092
 - B. variance = 1.8903
 - C. variance = 1.4051
 - D. variance = 1.6881
6. The average life expectancy of dishwashers produced by a company is 6 years with a standard deviation of 8 months. Assume that the lives of dishwashers are normally distributed. If 155 of this year's dishwasher production fail operating in less than 4 years and 4 months, then how many dishwashers were produced this year? ($Z_{2.49}=0.0064$, $Z_{2.39}=0.0084$, $Z_{2.59}=0.0048$)
- A. 24200
 - B. 34000
 - C. 29000
 - D. 40400
7. From a population that is not normally distributed and whose standard deviation is not known, a sample of 6 items is selected to develop an interval estimate for the mean of the population (μ). Then, which of the following is correct?
- A. The normal distribution can be used.
 - B. The t distribution with 5 degrees of freedom must be used.
 - C. The t distribution with 6 degrees of freedom must be used.
 - D. The sample size must be increased.
8. A machine that produces a major part for an airplane engine is monitored closely. In the past, 10% of the parts produced would be defective. With a .95 probability, the sample size that needs to be taken if the desired margin of error is .04 or less is ($Z_{0.025}=1.96$)
- A. 110
 - B. 111
 - C. 216
 - D. 217
9. Two thousand numbers are selected randomly; 960 are even numbers. At the .10 level of significance using the p-value approach, test the hypotheses $H_0: p = 0.5$. vs. $H_1: p \neq 0.5$. What is the range of p-value? ($Z_{0.05}=1.645$, $Z_{0.025}=1.96$)
- A. p-value > 0.10
 - B. $0.025 < \text{p-value} < 0.05$
 - C. $.001 < \text{p-value} < 0.025$
 - D. $0.05 < \text{p-value} < 0.1$
10. $H_0: \mu = 120$ vs. $H_1: \mu \neq 120$ are used to test whether a bath soap production process is meeting the standard output of 120 bars per batch. Use a 0.05 level of significance for the test and a planning value of 5 for the standard deviation. If the mean output drops to 117 bars per batch, the firm wants to have a 98% chance of concluding that the standard production output is not being met. How large a

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sample should be selected? ($Z_{0.02}=2.05$)

- A. 44
- B. 45
- C. 46
- D. 47

11. In national public opinion polls for interval estimation conducted by large professional organizations, what is the margin of error most commonly adopted?

- A. 0.01 ~ 0.02
- B. 0.02 ~ 0.03
- C. 0.03 ~ 0.04
- D. 0.04 ~ 0.05

12. The table below gives beverage preferences for random samples of teens and adults.

	Teens	Adults	Total
Coffee	10	40	50
Soft Drinks	30	20	50
	40	60	100

We are asked to test for independence between age (i.e., adult and teen) and drink preferences. What is the value for the test statistic?

- A. 5.991
- B. 7.815
- C. 14.067
- D. 16.67

13. Consider the following information.

$$SSTR = 6750$$

$$SSE = 8000$$

$$H_0: \mu_1 = \mu_2 = \mu_3 = \mu_4$$

H_a : At least one mean is different

$n=5$ is selected from each population and the null hypothesis is to be tested at the 5% level of significance (table value $F_{3,16; 0.05} = 3.24$). The null hypothesis

- A. should be rejected
- B. should not be rejected
- C. was designed incorrectly
- D. cannot be tested

14. Regression analysis was applied between sales data (y in \$1000s) and advertising data (x in \$100s) and the following information was obtained.

$$\hat{y} = 12 + 1.8x$$

$$n = 17 \quad SSR = 225 \quad SSE = 75 \quad S_{b_1} = .2683$$

The F test statistic computed from the above data is

- A. 43
- B. 45
- C. 48
- D. 50

15. Given the data for two variables, X and Y.

x_i	6	11	15	18	20
Y_i	6	8	12	20	30

Which of the following is correct?

