

一、選擇題，單選，每題三分

1. 一般 IS-LM 模型構成總需求線，
 $Y = C + I + G$, $C = C_0 + \beta Y$, $I = I_0 - \rho r$, $M/P = L_0 + \phi Y - \mu r$, $\beta, \rho, \phi, \mu > 0$, 在正斜率的總供給線之下，若政府支出增加，新均衡與原均衡相較 A)實質貨幣供給降低 B)實質貨幣需求降低 C)投資需求增加 D)消費支出下降
2. 去年台灣經濟衰退，與前年相較，下列有關支出面變動何者錯誤？A)實質出口年增率下降 B)實質進口年增率下降 C)實質民間投資支出年增率下降 D)實質政府消費年增率下降
3. 下列有關台灣去年經濟概況的描述，何者錯誤？A)實質國內生產毛額負成長 B)消費者物價指數負成長 C)失業率提高 D)薪資下降 E)貿易逆差
4. 在國民所得帳中某甲的個人所得不包括 A)薪資 B)存款利息收入 C)股票紅利 D)操作股票獲利 E)出租房屋所獲租金
5. 若需求降低，導致經濟衰退與實質工資下跌同時發生，下列理論何者能解釋這種現象？
 A)名目工資因工資契約而僵固，物價可自由變動 B)效率工資理論 C)物價僵固，名目工資可自由變動 D)新興古典學派理論
6. 依跨期消費理論，下列何者使消費及儲蓄同時增加 A)利率提高 B)利率降低 C)預期未來所得上升 D)預期未來物價上漲
7. 下列何者錯誤？ A)企業所得稅率調降導致投資需求增加 B)依加速原理所得增加導致投資需求增加 C)Tobin's Q 上升導致投資需求增加 D)實質利率下跌導致投資需求增加
8. 假設資本移動自由，匯率浮動，若一國同時採取擴張貨幣及緊縮財政政策，下列何者正確？以 IS-LM-BP 模型分析。A)該國貨幣貶值 B)該國所得提高 C)該國所得降低 D)該國進口增加
9. 依古典學派理論，政府消費擴大時，下列敘述何者錯誤？A)民間儲蓄增加 B)利率上升 C)貨幣供給不變 D)物價上揚
10. 依凱因斯的消費函數，下列何者屬於誘發性消費？A)股票漲價導致消費增加 B)利率下跌導致儲蓄減少，消費增加 C)薪水提高導致消費增加 D)對未來景氣樂觀而致消費增加
11. 去年來因經濟衰退，企業紛紛採用無薪假方式結省成本，依台灣失業率計算方式，放無薪假員工視為 A)非勞動力 B)失業 C)氣餒的工作者 D)就業
12. 有關去年台灣的國際收支情形，下列何者錯誤？ A)經常帳順差 B)金融帳順差 C)國際收支順差 D)資本帳順差
13. 定義儲蓄淨額為 S-I，下列何種情形最容易發生貿易逆差？A)儲蓄淨額為正，政府財政赤字 B)儲蓄淨額為負，政府財政盈餘 C)儲蓄淨額為負，政府財政赤字 D)儲蓄淨額為正，政府財政盈餘

二、總體經濟填充題，在答案卷直接寫出答案，不需列出計算過程：

1. 最近因嚴重財政赤字被媒體稱為 PIGS 的四國為何? (3%, 全對才給分) _____
2. 設有下列 IS-LM 模型: $Y=C+I+G$, $C=400+0.5Y$, $I=100-200r$, $M/P=300$, $P=1$, $L=500+0.3Y-200r$, $M/P=L$, 政府支出 G 增加 40 會導致所得增加, 則增加若干貨幣供給會對所得產生相同效果? (4%) _____
3. 根據以下資訊計算 GDP: 工資 200 億元, 政府購買 100 億元, 國內投資支出 200 億元, 利潤 150 億元, 民間消費支出 400 億元, 淨出口 50 億元, 利息 100 億元, 地租 50 億元, 則折舊與間接稅之和為 (4%) _____

