1. Amalgamated Telephone has a strong interest in calculating the price of the stock. What should an investor who is willing to pay for this stock, if the firm abide by the following dividend models?

(1). The firm paid an annual dividend of $5 yesterday. The firm has a stable dividend record and does not anticipate changing the annual dividend going forward. What is the price of the stock if you demand a return of 14 % for this stock? **(3%)**

(2). Assume that the case is identical to the problem (1), except now the dividend is expected to grow at 11 % per year forever. What should the investor be willing to pay for the stock if a return of 14 % is needed for this stock? **(3%)**

(3). Assume that the case is similar to the problem (1). Now we have two growth periods. The first growth period, g_1, is 11% and lasts for 8 years; the second growth period is 10%, starts immediately after g_1 ends, and continues forever. What should the investor be willing to pay for the stock if a return of 14 % is required for this stock? **(4%)**

(4). Assume the problem is identical to the problem (3), except now we have three growth periods (i.e., g_1, g_2, g_3). g_1 is 11% and lasts for 8 years; g_2 is 10% and lasts for 8 years after the end of g_1. g_3 is 8%, starts immediately after the end of g_2 and continues forever. What should the investor be willing to pay for the stock if a return of 14 % is required for this stock? **(6%)**

2. The following regression relates the betas of NYSE and AMEX stocks in 2006 to two variables: standard deviation in operating income (σ_{OI}) and debt/equity (D/E).

$$\text{Beta} = 0.45 \quad + 1.25\,\sigma_{OI} \quad + 1.09\ \text{D/E}$$

One day, you have been asked to use this regression to estimate the beta for a project that is expected to have a standard deviation in operating income of 40% and a debt to equity ratio of 30%.

a. Estimate the beta and cost of equity for this project, assuming a riskfree rate of 6% and a market risk premium of 5.5%. **(5%)**

b. Estimate the cost of capital for the project, assuming that the after-tax cost of debt is 5%. **(5%)**

3. When a bond is sold between coupon dates, what is a normal practice from which the bond purchaser will plan to do? Example: what price (including accrued interest) should you pay on April 14, 2003 (settlement date) for a 3.75% Taiwan Treasury bond that matures on June 15, 2017, if you required a yield to maturity of 4.25% (actual-day basis)? **(12%)**

4. The problem of using the overall firm's beta in discounting projects of different risk is the **(5%)**

a. firm would accept too many high-risk projects.

b. firm would reject too many low risk projects.

c. firm would reject too many high-risk projects.

d. firm would accept too many low risk projects.

e. Both A and B.

5. Jack's Construction Co. has 80,000 bonds outstanding that are selling at par value. Bonds with similar characteristics are yielding 8.5 percent. The company also has 4 million shares of common stock outstanding. The stock has a beta of 1.1 and sells for $40 a share. The U.S. Treasury bill is yielding 4 percent and the market risk premium is 8 percent. Jack's tax rate is 35 percent. What is Jack's weighted average cost of capital? **(5%)**

   a. 7.10 percent
   b. 7.39 percent
   c. 10.38 percent
   d. 10.65 percent
   e. 11.37 percent

6. Consider the following investment cash flow patterns over time: -$100, $310, -$240 for periods 0 through 2, respectively. At what rates of discount will the net present value of the investment equal zero? **(7%)**

二. 選擇題 (共 45 分)

(請將答案 依 題 號 填寫在 答 案 卷 內。為避免「a」和「d」難以判斷，造成閱卷困難，答案請 依 大 寫 的 **A、B、C** 或 **D** 填寫。如未按規定填寫，將不予計分。)

This part consists of **30** multiple-choice questions. Please write down your answers on the answer sheet provided. 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.

1. Since higher betas necessitate higher expected returns, one realistic way for a firm to reduce the beta of their equity is to:

A) reduce the proportion of debt financing.
B) reduce the proportion of equity financing.
C) increase the amount of their tax shield.
D) increase the beta of the debt.

2. Generally speaking, which of following statements is **correct** when a company increases its debt ratio? (**r_A**: cost of asset; **r_D**: cost of debt; **r_E**: cost of equity; **WACC**: weighted average cost of capital)

A) Both β_A and r_A will increase even if there are no corporate taxes.
B) Both β_D and WACC will increase even if there are no corporate taxes.
C) Both β_D and r_D will increase since the debt becomes riskier.
D) Both β_E and r_E will be unchanged if there are no corporate taxes.

3. If you were willing to bet that the overall stock market was heading down on a sustained basis, it would be logical to invest in:

A) low beta stocks.
B) high beta stocks.
C) stocks with large amounts of unique risk.
D) aggressive stocks.

4. If a stock's beta is 1.2 during a period when the market portfolio was down by 10%, then we could expect the return on this individual stock to:

A) lose more than 10%.
B) lose, but less than 10%.
C) gain more than 10%.
D) gain, but less than 10%.

5. What is the price of a stock with 5% of constant growth rate on dividend, 16% of expected rate of return on stock, and \$3 of dividend in one year?

