

國立中山大學 112 學年度 碩士班暨碩士在職專班招生考試試題

科目名稱：統計學【財管系碩士班甲組、乙組、丙組】

—作答注意事項—

考試時間：100 分鐘

- 考試開始鈴響前不得翻閱試題，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，請衡酌作答(不得另攜帶紙張，亦不得使用應考證空白處作為計算紙使用)。
- 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，後果由考生自負。
- 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。

國立中山大學 112 學年度碩士班暨碩士在職專班招生考試試題

科目名稱：統計學【財管系碩士班甲組、乙組、丙組】
※本科目依簡章規定「不可以」使用計算機(選擇題)

題號：443001
共 6 頁第 1 頁

注意事項：各題的計分方式與配分不完全相同，請參考各部份開頭說明。如有需要，可參考最後一頁公式。

第一部份：單選題（第 1-4 題，總共 20 分，每題 5 分，答錯倒扣 1.6 分，至多扣至本部份總分為零分；未作答者，該題以零分計。）

【題組：包括第 1-4 題。再次提醒：第 1-4 題為單選題。】

令 $\{Z_1, Z_2, Z_3, Z_4\}$ 為一組連續型隨機樣本，其中每一個隨機變數皆服從標準常態分配，期望值皆為 0，變異數皆為 1。

1. $Z_1^2 + Z_2^2 + Z_3^2 + Z_4^2$ 的變異數是以下何者？
(A) 2 (B) 4 (C) 8 (D) 12 (E) 16
2. $\frac{Z_1^2}{Z_2^2}$ 的變異數是以下何者？
(A) 1 (B) π (C) 2 (D) $\frac{1}{\pi}$ (E) 以上皆非
3. 令隨機變數 $Y = \frac{Z_1^2}{Z_1^2 + Z_2^2}$ ，Y 的變異數是以下何者？
(A) $\frac{1}{4}$ (B) $\frac{1}{8}$ (C) $\frac{1}{16}$ (D) $\frac{1}{24}$ (E) 以上皆非
4. 令隨機變數 $T = \frac{2(Z_1^2 + Z_2^2)}{Z_1^2 + Z_2^2 + Z_3^2 + Z_4^2}$ ，T 的變異數是以下何者？
(A) $\frac{1}{3}$ (B) $\frac{1}{6}$ (C) $\frac{1}{12}$ (D) $\frac{1}{18}$ (E) 以上皆非

第二部份：複選題（第 5-9 題，總共 80 分，每題 16 分且各有 5 個選項，每錯一選項扣 3.8 分，至多倒扣至該小題分數為零分；得分低於零分或所有選項均未作答者，該題以零分計。）

提醒：若無特別說明，母體皆為常態分配。表格中出現(??)或空白是指表格原有這些文字或符號或數據，作答時若有用到需自行判斷或計算。

【再次提醒：從下一頁開始的題目為複選題。】

國立中山大學 112 學年度碩士班暨碩士在職專班招生考試試題

科目名稱：統計學【財管系碩士班甲組、乙組、丙組】
※本科目依簡章規定「不可以」使用計算機(選擇題)

題號：443001
共 6 頁第 2 頁

5. 研究者想了解成年人對於金融知識的了解程度，設計測驗問卷請受測者回答並予以評分。這次的研究共有 16 位受測者，得分由小至大排列如下：
- 32 35 37 45 46 56 58 61 65 70 72 77 79 85 88 90
- 研究者運用 R 語言進行統計分析，將以上 16 個數據存放在 `f_grade` 變數中，並且想了解以下內容：
- (i) 這 16 個數據的敘述統計；
 - (ii) 金融知識測驗分數的母體平均數是否為 60 分，使用指令 `t.test(f_grade, mu=60, alternative="two.sided", conf.level=0.95)`，得到表一；
 - (iii) 及格標準若為 60 分，母體及格比例是否大於 0.5，使用指令 `prop.test(9,16,0.5,alternative="greater", correct=F)`，得到表二。
- 以下敘述哪些或哪一項正確？
- (A) 使用 `summary(f_grade)`指令，得到的第一四分位數是 45.5。
 - (B) 表一(甲)這格數字大於 72.5。
 - (C) 如果信心水準改為 90%，則表一雙尾信賴區間的寬度會變窄。
 - (D) 表二(乙)這格數字等於 0.25。
 - (E) 表二(丙)這格數字小於 0.8。

表一：用於回答第 5 題

One Sample t-test data: f_grade t = 0.46886, df = (??), p-value = 0.6459 alternative hypothesis: true mean is not equal to 60 95 percent confidence interval: 52.02145 (甲) sample estimates: mean of x 62.25
--

表二：用於回答第 5 題

1-sample proportions test without continuity correction data: 9 out of 16, null probability 0.5 X-squared = (乙), df = (??), p-value = 0.3085 alternative hypothesis: true p is greater than 0.5 95 percent confidence interval: 0.3645782 (丙) sample estimates: p (??)
--

國立中山大學 112 學年度碩士班暨碩士在職專班招生考試試題

科目名稱：統計學【財管系碩士班甲組、乙組、丙組】

題號：443001

※本科目依簡章規定「不可以」使用計算機(選擇題)

