Make sure that there are 20 questions. Each question is worth 5 points.

1. 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 small changes are not required to bring the market back to equilibrium.
   C) implications for prices derived from CAPM arguments are stronger than prices derived from APT arguments.
   D) all of the above are true.
   E) both A) and B) are true.

2. Which of the following is (are) true regarding the APT ?
   I) APT does not require all stocks to follow the APT pricing equation.
   II) More than one factor can be important in determining returns.
   III) All well-diversified portfolios satisfy the APT pricing equation.
   IV) It doesn't rely on the market portfolio that contains all stocks.
   (A) II, III, and IV (B) II and IV (C) II and III (D) I, II, and IV
   (E) I, II, III, and IV

3. Is the statement "CAPM is based on the assumption that investors follow the Portfolio Theory " correct ? (A) Yes (B) No (C) Depends.

4. Equity premium puzzle studies may be subject to bias because
   A) an inappropriate market index was used.
   B) the indexes we used did not exist for the entire period of the study.
   C) the appropriate specification of asset pricing model is controversial
   D) data of both domestic and foreign financial markets are used

5. On March 1, LKK submits a franc-denominated bid on a project in France. LKK will not learn until June 1 whether it has won the contract. What is the most appropriate way for LKK to manage the exchange risk on this contract?
   A) sell the franc amount of the bid forward for U.S. dollars
   B) buy French francs forward in the amount of the contract
   C) buy a put option on francs in the amount of the franc exposure
   D) sell a call option on francs in the amount of franc exposure

6. Assume an average dividend payout rate of 100% for both U.S. and Japanese companies. Suppose the average P/E ratio for Japanese firms is 38 and 16 for U.S. firms. Based on the dividend growth model, in order for Japanese and U.S. companies to have the same average cost of equity capital, how much higher would the Japanese annual earnings growth rate have to be?
   (A) 7.24% (B) 6.31% (C) 5.83% (D) 8.39%

7. Which of the following model is most related to the method of estimating the expected return for a stock using the earnings forecasts provided by financial analysts ? (A) CAPM   (B) APT   (C) EVA (Economic Value Added)   (D) Cash dividend discount model.

8. When borrowing rate equals lending rate, which Capital Allocation Line (CAL) should the investor choose to combine with the efficient frontier?

        I) with the highest reward-to-variability ratio.

        II) that will maximize his utility.

        III) with the steepest slope.

        IV) with the lowest slope.

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

9. An unspecified number of common shares as employee stock bonus (員工股票分紅) are granted at the beginning of the year to John. These common shares are expected to be delivered to John at the end of the year. The value (at the beginning of the year) of the above employee stock bonus can be best analyzed using (A) CAPM (B) NPV rule (C) Option Theory (D) EVA model.

10. Which of the following statements is true about models that attempt to measure the empirical performance of the CAPM?

(A) The conventional CAPM works better than the conditional CAPM with human capital. (B) The conventional CAPM works about the same as the conditional CAPM with human capital. (C) The conditional CAPM with human capital yields a better fit for empirical returns than the conventional CAPM. (D) Adding firm size to the model specification significantly improves the fit in the conditional CAPM. (E) Adding firm size to the model worsens the fit.

11. Which of the following statements are false?

I. In a successful takeover, the shareholders of the acquiring firm usually realize substantial gains.
II. It appears that the gains reaped by target firms from tender offer takeovers are higher than the gains realized from mergers.
III. On average, friendly mergers may be arranged at lower premiums than hostile tender offers.
A) I, II, and III
B) I and II only
C) II and III only
D) I only
E) III only

12. ABC Co. is considering giving a 2% cash discount to its customers who pay within 10 days. (The firm currently offers no discount.) If it institutes this policy, it is likely that:

I. ABC will experience a net use of funds.
II. The buyers will be able to reduce their cost of goods sold.
III. Buyers who do not take the discount will be using an expensive source of financing.
IV. ABC will find that its average collection period will increase.

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

13. An increase in which of the following, all else the same, leads to an increase in put option values?

I. Exercise price
II. Dividends
III. Stock price
IV. Volatility

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

14. Which of the following conclusions can be correctly drawn from the capital structure puzzle?

I. In the framework of the static theory of capital structure, a firm can precisely identify its optimal capital structure.
II. Firms with tax shields from other sources such as depreciation will benefit less from leverage.
III. Firms in lower tax brackets will tend to benefit less from increases in financial leverage.

A) I and II only
B) II and III only
C) III only
D) I, II and III
E) I only

15. Which of the following are beneficial attributes of leveraged buyouts?

I. Leveraged buyouts often create entrepreneurial incentives for managers.
II. The required repayment of the debt used in the buyout induces reduced managerial efficiencies.
III. Conflicts of interest between shareholders and managers are increased.
IV. Bureaucratic obstacles are often eliminated.