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科目名稱：商用統計學【企管系企管甲班碩士班甲組選考、乙組選考、丙組選考】題號：441002

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共 8 頁第 4 頁

- A. $b_1=1.5873$
- B. $E(y) = -6.045 + 1.32x$
- C. $b_0 = -6.022$
- D. none is correct

16. The following information regarding a dependent variable (y) and an independent variable (x) is provided as follow.

<u>Y</u>	<u>X</u>
4	2
3	1
4	4
6	3
8	5

It is known that $SSE = 6$ $SST = 16$. Then, the least squares estimate of the y -intercept is

- A. 1
 - B. 2
 - C. 3
 - D. 4
17. (Continued with problem 16) What is the value of the F test statistic?
- A. 2
 - B. 3
 - C. 4
 - D. 5
18. In a regression analysis, the regression equation is given by $y = 12 - 6x$. If $SSE = 510$ and $SST = 1000$, then the coefficient of correlation is
- A. -0.7
 - B. +0.7
 - C. 0.49
 - D. -0.49
19. Regression analysis was applied between sales data (y in \$1000s) and advertising data (x in \$100s) and the following information was obtained.
- $\hat{y} = 12 + 1.8x$
 $n = 17$
 $SSR = 225$
 $SSE = 75$
 $sb_1 = .2683$
- Then, the t statistic for testing the significance of the slope is
- A. 1.80
 - B. 1.96
 - C. 6.71
 - D. 0.56
20. A measure of identifying the effect of an unusual x value on the regression results is called
- A. Cook's D
 - B. leverage
 - C. odd ratio
 - D. unusual regression

國立中山大學 108 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【企管系企管甲班碩士班甲組選考、乙組選考、丙組選考】題號：441002

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共 8 頁第 5 頁

21. In order to test for the significance of a regression model involving 3 independent variables and 47 observations, the numerator and denominator degrees of freedom (respectively) for the critical value of F are
- A. 47 and 3
 - B. 3 and 47
 - C. 2 and 43
 - D. 3 and 43

22. The following estimated regression equation was developed relating yearly income (y in \$1000s) of 30 individuals with their age (x_1) and their gender (x_2) (0 if male and 1 if female).
 $\hat{y} = 30 + .7x_1 + 3x_2$ Also provided are $SST = 1200$ and $SSE = 384$. At the 5% level the F table value is $F_{2,27;0.05}=3.35$; then, the model
- A. is significant
 - B. is not significant
 - C. would be significant if the sample size was larger than 30
 - D. has significant individual parameters.

23. Use the computer output shown below to choose the correct answer, at a .05 level of significance.

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2	118.8474	59.4237	40.9216	0.0000
Residual	9	13.0692	1.4521		
Total	11	131.9167			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	118.5059	33.5753	3.5296	0.0064
(x_1)	-0.0163	0.0315	-0.5171	0.6176
(x_2)	-1.5726	0.3590	-4.3807	0.0018

- A. the model is not significant
 - B. x_1 is significant and no evidence that x_2 is significant
 - C. no evidence that x_1 is significant while x_2 is significant
 - D. $n=11$
24. (Continued with problem 23) What is the value of the coefficient of determination?
- A. 0.8
 - B. 0.7
 - C. 0.1
 - D. 0.9

25. In a regression analysis involving 20 observations and five independent variables, the following information in the ANOVA table was obtained. Which of the following answers is correct?