共 6 頁第 3 頁

6. 考慮下列迴歸模型： $Y_i = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \beta_3 x_{i3} + \varepsilon_i$ ，其中 i 表示第 i 組樣本，誤差項 ε_i 為 *i.i.d.* 且 $\varepsilon_i \sim ND(0, \sigma^2)$ ， $i = 1, 2, \dots, n$ 。研究者取得的 Y 、 x_1 、 x_2 、 x_3 資料數據皆為正數，而且自變數之間沒有線性重合。如果樣本數 $n = 200$ ，以下敘述哪些或哪一項正確？
- (A) 考慮假設檢定：虛無假設是 $\beta_0 = 0$ ，對立假設是 $\beta_0 \neq 0$ ，如果得到不拒絕虛無假設的結論，最好是重跑另一個無截距模型（自變數仍為 x_1 、 x_2 、 x_3 ，應變數仍為 Y ），用無截距模型對 β_1 、 β_2 、 β_3 進行推論。
- (B) 考慮兩組假設檢定：(i) 虛無假設是 $\beta_1 = \beta_2 = \beta_3 = 0$ ，對立假設是 β_1 、 β_2 、 β_3 不全為 0；(ii) 虛無假設是 $\beta_1 = 0$ ，對立假設是 $\beta_1 \neq 0$ 。在顯著水準為 0.05 的前提下如果在第(ii)組得到拒絕虛無假設的結論，則第(i)組也會得到拒絕虛無假設的結論。
- (C) 考慮假設檢定：虛無假設是 $\beta_2 = 0$ ，對立假設是 $\beta_2 \neq 0$ 。在顯著水準為 0.05 的前提下如果得到不拒絕虛無假設的結論，我們將第二個自變數由 x_2 改為 $\ln(x_2)$ 並且同時考慮自變數 x_1 與 x_3 ，重跑迴歸後，同樣會得到不拒絕虛無假設的結論。
- (D) 考慮假設檢定：虛無假設是 $\beta_3 = 0$ ，對立假設是 $\beta_3 \neq 0$ 。在顯著水準為 0.05 的前提下如果得到不拒絕虛無假設的結論，當顯著水準改為 0.1，有可能得到拒絕虛無假設的結論。
- (E) 設定 $x_3 = (x_2)^2$ ，考慮兩組假設檢定：(i) 虛無假設是 $\beta_2 = 0$ ，對立假設是 $\beta_2 \neq 0$ ；(ii) 虛無假設是 $\beta_3 = 0$ ，對立假設是 $\beta_3 \neq 0$ 。在顯著水準為 0.05 的前提下如果在第(ii)組得到拒絕虛無假設的結論，第(i)組未必得到拒絕虛無假設的結論。

國立中山大學 112 學年度碩士班暨碩士在職專班招生考試試題

科目名稱：統計學【財管系碩士班甲組、乙組、丙組】

題號：443001

※本科目依簡章規定「不可以」使用計算機(選擇題)

共 6 頁第 4 頁

7. 研究者想要了解某產業的產出(Y)、勞動投入(L)、資本投入(K)三者間的關係，設計下列迴歸模型：

$$\ln Y_i = \beta_0 + \beta_1 \ln L_i + \beta_2 \ln K_i + \varepsilon_i$$

其中 i 表示第 i 個公司， ε_i 表示誤差項。研究者收集該產業 61 家公司於去年年底的財務資料，以適當的代理變數衡量 Y 、 L 、 K ，其中產出 Y 與資本投入 K 的衡量單位皆為千元，勞動投入 L 的衡量單位為人數。使用 R 語言進行迴歸分析，報表部份內容如表三所示（有些數字經四捨五入處理）。以下敘述哪些或哪一項正確？

- (A) 在 R 語言若要對於某個數據取自然對數，可運用函數 \ln 。
- (B) 表三(丁)這格數字大於(戊)這格數字。
- (C) β_1 的係數估計值意義是：在其他條件不變的前提下，當勞動投入增加 1%，產出將增加 0.57%。
- (D) 如果 Y 、 L 的數據不變，但是將資本投入(K)的數據單位調整成以「元」為單位，新的分析結果 β_2 的估計值仍為 0.278。
- (E) 考慮假設檢定：虛無假設是 $\beta_1 + \beta_2 = 1$ ，對立假設是 $\beta_1 + \beta_2 \neq 1$ ，由表三可推得拒絕虛無假設的結論。

表三：用於回答第 7 題

Call:				
lm(formula = lny ~ lnL + lnK)				
Residuals:				
Min	1Q	Median	3Q	Max
-2.3969	-0.6511	0.1407	0.7615	1.6871
Coefficients:				
	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	8.091	(??)	(??)	(??) ***
lnL	0.570	(??)	(??)	(??) **
lnK	0.278	(??)	(??)	(??) *

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1				
Residual standard error: (??) on (??) degrees of freedom				
Multiple R-squared: (丁), Adjusted R-squared: (戊)				
F-statistic: 59.78 on (??) and (??) DF, p-value: (??)				

國立中山大學 112 學年度碩士班暨碩士在職專班招生考試試題

科目名稱：統計學【財管系碩士班甲組、乙組、丙組】
 ※本科目依簡章規定「不可以」使用計算機(選擇題)

題號：443001
 共 6 頁第 5 頁

8. 某金融機構一年前在網路銀行推出某項理財功能（稱為 N 功能），現在想要了解什麼特質的客戶會在網路銀行使用 N 功能。研究部門抽樣取得 1000 位客戶資料並進行羅吉斯迴歸分析，模型如下：

$$E(Y) = \frac{e^{\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3}}{1 + e^{\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3}}$$

就第 i 位客戶而言， $Y = 1$ 表示曾使用 N 功能， $Y = 0$ 表示從未使用 N 功能。此外考慮三個自變數： x_1 為表示客戶性別的虛擬變數， $x_1 = 1$ 代表女客戶， $x_1 = 0$ 代表男客戶； x_2 為客戶過去一年內曾到實體銀行財富管理部門現場洽詢的次數； x_3 為客戶年收入（單位為百萬元）。使用 R 語言進行羅吉斯迴歸分析，報表部份內容如表四所示（有些數字經四捨五入處理）。以下敘述哪些或哪一項正確？

- (A) 表四(己)這格數字為介於 -1.96 與 +1.96 之間。
- (B) 表四(庚)這格數字為 999。
- (C) 表四(辛)這格數字為 997。
- (D) 如果調整 x_3 的數據單位，年收入改用「千萬元」為單位，而且 Y 、 x_1 、 x_2 的數據不變，則新的分析結果 β_3 的估計值為 0.0575。
- (E) 「是否曾使用網路銀行的 N 功能」這件事與性別無關。

表四：用於回答第 8 題

Coefficients:	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-1.621	(??)	(??)	(??) **
x1	-0.131	(??)	(??)	(??)
x2	-0.130	(??)	(己)	(??) *
x3	0.575	(??)	(??)	(??) *

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1				
(Dispersion parameter for binomial family taken to be 1)				
Null deviance: 1239.8 on (庚) degrees of freedom				
Residual deviance: 1227.7 on (辛) degrees of freedom				
AIC: 1235.7				
Number of Fisher Scoring iterations: 4				

國立中山大學 112 學年度碩士班暨碩士在職專班招生考試試題

科目名稱：統計學【財管系碩士班甲組、乙組、丙組】
 ※本科目依簡章規定「不可以」使用計算機(選擇題)

