Finance 160:266 **Competency Exam 4** **Spring 2011**
Name **Due: April 4th, 2011**

Please choose the best possible answer to the following questions from the responses given to each question. This exam covers material related to CAPM, hybrid securities, capital budgeting, working capital management, valuation of financial instruments, option pricing and cash budgeting decisions. Each question is equally weighted..

____ 1. Which of the following statements is most correct?
   a. The rate of depreciation will often affect operating cash flows, even though depreciation is not a cash expense.
   b. Corporations should fully account for sunk costs when making investment decisions.
   c. Corporations should fully account for opportunity costs when making investment decisions.
   d. All of the answers above are correct.
   e. Answers a and c are correct.

____ 2. Mars Inc. is considering the purchase of a new machine which will reduce manufacturing costs by $5,000 annually. Mars will use the MACRS accelerated method to depreciate the machine, and it expects to sell the machine at the end of its 5-year operating life for $10,000. The firm expects to be able to reduce net operating working capital by $15,000 when the machine is installed, but required working capital will return to the original level when the machine is sold after 5 years. Mars's marginal tax rate is 40 percent, and it uses a 12 percent cost of capital to evaluate projects of this nature. If the machine costs $60,000, what is the project's NPV? [Note: MACRS table required]
   a. -$15,394
   b. -$14,093
   c. -$58,512
   d. -$21,493
   e. -$46,901

____ 3. Consider the following project data:

   (1) A $500 feasibility study will be conducted at t = 0.
   (2) If the study indicates potential, the firm will spend $1,000 at t = 1 to build a prototype. The best estimate now is that there is an 80 percent chance that the study will indicate potential, and a 20 percent chance that it will not.
   (3) If reaction to the prototype is good, the firm will spend $10,000 to build a production plant at t = 2. The best estimate now is that there is a 60 percent chance that the reaction to the prototype will be good, and a 40 percent chance that it will be poor.
   (4) If the plant is built, there is a 50 percent chance of a t = 3 cash inflow of $16,000 and a 50 percent chance of a $13,000 cash inflow.

   If the appropriate cost of capital is 10 percent, what is the project's expected NPV?
   a. -$35
   b. -$12
   c. $0
   d. $12
   e. $35

____ 4. Suppose a company's most recent free cash flow (i.e., yesterday's free cash flow) was $100 million and is expected to grow at a constant rate of 5 percent. If the company's weighted average cost of capital is 15 percent, what is the current value of operations?
   a. $913 million
   b. $1,000 million
   c. $1,050 million
   d. $1,500 million
   e. $2,000 million

____ 5. Using the corporate valuation model, the value of a company's operations is $400 million. The company's balance sheet shows $20 million in short-term investments that are unrelated to operations. The balance sheet also shows $50 million in accounts payable, $90 million in notes payable, $30 million in long-term debt, $40 million in preferred stock, and $100 million in total common equity. If the company has 10 million shares of stock, what is your best estimate for the stock price per share?
   a. $10
   b. $21
   c. $24
   d. $26
   e. $42

____ 6. Reading Railroad's common stock is currently priced at $30, and its 8 percent convertible debentures (issued at par, or $1,000) are priced at $850. Each debenture can be converted into 25 shares of common stock at any time before 2005. What is the conversion price, C_P, and the conversion value of the bond?
   a. $25.00; $1,000
   b. $25.00; $750
   c. $40.00; $750
   d. $40.00; $850
   e. $40.00; $1,000

____ 7. Deep River Power Corporation recently sold an issue of preferred stock that had an after-tax yield of 9.6 percent. The company's new bonds recently sold at par with an after-tax yield of 8.1 percent. Both issues were placed primarily with corporate investors in the 40 percent tax bracket. Given that the preferred stock enjoys a 70 percent dividend tax exclusion for corporate investors, what was the percentage point difference in the *before-tax yields* between the two issues?
   a. 1.50%
   b. 1.20%
   c. 2.59%
   d. 2.81%
   e. 0.21%

____ 8. An option which gives the holder the right to sell a stock at a specified price at some time in the future is called a(n)
   a. Call option.
   b. Put option.
   c. Out-of-the-money option.
   d. Naked option.
   e. Covered option.

____ 9. Suppose you believe that Du Pont's stock price is going to decline from its current level of $82.50 sometime during the next 5 months. For $510.25 you could buy a 5-month put option giving you the right to sell 100 shares at a price of $83.00 per share. If you bought a 100-share contract for $510.25 and Du Pont's stock price actually dropped to $63.00, you would make
a. $1,950.00
b. $1,439.75
c. $1,489.75
d. $2,000.00
e. $2,435.00

____ 10. An analyst is interested in using the Black-Scholes model to value call options on the stock of Ledbetter Inc. The analyst has accumulated the following information:

- The price of the stock is $40.
- The strike price is $40.
- The option matures in 3 months (t = 0.25).
- The standard deviation of the stock's returns is 0.40 and the variance is 0.16.
- The risk-free rate is 6 percent.