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>
Regression	_____?	_____?	_____?	_____?
Error (Residual)	_____?	_____?	30	
Total		990		

國立中山大學 108 學年度碩士暨碩士專班招生考試試題

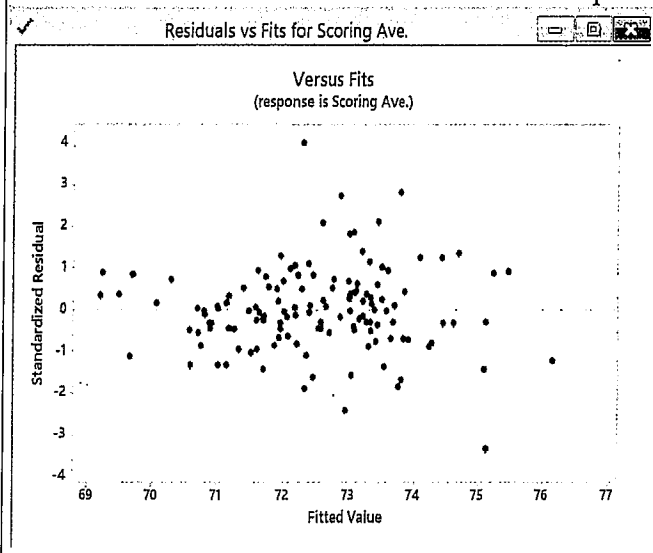
科目名稱：商用統計學【企管系企管甲班碩士班甲組選考、乙組選考、丙組選考】題號：441002

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共 8 頁第 6 頁

- A. $F = 3.6$
- B. $F = 3.8$
- C. $SSR = 420$
- D. $MSE = 114$

26. Provided with the standardized residuals plot as follow, please choose the correct answer.



- A. the standardized residual plot supports all the four assumptions about ε
- B. the plot does not seem to indicate existence of outliers
- C. the variance of the residuals appear to increase for larger fitted values
- D. the plot seems to violate the assumption that $E(\varepsilon) = 0$

27. In Durbin-Watson test the null hypothesis H_0 is

- A. $H_0: \rho \geq 0$
- B. $H_0: \rho \leq 0$
- C. $H_0: \rho = 1$
- D. $H_0: \rho = 0$

28. In the test of autocorrelation which of the following is correct?

- A. the error terms are modelled as $\varepsilon_t = \rho \varepsilon_{t-1}$
- B. autocorrelation means successive error terms are automatically correlated
- C. the error terms are modelled as $\varepsilon_t = \rho \varepsilon_{t-1} + z_t$
- D. none of the above is correct

29. A variable such as z , whose value is $z = x_1x_2$, is added to a general linear model in order to account for potential effects of two variables x_1 and x_2 acting together. This type of effect is

- A. called multiplicative effect
- B. called interaction effect
- C. called dual choice effect
- D. called binary choice effects

30. When dealing with the problem of non-constant variance, the reciprocal transformation means using

- A. $1/x$ as the independent variable instead of x
- B. $1/x^2$ as the independent variable instead of x
- C. $1/y^2$ as the dependent variable instead of y
- D. $1/y$ as the dependent variable instead of y

國立中山大學 108 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【企管系企管甲班碩士班甲組選考、乙組選考、丙組選考】題號：441002

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共 8 頁第 7 頁

31. A data set consisting of 7 observations of a dependent variable y and two independent variables x_1 and x_2 was used in a regression analysis. Using x_1 as the only independent variable, the following function is provided.

$$\hat{y} = .408 + 1.338x_1$$

The SSE for the above model is 39.535.

Using both x_1 and x_2 as independent variables yields the following function.

$$\hat{y} = .805 + .498x_1 - .477x_2$$

The SSE for this function is 1.015.

Then, the F test statistic equals

- A. 151.8
- B. 39.535
- C. 1.015
- D. 38.52

32. Given an actual demand of 61, its forecast of 58, and an α of 0.3, what would be the forecast for the next period using exponential smoothing?

- A. 57.1
- B. 58.9
- C. 61.0
- D. 65.5

33. Which of the following smoothing constants would make an exponential smoothing forecast equivalent to a naive forecast?

