

※ 注意：請於試卷上「非選擇題作答區」內依序作答，並應註明作答之大題及其題號。

第一部分

I. Multiple-Choice Question (5 points for each question)

1. Stock prices tend to be overvalued in the presence of short-sale constraints. What is the other necessary condition for this phenomenon?  
(A) Most investors are unsophisticated.  
(B) Investors have heterogeneous opinions about stock prices.  
(C) Stocks have a high earnings growth rate.  
(D) Stocks have low liquidity.  
(E) Stocks have low trading volume.
2. Which of the following statements about the cause of stock price momentum are correct?  
(I) Investors' excessive trading  
(II) Investors' disposition trading  
(III) Investors' incentive to beat the market  
(IV) Investors' overreaction with biased self-attribution  
(V) Slow diffusion of firm-specific information  
(A) I, II, and III    (B) I, III, and IV    (C) II, IV, and V    (D) II, III, and VI    (E) III, IV and V
3. When a firm announces that it wins a profitable contract, what will happen to its stock prices, return beta, and expected return of stock prices after this announcement?  
(I) Its stock prices are expected to increase.  
(II) Its stock prices remain unchanged.  
(III) Its return beta is expected to decrease.  
(IV) Its return beta remain unchanged.  
(V) The expected return of its stock prices is expected to decrease.  
(VI) The expected return of its stock prices remains unchanged.  
(A) I, III, and V    (B) II, IV, and V    (C) I, III, and VI    (D) I, IV, and VI    (E) II, III, and V
4. A stock XYZ is found to have short-term return reversal due to excess selling triggered by an exogenous shock. Which of the following statements about XYZ are correct?  
(I) The short-term demand curve of XYZ should be downward sloping.  
(II) The short-term return reversal of XYZ is stronger if there are less liquidity providers for XYZ in the market.  
(III) Investors who want to sell XYZ immediately face more price concession if the short-term return reversal in XYZ is stronger.  
(IV) The stock prices of XYZ tend to reverse over long time horizons as well.  
(V) The stock prices of XYZ are more predictable in the long run.  
(A) I, II, and III    (B) II, III, and IV    (C) II, III, and V    (D) I, III, and V    (E) III, IV, and V

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## II. Fill-In Question (5 points for each question)

Note: All answered numbers of questions 1, 2, and 3 are round to two decimal points and the answered number of question 4 is round to three decimal points. Otherwise, get zero points

1. Consider the following two-factor model for the returns of three securities indexed  $A$ ,  $B$ , and  $C$  and a risk-free security,  $f$ :

$$\tilde{R}_A = 0.06 + 0.01\tilde{F}_1 + 0.02\tilde{F}_2$$

$$\tilde{R}_B = 0.08 + 0.02\tilde{F}_1 + 0\tilde{F}_2$$

$$\tilde{R}_C = ? + 0.01\tilde{F}_1 - 0.02\tilde{F}_2$$

$$r_f = 0.04$$

where  $F_1$  denotes the first factor and  $F_2$  denotes the second factor. Assume that the factors have means of zero. To prevent an arbitrage opportunity, the expected return of security  $C$  should be equal to \_\_\_\_\_.

2. Assume the Eurodollar rate (9-month LIBOR) is 8 percent and the Eurosterling rate (9-month LIBOR for the U.K. currency) is 12 percent. Assume that nine months from now is 274 days and one year has 360 days. If the current spot exchange rate is \$1.36/£, what is the 9-month forward \$/£ exchange rate? \_\_\_\_\_.

3. Consider a single period binomial setting where there are no taxes, and the riskless interest rate is zero. A firm consists of a machine that will generate cash flows of \$4,500 if the economy is good and \$2,400 if the economy is bad. The good and bad states occur with equal risk-neutral probability. Initially, the firm has debt with a face value of \$1,000 due at the end of the period and 200 shares outstanding. The share price of the firm is equal to \_\_\_\_\_.

4. Consider the following two-factor model for the returns of three stocks,  $A$ ,  $B$ , and  $C$ . Assume that the factors and epsilons have means of zero.

$$\tilde{R}_A = 0.06 + 2\tilde{F}_1 + 2\tilde{F}_2 + \tilde{\varepsilon}_A$$

$$\tilde{R}_B = 0.05 + 3\tilde{F}_1 + 1\tilde{F}_2 + \tilde{\varepsilon}_B$$

$$\tilde{R}_C = 0.04 + 1\tilde{F}_1 + 1\tilde{F}_2 + \tilde{\varepsilon}_C$$

where  $F_1$  denotes the first factor and  $F_2$  denotes the second factor. You design a portfolio that has the first factor beta of 2 and the second factor beta of 1. The risk premium of your portfolio is \_\_\_\_\_.