題號：443001
 共 6 頁第 6 頁

9. 令 $\{X_1, X_2, \dots, X_n\}$ 為一組連續型隨機樣本，樣本數 n 固定且有限，其中每一個隨機變數皆服從常態分配，期望值皆為 μ ，變異數皆為 σ^2 ，而且 μ 與 σ^2 皆未知。令 $\bar{X} = \frac{\sum_{i=1}^n X_i}{n}$ ， $S^2 = \frac{\sum_{i=1}^n (X_i - \bar{X})^2}{n-1}$ ，以下敘述哪些或哪一項正確？
- (A) \bar{X} 與 $(X_1 - \bar{X})$ 之間彼此獨立。
- (B) \bar{X} 與 S^2 之間彼此獨立。
- (C) S^2 的變異數為 $\frac{2\sigma^4}{n-1}$ 。
- (D) S^2 為 σ^2 的充分統計量。
- (E) S^4 為 σ^4 的不偏估計元。

【參考公式】

- 若 X 服從自由度為 r 的卡方分配，機率密度函數如下：

$$f(x) = \begin{cases} \frac{1}{\Gamma(\frac{r}{2}) \cdot 2^{(r/2)}} x^{(r/2)-1} \cdot e^{-\frac{x}{2}} & \text{if } x > 0 \\ 0 & \text{otherwise} \end{cases}$$

- 若 X 服從自由度為 r 的 t 分配，機率密度函數如下：

$$f(x) = \frac{\Gamma(\frac{r+1}{2})}{\Gamma(\frac{r}{2})} \frac{1}{\sqrt{\pi r}} \frac{1}{\left(1 + \left(\frac{x^2}{r}\right)\right)^{\frac{r+1}{2}}}, \quad -\infty < x < \infty$$

- 若 X 服從自由度為 (m, n) 的 F 分配，機率密度函數如下：

$$f(x) = \begin{cases} \frac{\Gamma(\frac{m+n}{2})}{\Gamma(\frac{m}{2})\Gamma(\frac{n}{2})} \cdot \left(\frac{m}{n}\right)^{\frac{m}{2}} \cdot \frac{x^{(m/2)-1}}{\left(1 + \left(\frac{m}{n}x\right)\right)^{\frac{m+n}{2}}} & \text{if } x > 0 \\ 0 & \text{otherwise} \end{cases}$$

【試題至此全部結束，以下無其他試題】

國立中山大學 112 學年度 碩士班暨碩士在職專班招生考試試題

科目名稱：財務管理【財管系碩士班丙組】

— 作答注意事項 —

考試時間：100 分鐘

- **考試開始鈴響前不得翻閱試題，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，請斟酌作答(不得另攜帶紙張，亦不得使用應考證空白處作為計算紙使用)。
- 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，後果由考生自負。
- 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。**

國立中山大學 112 學年度碩士班暨碩士在職專班招生考試試題

科目名稱：財務管理【財管系碩士班丙組】

題號：443002

※本科目依簡章規定「不可以」使用計算機(混合題)

共 6 頁第 1 頁

第一部分：單選題(總共 25 題，每題 2 分，配分 50 分)

1. Home bias refers to

- (A). the tendency to give preferential treatment to people from your home country.
- (B). the tendency to vacation in your home country instead of traveling abroad.
- (C). the tendency to believe that your home country is better than other countries.
- (D). the tendency to overweight investments in your home country.
- (E). None of the options.

2. There are 3 directors' seats up for election. If you own 1,000 shares of stock and you can cast 3,000 votes for a particular director, this is illustrative of:

- (A). cumulative voting.
- (B). sequential voting.
- (C). straight voting.
- (D). absolute priority voting.
- (E). none of these.

3. If Microsoft were to acquire U.S. Airways, the acquisition would be classified as a _____ acquisition.

- (A). horizontal.
- (B). conglomerate.
- (C). vertical.
- (D). longitudinal.
- (E). complementary resources.

4. Generous compensation packages paid to a firm's top management in the event of a takeover are referred to as:

- (A). white knights.
- (B). poison puts.
- (C). golden parachutes.
- (D). shark repellents.
- (E). bear hugs.

5. Credit default swaps:

- (A). will pay the holder the LIBOR interest rate.
- (B). pay the borrower the LIBOR interest rate.
- (C). limit the amount of borrowing of all parties in the credit default swap.
- (D). are like insurance against a loss of value if the firm defaults on a bond.
- (E). none of these.

6. If you ignore taxes and transaction costs, a stock repurchase will:

- I. reduce the total assets of a firm.
- II. increase the earnings per share.
- III. reduce the PE ratio more than an equivalent stock dividend.
- IV. reduce the total equity of a firm.

- (A). I and III only.
- (B). II and IV only.
- (C). I, III, and IV only.
- (D). I, II, III, and IV.
- (E). I, II, and IV only.

國立中山大學 112 學年度碩士班暨碩士在職專班招生考試試題

科目名稱：財務管理【財管系碩士班丙組】

題號：443002

※本科目依簡章規定「不可以」使用計算機(混合題)

