First Name_____________    Last Name_____________

Please use the sample at your own risk. Please read carefully the following questions and problems. One more time, recall you are not supposed to use either tables or any notes besides your two sheets of 8 1/2" by 11" paper. Please write on the scantron answers to multiple choice questions. For written questions, be sure you show explicitly the entire procedure used, step by step, in your way to arrive at the solutions to the assigned problems. Write neatly. (Note that you might not need all the information given in some questions in order to answer questions). Please hand in the exam paper.

In this sample, the topic for each question is shown in bold letters. In the real final, the topic is not shown.

SEMI-STRONG FORM EFFICIENCY
1. The hypothesis that market prices reflect all publicly-available information is called efficiency in the:
   a. Open form.
   b. Strong form.
   c. Semi-strong form.
   d. Weak form.
   e. Stable form.

EFFICIENT MARKETS
2. If markets are at least semi-strong form efficient, and a company announces new, unexpected information regarding its future prospects—namely, that sales will be much lower than previously expected—what do you expect will happen in the stock market?
   a. The value of a share will decline over an extended period of time as investors begin to sell shares in the company.
   b. The value of a share will fall below what is considered appropriate because of the decreased demand for the shares, but eventually the price will rise to the correct level.
   c. The value of a share will drop immediately to a price that reflects the value of the new information.
   d. The value of a share will rise over a long period of time as investors sell the stock.
   e. The stock price will not change since this type of information has no impact in markets that are semi-strong form efficient.

EFFICIENT MARKETS
3. If the stock market is semi-strong efficient but not efficient in the strong form, which of the following statements is most correct?
a. All stocks should have the same expected returns; however, they may have different realized returns.
b. In equilibrium, stocks and bonds should have the same expected returns.
c. Investors can outperform the market if they have access to information which has not yet been publicly revealed.
d. If the stock market has been performing strongly over the past several months, stock prices are more likely to decline than increase over the next several months.

**COST OF DEBT**

b 4. The long-term debt of your firm is currently selling for 109% of its face value. The issue matures in 12 years and pays an annual coupon of 7.5%. What is the (pretax) cost of debt?

b. 6.40%
c. 7.50%
d. 8.90%
e. 9.30%

**WACC**

b 5. The market value of debt is $425 million and the total market value of the firm is $925 million. The cost of equity is 17%, the cost of debt is 10%, and the tax rate is 35%. What is the WACC?

a. 11.01%
b. 12.18%
c. 13.78%
d. 14.17%
e. 15.64%

b 6. The CEO of 785.com is thinking about whether to invest in a project that will return a sure 7% with no risk. Risk free rate is 4.5%. What is the right discount rate in getting the NPV of the project?

a. 7%
b. 4.5%
c. 6.75%

**WACC**
7. You are comparing two firms. All you know about them is that the WACC of firm A is 12% and the WACC of firm B is 15%. Which of the following can you infer from this?
   I. A has more systematic risk
   II. A uses more debt
   III. A and B are not in the same line of business
   IV. A uses preferred stock but B does not
   a. I and II only
   b. I and III only
   c. II and III only
   d. I, II, and IV only
   e. You cannot infer any of the above without additional information

8. Which of the following statement is NOT true for a portfolio made up of several stocks?
   a. The expected return = weighted average of each stock’s expected return.
   b. The portfolio standard deviation is >= the weighted average of each stock’s standard deviation.
   c. The portfolio beta is the weighted average of each stock’s beta
   d. The portfolio standard deviation is <= the weighted average of each stock’s standard deviation.

Answer b

A 9. Which of the following statements is incorrect?
   a. The slope of the security market line is measured by beta.
   b. Two securities with the same stand-alone risk can have different betas.
   c. Company-specific risk can be diversified away.
   d. The market risk premium is affected by attitudes about risk.
   e. Higher beta stocks have a higher required return.