三、個體經濟填充題，在答案卷直接寫出答案，不需要列出計算過程，但答案中

如果有自己訂出的符號，必須在答案自行註明所代表的意義

1、(30%) Consider the utility function

$$U = 2X_1^{1/2} + 4X_2^{1/2}$$

- (i) Find the demand functions for goods 1 and 2 as they depend on prices (P_1, P_2) and wealth (M).
(1) _____
- (ii) Find the compensated demand function. (2) _____
- (iii) Find the expenditure function. (3) _____

2、(10%) Given the production function $Y = x_1^\alpha x_2^\beta$, please find

- (i) Assume $\alpha, \beta > 0$. What restriction must α and β satisfy? (4) _____
- (ii) Input derived demand function. (5) _____

3、(10%) 假設李四的財富為 W ，遇上火災的機率為 π ，會損失 L (設 $W > L$)。為避免損失，李四可以買保險，並且支付保費 R (買保險 H ，費率為 ϕ)，已知李四的效用函數為 $U(W) = W^{1/2}$ 。在有風險下，李四追求符合 Von-Neumann 及 Morgenstern 的預期效用最大，請回答下列問題：

- (i) 若該保險是一公平保險 (fair insurance)，保費應如何訂定? (6) _____
- (ii) 李四願意參加該公平的保險嗎? 參加與否的理由為何? (7) _____

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Make sure that you have 20 questions. Each question is worth 5 points.

第 1-18 題：單選題。第 19-20 題：填充題

1. Let $|\beta|$ equal the absolute value of β . Relative to the underlying stock, a put option always has: (1) A higher $|\beta|$ and a higher standard deviation of return (2) A lower $|\beta|$ and a higher standard deviation of return (3) A higher $|\beta|$ and a lower standard deviation of return (4) A lower $|\beta|$ and a lower standard deviation of return (5) None of the above.
2. In Finance, which of the following should be used to analyze whether the synergy of a takeover is greater than zero? I: Bidder's stock abnormal return over 3 years following takeover completion > 0 · II: Bidder's ROE (Return on Equity in financial statements) over 3 years following takeover minus the industry's average value of ROE > 0 · III: Target's stock abnormal return over 3 years following takeover completion > 0 (1) I (2) II (3) III (4) I and II (5) II and III (6) I and III (7) I, II and III
3. An investment strategy has offered a series of rates of return over past 10 years. The average return of this strategy is 5% per year. Correlation coefficient between these returns and the market return is zero. Average risk-free return is 2 percent per year. What is the abnormal return (per year) of this investment strategy? (1) 0 ~ 2.0% (2) 2.01% ~ 3.5% (3) 3.51% ~ 5.0% (4) More than 5% (5) More information is needed.
4. Which of the following describes the difference between the value of a central-government (CG) bond and a local-government (LG) bond? (1) The value of a call option on the LG's assets with an exercise price equal to the face value of the bonds (2) The value of a put option on the LG's assets with an exercise price equal to the face value of the bonds (3) The value of the LG's assets minus the value of a put option on the assets with an exercise price equal to the face value of the bonds (4) The value of the LG's assets minus the value of a call option on the assets with an exercise price equal to the face value of the bonds (5) None of the above.
5. In the option trading, who need(s) to provide deposit (margin requirement)? (1) Buyer only (2) Seller only (3) Both buyer and seller (4) Seller of call option only (5) Buyer of call option only (6) Seller of put option only (7) Buyer of call option only.
6. ABC Company's variance of return is 200. If the R-squared of the regression between the company's return and the market portfolio return is 0.7, calculate the variance that is due to the firm-specific risk. (1) 0~10 (2) 10.1 ~ 50 (3) 50.1~100 (4) 100.1~150 (5) 150.1~200 (6) More information is needed
7. Which of the following should be included to measure interest rate risk for fixed-income securities? (A) credit rating (B) maturity (C) duration (D) convexity (E) yield : (1) A (2) B (3) A, B (4) C, D (5) A, B, C (6) B, C, D (7) B, D (8) A, B, C, D, E (9) None of the above
8. Covered Interest-Rate-Parity (IRP) theory refers to that the return of domestic CD (certificate of deposit) should equal the following actions : (A) Convert domestic currency to foreign currency (using spot rate) and then deposit foreign currency at one-year risk-free rate. (B) Buy foreign currency forward now. (C) Sell foreign currency now. (D) After one year, convert foreign currency to domestic currency using forward contract you trade now. (E) After one year, convert foreign currency to domestic currency using spot rate at that time : (1) A, D (2) A, E (3) A, B, D (4) A, C, D (5) A, B, E (6) A, C, E (7) None of the above.
9. Which of the following is (are) correct concerning Covered IRP and Uncovered IRP (A) The former uses currency forward, while the latter uses spot currency rate. (B) Empirically, ONLY the former holds. (C) If the latter does not hold, we will have an arbitrage opportunity. (1) A (2) B (3) C (4) A, B (5) A, C (6) B, C (7) A, B, C (8) None of the above.
10. Which of the following is (are) true about futures contracts? (A) The person with the long position can decide whether to exercise the futures contract and will only do so if there is a profit to be made. (B) It is possible for both the holder of the long position and the holder of the short position to earn a profit. (C) The amount that the holder of the long position gains must equal the amount that the holder of the short position loses. (D) The maintenance margin is the amount of money you post with your broker when you buy or sell a futures contract. (1) A (2) B (3) C (4) D (5) A, C (6) C, D (7) A, C, D (8) None of the above.