共 6 頁第 2 頁

7. A reverse stock split is sometimes used as a means of:
- (A). decreasing the market value per share of stock.
 - (B). increasing the number of stockholders.
 - (C). keeping a firm's stock eligible for trading on a stock exchange.
 - (D). raising cash from current stockholders.
8. Kahneman and Tversky (1973) report that _____ and _____.
- (A). people give too little weight to recent experience compared to prior beliefs; tend to make forecasts that are too extreme given the uncertainty of their information.
 - (B). people give too much weight to recent experience compared to prior beliefs; tend to make forecasts that are too extreme given the uncertainty of their information.
 - (C). people give too little weight to recent experience compared to prior beliefs; tend to make forecasts that are not extreme enough given the uncertainty of their information.
 - (D). people give too much weight to recent experience compared to prior beliefs; tend to make forecasts that are not extreme enough given the uncertainty of their information.
9. A bond manager who wishes to hold the bond with the greatest potential volatility would be wise to hold:
- (A). short-term, high-coupon bonds.
 - (B). long-term, low-coupon bonds.
 - (C). short-term, zero-coupon bonds.
 - (D). short-term, low-coupon bonds.
 - (E). long-term, zero-coupon bonds.
10. Assume the following information for a bank quoting on spot exchange rates:
Exchange rate of Singapore dollar in U.S. \$ = \$.60
Exchange rate of pound in U.S. \$ = \$1.50
Exchange rate of pound in Singapore dollars = S\$2.6
- Based on the information given, as you and others perform triangular arbitrage, what should logically happen to the spot exchange rates?
- (A). The Singapore dollar value in U.S. dollars should appreciate, the pound value in U.S. dollars should appreciate, and the pound value in Singapore dollars should depreciate.
 - (B). The Singapore dollar value in U.S. dollars should depreciate, the pound value in U.S. dollars should appreciate, and the pound value in Singapore dollars should depreciate.
 - (C). The Singapore dollar value in U.S. dollars should depreciate, the pound value in U.S. dollars should appreciate, and the pound value in Singapore dollars should appreciate.
 - (D). The Singapore dollar value in U.S. dollars should appreciate, the pound value in U.S. dollars should depreciate, and the pound value in Singapore dollars should appreciate.
11. If interest rate parity exists and transactions costs are zero, the hedging of payables in euros with a forward hedge will _____.
- (A). require more dollars than a money market hedge.
 - (B). have the same result as a put option hedge on payables.
 - (C). have the same result as a call option hedge on payables.
 - (D). have the same result as a money market hedge on payables.
 - (E). A and D.

國立中山大學 112 學年度碩士班暨碩士在職專班招生考試試題

科目名稱：財務管理【財管系碩士班丙組】

題號：443002

※本科目依簡章規定「不可以」使用計算機(混合題)

共 6 頁第 3 頁

12. Bond stripping and bond reconstitution offer opportunities for _____, which can occur if the _____ is violated.
- (A). arbitrage; law of one price.
 - (B). arbitrage; restrictive covenants.
 - (C). huge losses; law of one price.
 - (D). huge losses; restrictive covenants.
13. An important difference between CAPM and APT is
- (A). CAPM depends on risk-return dominance; APT depends on a no arbitrage condition.
 - (B). CAPM assumes many small changes are required to bring the market back to equilibrium; APT assumes a few large changes are required to bring the market back to equilibrium.
 - (C). both CAPM depends on risk-return dominance; APT depends on a no arbitrage condition and CAPM assumes many small changes are required to bring the market back to equilibrium; APT assumes a few large changes are required to bring the market back to equilibrium.
 - (D). implications for prices derived from CAPM arguments are stronger than prices derived from APT arguments.
 - (E). all of the options are true.
14. When computing yield to maturity, the implicit reinvestment assumption is that the interest payments are reinvested at the
- (A). coupon rate.
 - (B). current yield.
 - (C). yield to maturity at the time of the investment.
 - (D). the average yield to maturity throughout the investment period.
 - (E). prevailing yield to maturity at the time interest payments are received.
15. Which of the following are examples of an incremental cash flow?
- I. An increase in accounts receivable.
 - II. A decrease in net working capital.
 - III. An increase in taxes.
 - IV. A decrease in the cost of goods sold.
- (A). I and III only.
 - (B). I and IV only.
 - (C). I, III, and IV only.
 - (D). III and IV only.
 - (E). I, II, III, and IV.
16. The change in firm value in the presence of corporate taxes only is:
- (A). positive as equityholders face a lower effective tax rate.
 - (B). positive as equityholders gain the tax shield on the debt interest.
 - (C). negative because of the increased risk of default and fewer shares outstanding.
 - (D). negative because of a reduction of equity outstanding.
 - (E). none of these.

國立中山大學 112 學年度碩士班暨碩士在職專班招生考試試題

科目名稱：財務管理【財管系碩士班丙組】

題號：443002

※本科目依簡章規定「不可以」使用計算機(混合題)

共 6 頁第 4 頁

17. Using the CAPM to calculate the cost of capital for a risky project assumes that:
- (A). using the firm's beta is the same measure of risk as the project.
 - (B). the firm is all-equity financed.
 - (C). the financial risk is equal to business risk.
 - (D). both using the firm's beta is the same measure of risk as the project; and the financial risk is equal to business risk.
 - (E). both using the firm's beta is the same measure of risk as the project; and the firm is all-equity financed.
18. Assume that interest rate parity holds. The Mexican interest rate is 5%, and the U.S. interest rate is 8%. Subsequently, the U.S. interest rate decreases to 7%. According to interest rate parity, the peso's forward _____ will _____.
- (A). discount; increase.
 - (B). discount; decrease.
 - (C). premium; increase.
 - (D). premium; decrease.
19. Before expiration, the time value of an at-the-money put option is always
- (A). equal to zero.
 - (B). equal to the stock price minus the exercise price.
 - (C). negative.
 - (D). positive.
 - (E). none of the options
20. The term structure of interest rates is
- (A). the relationship between the rates of interest on all securities.
 - (B). the relationship between the yield on a bond and its default rate.
 - (C). the relationship between the interest rate on a security and its time to maturity.
 - (D). all of the options.
 - (E). none of the options.
21. Other things equal, the price of a stock put option is positively correlated with which of the following factors?
- (A). the stock price, and the time to maturity.
 - (B). the risk-free interest rate.
 - (C). the stock volatility, and stock price.
 - (D). the exercise price, and the risk-free interest rate.
 - (E). the stock volatility, and the exercise price.
22. Camille's Café is considering a project which will produce sales of \$17,500 and increase cash expenses by \$12,000. If the project is implemented, taxes will increase from \$23,000 to \$24,500 and depreciation will increase from \$4,000 to \$5,500. What is the amount of the operating cash flow using the top-down approach?
- (A). \$2,500.
 - (B). \$4,000.
 - (C). \$5,500.
 - (D). \$17,500.
 - (E). \$29,500.

國立中山大學 112 學年度碩士班暨碩士在職專班招生考試試題

科目名稱：財務管理【財管系碩士班丙組】

題號：443002

※本科目依簡章規定「不可以」使用計算機(混合題)

共 6 頁第 5 頁

23. The Norris Co. has an improved version of its hotel stand. The investment cost is expected to be \$72 million and will return \$13.5 million for 5 years in net cash flows. The ratio of debt to equity is 1 to 1. The cost of equity is 13%, the cost of debt is 9%, and the tax rate is 34%. The appropriate discount rate, assuming average risk, is:

- (A). 7.59%.
- (B). 8.65%.
- (C). 9.01%.
- (D). 9.47%.
- (E). 10.50%.

