

注意事項：

第一部分(投資學):(1) ~ (10)題“不需列出”計算過程或說明原因

第二部分(財務管理):(11) ~ (20)題“需列出”計算過程

第一部分：投資學

作答說明：下列共有 10 格的填充題，每格 5 分。回答時須在答案紙上依下列之格式寫出題號((1)至(10))及對應之答案，不需列出計算過程或說明原因。答錯不倒扣。

(1)	(1)之答案 (除非題目要求，否則不需列出計算過程或說明原因)
(2)	(2)之答案
(3)	(3)之答案
(4)	(4)之答案
...	...
(10)	(10)之答案

1. One of the important pillars of finance is the efficient market hypothesis (EMH), in which security prices quickly reflect available information accurately.

(i) When firms are included into S&P 500, the stock prices historically increase by about 3.5% on average (compared to firms with similar characteristics but not in S&P 500). There is also no apparent reversal afterwards. Which of following statement is *incorrect* with regard to this market? (1)

(a) The effect may be due to liquidity because index funds need to pay a premium to quickly purchase these stocks after inclusion.

(b) The demand curve for stocks may be downward sloping. Stock prices increase when demand curves move to the right.

(c) This is evidence that market may not be efficient, most likely due to limits to arbitrage in the market.

(d) The effect may reflect non-public information about these firms. S&P 500 selection committee may choose to include these firms based on information not known by investors.

(e) All of the above are correct.

(ii) Post-earnings-announcement-drift (PEAD) is an empirical pattern, in which stock prices of firms with good earnings outperform those with bad earnings for at least a

couple of months before and after earnings announcements. Which of the following statement is *incorrect*?     (2)    

- (a) This is evidence that the market violates strong market efficiency.
- (b) This is evidence that the market violates semi-strong market efficiency.
- (c) This is evidence that the market violates weak market efficiency.
- (d) The interpretation of this evidence is influenced by the risk model one uses (i.e., joint hypothesis problem).
- (e) All of the above are correct.

(iii) There exist many anomalies in the stock market that may suggest the market is not efficient. Some of these anomalies are very robust across time and markets. Which of the following is *incorrect*?     (3)    

- (a) Small firms on average outperform big firms.
- (b) Value firms on average outperform growth firms.
- (c) Stocks that have outperformed in the past 12 months (winners) on average outperform those that underperformed in the past 12 months (losers).
- (d) Stocks that have outperformed in the past 3 years (winners) on average underperform those that underperformed in the past 3 years (losers).
- (e) All of the above are correct.

(iv) One implication of EMH is that even if there are short-term mis-pricings in the market, arbitrageurs are able to correct them. However, there are limits to arbitrage in practice. Name two types of limits to arbitrage:     (4)     and     (5)    . (Limit each of the answer to less than five words.)

2. A stock portfolio's variance (or volatility) is determined by individual volatilities of component stocks and the relationships among its component stocks' returns.

(i) Which of the following is *incorrect*?     (6)    

- (a) Portfolio variance is the weighted average covariance of each stock with the portfolio.
- (b) Portfolio variance is the sum of the covariances of all pairs of component stocks.
- (c) Portfolio volatility is the weighted average correlation of each stock with the portfolio.

(d) Portfolio volatility is maximized when all component stocks have perfect positive correlation with each other.

(e) All of the above are correct.

(ii) You are managing an equally-weighted portfolio with a very large number of stocks. Suppose the portfolio's stocks have a volatility of 0.4 and a correlation coefficient (between each pair of stocks) of 0.1. What is the portfolio volatility? (Choose the closest number)     (7)    

(a) 12.6%

(b) 1.6%

(c) 13.8%

(d) 15.3%

(e) 6.7%

3. Capital Asset Pricing Model (CAPM) is the most popular theory of expected stock returns in modern finance. It establishes the relationship between risk and expected return.

(i) Consider two stocks in a CAPM world: stock A and stock B. Assume the risk-free rate is 3%. Suppose stock A has an expected return of 18% with a beta of 1.3, and stock B has an expected return of 12% with a beta of 0.6. Which of the following investment strategy would you choose?     (8)    

(a) Long stock A and short stock B

(b) Short stock A and long stock B

(c) Both are fairly priced. A long-short strategy has zero NPV.