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11. In Company ABC's financial statement, debt = \$50 millions and equity = \$50 millions. ABC's stock is traded at \$100 per share in the stock market. Corporate tax rate = 25%. ABC's W.A.C.C. = 20%. ABC's shares outstanding = 1 million shares. Interest rate of debt = 10%. Required rate of return of equity = ? (1) 0 ~ 10% (2) 10.1% ~ 15% (3) 15.1% ~ 20% (4) 20.1% ~ 30% (5) More than 30%.
12. 以下哪一方法所算出之異常報酬比較恰當？(1) event study (2) CAPM (3) Fama-French 3-factor model (4) APT (5) 以上方法所算出之異常報酬應該相同
13. Why should we not use the NPV (Net Present Value) rule to calculate option prices? I. Option's risk is different from underlying asset's risk. II. Option's expected return is different from underlying asset's expected return. III. We don't know the option payoffs when the option expires. IV. We cannot use CAPM to estimate the option's expected return. (1) I only (2) II only (3) III only (4) I, II (5) I, II, III (6) I, II, IV (7) I, II, III and IV (8) None of the above.
14. Now, exchange rate of NT\$: US\$ = 30:1. Currently, Taiwan's Consumer-Price-Index level = 55% of US' CPI level. NT\$ one-year risk-free rate (R_f) = 1.5%. US\$ one-year R_f = 0.5%. If Purchasing Power Parity Theory is expected to hold in the near future, exchange rate of NT\$: US\$ after one year = Y: 1. Y = ? (1) 0 ~ 10 (2) 10.1 ~ 20 (3) 20.1 ~ 30 (4) 30.1 ~ 45 (5) 45.1 ~ 60 (6) More than 60.
15. Company ABC has the following characteristics. WACC = 10%. Expected return of stock = 12%. β of equity = 1.3. Book value of equity at the beginning of time period = \$10 per share. Over this year of analysis, EPS = \$2 and is assumed to continue forever (as a perpetuity). Risk-free rate = 2%. What is current stock price? (1) 0 (2) 0.1 ~ 10 (3) 10.1 ~ 15 (4) 15.1 ~ 20 (5) More than 20.
16. A corporate bond will expire after one year. Face value = \$900. Annual coupon rate = 10%. Bond price now = \$500. Bond's credit rating = BB, whose default probability = 40%. Expected return of this bond = ? (1) 0 ~ 10% (2) 10.1% ~ 20% (3) 20.1% ~ 40% (4) 40.1% ~ 100% (5) More than 100%.
17. Apple Company announces, on March 8, to buy Google Co.
- | | Number of shares | Stock price (per share) on March 7 | Stock price on March 9 |
|--------|------------------|------------------------------------|------------------------|
| Apple | 25 | \$20 | \$22 |
| Google | 10 | \$10 | ? |
- Apple offers 7 shares of Apple stock plus \$50 in cash for all the Google shares. Stock price of Google on March 9 = ? (1) 0 ~ 15 (2) 15.1 ~ 20 (3) 20.1 ~ 30 (4) 30.1 ~ 40 (5) None of the above.
18. (延續上一題) Present value of expected synergy = ? (1) 10 ~ 50 (2) 50.1 ~ 100 (3) 100.1 ~ 150 (4) 150.1 ~ 200 (5) None of the above
19. (此題為填充題，不要寫計算過程) A put option has an exercise of \$70. At the final exercise date, the stock price could be either \$80 or \$50. Currently, the stock price is \$60. Risk-free rate is 5%. What assets would combine to give the same payoff as the put option? : _____ (買或賣) _____ (單位或金額) 的 _____ . (Hint: Answer includes more than one asset.)
20. (此題為填充題) 位於台灣的 K 公司於 1 月 1 日開始與美國公司 M 洽談收購 M 事宜，K 預計以 1000 萬美元來收購 M，洽商期間預計為 2 個月，請問這 2 個月之間 K 公司應該如何做才能規避外匯波動之風險？ _____ (買或賣) 在 3 月 1 日到期、面額為 _____ 的 _____ .

