

國立清華大學命題紙

九十三學年度 科技管理研究所 丙 組碩士班入學考試  
科目 財務管理 科號 6103 共 7 頁第 1 頁 \*請在試卷內作答

**Part I : Multiple-choice Questions** (Each question is worth 1.25 points.)

**Instructions:**

Part I consists of 40 multiple-choice questions. Mark your answers on the Scantron form provided. Because of the unique marking positions on the scantron form, a complete erasure of an incorrect response is important. Poor erasures could be read as marks. You are responsible for any misreading because of inappropriate erasure or marking.

Assume all cash flows are annual and come at the end of the year unless the problem states otherwise. Assume annual compounding unless the problem states otherwise.

- Which of the following changes would be likely to decrease the NPV (net present value) calculated for a project?
  - Decreasing the firm's opportunity cost of capital.
  - Permitting a net increase in working capital.
  - Spreading the total cash inflows over a shorter interval.
  - Decreasing the project's estimated expenses.
- If a project is expected to decrease inventory by \$6,000, decrease accounts payable by \$6,000, and increase accounts receivable by \$10,000, what effect does working capital have during the life of the project?
  - Increases investment by \$22,000.
  - Increases investment by \$2,000.
  - Increases investment by \$10,000.
  - Working capital has no effect during the life of the project.
- A project currently generates sales of \$10 million, variable costs equal to 50% of sales, and fixed costs of \$2 million. The firm's tax rate is 35%. What is the change in cash flow if depreciation costs increase from \$1 million to \$2 million?
  - increase by \$ 0.65 million
  - decrease by \$ 1 million
  - decrease by \$ 0.65 million
  - increase by \$ 0.35 million
- You estimate that your cattle farm will generate \$1 million of profits on sales of \$4 million under normal economic conditions, and that the degree of operating leverage is 4.0. What will profits be if sales turn out to be \$5 million?
  - \$2.00 million
  - \$3.00 million
  - \$4.00 million
  - \$6.00 million
- The term "capital structure" refers to:
  - the manner in which a firm obtains its long-term sources of funding.
  - the length of time needed to collect accounts receivable.
  - whether the firm can remain profitable in the long-run.
  - which specific assets the firm should invest in.

6. Which of the following changes in working capital will result in a decrease in cash flows?
- A) Increase in accounts payable.
  - B) Increase in inventories.
  - C) Decrease in accounts receivable.
  - D) Increase in current liabilities.
7. The slope of the security market line equals:
- A) one.
  - B) beta.
  - C) the market risk premium.
  - D) the asset risk premium.
8. What effect will a reduction in the cost of capital have on the NPV break-even level of revenue?
- A) It raises the break-even level.
  - B) It reduces the break-even level.
  - C) It has no effect on the break-even level.
  - D) This can not be determined without knowing the length of the investment horizon.
9. If your annual salary increase from \$25,000 to \$45,000 during a period that the price index increases from 100 to 150, then your real income has:
- A) decreased by 25%
  - B) increased by 12%.
  - C) increased by 20%.
  - D) increased by 53.3%
10. Which of the following statements about WACC (weighted average cost of capital) is **incorrect**?
- A) WACC is the rate of return expected to earn on firm's average-risk investments.
  - B) WACC is the after-tax version of company cost of capital.
  - C) WACC is the minimal acceptable rate of return on firm's portfolio.
  - D) WACC decreases as debt ratio increase.
11. What is the after-tax cost of preferred stock that sells for \$5 per share and offers a \$1 dividend when the tax rate is 40%?
- A) 20%
  - B) 15%
  - C) 12%
  - D) 10%
12. Suppose that the average rates of return from the following securities for the period 1950-1990 are: AT&T Stocks: 14.0% Treasury Bonds: 7.0% Treasury Bills: 4.0%. What was the average risk premium on AT&T stocks? If AT&T stock had a beta of 2.0, what was the average market return for that period?
- A) risk premium: 10.0%; market return: 3.0%
  - B) risk premium: 10.0%; market return: 9.0%
  - C) risk premium: 7.0%; market return: 10.9%
  - D) risk premium: 10.0%; market return: 8.3%
13. Which of the following statements is **incorrect**?
- A) Investors demand higher expected rates of return on stocks with more variable rates of return.
  - B) The CAPM predicts that a security with a beta of zero will provide a risk-free rate.
  - C) Investors demand higher expected rate of return from stocks with returns that are highly exposed to macroeconomic changes.
  - D) A diversified portfolio with beta of 2 is twice as volatile as the market portfolio