Given this information, the analyst is then able to calculate some other necessary components of the Black-Scholes model:

- $d_1 = 0.175$
- $d_2 = -0.025$
- $N(d_1) = 0.56946$
- $N(d_2) = 0.49003$

$N(d_1)$ and $N(d_2)$ represent areas under a standard normal distribution function. Using the Black-Scholes model, what is the value of the call option?
a. $0.60
b. $3.17
c. $3.47
d. $4.20
e. $8.00

____ 11. Determination of a firm's investment in net operating working capital and how that investment is financed are elements of working capital policy.
a. True
b. False

____ 12. As a rule, managers should try to always use the free component of trade credit but should use the costly component only after comparing its costs to the costs of similar credit from other sources.
a. True
b. False

____ 13. Helena Furnishings wants to sharply reduce its cash conversion cycle. Which of the following steps would reduce its cash conversion cycle?
a. The company increases its average inventory without increasing its sales.
b. The company reduces its DSO.
c. The company starts paying its bills sooner, which reduces its average accounts payable without reducing its sales.
d. Statements a and b are correct.
e. All of the statements above are correct.

____ 14. Analyzing days sales outstanding (DSO) and the aging schedule are two common methods for monitoring receivables. However, they can provide erroneous signals to credit managers when
a. Customers' payments patterns are changing.
b. Sales fluctuate seasonally.
c. Some customers take the discount and others do not.
d. Sales are relatively constant, either seasonally or cyclically.
e. None of the statements above is correct.

____ 15. Firms generally choose to finance temporary net operating working capital with short-term debt because
a. Matching the maturities of assets and liabilities reduces risk.
b. Short-term interest rates have traditionally been more stable than long-term interest rates.
c. A firm that borrows heavily long-term is more apt to be unable to repay the debt than a firm that borrows heavily short-term.
d. The yield curve has traditionally been downward sloping.
e. Sales remain constant over the year, and financing requirements also remain constant.

____ 16. The Danser Company expects to have sales of $30,000 in January, $33,000 in February, and $38,000 in March. If 20 percent of sales are for cash, 40 percent are credit sales paid in the month following the sale, and 40 percent are credit sales paid 2 months following the sale, what are the cash receipts from sales in March?
a. $55,000
b. $47,400
c. $38,000
d. $32,800
e. $30,000

____ 17. If Hot Tubs Inc. had sales of $2,027,773 per year (all credit) and its days sales outstanding was equal to 35 days, what was its average amount of accounts receivable outstanding? (Assume a 365-day year.)
a. $194,444
b. $57,143
c. $5,556
d. $97,222
e. $212,541

____ 18. Spartan Sporting Goods has $5 million in inventory and $2 million in accounts receivable. Its average daily sales are $100,000. The company's payables deferral period (accounts payable divided by daily purchases) is 30 days. What is the length of the company's cash conversion cycle?
a. 100 days
b. 60 days
c. 50 days
d. 40 days
e. 33 days

____ 19. A firm is offered trade credit terms of 3/15, net 45 days. The firm does not take the discount, and it pays after 67 days. What is the *nominal annual cost* of not taking the discount? (Assume a 365-day year.)
a. 21.71%
b. 22.07%
c. 22.95%
d. 23.48%
e. 24.52%

____ 20. Phillips Glass Company buys on terms of 2/15, net 30 days. It does not take discounts, and it typically pays 30 days after the invoice date. Net purchases amount to $730,000 per year. On average, how much "free" trade credit does Phillips receive during the year? (Assume a 365-day year.)

a. $30,000
b. $40,000
c. $50,000
d. $60,000
e. $70,000

____ 21. Inland Oil arranged a $10,000,000 revolving credit agreement with a group of small banks. The firm paid an annual commitment fee of one-half of one percent of the unused balance of the loan commitment. On the used portion of the loan, Inland paid 1.5 percent above prime for the funds actually borrowed on an annual, simple interest basis. The prime rate was at 9 percent for the year. If Inland borrowed $6,000,000 immediately after the agreement was signed and repaid the loan at the end of one year, what was the total dollar cost of the loan agreement for one year?

a. $560,000
b. $650,000
c. $540,000
d. $900,000
e. $675,000

____ 22. Rojas Computing is developing a new software system for one of its clients. The system has an up-front cost of $75 million (at t = 0). The client has forecasted its inventory levels for the next five years as shown below:

Year	Inventory
1	$1.0 billion
2	1.2 billion
3	1.6 billion
4	2.0 billion
5	2.2 billion

Rojas forecasts that its new software will enable its client to reduce inventory to the following levels:

Year	Inventory
1	$0.8 billion
2	1.0 billion
3	1.4 billion
4	1.7 billion
5	1.9 billion