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

16. Rank the following goals in increasing order of importance in a compromise dividend policy.

I. Avoid dividend cuts
II. Maintain a target debt/equity ratio
III. Avoid the need to sell equity
IV. Avoid cutting back on positive NPV projects

A) IV, I, II, III
B) IV, II, I, III
C) IV, I, III, II
D) I, II, IV, III
E) II, III, IV, I

17. Which of the following represent an increase in cash, all else the same?

   I. Long-term debt is increased
   II. Inventory is sold at a profit
   III. Fixed assets are purchased
   IV. Receivables are factored
   A) I, II, and IV only
   B) I only
   C) III only
   D) I and IV only
   E) II and III only

18. A commercial airline requires jet fuel to operate its planes. Which of the following actions would allow the company to lock in the acquisition cost of its jet fuel?

   I. Buy a futures contract on jet fuel.
   II. Sell a futures contract on jet fuel.
   III. Buy a futures call option on jet fuel.
   IV. Sell a futures call option on jet fuel.
   A) I and III only
   B) II and IV only
   C) I only
   D) II only
   E) IV only

19. Which of the following are false regarding leasing?

   I. Leasing provides a source of off-balance sheet financing.
   II. By leasing, the lessee's income statement will be weaker.
   III. Taxes may be reduced by leasing.
   IV. Unlike borrowing and purchase, leasing decreases a firm's financial leverage.
   A) II and III only
   B) I, II, and III only
   C) II only
   D) IV only
   E) I and IV only

20. Which of the following describes a short-run exposure of exchange rate risk?

   I. Your firm has large oil drilling and mining interests in one of the former Soviet republics. A new government with a distinct anti-American agenda unexpectedly wins a majority in that country's new parliament.
   II. Your firm's wholly-owned Australian subsidiary is expanding rapidly and earning increased profits; meanwhile, the U.S. dollar has been strengthening dramatically against the Australian dollar for some time now. Your firm reports consolidated financial statements across all its worldwide operations and subsidiaries.
   III. You import computer chips from Korea for use in your U.S.-manufactured cellphone handsets. You agree on the terms of sale and the number of chips to be purchased 90 days in advance, but you do not pay the Korean contractor until the chips have actually been delivered to your U.S. plant. You invoice your transaction in the Korean currency.
   A) I, II and III
   B) III only
   C) I only
   D) II only
   E) I and II only

PART ONE (50%):

1. State three major reasons (in two sentences at most) why we take samples rather than a census of the entire population. (5%)

2. When constructing a frequency distribution, the following rule must not be broken:　(5%)

   (a) Classes must be of equal width.
   (b) Classes must be mutually exclusive so that a given value will fall in one and only one class.
   (c) Classes midpoints must be the arithmetic mean of the values of the observations falling within the respective classes.
   (d) The distribution must have only one modal class (that is, there must be only one class with the largest number of values in it).

3. There are 20 new jobs opening up at ABank. To select the best 20 from among the hundreds of applicants for these positions, the prospective employer gives a physical exam and a written aptitude test to each applicant. Suppose 1000 people take the test and the mean grade on the test turns out to be 150 with a standard deviation of 10. If nothing is known about the shape of the distribution of test scores, which of the following statements is always true?　　(5%)

   (a) At least 375 people scored between 150 and 170 on the test.
   (b) At most, 125 people scored below 130 on the test.
   (c) At most, 250 people scored below 130 on the test.
   (d) At least 950 people scored between 130 and 170 on the test.
   (e) None of the above.

4. A salesperson either makes a sale S or does not make a sale N with each of two potential customers. The simple events and probabilities of their occurrence are as follows:

Simple Events	Probabilities
SS	0.08
SN	0.12
NS	0.15
NN	0.65

   Find the probabilities of each of the following events:
   (a) {No sales are made}　　　　　　　　(5%)
   (b) {At least one sale is made}　　　　　(5%)
   (c) {Exactly one sale is made}　　　　　(5%)

5. ABD bakery shop always carries KHH Style cake for it customers. The cakes are made fresh every day and any unsold cake is discarded. Each cake costs $5.00 and sells for $11.00. The demand for cake on any given day has the following distribution:

X	0	1	2	3
P(x)	0	0.5	0.3	0.2

   (a) What is the expected demand?　　　　　　　　　　　　　　　(5%)
   (b) What is the expected profit if the shop makes only one cake per day?　(5%)
   (c) What is the expected profit if the shop makes two cakes per day?　(5%)

6. NSYSU Bookstore decided to sample the dollar amount of individual morning and evening purchases. The manager believes that this information would help her or him develop a new marketing strategy. The data is given in the table below:　　(5%)

Morning	Evening
X_1	X_2
S_1	S_2
$N_1=50$	$N_2=40$

   Find a 95% confidence interval estimate for the difference between the average purchase amounts for the two times of day.