14. If a firm earns the WACC as an average return on its average-risk assets, then:
- A) equity holders will be satisfied, but bondholders will not.
  - B) bondholders will be satisfied, but equity holders will not.
  - C) all investors will earn their minimum required rate of return.
  - D) the firm is investing in negative NPV projects.
15. What is the pre-tax cost of debt for a firm in the 40% tax bracket that has a 10% after-tax cost of debt?
- A) 6%                      B) 10%                      C) 16.67%                      D) 25%
16. What will happen to a stock that offers a lower risk premium than predicted by the CAPM (capital asset pricing model) ?
- A) Its beta will decrease.
  - B) Its beta will increase.
  - C) Its price will decrease until the yield increases.
  - D) Its price will increase until the yield is reduced.
17. What happens to expected portfolio return if the portfolio beta increases from 1.0 to 2.0, the risk-free rate decreases from 5% to 4%, and the market risk premium remains at 8%?
- A) It increases from 12% to 19%.
  - B) It increases from 13% to 16%.
  - C) It increases from 13% to 20%.
  - D) It remains unchanged.
18. If Treasury bills are yielding 6% at a time when the market risk premium is 8%, then the
- A) market portfolio should yield 9%.
  - B) market portfolio should yield 14%.
  - C) market portfolio should yield 17.5%.
  - D) market portfolio should yield 21%.
19. Should a project be accepted if it offers an annual after-tax cash flow of \$2 million indefinitely, costs \$9 million, is less riskier than the firm's average projects, and the firm uses a 20% WACC?
- A) Yes, since NPV is positive.
  - B) Yes, since a zero NPV indicates marginal acceptability.
  - C) No, since NPV is zero.
  - D) No, since NPV is negative.
20. What would you estimate to be the required rate of return for equity investors if a stock sells for \$36 and will pay a \$3.60 dividend that is expected to grow at a constant rate of 4%?
- A) 7.6%                      B) 12.0%                      C) 14.0%                      D) 16.0%
21. How much will a firm need in cash flow before tax and interest to satisfy debt holders and equity holders if: the tax rate is 50%, there is \$10 million in common stock requiring a 10% return, and \$10 million in bonds requiring an 8% return ?
- A) \$3.26 million                      B) \$2.80 million                      C) \$2.56 million                      D) \$2.40 million
22. A project with higher than average risk offers an expected return of 16%. Which statement is **correct** if the company's opportunity cost of capital is 12% and the project's opportunity cost of capital is 18%?
- A) Project NPV is positive; it should be accepted.
  - B) Project NPV is negative; it should be rejected.

- C) Project NPV is positive; but it should be rejected.  
D) Project NPV is negative; but it should be accepted.
23. What can you assume about an investor whose diversified portfolio of stocks yielded 25% when the market portfolio yielded 15%?
- A) Treasury bills are offering a 10% yield.  
B) The portfolio beta is greater than 1.0.  
C) The portfolio beta equals 1.67.  
D) The investor's portfolio contains many defensive stocks.
24. What is the WACC for a firm with 60% debt and 40% equity that pays 12% on its debt, 25% on its equity, and has a 40% tax rate?
- A) 9.12%                      B) 12.00%                      C) 12.32%                      D) 14.32%
25. Company X has 2 million shares of common stock outstanding at a book value of \$2 per share. The stock trades for \$2.50 per share. It also has \$1 million in face value of debt that trades at 140% of par. What is its ratio of debt to value for WACC purposes?
- A) 16.67%                      B) 19.36%                      C) 20.00%                      D) 21.88%
26. A share of stock with a beta of 1.5 now sells for \$50. Investors expect the stock to pay a year-end dividend of \$3. The T-bill rate is 4%, and the market risk premium is 8%. What is investors' expectation of the stock price at the end of the year?
- A) \$51.42                      B) \$53.80                      C) \$55.00                      D) \$57.36
27. A firm has issued \$20 million in long-term bonds that now have 1 year remaining until maturity. The bonds carry an 8% annual coupon but are selling in the market for \$900. The firm also has \$45 million in market value of common stock. The tax rate is 35%. What is the after-tax cost of debt?
- A) 13%                              B) 12%                              C) 11%                              D) 10%
28. The total book value of a firm's equity is \$10 million; book value per share is \$10. The stock sells for a price of \$30 per share, and the cost of equity is 18%. The firm's bonds have a par value of \$5 million and sell at a price of 120% of par. The yield to maturity on the bonds is 10%, and the firm's tax rate is 40%. What is the WACC of the firm?
- A) 10.36%                      B) 12.97%                      C) 14.02%                      D) 16.00%
29. Consider the following case: Assume that there are no corporate taxes. A company has 40% debt financing with a required rate of return of 8%, and 60% equity financing with a required rate of return of 18%. If the company changes the debt ratio from 40% to 50% and we know that the required rate of return for debt changes from 8% to 9% because of the change in capital structure, then what is the new required rate of return for equity? [Hint: If there are no corporate taxes, changing capital structure does not affect the risk of cash flows. Therefore, the WACC (or  $r_A$ ) is unaffected by the change in capital structure.]
- A) 18.0%                              B) 19.0%                              C) 20.0%                              D) 21.0%
30. Which combination of position will tend to protect the owner from downside risk?
- A) Buy the stock and buy a call option.  
B) Sell the stock and buy a call option.  
C) Buy the stock and buy a put option.  
D) Buy the stock and sell a put option.

