

**Sample Final Questions**  
Foundations of Financial Markets  
Summer 2007, Section 1  
Total exam time: 2 hours

1. If the (positive) yield to maturity on a zero coupon bond is constant from one year to the next, the price of the zero coupon bond over the next year will
  - a. Increase
  - b. Decrease
  - c. Remain the same
  - d. You cannot tell
2. Which of the following five-year investments has the highest yield to maturity?
  - a. An 8 percent coupon annual pay bond selling at 103
  - b. An 8 percent coupon annual bond selling at par
  - c. A zero coupon bond with \$ 1000 face value selling at \$665
  - d. They all have the same YTM
3. Suppose you buy a put option with strike price of 100 for a price of \$10. Your maximum profit per share is
  - a. \$10
  - b. \$100
  - c. \$90
  - d. \$110
4. According to the CAPM, if a security's beta is negative, then its expected return must be
  - a. greater than expected return of market portfolio
  - b. zero
  - c. negative
  - d. equal to the risk free rate
  - e. none of the above
5. Being long a call and short a put is like
  - a. Going long a call and short the stock
  - b. Short selling
  - c. Buying stock on margin
  - d. A straddle

6. Suppose the yield on a one-year zero-coupon bond is 7%. The yield on a two-year zero-coupon bond is 8%. You expect the one-year yield next year to rise to 7.5%. Which of the following strategies would give you the highest expected HPR over the next one year?
  - a. Invest in the one-year bond and hold till maturity
  - b. Invest in the two-year bond and sell after one year
  - c. The expected returns on a and b are equal
  - d. Impossible to tell
  
7. Which of the following represents an arbitrage opportunity where you would do the following: buy the call, sell the put, sell the stock, and buy a risk-free security.  $S = 110$ ,  $X = 100$ ,  $r = 0$ ,  $T = 1$ 
  - a.  $P = 2$ ,  $C = 12$
  - b.  $P = 5$ ,  $C = 15$
  - c.  $P = 12$ ,  $C = 23$
  - d.  $P = 5$ ,  $C = 12$
  
8. Assume a zero coupon bond has duration = 10 years and a 30 year bond has an 18% coupon and a duration = 10 years. Assume further that the yields on both bonds are the same. If we increase the yield by the identical small amount, then, the % price change of the 30 year will be approximately:
  - a. Equal to the % price change of the zero
  - b. Less than the % price change of the zero
  - c. Greater than the % price change of the zero
  - d. Can't tell
  
9. Suppose the expected return on stock ABC is 14%. Suppose  $R_f = 3\%$ ,  $E(R_m) = 10\%$  and ABC's  $\beta = 1.45$ . Then the  $\alpha$  on ABC is
  - a. Positive
  - b. Negative
  - c. Zero
  - d. Not enough information to answer
  
10. Which of the following is **TRUE** about the Capital Market Line (CML) and the Security Market Line (SML)?
  - a. Both of them apply to all assets and portfolios.
  - b. They have different slopes.
  - c. CML captures the linear relation between expected return and beta.
  - d. SML captures the linear relation between expected return and volatility.
  - e. All of the above

11. According to the CAPM, if the expected return on asset 1,  $E(R_1)$ , is greater than the expected return on asset 2,  $E(R_2)$ , then
  - a.  $R_1$  must always be greater than  $R_2$
  - b.  $\sigma_1$  must be greater than  $\sigma_2$
  - c.  $\beta_1$  must be greater than  $\beta_2$
  - d. all of the above must be true
12. An upcoming event suggests that there will be significant movement in the share price, but you're not sure in which direction. Which position would you choose?
  - a. Long a call
  - b. Long stock and short a call
  - c. A straddle
  - d. Portfolio insurance
13. Assuming you hold an annual pay coupon bond to maturity, its holding period return is equal to
  - a. the YTM if you can and do reinvest at a fixed rate
  - b. the coupon rate
  - c. the YTM if you can and do reinvest at the YTM
  - d. none of the above
14. According to the Expectations Hypothesis of the term structure
  - a. the 1-year rate today equals the expected one-year rate next year
  - b. investors are risk averse
  - c. when the yield curve is upward sloping, the expected one-year rate next year is higher than the one-year rate today
  - d. none of the above
15. The buyer of a put and the seller of a call
  - a. must disagree about whether the price of the underlying is expected to go up or down
  - b. both have rights and not obligations
  - c. both are happy to see the price of the underlying asset fall
  - d. both b and c are correct
16. Which of the following statements is false:
  - a. A par bond must have a coupon rate that is equal to the yield to maturity
  - b. When the coupon rate is greater than the yield to maturity, the bond is selling at a premium

- c. Duration can be used to calculate the interest-rate sensitivity
  - d. If I invest \$100 in a bond with coupon rate of 10% and maturity of two years which is currently selling at par, I will certainly have \$121 at the end of the two years
17. The higher the growth rate of a company, all else the same,
- a. the higher the P/E ratio of its stock
  - b. the higher the beta of its stock
  - c. the higher the price-dividend ratio of its stock
  - d. both a and c

**Numerical questions: please provide details of how you get your answers.**

18. Suppose that the risk-free rate is  $R_f = 3\%$  and the market risk-premium is  $8\%$ . According to Gordon's Growth Model, if a company has a current dividend of  $D_0 = \$20$  per share, a constant growth rate of  $g = 6\%$ , and  $\beta = 1.25$ , what is its (ex-dividend) stock price?

19. The price of a stock today is  $\$100$ . Next year, the stock price will be either  $\$120$  or  $\$90$ . The risk-free rate is  $3\%$  per year. What is the price of a call option with strike price  $\$102$ ?

20. Suppose you bought an 8% annual pay coupon bond with 4 years to maturity at par (\$1000) and then sold it at \$1020 one year before maturity. If you were able to reinvest the coupons at 8%, what is the annualized HPR you made over the 3 years you held the bond?

21. Calculate the price of annual pay coupon bond with 10% coupon rate, with face value \$100, with 20 years to maturity and a yield to maturity of 8%. [Hint: think about the stream of coupon payments as an annuity]

22. A stock has a current price of \$80 per share. The dividend one year from now is expected to be \$6 and will grow thereafter by 4% per year. What is the stock's required rate of return?

23. According to the Expectations Hypothesis, what is the expected rate of interest on a 1 year loan starting 2 years from now, implied by the following term structure

A 1-year zero coupon bond has a yield to maturity of 1%,

A 2-year zero coupon bond has a yield to maturity of 3%,

A 3-year zero coupon bond has a yield to maturity of 4%.

24. A 3-year maturity annual pay coupon bond has a face value \$1000 and 25% coupon rate. The YTM is also 25%. Calculate the percentage price change associated with a change of yield to maturity from 25% to 26%.

25. Suppose there are two kinds of zero coupon bonds, “CATs” and “TIGRs,” both paying a face value of \$100 in 1 year. Assume the CAT is sold at \$97. Suppose buying a unit of zero coupon bond costs \$1, and selling a unit of zero-coupon bond also costs \$1. What does the no-arbitrage condition imply the price of TIGRs?