Directions: Please answer the following questions designed to test your knowledge of Portfolio Analysis, Risk/Return Relationships, Basics of Financial Options, and Cost of Capital. There are 33 questions, please select the best answer from the responses that are given. Each question is equally weighted. Do your own work. This exam will be due at the beginning of class on March 22, 2010.

1. If the returns of two firms are negatively correlated, then one of them must have a negative beta.
2. In portfolio analysis, we often use ex post (historical) returns and standard deviations, despite the fact that we are interested in ex ante (future) data.
3. The preemptive right gives current stockholders the right to purchase, on a pro rata basis, any new shares sold by the firm. This right helps protect current stockholders against both dilution of control and dilution of value.
4. Founders' shares are a type of classified stock where the shares are owned by the firm's founders, and they generally have more votes per share than the other classes of common stock.
5. The cash flows associated with common stock are more difficult to estimate than those related to bonds because stocks only have residual claims against the company.
6. If two firms have the same current dividend and the same expected dividend growth rate, their stocks must sell at the same current price or else the market will not be in equilibrium.
7. An option is a contract that gives its holder the right to buy or sell an asset at a predetermined price within a specified period of time.
8. If the current price of a stock is below the strike price, then an option to buy the stock is worthless and will have a zero value.
9. The cost of capital should reflect the average cost of the various sources of long-term funds a firm uses to acquire assets.
10. The before-tax cost of debt, which is lower than the after-tax cost, is used as the component cost of debt for purposes of developing the firm's WACC.

Multiple Choice
Identify the choice that best completes the statement or answers the question.

11. You have the following data on three stocks:

<table>
<thead>
<tr>
<th>Stock</th>
<th>Standard Deviation</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.15</td>
<td>0.79</td>
</tr>
<tr>
<td>B</td>
<td>0.25</td>
<td>0.61</td>
</tr>
<tr>
<td>C</td>
<td>0.20</td>
<td>1.29</td>
</tr>
</tbody>
</table>

As a risk minimizer, you would choose Stock ____ if it is to be held in isolation and Stock ____ if it is to be held as part of a well-diversified portfolio.

a. A; A.
b. A; B.
c. B; C.
d. C; A.
e. C; B.
12. You hold a diversified portfolio consisting of a $5,000 investment in each of 20 different common stocks. The portfolio beta is equal to 1.12. You have decided to sell a lead mining stock (b = 1.00) at $5,000 net and use the proceeds to buy a like amount of a steel company stock (b = 2.00). What is the new beta of the portfolio?
   a. 1.1139
   b. 1.1725
   c. 1.2311
   d. 1.2927
   e. 1.3573

13. Assume that you hold a well-diversified portfolio that has an expected return of 12.0% and a beta of 1.20. You are in the process of buying 100 shares of Alpha Corp at $10 a share and adding it to your portfolio. Alpha has an expected return of 15.0% and a beta of 2.00. The total value of your current portfolio is $9,000. What will the expected return and beta on the portfolio be after the purchase of the Alpha stock?
   \[ r_{g} = \frac{E_{g}}{E_{p}} \]
   a. 11.69%; 1.22
   b. 12.30%; 1.28
   c. 12.92%; 1.34
   d. 13.56%; 1.41
   e. 14.24%; 1.48

14. Calculate the required rate of return for Mercury, Inc., assuming that (1) investors expect a 4.0% rate of inflation in the future, (2) the real risk-free rate is 3.0%, (3) the market risk premium is 5.0%, (4) Mercury has a beta of 1.00, and (5) its realized rate of return has averaged 15.0% over the last 5 years.
   a. 10.29%
   b. 10.83%
   c. 11.40%
   d. 12.00%
   e. 12.60%

15. Consider the following information and then calculate the required rate of return for the Scientific Investment Fund, which holds 4 stocks. The market's required rate of return is 15.0%, the risk-free rate is 7.0%, and the Fund's assets are as follows:

<table>
<thead>
<tr>
<th>Stock</th>
<th>Investment</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>$ 200,000</td>
<td>1.50</td>
</tr>
<tr>
<td>B</td>
<td>300,000</td>
<td>−0.50</td>
</tr>
<tr>
<td>C</td>
<td>500,000</td>
<td>1.25</td>
</tr>
<tr>
<td>D</td>
<td>1,000,000</td>
<td>0.75</td>
</tr>
</tbody>
</table>

   a. 10.67%
   b. 11.23%
   c. 11.82%
   d. 12.45%
   e. 13.10%

16. If in the opinion of a given investor a stock's expected return exceeds its required return, this suggests that
   a. The investor thinks the stock is experiencing supernormal growth.
   b. The investor thinks the stock should be sold.
   c. The investor thinks the stock is a good buy.
   d. The investor thinks management is probably not trying to maximize the price per share.
   e. The investor thinks dividends are not likely to be declared.

17. If a stock’s dividend is expected to grow at a constant rate of 5% a year, which of the following statements is CORRECT?
a. The expected return on the stock is 5% a year.
b. The stock's dividend yield is 5%.
c. The price of the stock is expected to decline in the future.
d. The stock's required return must be equal to or less than 5%.
e. The stock's price one year from now is expected to be 5% above the current price.

