Practice Final Exam

Choose only one answer for each question. You do not have to explain why you have selected a particular one. If you feel that a question is ambiguous, feel free to write a justification for your answer on the test sheet.

1. The bid price of a stock is:

A) the price at which the dealer is willing to buy the stock
B) the price at which the dealer is willing to sell the stock
C) the price at which the dealer is willing to hold the stock

2. You invest $100 in a risky asset with an expected rate of return of 12% and a standard deviation of 15% and a T-bill with a rate of return of 5%. What percentages of your money must be invested in the risk-free asset to form a portfolio with a standard deviation of 6%?

A) 30%
B) 40%
C) 50%
D) 60%
E) cannot be determined

3. Eager Beavers has a beta of 2.25. The annualized market return yesterday was 12%, and the risk-free rate is currently 4%. You observe that Eager Beavers had an annualized return yesterday of 15%. Assuming that markets are efficient, this suggests that

A) bad news about Eager Beavers was announced yesterday
B) good news about Eager Beavers was announced yesterday
C) no news about Eager Beavers was announced yesterday
D) interest rates rose yesterday
E) interest rates fell yesterday

4. You purchased XYZ stock at $40 per share. The stock is currently selling at $55. Your gains may be protected by placing a _____

A) stop-loss order
B) limit-buy order
C) market order
D) limit-sell order
E) none of the above

5. You purchased 100 shares of common stock on margin for $35 per share. The initial margin is 50% and the stock pays no dividend. What would your rate of return be if you sell the stock at $42 per share? Ignore interest on margin

A) 14%
B) 20%
C) 28%
D) 33%
E) 40%

6. The risk-free rate is 7 percent. The expected market rate of return is 15 percent. If you expect stock X with a beta of 1.3 to offer a rate of return of 12 percent, you should

A) buy stock X because it is overpriced
B) sell short stock X because it is overpriced
C) sell stock X because it is underpriced
D) buy stock X because it is underpriced
E) none of the above, as the stock is fairly priced

7. The amount that an investor allocates to the market portfolio is negatively related to I) the expected return on the market portfolio. II) the investor's risk aversion coefficient. III) the risk-free rate of return. IV) the variance of the market portfolio

A) I and II
B) II and III
C) II and IV
D) II, III, and IV
E) I, III, and IV

8. In a two-security minimum variance portfolio where the correlation between securities is greater than -1.0

A) the security with the higher standard deviation will be weighted more heavily
B) the security with the higher standard deviation will be weighted less heavily
C) the two securities will be equally weighted
D) the answer will depend on the correlation between the two assets
E) the risk will be zero

9. *Brave Investors Inc.* has a market capitalization of $100million and a market beta of 1.5. *Brave Investors* considers a merger with *Perfect Indexers*, another company that has a market capitalization of $400million and a market beta of 1.2. What will be the required rate of return on equity of the merged company given that the risk free rate of interest is 5% and the market risk premium is 8%? Both companies and the merged company are 100% equity financed.

A) 8.78%
B) 9.05%
C) 10.8%
D) 15.08%
E) None of the above

10. Assume that a typical technology stock has a standard deviation of returns equal to 50% per year, and that all technology stocks are independent of each other. If the typical blue-chip stock has a standard deviation of 10% per year, then what is the minimum number of different technology stocks you would have to include in an equally weighted portfolio to make the tech stock portfolio safer (in terms of standard deviation) than holding a single blue-chip stock?

A) 20
B) 25
C) 30
D) 35
E) 40

11. Assume that both X and Y are well-diversified portfolios and the risk-free rate is 8%. Portfolio X has an expected return of 14% and a beta of 1.00. Portfolio Y has an expected return of 9.5% and a beta of 0.25. In this situation, you would conclude that portfolios X and Y _____.

a. offer an arbitrage opportunity
b. are both overpriced
c. are both underpriced
d. are both fairly priced
e. None of the above

12. The market expects a return of 11% on each of two stocks, A and B. Stock A is expected to pay a dividend of $3 in the upcoming year while stock B is expected to pay a dividend of $2 in the upcoming year. The expected growth rate of dividends for both stocks is 4%. Using the constant growth DDM, the intrinsic value of stock A _____.

a. will be higher than the intrinsic value of stock B

b. will be the same as the intrinsic value of stock B
c. will be less than the intrinsic value of stock B
d. intrinsic value does not depend on the level of dividends being paid
e. more information is necessary to answer this question

13. Antiquated Products Corporation produces goods that are very mature in their product life cycles. Antiquated Products Corporation is expected to pay a dividend in year 1 of $1.00, a dividend of $0.90 in year 2, and a dividend of $0.85 in year 3. After year 3, dividends are expected to decline at a rate of 2% per year. An appropriate required rate of return for the stock is 8%. The stock should be worth _____.