A) \$18.75 B) \$27.27 C) \$32.18 D) \$60.00

6. The correct opportunity cost for a project is determined to be 15% and the project is expected to generate \$1 million in cash flows at the end of the next five years after an initial outlay of \$3 million. Based on this information, the project would plot:

A) on the security market line.
B) on the security market line, with a beta of 1.0.
C) above the security market line.
D) below the security market line.

7. Suppose that the expansion project of the National Tsing Hua University costs $105,360 now and will generate an annual cash flow of $15,000 from Year 1 through Year 10. The project's beta is 1.5, the risk-free rate is 5%, and the expected rate of return on the market portfolio is 11%. What is the net present value of the project?

A) + $75,285
B) -- $30,075
C) + $69,885
D) --$27,118

8. The term "capital structure" refers to:

A) the manner in which a firm obtains its long-term sources of funding.
B) the length of time needed to collect accounts receivable.
C) whether the firm can remain profitable in the long-run.
D) which specific assets the firm should invest in.

9. The effect of financial leverage depends on the operating earnings of the company. Which of the following is **not true**?

A) Below the indifference or break-even point in EBIT the non-levered structure is superior.
B) Financial leverage increases the slope of the EPS line.
C) Above the indifference or break-even point the increase in EPS for all equity plans is greater than debt-equity plans for same amount of EBIT increase.
D) The rate of return on operating assets is unaffected by leverage.

10. A firm has zero debt in its capital structure. Its overall cost of capital is 10%. The firm is considering a new capital structure with 60% debt. The interest rate on the debt would be 8%. Assuming there are no taxes or other imperfections, its cost of equity capital with the new capital structure would be:

A) 9%. B) 14%. C) 13%. D) 10%.

11. 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?

A) 18.0% B) 19.0% C) 20.0% D) 21.0%

12. What is the coupon rate for a bond with three years until maturity, a price of $1,080.19, and a yield to maturity of 6% ?

A) 6% B) 8% C) 9% D) 10%

13. 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 %

14. 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.

15. If a project is expected to decrease inventory by $3,000, decrease accounts payable by $3,000, and increase accounts receivable by $5,000, what effect does working capital have during the life of the project?

A) Increases investment by $11,000.
B) Increases investment by $1,000.
C) Increases investment by $5,000.
D) Working capital has no effect during the life of the project.

16. 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

17. 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?

A) $2.00 million B) $3.00 million C) $4.00 million D) $6.00 million

18. Why is the value of a call option said to increase as the interest rate increases?

A) The stock seller must pay the call owner more interest.
B) As the interest rates increase, stock prices increase.
C) The present value of the strike price is less.
D) Interest rate increases reduce the option premium.

19. 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.

20. A decrease in which of the following terms will cause an increase in the call value of an option?

A) Interest rates
B) Time to maturity
C) Volatility of the stock
D) Exercise price

21. Calculate the profit per share for an investor that exercises a put option with a strike price of $75 when the stock is selling for $65 and the premium for the put option was $4.

A) $6
B) $10
C) $14
D) -$10

22. Given the following information, what is the net operating income for an office building?

Gross rental income $250,000 *Estimated vacancy and losses 7%*
Taxes & insurance $18,000 *Utilities & maintenance $21,000*
Depreciation $20,000

A) $173,500. B) $191,000. C) $193,500. D) $211,000.

23. The call option on a dividend paying stock compared to a non-dividend paying stock is:

A) more valuable because of the extra dividend payment.
B) equal in value because cash dividends are paid on stock only.
C) less valuable because cash dividends are paid on stock only.
D) less valuable if the dividend paying stock is in-the-money while the non-dividend paying stock if out-of-the-money.

24. The risk-neutral probabilities for an asset, with a current value equal to the present value of future payoffs are:

A) given by the probability of each state occurring.
B) given by the value of the underlying asset under good news and the risk free rate.
C) given by the value of the underlying asset under good news and bad news.
D) given by the value of the underlying asset under good news, bad news, and the risk free rate.

25. 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%

26. 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) bond holders 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.

27. Which of the following statements about EVA (economic value added) is **incorrect**?

A) EVA can be used as an internal (corporate) performance measure because EVA ties directly to the creation of shareholder wealth.
B) If appropriately implemented, EVA provides an internal system of corporate governance that motivates all managers and employees to work cooperatively and enthusiastically to achieve the very best performance possible.
C) EVA cannot be used as an external measure of performance because stock prices are unpredictable.
D) EVA can be the key variable in an effective incentive compensation system that truly aligns the interests of managers with those of shareholders.

28. 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.

29. 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.

30. An investor makes a $1 million investment in a venture capital project that has an expected payoff $5,000,000 at the end of four years. The cost of capital is 10%. If the conditional annual failure probabilities over the first four years are 10%, 15%, 20%, and 15%, respectively, what is the expected NPV of the project?

A) $415,067.
B) $366,067.
C) $775,834.
D) $698,057.