### 18. A stock is expected to pay a dividend of $0.75 at the end of the year. The required rate of return is \( r_s = 12.5\% \), and the expected constant growth rate is \( g = 8.5\% \). What is the current stock price?

- **a. $17.82**
- **b. $18.28**
- **c. $18.75**
- **d. $19.22**
- **e. $19.70**

### 19. If \( D_1 = $1.75 \), \( g \) (which is constant) = 4.5\%, and \( P_0 = $46 \), what is the stock's expected dividend yield for the coming year?

- **a. 3.26\%**
- **b. 3.43\%**
- **c. 3.61\%**
- **d. 3.80\%**
- **e. 3.99\%**

### 20. McDonnell Manufacturing is expected to pay a dividend of $1.50 per share at the end of the year (\( D_1 = $1.50 \)). The stock sells for $34.50 per share, and its required rate of return is 11.5\%. The dividend is expected to grow at some constant rate, \( g \), forever. What is the equilibrium expected growth rate?

- **a. 6.46\%**
- **b. 6.63\%**
- **c. 6.80\%**
- **d. 6.97\%**
- **e. 7.15\%**

### 21. E. M. Roussakis Inc.'s stock currently sells for $45 per share. The stock's dividend is projected to increase at a constant rate of 3.75\% per year. The required rate of return on the stock, \( r_s \), is 15.50\%. What is Roussakis' expected price 5 years from now?

- **a. $48.88**
- **b. $50.14**
- **c. $51.42**
- **d. $52.74**
- **e. $54.09**

### 22. Carter's preferred stock pays a dividend of $1.00 per quarter. If the price of the stock is $50.00, what is its nominal (not effective) annual rate of return?

- **a. 7.23\%**
- **b. 7.41\%**
- **c. 7.61\%**
- **d. 7.80\%**
- **e. 8.00\%**

### 23. An option that gives the holder the right to sell a stock at a specified price at some future time is

- **a. a call option.**
- **b. a put option.**
- **c. an out-of-the-money option.**
- **d. a naked option.**
- **e. a covered option.**

### 24. Other things held constant, the value of an option depends on the stock's price, the risk-free rate, and the
25. An investor who writes standard call options against stock held in his or her portfolio is said to be selling what type of options?
   a. In-the-money
   b. Put
   c. Naked
   d. Covered
   e. Out-of-the-money

26. Suppose you believe that Johnson Company's stock price is going to increase from its current level of $22.50 sometime during the next 5 months. For $310.25 you can buy a 5-month call option giving you the right to buy 100 shares at a price of $25 per share. If you buy this option for $310.25 and Johnson's stock price actually rises to $45, what would your pre-tax net profit be?
   a. −$310.25
   b. $1,689.75
   c. $1,774.24
   d. $1,862.95
   e. $1,956.10

27. Suppose you believe that Delva Corporation'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 $85 per share. If you bought this option for $510.25 and Delva's stock price actually dropped to $60, what would your pre-tax net profit be?
   a. −$510.25
   b. $1,989.75
   c. $2,089.24
   d. $2,193.70
   e. $2,303.38

28. An analyst wants to use the Black-Scholes model to value call options on the stock of Ledbetter Inc. based on the following data:
   - The price of the stock is $40.
   - The strike price of the option 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%.

Given this information, the analyst then calculated the following 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?
29. Assume that you are a consultant to Broske Inc., and you have been provided with the following data: $D_1 = $1.30; $P_0 = $42.50; and $g = 7.00\%$ (constant). What is the cost of equity from retained earnings based on the DCF approach?
   a. 9.08\%
   b. 9.56\%
   c. 10.06\%
   d. 10.56\%
   e. 11.09\%

30. You were hired as a consultant to Kroncke Company, whose target capital structure is 40\% debt, 10\% preferred, and 50\% common equity. The after-tax cost of debt is 6.00\%, the cost of preferred is 7.50\%, and the cost of retained earnings is 13.25\%. The firm will not be issuing any new stock. What is its WACC?
   a. 9.48\%
   b. 9.78\%
   c. 10.07\%
   d. 10.37\%
   e. 10.68\%

31. A company's perpetual preferred stock currently trades at $87.50 per share, and it pays an $8.00 annual dividend. If the company were to sell a new preferred issue, it would incur a flotation cost of 5.00\% of the issue price. What is the firm's cost of preferred stock?
   a. 8.25\%
   b. 8.69\%
   c. 9.14\%
   d. 9.62\%
   e. 10.11\%

32. To help finance a major expansion, Delano Development Company sold a noncallable bond several years ago that now has 15 years to maturity. This bond has a 10.25\% annual coupon, paid semiannually, it sells at a price of $1,025, and it has a par value of $1,000. If Delano's tax rate is 40\%, what component cost of debt should be used in the WACC calculation?
   a. 5.11\%
   b. 5.37\%
   c. 5.66\%
   d. 5.96\%
   e. 6.25\%

33. Chambliss Inc. hired you as a consultant to help estimate its cost of capital. You have been provided with the following data: $D_0 = $0.90; $P_0 = $27.50; and $g = 8.00\%$ (constant). Based on the DCF approach, what is the cost of equity from retained earnings?
   a. 10.41\%
   b. 10.96\%
   c. 11.53\%
   d. 12.11\%
   e. 12.72\%