- A. 0.0
- B. 0.1
- C. 0.5
- D. 1.0

34. In stepwise regression procedure, how would you decide which variable to enter or leave the model?

- A. a variable which is outside the model but with the largest p-value is to enter the model
- B. a variable which is inside the model but with the largest p-value is to leave the model
- C. a variable which is inside the model but with the smallest p-value is to leave the model
- D. none of the above statements is correct

35. If the estimate of the trend component is 158.2, the estimate of the seasonal component is 94%, the estimate of the cyclical component is 105%, and the estimate of the irregular component is 98%, then the multiplicative model will produce a forecast of

- A. 1.53
- B. 1.53%
- C. 153.02
- D. 153,020,532

36. Below you are given the first five values of a quarterly time series. The multiplicative model is appropriate and a four-quarter moving average will be used.

Year	Quarter	Time Series Value Y_t
1	1	36
1	2	24
1	3	16
1	4	20
2	1	44

國立中山大學 108 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【企管系企管甲班碩士班甲組選考、乙組選考、丙組選考】題號：441002

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共 8 頁第 8 頁

An estimate of the seasonal-irregular component for Quarter 3 of Year 1 is

- A. 0.64
- B. 1.5625
- C. 5.333
- D. 0.3

37. The quality control manager requested a producer's risk of 0.1 when p_0 was 0.03 and a consumer's risk of 0.2 when p_1 was 0.15. Consider the acceptance sampling plan based on a sample size of 20 and an acceptance number of 1. Let X be the number of defective items selected in the sample, then which of the following answers is correct?

- A. the producer's risk = $P(X \geq 2 \mid n=20, p=0.03)$
- B. the producer's risk = $P(X \leq 1 \mid n=20, p=0.15)$
- C. the producer's risk = $P(X \geq 2 \mid n=20, p=0.15)$
- D. the producer's risk = $P(X \leq 1 \mid n=20, p=0.03)$

38. (Continued with problem 37) Which of the following is correct?

- A. the consumer's risk = $P(X \geq 2 \mid n=20, p=0.15)$
- B. the consumer's risk = $P(X \geq 2 \mid n=20, p=0.03)$
- C. the consumer's risk = $P(X \leq 1 \mid n=20, p=0.15)$
- D. the consumer's risk = $P(X \leq 1 \mid n=20, p=0.03)$

39. A nonparametric version of the parametric analysis of variance test is the

- A. Kruskal-Wallis test
- B. Mann-Whitney-Wilcoxon test
- C. sign test
- D. Wilcoxon signed-rank test

40. Fifteen people were given two types of cereal, Brand X and Brand Y. Two people preferred Brand X and thirteen people preferred Brand Y. We want to determine whether or not customers prefer one brand over the other. The p -value for this test is (Hint: $0.5^{15}=0.000030517$)

- A. 0.0005
- B. 0.001
- C. 0.0037
- D. 0.0074

三、計算題 (合計 10 分)

1. Consider the following time series data. Please answer the following questions.

Week	1	2	3	4	5	6	7
Value	24	13	20	12	19	23	15

- (a) Develop the 3-week moving average forecasts for this time series. Compute MSE and a forecast for week 8.
- (b) Use $\alpha=0.2$ to compute the exponential smoothing forecasts for the time series. Compute MSE and a forecast for week 8.
- (c) Compare the 3-week moving average approach with the exponential smoothing approach using $\alpha=0.2$. Which appears to provide more accurate forecasts based on MSE?

國立中山大學 108 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】

—作答注意事項—

考試時間：100 分鐘

- 考試開始響前不得翻閱試題，並不得書寫、劃記、作答。請先檢查答案卷（卡）之應考證號碼、桌角號碼、應試科目是否正確，如有不同立即請監試人員處理。
- 答案卷限用藍、黑色筆(含鉛筆)書寫、繪圖或標示，可攜帶橡皮擦、無色透明無文字墊板、尺規、修正液（帶）、手錶(未附計算器者)。每人每節限使用一份答案卷，不得另攜帶紙張，請斟酌作答。
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- 試題及答案卷（卡）請務必繳回，未繳回者該科成績以零分計算。
- 試題採雙面列印，考生應注意試題頁數確實作答。
- 違規者依本校招生考試試場規則及違規處理辦法處理。