第二部分

1. 有一個中山大學學生對其同學在學校宿舍吃自助餐與到 7-11 便利商店買便當的花費是否有差異很感興趣，他認為吃自助餐應該比較便宜，為了檢驗這個問題，他打算隨機選擇了兩組樣本，一組人數為 12 人，是在宿舍吃自助餐，一組人數為 15 人，是去 7-11 便利商店買便當，可是他不知如何用統計方法來檢驗這個問題。請你告訴他如何進行這個假設檢定，假設這資料並不從常態分配的母體抽樣而得。(10 分)

2. 台灣皮鞋公司目前所生產的某一款皮鞋，原料來自 5 家不同的供應商。為了測試該款在不同里程的耐磨程度，以及各家供應商所提供的原料是否有差異，該公司將每家供應商所提供的原料及所製成之皮鞋令其行走分別 1, 3, 5 萬公里，並測量其磨損度，資料整理如下：

原料供應商	里程		
	1 萬	3 萬	5 萬
A	3.7	4.2	4.4
B	3.8	4.3	4.5
C	3.9	4.3	4.4
D	4.1	4.2	4.3
E	3.9	4.1	4.6

(1). 請以 ANOVA 隨機集區設計(Randomized Block Design)進行檢定(α 設定為 0.05，列的 F 臨界值為 3.838，欄的 F 臨界值為 4.459)。(6 分)

(2). 如果在做 ANOVA 時，忽略了 Blocking Variable（供應商），ANOVA 的表會變成什麼樣子？其結果有什麼樣的變化？為什麼？(4 分)

3. 是非題(需解釋，全對才給分，每小題 2 分)

(1). Heteroskedasticity in the errors leads to biased estimates of the regression coefficients and their standard errors.

(2). When the coefficient estimates in an equation have high standard errors, it shows evidence of high multicollinearity.

(3). A model with higher (adjusted and unadjusted) R^2 is always better than model with lower R^2.

(4). Residual analysis can be employed to study the distribution of Y are normal.

(5). When you perform a regression of Y on X, you can find that the larger the sample size and dispersion of X are, the larger the variance of the estimated slope is.

4. 根據研究，房屋價格水準會受到人口特徵、所得與營造價格等因素所影響，以下為民國 62 年至 83 年台北地區年平均每坪房價(Y)對台北地區家戶數(X_1)、家庭年所得(X_2)與營造價格指數(X_3)，以最小平方法所得之複迴歸分析結果：

Y：年平均每坪房價 (單位：千元)

X_1：家戶數 (單位：千戶)

X_2：家庭年所得 (單位：千元)

X_3：營造價格指數

	係數	標準誤		
截距	-68.70	82.87	R-square=	0.881108
X_1	0.10	0.26	Adjusted R-square=	0.861292
X_2	0.31	0.11	F =	44.465
X_3	-0.46	2.14		

請回答以下有關此複迴歸之問題。

(1).請計算出自變數 X_1 , X_2 之 t 值。(2 分)

(2).請解釋 X_1 係數之意義。(3 分)

(3).請解釋上表已經有了 R-square，為何還要提供 Adjusted R-square 做為參考？(3 分)

(4).由於上述資料為時間序列型態，假若欲檢視是否有序列相關，應如何為之？(3 分)

(5).三個自變數個別與因變數之簡單相關係數均為正值，然 X_3 之係數卻為負，請問可能原因為何？(3 分)

(6).若 X_2 家庭年所得之單位改為元，則對係數、t、R-square 與 F 值等是否有影響，影響為何？(3 分)

(7).若想要比較自變數 X_1 , X_2 , X_3 對因變數 Y 之重要性大小，可以用上表的係數大小來比較嗎？若不行，應該如何比較？(3 分)

（請將答案寫在試卷(答案卷)上，否則不予計分）

94財管所經濟學

總體經濟部分：選擇題，單選，每題四分

1. 若人民領取政府所發移轉性支出用來消費當年所生產商品，則在國民所得帳中，這部分的消費應列為A)民間消費 B)政府消費 C)民間投資 D)政府投資 E)不列入當年國民所得帳中