24. Thompson & Thomson is an all equity firm that has 500,000 shares of stock outstanding. The company is in the process of borrowing \$8 million at 9% interest to repurchase 200,000 shares of the outstanding stock. What is the value of this firm if you ignore taxes?

- (A). \$20.0 million.
- (B). \$20.8 million.
- (C). \$21.0 million.
- (D). \$21.2 million.
- (E). \$21.3 million.

25. Assume that the spot rate of the Singapore dollar is \$0.664. The ADR of a Singapore firm is convertible into 3 shares of stock. The price of an ADR is \$20. What is the share price of the firm in Singapore dollars?

- (A). 4.52.
- (B). 6.67.
- (C). 10.00.
- (D). 13.28.
- (E). 39.84.

第二部分：問答與計算題(總共 5 題，配分 50 分)

1.

- A. Please display a figure to draw Interest Rate Parity line. The y-axis is the interest rate difference between home and foreign markets and the x-axis is the forward rate premium. (4%)
- B. Please point out which area in the figure the potential covered interest arbitrage by investors residing in the home and foreign country. (3%)
- C. Please describe how much profits from covered interest arbitrage if the opportunity lies on Interest Rate Parity line. (4%)

2.

- A. Please define what is the agency problem and the two types of agency problems. (7%)
- B. Please provide examples of the two types of agency problems in corporate finance (4%).

3.

- A. Please define the corporate governance mechanism (3%).
- B. Please describe the internal and external governance mechanisms and provide the definition and example for each corporate governance mechanism in the framework (6%).

國立中山大學 112 學年度碩士班暨碩士在職專班招生考試試題

科目名稱：財務管理【財管系碩士班丙組】

題號：443002

※本科目依簡章規定「不可以」使用計算機(混合題)

共 6 頁第 6 頁

4. A portfolio management organization analyzes 60 stocks and constructs a mean-variance efficient portfolio using only these 60 securities.
- A. How many estimates of expected returns, variances, and covariances are needed to optimize this portfolio? (4%)
- Estimates of expected returns:
Estimates of variances:
Estimates of covariances:
Total estimates:
- B. If one could safely assume that stock market returns closely resemble a single-index structure, how many estimates of alpha, beta, variance, market risk premium, and macroeconomic factor would be needed? (6%)
- Index-model
- Estimates of alpha:
Estimates of beta:
Estimates of variances:
market risk premium:
macroeconomic factor:
Total estimates:
5. You are evaluating two investment alternatives. One is a passive market portfolio with an expected return of 10% and a standard deviation of 16%. The other is a fund that is actively managed by your broker. This fund has an expected return of 15% and a standard deviation of 20%. The risk-free rate is currently 7%. Answer the questions below based on this information.
- A. What is the slope of the capital market line? (3%)
- B. What is the slope of the capital allocation line offered by your broker's fund? (3%)
- C. What is the maximum fee your broker could charge and still leave you as well off as if you had invested in the passive market fund? (Assume that the fee would be a percentage of the investment in the broker's fund and would be deducted at the end of the year.) (3%)

國立中山大學 112 學年度 碩士班暨碩士在職專班招生考試試題

科目名稱：微積分【財管系碩士班甲組】

— 作答注意事項 —

考試時間：100 分鐘

- 考試開始鈴響前不得翻閱試題，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，請衡酌作答(不得另攜帶紙張，亦不得使用應考證空白處作為計算紙使用)。
- 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，後果由考生自負。
- 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。

國立中山大學 112 學年度碩士班暨碩士在職專班招生考試試題

科目名稱：微積分【財管系碩士班甲組】

題號：443003

※本科目依簡章規定「不可以」使用計算機(問答申論題)

共 2 頁第 1 頁

1. (10%)

For the following functions from \mathbb{R} to \mathbb{R} , determine (1) where they are differentiable and (2) find their derivatives:

(a) $f(x) = |x| + |x + 3|$ (5%)

(b) $g(x) = x|x|$ (5%)

2. (20%)

For the following functions, (1) find the points of relative extrema, (2) the intervals on which the functions are increasing and (3) the intervals on which they are decreasing

(a) $f(x) = x + 2/x$, for $x \neq 0$ (10%)

(b) $g(x) = \sqrt{x} - 2\sqrt{x+4}$, for $x > 0$ (10%)

3. (25%)

Find the following limits

(a) $\lim_{x \rightarrow 0^+} \frac{\ln(x+1)}{\sin x}$, for $0 < x < \pi/2$ (7%)

(b) $\lim_{x \rightarrow 0^+} x \ln x$, for $0 < x < \infty$ (6%)

(c) $\lim_{x \rightarrow 0^+} x^x$, for $0 < x < \infty$ (6%)

(d) $\lim_{x \rightarrow \infty} \left(1 + \frac{1}{x}\right)^x$, for $1 < x < \infty$ (6%)

4. (15%)

Find the derivative of $F(x)$ when F is defined on $[0, 1]$:

(a) $F(x) = \int_0^{x^2} (1+t^3)^{-1} dt$ (7%)

(b) $F(x) = \int_{x^2}^x \sqrt{1+t^2} dt$ (8%)

國立中山大學 112 學年度碩士班暨碩士在職專班招生考試試題

科目名稱：微積分【財管系碩士班甲組】

題號：443003

※本科目依簡章規定「不可以」使用計算機(問答申論題)

共 2 頁第 2 頁

5. (30%)

Evaluate the following integrals

(a) $\int_0^1 t\sqrt{1+t^2} dt$ (10%)

(b) $\int_0^2 t^2(1+t^3)^{-1/2} dt$ (10%)

(c) $\int_1^4 \frac{\sqrt{1+\sqrt{t}}}{\sqrt{t}} dt$ (10%)

國立中山大學 112 學年度 碩士班暨碩士在職專班招生考試試題

科目名稱：經濟學【財管系碩士班乙組】

— 作答注意事項 —

考試時間：100 分鐘

- 考試開始鈴響前不得翻閱試題，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，請衡酌作答(不得另攜帶紙張，亦不得使用應考證空白處作為計算紙使用)。
- 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，後果由考生自負。
- 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。

國立中山大學 112 學年度碩士班暨碩士在職專班招生考試試題

科目名稱：經濟學【財管系碩士班乙組】

題號：443004

※本科目依簡章規定「不可以」使用計算機(混合題)

共 7 頁第 1 頁

壹、單選題，每題 2.5 分，總分 75 分

個體經濟學（16 題，總分 40 分）

1) Jean goes to her local sporting goods store to buy socks and jogging shorts. Socks cost \$10 per pair and jogging shorts cost \$15 each. At her current consumption bundle pair of 4 pairs of socks and 2 jogging shorts, her marginal benefit from the last pair of socks is 20 and the marginal benefit of the last jogging short is 30. Jean should _____.