I. 選擇題 (題目答案可能是單選或多選，共 70 分，每題 5 分)

1. Which of the following sample space is/are countable finite?
 - (A). Number of girls born if twenty babies were born.
 - (B). Number of male students in a 40-students class.
 - (C). Number of death in 30 car accidents.
 - (D). Number of coin tosses before the first tail.

2. Properties of a discrete probability distribution include:
 - (A). The probability for every value of a random variable is positive.
 - (B). The sum of the probability for the value of a random variable is 1.
 - (C). One of the values of a random variable may have a probability equal to zero.
 - (D). The probabilities for any two different values of a random variable are different.

3. Which of the following statements for Exponential distribution is/are not correct (Exponential probability density function is $f(x)=\lambda e^{-\lambda x}$)?
 - (A). The x values range from zero to infinity.
 - (B). Its apex is always at $x=0$.
 - (C). it describes random occurrences over some interval.
 - (D). it is skewed to the right.

4. Which of the following statements is/are not correct regarding the Durbin-Watson d test?
 - (A). Durbin-Watson test is used to detect if autocorrelation is present in a time-series regression analysis.
 - (B). Computation of the d statistic is based on the estimated residuals.
 - (C). The d statistic range between -1 and 1.
 - (D). One drawback of Durbin-Watson d test is if d value falls in the indecisive zone, one cannot conclude whether autocorrelation does or does not exist.

5. Which of the following statements is/are correct regarding sampling techniques?
 - (A). For the stratified random sampling, a stratum should be relatively heterogeneous internally.
 - (B). The judgment sampling tends to have systematic error.
 - (C). For snowball sampling, survey subjects are selected based on referral from other survey respondents.
 - (D). Problems with systematic sampling can occur if the data are subject to any periodicity.

6. Which of the following statements is/are not correct?
 - (A). The chi-squared distribution is symmetrical.
 - (B). All values of the chi-squared distribution are positive.
 - (C). The critical region for a goodness-of-fit test with k categories is $\chi^2 > \chi^2_{\alpha}(k-1)$
 - (D). Contingency table is used to summarize observed and expected frequencies for a test of Independence.

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7. Correlation analysis is/are used to determine
- (A). the equation of the regression line.
 - (B). the strength of the relationship between the two variables.
 - (C). a specific value of one variable for a given value of another variable.
 - (D). All of above are not correct.
8. Which of the following statements for index numbers is/are correct?
- (A). Laspeyres price index is a weighted aggregate price index computed by using the quantities of the based years for all other years.
 - (B). The advantage of Passche price index is that it incorporates current quantity figures in the calculations.
 - (C). One disadvantage for Laspeyres price index is that ascertaining quantity figures for each time period is expensive.
 - (D). Taiwan consumer price index is based on Passche calculation.
9. Several important assumptions underlie analysis of variance include:
- (A). Observations are drawn from normally distributed population.
 - (B). Observations represent random samples from the populations.
 - (C). Variances of the population are equal.
 - (D). Each group need to have equal sample size.
10. Reasons for sampling include:
- (A). The sample can save time and money.
 - (B). For given resources, the sample can broaden the scope of the study
 - (C). Because the research process is sometimes destructive, the sample can save product.
 - (D). If accessing the population is impossible, the sample is the only option.
11. An alternative hypothesis is that $p < 0.65$. To test this hypothesis, a random sample of size 360 is taken. Following are true alternative proportion and the probability of committing a Type II error if $\alpha = 0.05$. Which of the following is/are correct?
- (A). When $p_a = 0.60$, $\beta = 0.1368$
 - (B). When $p_a = 0.55$, $\beta = 0.0122$
 - (C). When $p_a = 0.50$, $\beta = 0.0000$
 - (D). None of the above.
12. Which of the following statements for regression analysis is/are correct?
- (A). the correlation among the independent variables is termed as autocorrelation.
 - (B). an outlier is an observation whose residual is much larger than the rest of the residual values.
 - (C). the error term ε is assumed to have a variance of zero.
 - (D). F test is used to determine whether an additional variable makes a significant contribution to a multiple regression model.