a. $8.49
b. $12.58
c. $13.39
d. $13.84
e. none of the above

14. Floating-rate bonds are designed to _____ while convertible bonds are designed to _____.

a. minimize the holders' interest rate risk; give the investor the ability to share in the price appreciation of the company's stock
b. maximize the holders' interest rate risk; give the investor the ability to share in the price appreciation of the company's stock
c. minimize the holders' interest rate risk; give the investor the ability to benefit from interest rate changes
d. maximize the holders' interest rate risk; give investor the ability to share in the profits of the issuing company
e. none of the above

15. Which one of the following par value 12% coupon bonds with a face value of $1000 experiences a price change of $23 when the market yield changes by 50 basis points?

a. The bond with a duration of 6 years
b. The bond with a duration of 5 years
c. The bond with a duration of 2.7 years
d. The bond with a duration of 5.15 years
e. None of the above

16. Old Quartz Gold Mining Company is expected to pay a dividend of $8 in the coming year. Dividends are expected to decline at the rate of 2% per year. The risk-free rate of return is 6% and the expected return on the market portfolio is 14%. The stock of Old Quartz Gold Mining Company has a beta of -0.25. What is the intrinsic value of the stock?

a. $80.00
b. $133.33
c. $200.00
d. $400.00
e. none of the above

17. An 8% coupon, 30-year bond has yield-to-maturity of 10% and duration of 10.2 years. If the market yield drops by 15 basis points, there will be a _____ in the bond's price.

a. 1.15% decrease
b. 1.39% increase
c. 1.53% increase
d. 1.68% decrease
e. None of the above

18. Consider a call with a strike price of $50 and the price $6. Additionally, consider a put with the same strike price and expiration date, which costs $4. The purchase of a straddle would result in the loss for the following range of stock prices.

a. 46-66
b. 40-54
c. less than 40 and greater than 54
d. greater than 54
e. will never give losses

19. Suppose you buy one IBM May call contract with strike price of 100 at $5.00 and write one IBM May call contract with strike price 105 at $3.00. If the price of IBM stock is $103 in May, your profit will be

a. $100
a. $300
b. $0
c. None of the above
d. $500

20. Consider the put with the price of $2.34, with 6 months to maturity, annual risk-free rate of 3%, and the price of the underlying stock equal to $20. If the put is at the money, and the interest is continuously compounded under no arbitrage, what should be the price of the European call with the same strike and time to maturity?

a. $2.63
b. $2.64
c. $2.65
d. $2.66
e. $2.67

21. All of the following factors directly affect the price of a stock option except

a. The risk-free rate
b. The volatility of the stock
c. The time to expiration
d. The expected rate of return on the stock
e. None of the above

22. If you expect that financial markets will become more uncertain over the coming investment period, you would maximize your profits by _____.

a. selling volatility
b. buying call options
c. hedging your position using delta percentage of stocks
d. taking a short position in the futures index contract
e. All of the above are good strategies to lock in the profits under such scenario.

Solutions

1. The bid price of a stock is:

A) the price at which the dealer is willing to buy the stock
B) the price at which the dealer is willing to sell the stock
C) the price at which the dealer is willing to hold the stock

Answer: A.

2. You invest $100 in a risky asset with an expected rate of return of 12% and a standard deviation of 15% and a T-bill with a rate of return of 5%. What percentages of your money must be invested in the risk-free asset to form a portfolio with a standard deviation of 6%?

A) 30%
B) 40%
C) 50%
D) 60%
E) cannot be determined

Answer: D.

3. Eager Beavers has a beta of 2.25. The annualized market return yesterday was 12%, and the risk-free rate is currently 4%. You observe that Eager Beavers had an annualized return yesterday of 15%. Assuming that markets are efficient, this suggests that

A) bad news about Eager Beavers was announced yesterday
B) good news about Eager Beavers was announced yesterday
C) no news about Eager Beavers was announced yesterday
D) interest rates rose yesterday
E) interest rates fell yesterday

Answer: A.

4. You purchased XYZ stock at $40 per share. The stock is currently selling at $55. Your gains may be protected by placing a _____

A) stop-loss order
B) limit-buy order
C) market order
D) limit-sell order
E) none of the above

Answer: A.

5. You purchased 100 shares of common stock on margin for $35 per share. The initial margin is 50% and the stock pays no dividend. What would your rate of return be if you sell the stock at $42 per share? Ignore interest on margin

A) 14%
B) 20%
C) 28%
D) 33%
E) 40%

Answer: E.

6. The risk-free rate is 7 percent. The expected market rate of return is 15 percent. If you expect stock X with a beta of 1.3 to offer a rate of return of 12 percent, you should

A) buy stock X because it is overpriced
B) sell short stock X because it is overpriced
C) sell stock X because it is underpriced
D) buy stock X because it is underpriced
E) none of the above, as the stock is fairly priced

Answer: B.