- A) buy the same number of socks but buy an additional jogging short
- B) buy one more pair of socks and one fewer jogging short
- C) buy one more jogging short and one fewer pair of socks
- D) leave her consumption bundle unchanged

2) The following table shows the total output, variable costs, fixed costs, total costs, average total costs, and marginal costs of a firm, with some cells in the table intentionally left blank. What is the variable cost of producing 17 units of output?

Total Output (units)	Variable Costs (\$)	Fixed Costs (\$)	Total Cost (\$)	Average Total Cost (\$)	Marginal Cost (\$)
0	0	100			n.a.
5	10				
10			122		
14					2.50
17				8.24	

- A) \$100
- B) \$8.23
- C) \$40
- D) \$50

3) Is the producer surplus same as the profit?

- A) Yes, they are the same, because the producer surplus is the sum of profits from each unit sold.
- B) Yes, they are the same, because the profit is the revenue minus the sum of marginal costs of each unit sold.
- C) No, they are different, because the profit is always at least the producer surplus.
- D) No, they are different, because the producer surplus does not take into account the fixed cost.

4) If a new production process is developed that allows firms to produce the same output with fewer inputs, then the prices of the inputs _____.

- A) will rise due to increased supply of the inputs
- B) may rise due to increased production by existing firms and new firms' entry
- C) will fall due to increased demand for the inputs
- D) may fall due to decreased production by existing firms and/or exit

5) The figure below shows the potential gains from specialization for farms in Idaho and Iowa. Which of the following terms of trade will result in mutual gains for both Idaho and Iowa?

- A) Idaho offers to trade 1 ton of alfalfa for 50 bushels of corn
- B) Idaho offers to trade 1 ton of alfalfa for 40 bushels of corn
- C) Iowa offers to trade 20 bushels of corn for 1 ton of alfalfa
- D) Iowa offers to trade 15 bushels of corn for 1 ton of alfalfa

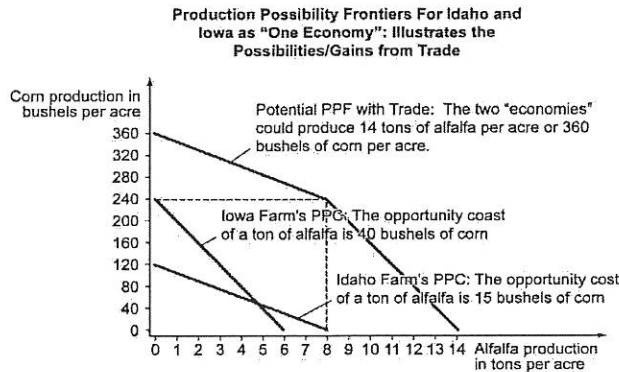
國立中山大學 112 學年度碩士班暨碩士在職專班招生考試試題

科目名稱：經濟學【財管系碩士班乙組】

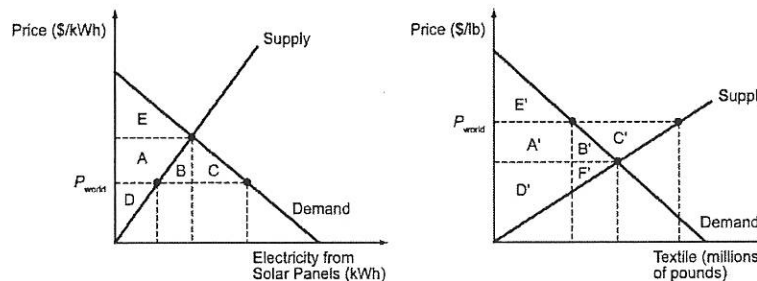
題號：443004

※本科目依簡章規定「不可以」使用計算機(混合題)

共 7 頁第 2 頁



6) The figures below show markets for solar panels and textiles in Banana Republic. P_{world} is the world price in each market.



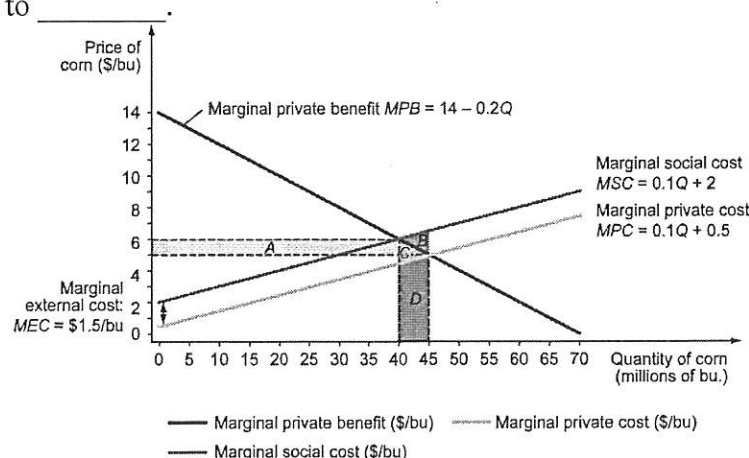
Suppose that, before Banana Republic opened up its markets to international trade, the domestic markets were in long-run equilibrium. All else being equal, what is expected to happen in the long run after the markets are opened up to trade?

- A) The new long-run equilibrium is achieved at the world price in each market.
- B) The price in each market will move toward the original long-run equilibrium price.
- C) Resources will shift from production of solar panels to production of textiles.
- D) Resources will shift from production of textiles to production of solar panels.

7) Which of the following gives rise to a pecuniary externality?