(d) Not enough information.

(ii) Which of the following regarding the implementation of CAPM is *incorrect*?     (9)    

見背面

(a) In practice, the market portfolio is typically proxied by a broad stock index that requires periodic rebalancing.

(b) Beta can be estimated by an OLS regression of monthly (or weekly) excess return on market excess return.

(c) The risk-free rate is typically measured by government treasury yields.

(d) CAPM estimation is sensitive to outliers. One way is to use industry return to substitute for outliers.

(e) All of the above are correct.

4. Consider a call option that expires in one month. The firm of the underlying stock is about to pay a \$0.1 dividend per share, and no dividend next month. What is the maximum strike price where it could be possible that early exercise of the option is optimal. Assume the interest rate is 3% (APR with monthly compounding).     (10)  
(Round your answer to the nearest dollar.)

第二部分：財務管理

作答說明：下列共有 10 格的填充題，每格 5 分。回答時須在答案紙上寫出題號 ((11)至(20))及對應之計算過程與答案

※※所有問題均請詳列計算過程，若只有答案將不予計分※※

※※填充題題型請至少計算至小數點後第二位※※

※※答案請標示清楚，如 ANS: \_\_\_\_\_ ※※

※※一律作答於所附之考試答案卷(本)上。若於試題卷上作答者，將不予計分  
※※

(11)	(11)之答案與計算過程
(12)	(12)之答案與計算過程
(13)	(13)之答案與計算過程
(14)	(14)之答案與計算過程
...	...
(20)	(20)之答案與計算過程

11. You are negotiating to make a 7-year loan of \$20,000 to Morris Inc. To repay you, Morris will pay \$3,000 at the end of Year 1, \$4,100 at the end of Year 2, and \$7,000 at the end of Year 3, plus a fixed but currently unspecified cash flow, Z, at the end of each year from Year 4 through Year 7. Morris is essentially riskless, so you are confident the payments will be made. You regard 6% as an appropriate rate of return on a low risk but illiquid 7-year loan. What cash flow must the investment provide at the end of each of the final 4 years, that is, what is Z? \_\_\_\_ (11) \_\_\_\_

12. NTU Inc. is planning its operations for next year, and the CEO wants you to forecast the firm's additional funds needed (AFN). The CEO observes that assets, accounts payable, and accruals vary directly with sales, and that assets are at full capacity. Data for use in your forecast are shown below. What is the AFN for the coming year? \_\_\_\_ (12) \_\_\_\_

Last year's sales = $S_0$	\$300,000	Last year's accounts payable	\$100,000
Sales growth rate = g	36%	Last year's notes payable	\$35,000

Last year's total assets =	\$205,000	Last year's accruals	\$40,000
Last year's profit margin =	22.0%	Target payout ratio	12.0%

13. A firm is considering Projects X and Y, whose cash flows are shown below. These projects are mutually exclusive, equally risky, and not repeatable. The CEO wants to use the IRR criterion, while the CFO favors the NPV method. You were hired to advise the firm on the best procedure. If the wrong decision criterion is used, how much potential value would the firm lose? \_\_\_\_\_(13)\_\_\_\_\_

WACC: 6.00%

Year	0	1	2	3	4
CF <sub>X</sub>	-\$2,000	\$715	\$715	\$715	\$715
CF <sub>Y</sub>	-\$850	\$330	\$330	\$330	\$330

14. Your subscription to NTU Daily is about to expire. You plan to subscribe to the magazine for the rest of your life, and you can renew it by paying \$500 annually, beginning immediately, or you can get a lifetime subscription for \$8,000, also payable immediately. Assuming that you can earn 5.5% on your funds and that the annual renewal rate will remain constant, how many years must you live at least to make the lifetime subscription the better buy? (Round the value up to the nearest integer) \_\_\_\_\_(14)\_\_\_\_\_

15. Michael and Josh are brothers who were both born on the same day, and both turned 25 today. Their grandfather began putting \$3,000 per year into a trust fund for Michael on his 20th birthday, and he just made a 6th payment into the fund. The grandfather (or his estate's trustee) will make 40 more \$3,000 payments until a 46th and final payment is made on Michael's 65th birthday. The grandfather set things up this way because he wants Michael to work, not be a "trust fund baby," but he also wants to ensure that Michael is provided for in his old age.