31. In an efficient market, ignoring taxes and time value,
- A) The price of stock should decrease by the amount of the dividend immediately on declaration date.
  - B) The price of stock should decrease by the amount of the dividend immediately on ex-dividend date.
  - C) The price of stock should increase by the amount of the dividend immediately on declaration date.
  - D) The price of stock should increase by the amount of the dividend immediately on ex-dividend date.
32. Although dividend payments reduce the total firm funds to pay bondholders the payment of dividends can reduce agency costs by:
- A) Doing so on a regular schedule.
  - B) Sharing the dividend payments with the bondholders
  - C) Reducing the free cash flows to reduce the perquisite consumption.
  - D) Making sure that only shareholders of record receive the dividend.
33. A stock dividend and a stock split are similar in that
- A) Cash is paid out and the number of shares outstanding increases.
  - B) No cash is paid out and the number of shares outstanding increases.
  - C) Both changes affect only the common stock account.
  - D) Cash is paid out and the only other effect is on the retained earnings account.

The following information refers to **Questions 34-35.**

The Nu-Grain Bread Company has 500,000 shares outstanding, which are selling for \$18.00 currently. These shares have a \$10 par value of which most were issued over 10 years ago. Nu-Grain is contemplating a stock split of four for one.

34. The four for one stock split causes what change in value of the retained earnings account?
- A) \$27,000,000.      B) \$12,000,000.      C) \$3,000,000.      D) \$0
35. The four for one stock split causes what change in the common stock account?
- A) Account value is unchanged, par value is \$2.50 and shares outstanding are 2,000,000.
  - B) Account value is \$15,000,000 higher, par value is \$2.50 and shares outstanding are 2,000,000.
  - C) Account value is \$12,000,000 higher, par value is \$2.50 and shares outstanding are 2,000,000.
  - D) Account value is \$3,000,000 higher, par value is \$2.50 and shares outstanding are 2,000,000.
36. Empirical evidence suggests that new equity issues are generally:
- A) Priced efficiently by the market.
  - B) Overpriced by investor excitement concerning a new issue.
  - C) Overpriced resulting from SEC regulation.
  - D) Underpriced, in part, to counteract the winner's curse.
37. The Wordsmith Corporation has 10,000 shares outstanding at \$30 each. They expect to raise \$150,000 by a rights offering with a subscription price of \$25 how many rights must you turn in to get a new share?
- A) 2.00                      B) 1.20                      C) 0.60                      D) 1.67

38. BrightView Windows issued warrants with an exercise price of \$17 for one share per warrant. On May 1, BrightView's common stock is at \$20 per share. The lower and upper limits on the warrant value on May 1 are:
- A) \$ 0 and \$17.      B) \$ 17 and \$20.      C) \$ 3 and \$17.      D) \$ 3 and \$ 20.
39. A firm has 100 shares of stock and 40 warrants outstanding. The warrants are about to expire, and all of them will be exercised. The market value of the firm's assets is \$2,000, and the firm has no debt. Each warrant gives the owner the right to buy 2 shares at \$15 per share. What is the price per share of the stock?
- A) \$15.00.      B) \$17.78.      C) \$11.11.      D) \$20.00.
40. The exercise of warrants creates new shares which:
- A) Increases the total number of shares but does not affect share value.  
B) Increases the total number of shares, which reduces the individual share value.  
C) Does not change the number of shares outstanding similar to options.  
D) Increases share value because cash is paid into the firm at the time of warrant exercise.

### Part II: Short Essay Questions

1. Consider a 10-month forward contract on TSMC stock. The stock price of TSMC is currently \$50. Assume that the risk free rate is 6% per annum (or 0.5% per month) for all maturities. We also expect the dividends of \$0.75 per share after three months, six months and nine months.
  - a. (5 points) What is the fair forward price?
  - b. (5 points) Suppose 4 months later, the stock price of TSMC rises to 55, what is the value of the forward contract?
2. (5 points) Consider an efficient capital market in which a particular macroeconomic variable that influences your firm's net earnings is positive serially correlated. Would you expect price changes in your stock to be serial correlated? Why or why not?
3. (10 points) Suppose you observe the following data :

Strike price	Time to expire	Call price
6300	1 month	372
6400	1 month	290
6500	1 month	202

Does there exist any arbitrage opportunity? Why?

4. (5 points) What is equity link notes?
5. (5 points) Is the following statement true or false?  
A risky security cannot have an expected return that is less than the risk free rate because the risk averse investor would be willing to hold this asset in equilibrium.
6. The stock price of stock j is currently \$40. It is known that at the end of the three months it will be either \$45 or \$38 with 1/2 probability each. The risk free rate is 8% per annum.
  - a. (5 points) Calculate the three-month European call option on the stock with an exercise price of \$40.
  - b. (5 points) If you write 7000 shares of call options, how many shares of stocks should you buy to form a hedge portfolio?
  - c. (5 points) Suppose the  $\beta$  value of stock j is 1.2, find the  $\beta$  value of this call option?