- A) Excessive consumption of alcohol leading to bad health
- B) A sudden increase in the demand for diamonds, leading to an increase in their prices
- C) Deforestation, leading to the extinction of many species
- D) Globalization, leading to the displacement of indigenous workers

8) Refer to the figure below. The deadweight loss arising in the private market equilibrium is area _____ and is equal to _____.



國立中山大學 112 學年度碩士班暨碩士在職專班招生考試試題

科目名稱：經濟學【財管系碩士班乙組】

題號：443004

※本科目依簡章規定「不可以」使用計算機(混合題)

共 7 頁第 3 頁

- A) A; \$60 million
- B) B; \$3.75 million
- C) C; \$3.75 million
- D) D; \$23.75 million

9) Suppose there are only three houses on a street. The following table shows each homeowner's willingness to pay for street lights. It costs \$700 to install a street light. If each homeowner on this street is left to purchase streetlights independently, then Homeowner 1 would purchase _____, Homeowner 2 would purchase _____, and Homeowner 3 would purchase _____ streetlight(s).

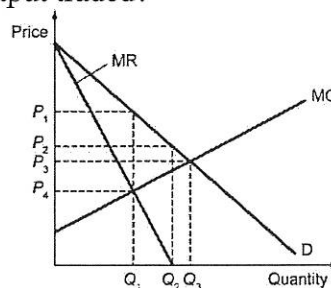
	Homeowner 1's Willingness to Pay	Homeowner 2's Willingness to Pay	Homeowner 3's Willingness to Pay
First street light	\$400	\$300	\$710
Second street light	\$350	\$200	\$300
Third street light	\$200	\$110	\$100
Fourth street light	\$100	\$30	\$40

- A) 1; 0; 2
- B) 1; 1; 2
- C) 0; 0; 2
- D) 0; 0; 1

10) A monopolist faces a linear, downward-sloping demand curve. If the slope of the demand curve is 2 (where price is on the y-axis and quantity on the x-axis) and the monopolist can sell four units of output at a price of \$16. What is the marginal revenue from selling the fourth unit of output?

- A) \$1
- B) \$4
- C) \$10
- D) \$18

11) The following figure shows the demand (D), marginal revenue (MR), and marginal cost (MC) curves for a monopolist. The monopolist can freely set its price, but the government agreed to compensate consumers for their loss in consumer surplus in comparison to the competitive outcome. What is the amount of compensation per unit of output traded?



- A) $(Q_3 - Q_1) (P_1 - P_4) / 2 Q_1$
- B) $(Q_3 - Q_1) (P_1 - P_4) / 2 Q_3$
- C) $(Q_3 - Q_1) (P_1 - P_3) / 2 Q_1$
- D) $(P_1 - P_3) [Q_1 + (Q_3 - Q_1) / 2] / Q_1$

12) There are two firms in an industry, Firm A and Firm B. Both firms sell a homogenous product. If one firm sets a price higher than the other firm, then all the demand goes to the firm setting the lower price. If prices are equal, the demand is shared equally between the two firms. The following figure depicts the

國立中山大學 112 學年度碩士班暨碩士在職專班招生考試試題

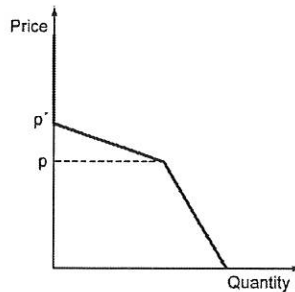
科目名稱：經濟學【財管系碩士班乙組】

題號：443004

※本科目依簡章規定「不可以」使用計算機(混合題)

共 7 頁第 4 頁

demand faced by Firm A. What is Firm B's strategy that could explain such a demand curve faced by Firm A?



- A) Firm B sets its price to p .
- B) Firm B sets its price to p' .
- C) Firm B sets its price to p' whenever the price of Firm A is greater than p , and sets a price equal to Firm A's whenever Firm A sets its price below p .
- D) Firm B equates Firm A's price for any price between p and p' and never sets a price outside this interval.

13) Tire Rack.com is an online seller of tires that currently has a 14 percent share of the replacement passenger and light truck tire market in the United States and has a 25 percent share in Canada. Tire Rack not only sells tires but also sells wheels and offers mounting and balancing services. It does not offer installation services, but it partners with 8,100 installation providers in the United States, all of whom agree to charge standard installation fees based on tire size. The online presence of Tire Rack.com _____.

- A) lowers search costs for the best tire deal and makes local tire markets more competitive regardless of the number of brick-and-mortar tire dealers
- B) lowers search costs for the best tire deal but has no impact on local tire markets, because it does not provide tire installation services
- C) lowers search costs for the best tire deal but actually makes local tire markets less competitive, because it has partnerships with tire installers
- D) does none of the above

14) The government of Westalis provided generous unemployment benefits to all unemployed workers in the country. However, the new government that came into power reduced the amount of unemployment insurance paid to each worker. This increased the average number of hours that unemployed workers spent daily looking for jobs. This suggests that _____ exists in the labor market in Westalis.

- A) the problem of moral hazard
- B) the tragedy of the commons
- C) a pecuniary externality
- D) a positive externality

15) Cath and Adam are playing a game. They are put in two different rooms and asked to choose between two colors: black and white. If they both choose black, they will not get any money. If they both choose white, each of them will get \$5. If one chooses white while the other chooses black, the one who chooses black will get \$10 and the one who chooses white will get \$0. Which of the following is true in equilibrium?

- A) Cath and Adam will each get \$0.
- B) Cath and Adam will each get \$5.
- C) Cath will get \$10, and Adam will get \$5.
- D) Cath will get \$5, and Adam will get \$10.

16) Which of the following is most likely to be an example of causation?

國立中山大學 112 學年度碩士班暨碩士在職專班招生考試試題

科目名稱：經濟學【財管系碩士班乙組】

題號：443004

※本科目依簡章規定「不可以」使用計算機(混合題)

共 7 頁第 5 頁

- A) The crime rate is high in a country. The literacy rate is high as well.
- B) A firm producing compact fluorescent light bulbs installs new machinery. Their per-day production of light bulbs increases.
- C) A soccer player scores four goals when he wears red socks. He concludes that the red socks helped him score the goals.
- D) A student wins money by scratching a ticket with a particular coin. He decides to scratch all tickets with the same coin in the future.