Use the following to answer questions 10-11:

GenLabs has been a hot stock the last few years, but is risky. The expected returns for GenLabs are highly dependent on the state of the economy as follows:
<table>
<thead>
<tr>
<th>State of Economy</th>
<th>Probability</th>
<th>GenLabs Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>.05</td>
<td>-50%</td>
</tr>
<tr>
<td>Recession</td>
<td>.10</td>
<td>-15</td>
</tr>
<tr>
<td>Mild Slowdown</td>
<td>.20</td>
<td>5</td>
</tr>
<tr>
<td>Normal</td>
<td>.30</td>
<td>15%</td>
</tr>
<tr>
<td>Broad Expansion</td>
<td>.20</td>
<td>25</td>
</tr>
<tr>
<td>Strong Expansion</td>
<td>.15</td>
<td>40</td>
</tr>
</tbody>
</table>

10. The expected return on GenLabs is:
   A) 3.3%
   B) 8.5%
   C) 12.5%
   D) 20.5%
   E) None of the above.
   Answer: C Difficulty: Medium Page: 256
   Rationale:
   \[ E(r) = .05(-.5) + .10(-.15) + .2(.05) + .3(.15) + .2(.25) + .15(.40) = .125 = 12.5\% \]

11. The variance of GenLabs returns is
   A) .0207
   B) .0428
   C) .0643
   D) .0733
   E) None of the above.
   Answer: B Difficulty: Medium Page: 256-257
   Rationale:
   \[ \text{Variance} = (.05(-.5 - .125)^2 + .1(-.15 - .125)^2 + .2(.05 - .125)^2 + .3(.15 - .125)^2 + .2(.25 - .125)^2 + .15(.40 - .125)^2} = .0428 \]

12. You have plotted the data for two securities over time on the same graph, ie., the month return of each security for the last 5 years. If the pattern of the movements of the two securities rose and fell as the other did, these two securities would have
   A) no correlation at all.
   B) a weak negative correlation.
   C) a strong negative correlation.
   D) a strong positive correlation.
   E) one cannot get any idea of the correlation from a graph.
   Answer: D Difficulty: Easy Page: 260

13. Beta measures
   A) the ability to diversify risk.
   B) how an asset covaries with the market.
   C) the actual return on an asset.
   D) the standard of the assets' returns.
14. A stock with a beta of zero would be expected to have a rate of return equal to
   A) the risk-free rate.
   B) the market rate.
   C) the prime rate.
   D) the average AAA bond.
   E) None of the above.
   Answer: A   Difficulty: Medium   Page: 285

15. According to the CAPM
   A) the expected return on a security is negatively and non-linearly related to the security's beta.
   B) the expected return on a security is negatively and linearly related to the security's beta.
   C) the expected return on a security is positively and linearly related to the security's variance.
   D) the expected return on a security is positively and non-linearly related to the security's beta.
   E) the expected return on a security is positively and linearly related to the security's beta.
   Answer: E   Difficulty: Easy   Page: 282

16. A portfolio contains two assets. The first asset comprises 40% of the portfolio and has a beta of 1.2. The other asset has a beta of 1.5. The portfolio beta is
   A) 1.35
   B) 1.38
   C) 1.42
   D) 1.50
   E) 1.55
   Answer: B   Difficulty: Medium   Page: 287
   Rationale:
   \[ \beta_p = .4(1.2) + .6(1.5) = 1.38 \]

17. The characteristic line is graphically depicted as
   A) the plot of the relationship between beta and expected return.
   B) the plot of the returns of the security against the beta.
   C) the plot of the security returns against the market index returns.
   D) the plot of the beta against the market index returns.
   Answer: C
18. The value of a put option is always
   A) larger than the current stock price.
   B) larger than the strike price
   C) equal or less than the strike price
   D) none of the above

Answer C)

19. Suppose an investor buys one share of stock and a put option on the stock and
   simultaneously sells a call option on the stock with the same exercise price. What will be
   the value of his investment on the final exercise date?
   A) Above the exercise price if the stock price rises and below the exercise price if it falls
   B) Equal to the exercise price regardless of the stock price
   C) Equal to zero regardless of the stock price
   D) Below the exercise price if the stock price rises and above if it falls
   E) None of the above

Answer: B

VALUE OF A CALL OPTION

d 20. All else the same, the value of a call option decreases as the:
   I. Underlying asset price decreases
   II. Exercise price decreases
   III. Volatility decreases
   a. I only
   b. II only
   c. III only
   d. I and III only