## III. Proof Question (10 points)

Two ways to evaluate the risky projects are the risk-adjusted discount rate method and the certainty equivalent method. Specifically, among other things, the former requires the calculation of the return beta, denoted by  $\beta$ , with respect to the returns on the market portfolio, while the latter requires that of the cash flow beta, denoted by  $b$ , with respect to the returns on the market portfolio. Show

that the present value (PV) of a risky project is equal to  $\frac{b}{\beta}$  if its PV > 0.

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第二部分：財務管理（共五十分。每題 5 分）

注意事項：

※※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: XXXXXX ※※

※※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※※

1. Steven receives an annuity payment of \$3,500, payable every two years, for the next twenty years. The next payment is due two years from today. What is the present value of this annuity at a discount rate of 6 percent? \_\_\_\_\_
2. Peter owns a perpetuity that will pay \$2,000 a year, starting one year from now. He offers to sell you all of the remaining payments after the next 35 payments have been paid. What price should you offer him for payments 36 onward if you desire a rate of return of 9 percent? \_\_\_\_\_
3. Eight years ago, Phoebe took out a 30-year mortgage for \$555,000 at 6.8 percent. She has made all of the monthly payments as agreed. What is her current loan balance? \_\_\_\_\_
4. David Robinson from the firm of Bradley, Karpoff, and Kim, has been offered an upfront retainer of \$50,000 to provide legal services over the next 24 months to Porter Transportation. In return for this upfront payment, Porter Transportation would have access to 8 hours of legal services from David for each of the next 24 months. David's normal billable rate is \$200 per hour for legal services. Assuming that David's cost of capital is 11% EAR, then the NPV of his retainer offer is closest to \_\_\_\_\_
5. Consider the following two projects:

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Discount
Project	C/F	C/F	C/F	C/F	C/F	C/F	C/F	C/F	Rate
Dolphin	-89	30	35	40	45	50	N/A	N/A	16%
Penguin	-90	35	35	35	35	35	35	35	15%

Assume that projects Dolphin and Penguin are mutually exclusive. The correct investment decision and the best rational for that decision is to \_\_\_\_\_

- A) invest in project Penguin since  $NPV_{Penguin} > 0$ .
- B) invest in project Dolphin since  $NPV_{Penguin} < NPV_{Dolphin}$ .
- C) invest in project Penguin since  $IRR_{Penguin} > IRR_{Dolphin}$ .
- D) invest in project Penguin since  $NPV_{Penguin} > NPV_{Dolphin} > 0$ .
- E) invest in both projects since  $NPV_{Dolphin} > 0$  and  $NPV_{Penguin} > 0$ .

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6. Consider the following list of projects:

Project	Investment	Profitability		
		NPV	Index	Rank
A	225,555	6,000	0.0266	8
B	300,000	37,000	0.1233	2
C	195,000	30,000	0.1538	1
D	166,666	2,000	0.0120	9
E	188,999	10,000	0.0529	7
F	65,000	7,600	0.1169	3
G	95,000	9,800	0.1032	4
H	200,000	20,000	0.1000	5
I	55,555	4,000	0.0720	6

Assuming that your capital is constrained, so that you only have \$760,000 available to invest in projects, which projects should you rationally invest in and in what order? (Assume that Profitability Index = value created / resource consumed)

- A) CBF G
- B) CB G F
- C) BC F G
- D) CB F H

7. Suppose that Tesla stock is trading for \$45.20 per share with 1.22 billion shares outstanding while Microsoft has 545.5 million shares outstanding and a market capitalization of \$29.113 billion. Assume that you hold the market portfolio. If you hold 1,500 shares of Tesla, then the number of shares of Microsoft that you hold is closest to \_\_\_\_\_

- A) 450 shares
- B) 570 shares
- C) 670 shares
- D) 830 shares

8. Bob Industries has a bond outstanding with 20 years to maturity, an 8.5% nominal coupon, semiannual payments, and a \$1,000 par value. The bond has a 6.4% nominal yield to maturity, but it can be called in 5 years at a price of \$950. What is the bond's nominal yield to call? \_\_\_\_\_

9. NTU Corporation is presently enjoying relatively high growth because of a surge in the demand for its new product. Management expects earnings and dividends to grow at a rate of 15% for the next 4 years, after which competition will probably reduce the growth rate in earnings and dividends to zero. The company's last dividend,  $D_0$ , was \$1.15, its beta is 1.50, the market risk premium is 5.75%, and the risk-free rate is 2.00%. What is the current price of the common stock? \_\_\_\_\_

10. Suppose that the market portfolio is equally likely to increase by 22% or decrease by 6%. Security "XXX" goes up on average by 31% when the market goes up and goes down by 15% when the market goes down. Security "YYY" goes down on average by 18% when the market goes up and goes up by 19% when the market goes down. Security "ZZZ" goes up on average by 3% when the market goes up and goes up by 3% when the market goes down. What is the expected return on a security with a beta of 1.5? \_\_\_\_\_