總體經濟學 (14 題, 總分 35 分)

- 17) The marginal product of capital is the increase in
- A) capital needed to produce one more unit of output.
 - B) output from a one-unit increase in capital.
 - C) labor needed to accompany a one-unit increase in capital.
 - D) output from a one-dollar increase in capital.
- 18) Someone who is not employed and is not looking for work is classified in the Labor Force Survey as
- A) not in the labor force.
 - B) unemployed.
 - C) not in the population.
 - D) on welfare.
- 19) David consumes 140 in the current period and 220 in the future period. David's present value of lifetime consumption is 340. The real interest rate is
- A) 0%.
 - B) 5%.
 - C) 10%.
 - D) 20%.
- 20) Taiwan Central Government Budget project for 2023 shows that the general government expenditure is roughly NT\$_____.
- A) 0.7 trillion
 - B) 2.7 trillion
 - C) 5.7 trillion
 - D) 10.8 trillion
- 21) A country has a current account surplus if
- A) the value of its exports exceeds the value of its imports, assuming net income from foreign assets and net unilateral transfers have a value of zero.
 - B) the value of its net exports of services exceeds the value of its net exports of goods.
 - C) it receives more income from foreign assets than it pays to foreigners for foreign-owned domestic assets.
 - D) its capital inflows exceed its capital outflows.
- 22) If a French company sells 1000 gallons of Perrier to a U.S. company at 5 euros per gallon, and uses the money to buy stock in a Spanish cork company, how does this affect the French balance of payments accounts?
- A) Decrease in financial account balance; increase in trade balance
 - B) Decrease in trade balance; increase in financial account balance
 - C) Decrease in net investment income from abroad; increase in financial account balance

試題請隨卷繳回，請留意背面是否有題

國立中山大學 112 學年度碩士班暨碩士在職專班招生考試試題

科目名稱：經濟學【財管系碩士班乙組】

題號：443004

※本科目依簡章規定「不可以」使用計算機(混合題)

共 7 頁第 6 頁

- D) Decrease in trade balance; increase in net income from abroad
- 23) The per-worker production function in the Solow model assumes
- A) constant returns to scale and increasing marginal productivity of capital.
 - B) constant returns to scale and diminishing marginal productivity of capital.
 - C) increasing returns to scale and diminishing marginal productivity of capital.
 - D) decreasing returns to scale and diminishing marginal productivity of capital.
- 24) A Lorenz curve plots
- A) unemployment and inflation.
 - B) job openings and the unemployment rate.
 - C) the distribution of labor supply.
 - D) the distribution of income.
- 25) If the asset market is in equilibrium, the growth rate of the nominal money supply minus the growth rate of real money demand equals
- A) the real interest rate.
 - B) the inflation rate.
 - C) the price level.
 - D) the growth rate of real output.
- 26) You want to invest in a firm whose profits show small fluctuations throughout the business cycle. Which of the following would you invest in?
- A) A corporation that depends heavily on business fixed investment
 - B) A corporation that depends heavily on residential investment
 - C) A corporation that depends heavily on consumer nondurables
 - D) A corporation that depends heavily on consumer durables
- 27) Which of the following curves in the IS-LM model is vertical?
- A) The IS curve
 - B) The LM curve
 - C) The FE line
 - D) The AD curve
- 28) Under monetary neutrality, an increase in the money supply causes output to _____ and the price level to _____.
- A) rise; rise
 - B) rise; not change
 - C) not change; not change
 - D) not change; rise
- 29) The idea that new policies change the economic rules and affect economic behavior, so that no one can safely assume that historical relationships between variables will hold when policies change, is known as
- A) Okun's Law.
 - B) Say's Law.
 - C) the equation of exchange.
 - D) the Lucas critique.
- 30) The long-run Phillips curve is
- A) vertical.

國立中山大學 112 學年度碩士班暨碩士在職專班招生考試試題

科目名稱：經濟學【財管系碩士班乙組】

題號：443004

※本科目依簡章規定「不可以」使用計算機(混合題)

共 7 頁第 7 頁

- B) horizontal.
 C) upward sloping.
 D) downward sloping.

貳、個體經濟學：填充簡答題，總分10分

1) [每個答案2.5分] Suppose there are three power-generating plants, each of which has access to 5 different production processes. The accompanying table summarizes the cost of each production process and the corresponding number of tons of smoke emitted each.

Process (smoke/day)	A (4 tons/day)	B (3 tons/day)	C (2 tons/day)	D (1 tons/day)	E (0 tons/day)
Cost to Firm X (\$/day)	\$ 500	\$ 514	\$ 530	\$ 555	\$ 585
Cost to Firm Y (\$/day)	400	420	445	480	520
Cost to Firm Z (\$/day)	300	325	360	400	550

Suppose the government imposes a tax of \$21 on each ton of smoke emitted. To minimize costs, Firm Y will emit _____ tons, and Firm Z will emit _____ tons.

2) [各小題 2.5 分]

- (1) Find all pure-strategy Nash equilibria of the following game.
 (2) If each player chooses her maximin strategy which is a strategy that maximizes the minimum payoff for herself, then what is the strategy profile constituted by both players' maximin strategies?

Player 1\Player 2	L	M	R
U	4, 0	0, 1	-1, -100
D	2, 2	1, 1	0, 3

參、總體經濟學：填充題，每題 2.5 分，總分 15 分

1. A basis point is a common unit of measure for interest rates. One basis point is equal to _____.
 2. What is discount rate of the central bank of Taiwan on 25 December 2022? _____.

The nation of Pride produces hockey pucks, cases of root beer, and sandals. The following table lists prices and quantities of the three goods in the years 2017 and 2022.

	Pucks		Root Beer		Sandals	
Year	Quantity	Price	Quantity	Price	Quantity	Price
2017	\$200	\$6	\$350	\$15	\$60	\$20
2022	\$175	\$8	\$400	\$20	\$70	\$30

Assume that 2017 is the base year. Find nominal GDP and real GDP for both years.

3. 2017 Nominal GDP. Ans: _____.
 4. 2017 Real GDP. Ans: _____.
 5. 2022 Nominal GDP. Ans: _____.
 6. 2022 Real GDP. Ans: _____.