IMPLICIT OPTIONS

c 21. A ticket to a baseball game gives the holder the right, but not the obligation, to attend a
   specified game. Thus, a baseball ticket is effectively an option on the possession of a seat, which has an expiration date equal to __________.
   a. American call; the day of the game
   b. American call; the end of the baseball season
   c. European call; the day of the game
   d. European call; the end of the baseball season
   e. convertible bond; the end of the baseball season
Use the following option quotes to answer questions #22 through #23.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco</td>
<td>15.00</td>
<td>Oct.</td>
<td>491</td>
<td>2.26</td>
<td>559</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>16.30</td>
<td>15.00</td>
<td>Nov.</td>
<td>259</td>
<td>2.90</td>
<td>154</td>
<td>1.00</td>
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<tr>
<td>16.30</td>
<td>17.50</td>
<td>Oct.</td>
<td>680</td>
<td>0.85</td>
<td>522</td>
<td>1.60</td>
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</tr>
<tr>
<td>16.30</td>
<td>17.50</td>
<td>Nov.</td>
<td>142</td>
<td>1.33</td>
<td>40</td>
<td>2.31</td>
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</tr>
<tr>
<td>16.30</td>
<td>17.50</td>
<td>Feb.</td>
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<td>28</td>
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<tr>
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<td>20.00</td>
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<td>0.30</td>
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<td>123</td>
<td>0.55</td>
<td>212</td>
<td>4.67</td>
<td></td>
</tr>
</tbody>
</table>

**OPTION QUOTE**

22. What is the market value per share of the November 15 call?
   - a. $1.30
   - b. $1.33
   - c. $1.95
   - d. $2.26
   - e. $2.90

23. Which of the options shown in the quote are in-the-money?
   I. The October 15 call
   II. The November 17.50 call
   III. The October 15 put
   IV. The November 20 put
   - a. I and II only
   - b. II and III only
   - c. I and IV only
   - d. III only
   - e. III and IV only

**PROTECTIVE PUT**

24. The purchase of stock and a put option on the stock to limit the downside risk associated with the stock is a strategy called the ____________.
   - a. put-call parity relation
   - b. covered call
   - c. protective put
   - d. straddle
e. strangle

PUT-CALL PARITY

25. An European put option with exercise price $50 and 6 months to expiration sells for $1.00. The continuously-compounded risk-free rate is 8% annually (so that 
PV(k)=$50*exp(-0.08*0.5)= $48.04), and the stock sells for $56. How much must a call option sell for with the same exercise price and expiration?

a. $  6.00 
b. $  7.51 
c. $  8.96 
d. $  9.65 
e. $10.84

Written questions

1. The Jackson Company has just paid a dividend of $3.00 per share (D0) on its common stock, and it expects this dividend to grow by 10 percent per year, indefinitely. The firm has a beta of 1.50; the risk-free rate is 10 percent; and the expected return on the market is 14 percent. (3 points)

How much should an investor be willing to pay for this stock today?

$$R_s = R_F + \beta(R_M - R_F) = 10\% + 1.5 \times (14\% - 10\%) = .10 + 1.5 \times 0.04 = 10\% + 1.5(4\%) = 16\%.$$  

$$P_0 = \frac{3.00(1.10)}{0.16 - 0.10} = $55.00.$$  

2. Assume that the bond A, B, and C issued by US government have no default risk. In addition, 
Bond A pays coupon rate of 6% and matures in 10 years. Price=$1000 
Bond B pays coupon rate of 12% and matures in 10 years. Price=$1100 
Bond C pays coupon rate of 9% and matures in 10 years. Price=$1060

Describe an arbitrage strategy and your profit. (2 points)

Buy (go long) 1 share of Bond A and 1 share of bond B, go short 2 shares of bond C. Because you are using the proceeds from going short of 2 bond c to buy one bond A and one bond B, you can make a profit of $20 immediately. 
In the next 10 years, use the cash inflows from Bond A and Bond B to pay off your obligation under Bond C.