2. IS-LM-BP模型中，若政府禁止資本移動，但容許經常帳的外匯交易，則在固定匯率下採擴張貨幣政策 A)經常帳不會變動 B)所增貨幣最終為央行干預所抵銷 C)利率不會下跌 D)央行無須干預外匯市場

3. 下列何種情形下，菲利普曲線的關係仍然成立？A)石油價格下跌 B)勞動生產力提高 C)生產技術提昇 D)台幣升值

4. 有如下典型經濟模型

$$Y = f(L, K, G), \partial Y / \partial L > 0, \partial^2 Y / \partial L^2 < 0, \partial Y / \partial G > 0$$
$$Y = C(Y) + I(r) + G$$
$$M / P = L_0 + \alpha Y - \beta r$$
$$\overline{W} / P = \partial Y / \partial L$$

當政府支出G增加時 A)利率提高 B)物價提高 C)消費減少 D)實質工資提高 E)物價下跌

5. 若自發性投資與定額稅同時等幅增加，則 A)典型IS-LM模型中均衡所得增加 B)典型IS-LM模型中均衡所得降低 C)典型IS-LM模型中均衡所得不變 D)包括政府的簡單凱因斯模型中均衡所得不變

6. 國民所得帳中 A)政府消費不包括公務人員薪資 B)政府消費不包括移轉性支出 C)投資支出不包括存貨變動 D)固定資本形成不包括建築物 E)存貨不包括原料

7. 設存款準備率為0.2，大眾保有現金為向銀行借款的10%，設央行以公開市場操作收回資金120萬，請問銀行系統應收回若干放款x？
A)x≤400 B)400<x≤450 C)450<x≤500 D)500<x≤550 E)550<x

8. 若台灣國際收支平衡表中，金融帳有逆差美元100億，經常帳有順差美元90億，資本帳為零，則 A)央行賣出美元10億 B)台灣貨幣供給會增加 C)台幣應升值 D)央行應賣出債券沖銷

9. 依古典學派的可貸資金理論 A)貨幣供給增加時利率會下降 B)民間投資需求增加時利率會下降 C)民間儲蓄意願降低時利率會下降 D)貿易赤字增加時利率會下降 E)政府財政赤字減少時利率會下降

10. 依據凱因斯模型，下列何者對提高產出效果最大？A)減稅100億 B)增加政府支出100億 C)補貼低收入戶100億 D)股票市值增加100億

11. 下列何者不是中央銀行的目標 A)維持物價穩定 B)促進經濟成長 C)維持金融市場穩定 D)促進政府財政收支平衡

12. 設有下列經濟模型

$Y = C + I + G + NX$; $C = 140 + 0.8Y_d$; $Y_d = Y - T$; $I = 200 - 500r$; $M/P = L$; $L = 50 + 0.3Y - 500r$; $NX = 100 - 0.2Y$

試算出當T增加100，IS線橫移距離的絕對值為 A)200 B)180 C)160 D)140 E)120

個體經濟部分：

1. 於不完全競爭市場中 (imperfect competition market)，只有二廠商(S and T)生產同一種產品。廠商之產量決策不相互影響(Standard Cournot Model)。根據以下資料計算各廠商(S and T)之最佳產量及最佳利潤。市場總產量及總利潤。(十五分)

P = 產品價格，Q_S = S 廠商產量，Q_T = T 廠商產量，TC_S = S 廠商總成本
TC_T = T 廠商總成本

$P = 100 - Q_S - Q_T$

$TC_S = 600 + 6Q_S + 0.5Q_S^2$

$TC_T = 120 + 2Q_T + 0.2Q_T^2$

答案先行書寫(S 廠商最佳產量及最佳利潤、T 廠商最佳產量及最佳利潤、市場總產量及總利潤)。之後詳列計算細節。

2. 當總收入(total revenue, TR)被極大時，邊際收入(marginal revenue, MR)等於零，同時需求彈性(demand elasticity)為 –1(i.e., unit elasticity)。證明邊際收入(= 0)與需求彈性(= -1)之關係式。(十五分)

P: price of a normal good, 價格,
Q_D: Quantity demanded, 需求,
Total revenue: TR = P· Q_D 總收入,
e = 需求彈性(*point price elasticity* formula).

3.
(a) 解釋補償變量(compensating variation)與對等變量(equivalent variation)。(十分)
(b)一消費者消費兩種商品，商品 X 與商品 Y。效用函數為

$U(X,Y) = \frac{1}{2}X^2 + Y$。其每週總消費預算為$128, 商品 X 原價格為$4 商品 Y 價格為$8. 若商品 X 價格下降為$2，求補償變量(compensating variation)與對等變量(equivalent variation)。必須明示計算過程及相關效用函數值、消費預算值。(十二分)

答案先行書寫(補償變量及相關效用函數值、消費預算值；對等變量及相關效用函數值、消費預算值)。之後詳列計算細節。