



## Chapter 07 - Interest Rates and Bond Valuation test bank

Corporate Finance ت اك رش ل يوم ت (King Abdulaziz University)

**Chapter 07**  
**Interest Rates and Bond Valuation**

Chapter 07 Interest Rates and Bond Valuation **Answer Key**

**Multiple Choice Questions**

1. Mary just purchased a bond which pays \$60 a year in interest. What is this \$60 called?

- A.** coupon
- B. face value
- C. discount
- D. call premium
- E. yield

Refer to section 7.1

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.1*  
*Topic: Coupon*

2. Bert owns a bond that will pay him \$75 each year in interest plus a \$1,000 principal payment at maturity. What is the \$1,000 called?

- A. coupon
- B.** face value
- C. discount
- D. yield
- E. dirty price

Refer to section 7.1

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.1*  
*Topic: Face value*

3. A bond's coupon rate is equal to the annual interest divided by which one of the following?
- A. call price
  - B. current price
  - C. face value**
  - D. clean price
  - E. dirty price

Refer to section 7.1

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.1*  
*Topic: Coupon rate*

4. The specified date on which the principal amount of a bond is payable is referred to as which one of the following?
- A. coupon date
  - B. yield date
  - C. maturity**
  - D. dirty date
  - E. clean date

Refer to section 7.1

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.1*  
*Topic: Maturity*

5. Currently, the bond market requires a return of 11.6 percent on the 10-year bonds issued by Winston Industries. The 11.6 percent is referred to as which one of the following?

- A. coupon rate
- B. face rate
- C. call rate
- D. yield to maturity**
- E. interest rate

Refer to section 7.1

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.1*  
*Topic: Yield to maturity*

6. The current yield is defined as the annual interest on a bond divided by which one of the following?

- A. coupon
- B. face value
- C. market price**
- D. call price
- E. dirty price

Refer to section 7.1

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.1*  
*Topic: Current yield*

7. An indenture is:

- A. another name for a bond's coupon.
- B. the written record of all the holders of a bond issue.
- C. a bond that is past its maturity date but has yet to be repaid.
- D. a bond that is secured by the inventory held by the bond's issuer.
- E.** the legal agreement between the bond issuer and the bondholders.

Refer to section 7.2

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.2*  
*Topic: Indenture*

8. Atlas Entertainment has 15-year bonds outstanding. The interest payments on these bonds are sent directly to each of the individual bondholders. These direct payments are a clear indication that the bonds can accurately be defined as being issued:

- A. at par.
- B.** in registered form.
- C. in street form.
- D. as debentures.
- E. as callable.

Refer to section 7.2

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.2*  
*Topic: Registered form*

9. A bond that is payable to whomever has physical possession of the bond is said to be in:
- A. new-issue condition.
  - B. registered form.
  - C. bearer form.**
  - D. debenture status.
  - E. collateral status.

Refer to section 7.2

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.2*  
*Topic: Bearer form*

10. The Leeward Company just issued 15-year, 8 percent, unsecured bonds at par. These bonds fit the definition of which one of the following terms?
- A. note
  - B. discounted
  - C. zero-coupon
  - D. callable
  - E. debenture**

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.2*  
*Topic: Debenture*

11. Which of the following defines a note?

- I. secured
  - II. unsecured
  - III. maturity less than 10 years
  - IV. maturity in excess of 10 years
- A. III only
  - B. I and III only
  - C. I and IV only
  - D. II and III only**
  - E. II and IV only

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.2*  
*Topic: Note*

12. A sinking fund is managed by a trustee for which one of the following purposes?

- A. paying interest payments
- B. early bond redemption**
- C. converting bonds into equity securities
- D. paying preferred dividends
- E. reducing coupon rates

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.2*  
*Topic: Sinking fund*

13. A bond that can be paid off early at the issuer's discretion is referred to as being which one of the following?

- A. zero coupon
- B. callable**
- C. senior
- D. collateralized
- E. unsecured

Refer to section 7.2

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.2*  
*Topic: Call provision*

14. A \$1,000 face value bond can be redeemed early at the issuer's discretion for \$1,030, plus any accrued interest. The additional \$30 is called which one of the following?