國立中山大學 108 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

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共 1 頁第 1 頁

請按題號順序作答，並請寫出推導過程，違者扣分。

1. Find dy/dx for the following (15%)

a. $y = \frac{w}{w+1}$ and $w = \frac{x}{x+1}$

b. $x^{3/4} + y^{3/4} = 2$ by implicit differentiation

c. $y = \ln(x + e^{-3x})$

2. Sketch the graph of $f(x) = 8x^5 - 5x^4 - 20x^3$, indicating local extrema, inflection points, concave structure, and asymptotes, if applicable. (15%)

3. Evaluate the integrals (30%)

a. $\int_0^{\pi/3} \sin 3t dt$

b. $\int_{-\infty}^0 \frac{dx}{\sqrt{4-x}}$

c. $\int \frac{dx}{x^2 - x - 6}$

d. $\int x\sqrt{x+1} dx$

e. $\int \frac{dx}{\sqrt{x}(2+\sqrt{x})^2}$

f. $\int \frac{e^{3x}}{1+e^{3x}} dx$

4. Find the limits of the following (15%)

a. $\{a_n\}_{n=0}^{\infty}$ where $a_n = \frac{3^n + 5}{e^n}$

b. $\sum_{n=1}^{\infty} nx^n$, indicating the interval of convergence.

c. $\lim_{x \rightarrow 0} \frac{\ln(3+x)}{x}$

5. Approximate $\ln(1.11)$ by Taylor's expansion accurate to 3 decimal places. (10%)

6. 某一城市一年內需要維修的街道數目假設是隨機變數，其機率密度函數(probability density function)為 $f(x) = 12x^2(1-x)$, $0 \leq x \leq 1$, 求今年該區最多到一半的道路需要維修的機率。(15%)

國立中山大學 108 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】

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- 答案卡請以 2B 鉛筆劃記，不可使用修正液（帶）塗改，未使用 2B 鉛筆、劃記太輕或污損致光學閱讀機無法辨識答案者，其後果由考生自行負擔。
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國立中山大學 108 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
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一、單選題(75 分)：請選擇最合適的答案，每題 2.5 分，不倒扣。

1. When a sales organization has a standard practice that salespeople who call on customers on construction sites should wear a "hard hat" at all times during this sales call, this is an example of:
(A) Equity.
(B) A rule.
(C) Job specialization.
(D) Theory X.
(E) Management science theory.
2. _____ is the process of evaluating each market segment's attractiveness and selecting one or more segments to enter.
(A) Market segmentation
(B) Mass marketing
(C) Differentiation
(D) Market targeting
(E) Market entering
3. If the Director of Athletics at a college reports jointly to both the Dean of Faculty and the Dean of Student Affairs, this is a violation of which one of Fayol's principles?
(A) Equity
(B) Unity of command
(C) Unity of direction
(D) Initiative
(E) Order
4. Managers who believe that they are largely responsible for their own fate are said to be high in:
(A) External locus of control.
(B) Conscientiousness.
(C) Negative affectivity.
(D) Internal locus of control.
(E) Openness to experience.
5. A manager who is self-reliant and self-sufficient is expressing which type of instrumental value?
(A) Responsibility
(B) Independence
(C) Ambition
(D) Capability
(E) Helpfulness
6. Giorgio, is very angry with his co-worker Petra, who has made errors in her work that cause Giorgio to have to work late. Giorgio is experiencing a(n):
(A) Personality
(B) Emotional intelligence incident
(C) Emotion
(D) Mood
(E) Scruple