7. The amount that an investor allocates to the market portfolio is negatively related to I) the expected return on the market portfolio. II) the investor's risk aversion coefficient. III) the risk-free rate of return. IV) the variance of the market portfolio

A) I and II
B) II and III
C) II and IV
D) II, III, and IV
E) I, III, and IV

Answer: D.

8. In a two-security minimum variance portfolio where the correlation between securities is greater than -1.0

A) the security with the higher standard deviation will be weighted more heavily
B) the security with the higher standard deviation will be weighted less heavily
C) the two securities will be equally weighted
D) the answer will depend on the correlation between the two assets
E) the risk will be zero

Answer: B.

9. *Brave Investors Inc.* has a market capitalization of $100million and a market beta of 1.5. *Brave Investors* considers a merger with *Perfect Indexers,* another company that has a market capitalization of $400million and a market beta of 1.2. What will be the required rate of return on equity of the merged company given that the risk free rate of interest is 5% and the market risk premium is 8%? Both companies and the merged company are 100% equity financed.

A) 8.78%
B) 9.05%
C) 10.8%
D) 15.08%
E) None of the above

Answer: D.

10. Assume that a typical technology stock has a standard deviation of returns equal to 50% per year, and that all technology stocks are independent of each other. If the typical blue-chip stock has a standard deviation of 10% per year, then what is the minimum number of different technology stocks you would have to include in an equally weighted portfolio to make the tech stock portfolio safer (in terms of standard deviation) than holding a single blue-chip stock?

A) 20
B) 25
C) 30
D) 35
E) 40

Answer: B.

11. Assume that both X and Y are well-diversified portfolios and the risk-free rate is 8%. Portfolio X has an expected return of 14% and a beta of 1.00. Portfolio Y has an expected return of 9.5% and a beta of 0.25. In this situation, you would conclude that portfolios X and Y _____.

a. offer an arbitrage opportunity
b. are both overpriced
b. are both underpriced
c. are both fairly priced
d. None of the above

This is an application of a one-factor APT model. To answer the question about relative mispricing, let's assume that one of the assets is fairly priced and investigate what it means for the other asset. Let F denote the factor that affects returns on both assets.

E(Rx)-Rf=beta(x)*E(F). 14%-8%=1*E(F). Which implies E(F)=6%.

Now, we want to see what it implies for the alpha of strategy Y. E(Ry)-Rf=alpha+beta(y)*E(F).

Alpha = E(Ry)-Rf-beta(y)*E(F) = 9.5%-8%-0.25*6% =0%. Hence, strategy Y is fairly priced with respect to strategy X. But, we do not know whether any of these strategies are fairly priced in absolute terms; hence, option (e) is probably the better answer than d (which would be true if we talked about relative pricing).

12. The market expects a return of 11% on each of two stocks, A and B. Stock A is expected to pay a dividend of $3 in the upcoming year while stock B is expected to pay a dividend of $2 in the upcoming year. The expected growth rate of dividends for both stocks is 4%. Using the constant growth DDM, the intrinsic value of stock A _____.

a. will be higher than the intrinsic value of stock B
b. will be the same as the intrinsic value of stock B
c. will be less than the intrinsic value of stock B
d. intrinsic value does not depend on the level of dividends being paid
e. more information is necessary to answer this question

The GGM model implies V0=E(D1)/(R-g). Given that both companies have the same R and g, the only thing that makes the difference to value is E(D1), but company A has higher E(D1) and thus a higher value V0.

13. Antiquated Products Corporation produces goods that are very mature in their product life cycles. Antiquated Products Corporation is expected to pay a dividend in year 1 of $1.00, a dividend of $0.90 in year 2, and a dividend of $0.85 in year 3. After year 3, dividends are expected to decline at a rate of 2% per year. An appropriate required rate of return for the stock is 8%. The stock should be worth _____.

a. $8.49
b. $12.58
c. $13.39
d. $13.84
e. none of the above (8.98)

This is similar to the question on Texas Instruments from class. We apply the switching growth model. First, let's calculate the value of the firm in the first regime. V1= 1/1.08+0.90/1.08^2+0.85/1.08^3 = 2.37. The second part is to calculate the value of the firm after year 3, V2. We use GGM. V23= E(D4)/(R-g) = 0.85*(1-0.02)/(0.08-(-0.02))= 8.33. But since this is the value at the end of year 3 we need to discount it by 3 periods back to time 0. V20=8.33/1.08^3 = 6.61. The total value is V0=2.37+6.61 = 8.98.