13. Which of the following statements for nonparametric statistics is/are correct?
- Friedman test is a nonparametric alternative to the randomized block design ANOVA test.
 - The nonparametric alternative to the one-way ANOVA is the Kruskal-Wallis test.
 - The Mann-Whitney U test is a nonparametric counterpart of the t test used to compare the means of two independent populations.
 - The Runs test is a nonparametric test of randomness.
14. Which of the following is/are the control chart abnormalities for which a statistical process controller should be notice?
- Points are above upper control limit.
 - Points are below lower control limit.
 - A trend of consecutive points is present.
 - The centerline shifts from chart to chart.

II. 問答題 (共 30 分)

- In the computing industry the average age of professional employees tends to be younger than in many other business professions. Suppose the average age of a professional employed by a particular computer firm is 30 with a standard deviation of 5 years. A histogram of professional employee ages with this firm reveals that the data are not normally distribution but rather are amassed in the twenties and that few workers are over 40. Apply Chebyshev's theorem to determine within what range of ages would be at least 80% of the workers' ages fall. (5 分)
- According to the *Information Please Almanac*, 6% of the human population has blood type O-negative. What is the probability that, in a random sample of 500, fewer than 25 have blood type O-negative? (5 分)
- (A) A car rental agency faces the decision of buying a fleet of cars, all of which will be the same size. It can purchase a fleet of small cars, medium cars, or large cars. The smallest cars are the most fuel efficient and the largest cars are the greatest fuel users. One of the problems for the decision makers is that they do not know whether the price of fuel will increase or decrease in the near future. If the price increases, the small cars are likely to be most popular. If the price decreases, customers may demand the larger cars. Following is a decision table with these decision alternatives, the states of nature, the probabilities, and the payoffs. Use this information to determine the expected monetary value for this problem. (5 分)

		State of Nature	
		Fuel Decrease (0.60)	Fuel Increase (0.40)
Decision Alternative	Small Cars	-\$225	\$425
	Medium Cars	\$125	-\$150
	Large Cars	\$350	-\$400

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(B). The decision makers have an opportunity to purchase a forecast of the world oil markets that has some validity in predicting gasoline prices. The following matrix gives the probabilities of these forecasts being correct for various states of nature. Use this information to revise the prior probabilities and recompute the expected monetary value on the basis of sample information. What is the expected value of sample information for this problem? Should the agency decide to buy the forecast? (5 分)

		State of Nature	
		<i>Fuel Decrease</i>	<i>Fuel Increase</i>
Forecast	<i>Fuel Decrease</i>	0.75	0.15
	<i>Fuel Increase</i>	0.25	0.85

4. Eleven employees were put under the care of the company nurse because of high cholesterol readings. The nurse lectured them on the dangers of this condition and put them on a new diet. Shown below are the cholesterol readings of the 11 employees both before the new diet and one month after use of the diet began. Use an appropriate statistical test and construct a 98% confidence interval to estimate the population mean difference of cholesterol reading for people who are involved in this program. Assume differences in cholesterol readings are normally distributed in the population. (10 分)

Employee	Before	After
1	255	197
2	230	225
3	290	215
4	242	215
5	300	240
6	250	235
7	215	190
8	230	240
9	225	200
10	219	203
11	236	223