After Year 5, the software will become obsolete, so it will have no further impact on the client's inventory levels. Rojas' client is evaluating this software project as it would any other capital budgeting project. The client estimates that the weighted average cost of capital for the software system is 10 percent. What is the estimated NPV (in millions of dollars) of the new software system?

a. $233.56
b. $489.98
c. $625.12
d. $813.55
e. $956.43

____ 23. Peter Kewitt Construction's days sales outstanding is 50 days (on a 365-day basis). The company's accounts receivable equal $100 million and its balance sheet shows inventory equal to $125 million. What is the company's inventory turnover ratio?
a. 5.84
b. 4.25
c. 3.33
d. 2.75
e. 7.25

____ 24. Which of the following statements is most correct?
a. All else equal, long-term bonds have more interest rate risk than short term bonds.
b. All else equal, higher coupon bonds have more reinvestment risk than low coupon bonds.
c. All else equal, short-term bonds have more reinvestment risk than do long-term bonds.
d. Statements a and c are correct.
e. All of the statements above are correct.

____ 25. Which of the following events would make it more likely that a company would choose to call its outstanding callable bonds?
a. A reduction in market interest rates.
b. The company's bonds are downgraded.
c. An increase in the call premium.
d. Answers a and b are correct.
e. Answers a, b, and c are correct.

____ 26. Recently, Ohio Hospitals Inc. filed for bankruptcy. The firm was reorganized as American Hospitals Inc., and the court permitted a new indenture on an outstanding bond issue to be put into effect. The issue has 10 years to maturity and a coupon rate of 10 percent, paid annually. The new agreement allows the firm to pay no interest for 5 years. Then, interest payments will be resumed for the next 5 years. Finally, at maturity (Year 10), the principal plus the interest that was not paid during the first 5 years will be paid. However, no interest will be paid on the deferred interest. If the required annual return is 20 percent, what should the bonds sell for in the market today?
a. $242.26
b. $281.69
c. $578.31
d. $362.44
e. $813.69

____ 27. A firm going from a lower to a higher tax bracket could increase its use of debt, yet actually wind up with a lower after-tax cost of debt.
a. True
b. False

____ 28. The common stock of Anthony Steel has a beta of 1.20. The risk-free rate is 5 percent and the market risk premium ($r_M - r_{RF}$) is 6 percent. What is the company's cost of common stock, r_s?
a. 7.0%
b. 7.2%
c. 11.0%
d. 12.2%
e. 12.4%

____ 29. Martin Corporation's common stock is currently selling for $50 per share. The current dividend is $2.00 per share. If dividends are expected to grow at 6 percent per year, then what is the firm's cost of common stock?
a. 10.0%
b. 10.2%
c. 10.6%
d. 10.8%
e. 11.0%

____ 30. Johnson Control Industries finances its projects with 40 percent debt, 10 percent preferred stock, and 50 percent common stock.

- The company can issue bonds at a yield to maturity of 8.4 percent.
- The cost of preferred stock is 9 percent.
- The company's common stock currently sells for $30 a share.
- The company's dividend is currently $2.00 a share ($D_0$ = $2.00), and is expected to grow at a constant rate of 6 percent per year.
- Assume that the flotation cost on debt and preferred stock is zero, and no new stock will be issued.
- The company's tax rate is 30 percent.

What is the company's weighted average cost of capital (WACC)?
a. 8.33%
b. 9.32%
c. 9.79%
d. 9.99%
e. 13.15%

____ 31. Hadlock Healthcare expects to pay a $3.00 dividend at the end of the year (D_1 = $3.00). The stock's dividend is expected to grow at a rate of 10 percent a year until three years from now (t = 3). After this time, the stock's dividend is expected to grow at a constant rate of 5 percent a year. The stock's required rate of return is 11 percent. What is the price of the stock today?
a. $49
b. $54
c. $64
d. $52
e. $89

____ 32. ABC Company has been growing at a 10 percent rate, and it just paid a dividend of D_0 = $3.00. Due to a new product, ABC expects to achieve a dramatic increase in its short-run growth rate, to 20 percent annually for the next 2 years. After this time, growth is expected to return to the long-run constant rate of 10 percent. The company's beta is 2.0, the required return on an average stock is 11 percent, and the risk-free rate is 7 percent. What should the dividend yield (D_1/P_0) be today?
a. 3.93%
b. 4.60%
c. 10.00%
d. 7.54%
e. 2.33%

____ 33. DAA's stock is selling for $15 per share. The firm's income, assets, and stock price have been growing at an annual 15 percent rate and are expected to continue to grow at this rate for 3 more years. No dividends have been declared as yet, but the firm intends to declare a dividend of D_3 = $2.00 at the end of the last year of its supernormal growth. After that, dividends are expected to grow at the firm's normal growth rate of 6 percent. The firm's required rate of return is 18 percent. The stock is

a. Undervalued by $3.03.
b. Overvalued by $3.03.
c. Correctly valued.
d. Overvalued by $2.25.
e. Undervalued by $2.25.