國立中山大學 108 學年度碩士暨碩士專班招生考試試題

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7. The supervisor of a newly hired school bus driver rides with the new driver for the first week on the new job to be sure that the driver follows the correct route and the proper safety procedures. In which aspect of the HRM process is this supervisor involved?
(A) Simulation
(B) Needs assessment
(C) Role-playing
(D) On-the-job training
(E) Development
8. An ethical dilemma is a situation in which a person has to decide if she should act in a way that _____, even though doing so may _____.
(A) Fosters her own self-interest; favor another's self-interest
(B) Is the "right" thing to do; go against her own self-interest
(C) Is the "wrong" thing to do; go against her own self-interest
(D) May help another person; favor her own self-interest
(E) Go against her own self-interests; is the "wrong" thing to do
9. The _____ rule is that an ethical decision is one that distributes rewards and harm in a fair way.
(A) Justice
(B) Moral Rights
(C) Utilitarian
(D) Practical
(E) Existential
10. The Target retail store in Scottsdale, Arizona stocks baby trailers for bicycles because its customers want to buy this product in this store, even though Target does not typically stock this product in its other stores. This is an example of:
(A) Procedural justice.
(B) Distributive justice.
(C) Managing diversity.
(D) Bias.
(E) The ombudsman effect.
11. A group of managers interviewing job applicants ask each job applicant: "What are your unique qualifications for this job?" Which type of interviewing is being used?
(A) Unstructured
(B) Situational
(C) Role-playing
(D) Structured
(E) Ad hoc
12. A white, female manager assumes a number of things about a subordinate that are inaccurate just because that subordinate is a black male and "all black males are like that." This manager is exhibiting:
(A) The similar-to-me effect.
(B) Quid pro quo harassment.
(C) The glass ceiling.
(D) Stereotyping.
(E) A hostile work environment.

背面有題

試題請隨卷繳回

國立中山大學 108 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

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共 6 頁第 3 頁

13. When a manager knowingly and willingly denies a subordinate an opportunity for promotion within the organization because that subordinate is "different from" the manager, what has occurred?
 - (A) Sexual harassment
 - (B) Proactive approach
 - (C) Whistle-blowing
 - (D) Overt discrimination
 - (E) The glass ceiling
14. Which of the following is true of strategic planning in a firm?
 - (A) Strategic planning focuses on the firm's internal environment rather than the external environment.
 - (B) Strategic planning involves the formulation of supporting objectives for business units based on the company's mission statement.
 - (C) Strategic planning occurs at the business-unit, product, and market levels rather than a company-wide level.
 - (D) Strategic planning deals with adapting the firm to take advantage of opportunities in its changing environment.
 - (E) Strategic planning deals with maintaining the company's current business ventures.
15. The process by which experienced members of the organization provide guidance and advice to newer members is called:
 - (A) Quid pro quo
 - (B) Networking
 - (C) Mentoring
 - (D) Performance appraisal
 - (E) Career planning
16. A male manager makes a remark to a female manager that she considers to be a sexually demeaning remark about her appearance. This male manager has exhibited:
 - (A) Quid pro quo sexual harassment.
 - (B) The glass ceiling.
 - (C) The similar-to-me effect.
 - (D) The salience effect.
 - (E) A hostile work environment.
17. A major competitor of XYZ, Inc. suddenly creates a new type product that makes XYZ's products obsolete. This is an example of which type of force in the environment?
 - (A) General environment
 - (B) Task environment
 - (C) Economic environment
 - (D) Legal environment
 - (E) Political environment
18. The collection of values that a society considers important and the norms of behavior that are approved by the society is(are) known as:
 - (A) Sociocultural forces.
 - (B) Economies of scale.
 - (C) The national culture.
 - (D) The task environment.
 - (E) The general environment.

