一、單選題(30%)

1. Which of the following statements is CORRECT?

A. If the returns on two stocks are perfectly positively correlated and the stocks have equal standard deviations, an equally weighted portfolio of the two stocks will have a standard deviation that is less than that of the individual stocks.

B. If a stock has a negative beta, its expected return must be negative.

C. According to the CAPM, stocks with higher standard deviations of returns will have higher expected returns.

D. A portfolio with a large number of randomly selected stocks would have more market risk than a single stock that has a beta of 0.5.

E. If two stocks were combined to form a 2-stock portfolio, the portfolio's expected return would be a weighted average of the stocks' expected returns, but the portfolio's standard deviation would probably be greater than the average of the stocks' standard deviations.

2. According to theory, studying historical prices in order to identify mispriced stocks will not work in markets that are _____ efficient. (I) weak form (II) semistrong form (III) strong form

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

3. 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 A and B.　　　　　　　　　　　E. Both A and C.

4. Which of the following statements is CORRECT?

A. The slope of the security market line is measured by beta.

B. Two securities with the same stand-alone risk will have the same betas.

C. Company-specific risk cannot be diversified away.

D. A stock's beta indicates its company-specific risk.

E. Lower beta stocks have higher required returns.

5. If a firm has low fixed costs relative to all other firms in the same industry, a large change in sales volume would have:

A. a smaller change in EBIT for the firm versus the other firms.

B. no effect in any way on the firms as volume does not effect fixed costs.

C. a decreasing effect on the cyclical nature of the business.

D. a larger change in EBIT for the firm versus the other firms.

E. None of the above.

6. Which of the following statements about dividend policies is correct?

A. Modigliani and Miller argue that investors prefer dividends to capital gains because dividends are more certain than capital gains. They call this the "bird-in-the hand" effect.

B. One reason that companies tend to avoid stock repurchases is that dividend payments are taxed at a lower rate than stock repurchases.

C. In general, a dollar paid out to repurchase stock will be taxed at the same rate as a dollar paid out in dividends.

D. One key advantage of a residual dividend policy is that it enables a company to follow a stable dividend policy.

E. The clientele effect suggests that companies should follow a stable dividend policy.

7. Which of the following statements is CORRECT?

A. Since depreciation is not a cash expense, it plays no role in capital budgeting.

B. Under current laws and regulations, corporations must use straight line depreciation for all assets whose lives are 3 years or longer.

C. Under MACRS depreciation, firms write off assets slower than they would under straight line depreciation, and as a result projects' forecasted NPVs are normally lower than they would be if straight line depreciation were permitted for tax purposes.

D. Under MACRS depreciation, firms can write off assets faster than they could under straight line depreciation, and as a result projects' forecasted NPVs are normally lower than they would be if straight line depreciation were permitted for tax purposes.

E. Under MACRS depreciation, firms can write off assets faster than they could under straight line depreciation, and as a result projects' forecasted NPVs are normally higher than they would be if straight line depreciation had to be used for tax purposes.

8. Nu-Tek, Inc. is expecting a period of intense growth and has decided to retain more of its earnings to help finance that growth. As a result it is going to reduce its annual dividend by 10% a year for the next three years. After that, it will maintain a constant dividend of $.70 a share. Last month, the company paid $1.80 per share. What is the value of this stock if the required rate of return is 13%?

A. $6.79   B. $7.22   C. $8.22   D. $8.87   E. $9.01

9. When shareholders pursue selfish strategies such as taking large risks or paying excessive dividends, these will result in:

A. no action by debtholders since these are equity holder concerns.

B. positive agency costs, as bondholders impose various restrictions and covenants which will diminish firm value.

C. investments of the same risk class that the firm is in.

D. undertaking scale enhancing projects.

E. lower agency costs, as shareholders have more control over the firm's assets.

10. You are trying to determine whether to accept project A or project B. These projects are mutually exclusive. As part of your analysis, you should compute the incremental IRR by determining:

A. the internal rate of return for the cash flows of each project.

B. the net present value of each project using the internal rate of return as the discount rate.

C. the discount rate that equates the discounted payback periods for each project.

D. the discount rate that makes the net present value of each project equal to 1.

E. the internal rate of return for the differences in the cash flows of the two projects.

二、問答題

1. (10%) If the price of a bond is denoted as P, the coupon payments are C, yield to maturity is y and the time to maturity is T years. Please show that "the higher time to maturity T, the higher interest rate risk of the bond".

2. (10%) Please show that "the portfolio beta is equal to the weighted average of the underlying securities' beta". You could define the notations clearly if you need.

二 Questions:

1. Use put-call parity to show that the cost of a butterfly spread created from European puts is identical to the cost of a butterfly spread created from European calls. (10%)

2. A three-month call with a strike price of $25 costs $2. A three-month put with a strike price of $20 and costs $3. A trader uses the options to create a strangle. For what two values of S_T does the trader breakeven with a profit of zero, where S_T is the stock price in three months? (10%)

3. Explain what a swap rate is. What is the relationship between swap rate and par yields? (10%)

4. A company has a $36 million portfolio with a beta of 1.2. The S&P index is currently standing at 900. Futures contracts on $250 times the index can be traded. What trade is necessary to achieve the following. (Indicate the number of contracts that should be traded and whether the position is long or short.) (10%)
   (i) Eliminate all systematic risk in the portfolio
   (ii) Reduce the beta to 0.9
   (iii) Increase beta to 1.8

5. The delta of a European call option on a non-dividend-paying stock is 0.6, its gamma is 0.04 and its vega is 0.1 (10%)
   (i) What is the delta of a European put option with the same strike price and time to maturity as the call option?
   (ii) What is the gamma of a European put option with the same strike price and time to maturity as the call option?
   (iii) What is the vega of a European put option with the same strike price and time to maturity as the call option?