Until now, the grandfather has been disappointed with Josh, hence has not given him anything. However, they recently reconciled, and the grandfather decided to make an equivalent provision for Josh. He will make the first payment to a trust for Josh today, and he has instructed his trustee to make 40 additional equal annual payments until Josh turns 65, when the 41st and final payment will be made. If both trusts earn an annual return of 6.5%, how much must the grandfather put into Josh's trust today and each

subsequent year to enable him to have the same retirement nest egg as Michael after the last payment is made on their 65th birthday? \_\_\_\_ (15) \_\_\_\_

16. Jason Company is considering a new salsa whose data are shown below. The equipment to be used would be depreciated by the straight-line method over its 3-year life and would have a zero salvage value, and no change in net operating working capital would be required. Revenues and other operating costs are expected to be constant over the project's 3-year life. However, this project would compete with other Jason products and would reduce their pre-tax annual cash flows. What is the project's NPV? \_\_\_\_ (16) \_\_\_\_

WACC	12.0%
Pre-tax cash flow reduction for other products (cannibalization)	-\$5,500
Investment cost (depreciable basis)	\$80,000
Straight-line depreciation rate	33.333%
Annual sales revenues	\$67,500
Annual operating costs (excl. depreciation)	-\$25,000
Tax rate	40.0%

17. Bob Enterprise, which is debt-free and finances only with equity from retained earnings, is considering 7 equal sized capital budgeting projects. Its CFO hired you to assist in deciding whether none, some, or all of the projects should be accepted. You have the following information: risk-free rate = 4.50%; market return = 12%; and beta = 0.91. The company adds or subtracts a specified risk factor to the corporate WACC when it evaluates projects that have above- or below-average risk. Data on the 7 projects are shown below. If these are the only projects under consideration, how large should the capital budget be? \_\_\_\_ (17) \_\_\_\_

Project	Risk	Risk Factor	Expected Return	Cost (Millions)
1	Very low	-2.00%	7.60%	\$30.0
2	Low	-1.00%	11.00%	\$30.0
3	Average	0.00%	10.10%	\$30.0
4	High	1.00%	10.40%	\$30.0
5	Very high	2.00%	10.80%	\$30.0
6	Very high	3.00%	10.90%	\$30.0

7      Very high      3.00%      13.00%      \$30.0

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18. Using the average historical excess returns for both Albert Company and the market portfolio, your estimate of Albert's beta is closest to: \_\_\_\_ (18) \_\_\_\_

Year	Risk-free return	Market return	Albert Company return
2007	3.00%	7.00%	7.20%
2008	1.50%	-39.50%	-30.60%
2009	1.00%	28.90%	12.40%
Average		-1.20%	-3.67%

19. Jack Inc. has a 6-year, 8% annual coupon bond with a \$1,000 par value. Eva Inc. has a 12-year, 8% semi-annual coupon bond with a \$1,000 par value. Both bonds currently have a yield to maturity of 9%. Which of the following statements are correct if the market yield increases to 10%? \_\_\_\_ (19) \_\_\_\_

- A. Both bonds would decrease in value by 4.42%.
- B. The Eva bond will increase in value by \$65.51.
- C. The Jack bond will increase in value by 4.42%.
- D. The Eva bond will decrease in value by 7.06%.
- E. The Eva bond will decrease in value by \$42.25.

20. Paul Corp has a beta of 1.3 and is currently in equilibrium. The required rate of return on this Paul stock is 13.50% versus a required return on an average stock of 11.00% in the market. Now the required return on an average stock increases by 30%. Neither betas nor the risk-free rate change. What would Paul's new required return be? \_\_\_\_ (20) \_\_\_\_