14. Floating-rate bonds are designed to _____ while convertible bonds are designed to _____.

a. minimize the holders' interest rate risk; give the investor the ability to share in the price appreciation of the company's stock

b. maximize the holders' interest rate risk; give the investor the ability to share in the price appreciation of the company's stock

c. minimize the holders' interest rate risk; give the investor the ability to benefit from interest rate changes

d. maximize the holders' interest rate risk; give investor the ability to share in the profits of the issuing company

e. none of the above

15. Which one of the following par value 12% coupon bonds with a face value of $1000 experiences a price change of $23 when the market yield changes by 50 basis points?

a. The bond with a duration of 6 years
b. The bond with a duration of 5 years
c. The bond with a duration of 2.7 years
d. The bond with a duration of 5.15 years
e. None of the above

Since this is a par bond, the yield of the bond would equal the coupon rate, i.e. 12%. To answer this question we look at the standard fixed income formula dP/P=-D/(1+y)*dy. But, we know from the question that the price changes by 23/1000=0.023. Solving for D, we get D=(dP/P)*(1+y)/dy = 0.023*1.12/0.005 = 5.15.

16. Old Quartz Gold Mining Company is expected to pay a dividend of $8 in the coming year. Dividends are expected to decline at the rate of 2% per year. The risk-free rate of return is 6% and the expected return on the market portfolio is 14%. The stock of Old Quartz Gold Mining Company has a beta of -0.25. What is the intrinsic value of the stock?

a. $80.00
b. $133.33
c. $200.00
d. $400.00
e. none of the above

This is an application of GGM model. We have E(D1)=8, g=-2%, rf=6%, E(Rm)=14%, and beta=-0.25. The first object we need to calculate is the discount rate. E(R)=6%-0.25*(14%-6%)=4%. E(R) is greater than g, thus we can use the short formula. V0 = 8/(0.04-(-0.02)) = 8/0.06= $133.33.

17. An 8% coupon, 30-year bond has yield-to-maturity of 10% and duration of 10.2 years. If the market yield drops by 15 basis points, there will be a _____ in the bond's price.

a. 1.15% decrease
b. 1.39% increase
c. 1.53% increase
d. 1.68% decrease
e. None of the above

This is an application of the fixed income equation. dP/P=-D/(1+y)*dy=-(10.2/(1+0.1))*(-0.0015)=0.0139.

18. Consider a call with a strike price of $50 and the price $6. Additionally, consider a put with the same strike price and expiration date, which costs $4. The purchase of a straddle would result in the loss for the following range of stock prices.

a. 46-66
b. 40-54
c. less than 40 and greater than 54
d. greater than 54

e. will never give losses

The straddle is a strategy that takes long position in both a call and put contract. The payoff of the straddle is zero for future price of 50. But the cost of the straddle is $10 (4+6), which implies that the straddle will have negative profit for the prices between $40 and $60. You may want to convince yourselves of this fact by drawing a little profit graph (the way we did it in class). Among the answers given, (b) fits into the range 40-60.

19. Suppose you buy one IBM May call contract with strike price of 100 at $5.00 and write one IBM May call contract with strike price 105 at $3.00. If the price of IBM stock is $103 in May, your profit will be

a. **$100**
b. $300
c. $0
d. None of the above
e. $500

If the price is $103, the long call contract is going to pay (103-100)*100=300 dollars, while the short call expires unexercised. In addition, you have to pay $500 dollars for the long call and you receive $300 for short call, which amounts to $100 profit.

20. Consider the put with the price of $2.34, with 6 months to maturity, annual risk-free rate of 3%, and the price of the underlying stock equal to $20. If the put is at the money, and the interest is continuously compounded under no arbitrage, what should be the price of the European call with the same strike and time to maturity?

a. $2.63
b. $2.64
c. $2.65
d. $2.66
e. $2.67

This is an application of the put-call parity. Given that the put option is currently at the money, it implies X=20. Under no arbitrage C=P+S-exp(-RT)*X = 2.34+20-exp(-0.03*0.5)*20 = 2.64.

21. All of the following factors directly affect the price of a stock option except

a. The risk-free rate
b. The volatility of the stock
c. The time to expiration
d. The expected rate of return on the stock
e. None of the above

In the binomial tree model, among the ones listed, only the expected rate of return on the stock does not matter.

22. If you expect that financial markets will become more uncertain over the coming investment period, you would maximize your profits by _____.

a. selling volatility
b. buying call options
c. hedging your position using delta percentage of stocks
d. taking a short position in the futures index contract
e. All of the above are good strategies to lock in the profits under such scenario.

Selling volatility is equivalent to taking a short straddle position, so this is a good strategy exactly in times of low expected uncertainty. Hedging position makes you insensitive to changes in economic conditions. Taking a short futures contract is betting on low market return, but no on volatility. In contrast, the value of call option is increasing in volatility; hence, its value is going to increase in

more uncertain times. As you can see, parts of this question are a bit outside of what we covered in class.