國立中山大學 108 學年度碩士暨碩士專班招生考試試題

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19. The process of dividing a market into distinct groups of buyers with different needs, characteristics, or behaviors is called _____.
- (A) Diversification
 - (B) Market penetration
 - (C) Market targeting
 - (D) Positioning
 - (E) Market segmentation
20. In the administrative model of decision making, when the number of possible alternatives to a decision is so large that the manager cannot possibly evaluate all of them before making a decision, this is called:
- (A) Satisficing.
 - (B) Bounded rationality.
 - (C) Brainstorming.
 - (D) Devil's advocacy.
 - (E) The optimum decision.
21. Which type of organizational strategy states the industries and markets in which the organization intends to compete?
- (A) Divisional-level strategy
 - (B) Departmental-level strategy
 - (C) Functional-level strategy
 - (D) Corporate-level strategy
 - (E) Business-level strategy
22. The company that customizes every product to the unique demands of individual customers is likely to see its cost structure:
- (A) Become obsolete
 - (B) Rise as unit revenues rise
 - (C) Become lower as demand increases rapidly
 - (D) Become so high that unit costs exceed unit revenues
 - (E) All of the above
23. A manager increases the number of tasks that a subordinate has to perform in order to attempt to make the job more interesting for the subordinate. This is called:
- (A) Job simplification.
 - (B) Job enlargement.
 - (C) Job enrichment.
 - (D) A matrix structure.
 - (E) A functional job structure.
24. The _____ required for the job of chemical researcher for Monsanto Company is _____ than that required by the job of "food server" in a McDonald's restaurant.
- (A) Skill variety; higher
 - (B) Autonomy; lower
 - (C) Task significance; lower
 - (D) Task identity; lower
 - (E) None of the above

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25. An organization gives very specific specifications to its suppliers of raw materials the organization needs to produce goods, in an attempt to improve the quality of those raw materials. This is an example of:
- (A) Concurrent control.
 - (B) Feedforward control.
 - (C) Feedback control.
 - (D) Bureaucratic control.
 - (E) MBO control.
26. The direct costs associated with producing a specific product are subtracted from the net revenues received from the sale of this product. The resulting figure is called:
- (A) Net income.
 - (B) Operating profit.
 - (C) Cash flow.
 - (D) Gross profit margin.
 - (E) The liquidity ratio.
27. When newly-hired programmers at Microsoft Corporation join small work teams so that experienced workers can serve as mentors to them while they are adjusting to their new job, this is an example of which component of the HRM process?
- (A) Recruitment
 - (B) Selection
 - (C) Performance appraisal
 - (D) Performance feedback
 - (E) Training and development
28. Negative reinforcement involves _____ negative consequences when functional behaviors are performed and punishment involves _____ negative consequences when dysfunctional behaviors are performed.
- (A) Removing; removing
 - (B) Administering; administering
 - (C) Removing; administering
 - (D) Administering; removing
 - (E) None of the above
29. A production supervisor delegates to a production worker the responsibility to schedule his own work activities depending on the job requirements on the daily schedule. What type of transfer of authority has occurred?
- (A) Referent power
 - (B) Empowerment
 - (C) Relationship-oriented power
 - (D) Consideration power
 - (E) None of the above
30. Which of the following is NOT a factor in deciding what communication medium a manager should use?
- (A) Information richness of a medium.
 - (B) The manager's personality.
 - (C) Time needed for communication.

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- (D) Need for a paper trail.
- (E) All of the above are factors.

二、申論題(12分)：請扼要切題的回答，切忌長篇大論不知所云。

企業的成長可以透過產品/市場的擴張來達成，學理上稱之為安索夫矩陣(Ansoff Matrix)或產品/市場擴張方格。請解釋何謂安索夫矩陣，並以一實際案例說明安索夫矩陣的應用。

三、時事題(13分)：請扼要切題的回答，切忌長篇大論不知所云。

關於零售通路的未來發展，某一商管雜誌曾於近期內，提出以下的觀點：「業界普遍認為，未來能進行 O2O (Online to Offline)，即線上線下虛實通路整合的企業才能勝出，虛實整合趨勢不可擋，廠商必須快速轉型，未來能做好虛跟實整合者才能成功。」您同意或不同意以上的觀點？請以影響企業管理的環境要素做為分析架構，詳細論述您同意或不同意的理由。