- A. dirty price
- B. redemption value
- C. call premium**
- D. original-issue discount
- E. redemption discount

Refer to section 7.2

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.2*  
*Topic: Call premium*



15. A deferred call provision is which one of the following?

- A. requirement that a bond issuer pay the current market price, plus accrued interest, should the firm decide to call a bond
- B. ability of a bond issuer to delay repaying a bond until after the maturity date should the issuer so opt
- C. prohibition placed on an issuer which prevents that issuer from ever redeeming bonds prior to maturity
- D.** prohibition which prevents bond issuers from redeeming callable bonds prior to a specified date
- E. requirement that a bond issuer pay a call premium which is equal to or greater than one year's coupon should that issuer decide to call a bond

Refer to section 7.2

*AACSB: N/A*

*Bloom's: Knowledge*

*Difficulty: Basic*

*Learning Objective: 7-1*

*Section: 7.2*

*Topic: Deferred call provision*

16. A call-protected bond is a bond that:

- A. is guaranteed to be called.
- B. can never be called.
- C. is currently being called.
- D. is callable at any time.
- E.** cannot be called during a certain period of time.

Refer to section 7.2

*AACSB: N/A*

*Bloom's: Knowledge*

*Difficulty: Basic*

*Learning Objective: 7-1*

*Section: 7.2*

*Topic: Call-protected bond*

17. The items included in an indenture that limit certain actions of the issuer in order to protect bondholder's interests are referred to as the:

- A. trustee relationships.
- B. bylaws.
- C. legal bounds.
- D. "plain vanilla" conditions.
- E.** protective covenants.

Refer to section 7.2

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.2*  
*Topic: Protective covenants*

18. A bond that has only one payment, which occurs at maturity, defines which one of the following?

- A. debenture
- B. callable
- C. floating-rate
- D. junk
- E.** zero coupon

Refer to section 7.4

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.4*  
*Topic: Zero-coupon bond*

19. Which one of the following is the price a dealer will pay to purchase a bond?

- A. call price
- B. asked price
- C. bid price**
- D. bid-ask spread
- E. par value

Refer to section 7.5

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.5*  
*Topic: Bid price*

20. You want to buy a bond from a dealer. Which one of the following prices will you pay?

- A. call price
- B. auction price
- C. bid price
- D. asked price**
- E. bid-ask spread

Refer to section 7.5

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.5*  
*Topic: Asked price*

21. The difference between the price that a dealer is willing to pay and the price at which he or she will sell is called the:

- A. equilibrium.
- B. premium.
- C. discount.
- D. call price.
- E.** spread.

Refer to section 7.5

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.5*  
*Topic: Bid-ask spread*

22. A bond is quoted at a price of \$989. This price is referred to as which one of the following?

- A. call price
- B. face value
- C.** clean price
- D. dirty price
- E. wholesale price

Refer to section 7.5

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.5*  
*Topic: Clean price*

23. Pete paid \$1,032 as his total cost of purchasing a bond. This price is referred to as the:
- A. quoted price.
  - B. spread price.
  - C. clean price.
  - D.** dirty price.
  - E. call price.

Refer to section 7.5

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.5*  
*Topic: Dirty price*

24. Real rates are defined as nominal rates that have been adjusted for which of the following?
- A.** inflation
  - B. default risk
  - C. accrued interest
  - D. interest rate risk
  - E. both inflation and interest rate risk

Refer to section 7.6

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-4*  
*Section: 7.6*  
*Topic: Real rate*

25. Interest rates that include an inflation premium are referred to as:
- A. annual percentage rates.
  - B. stripped rates.
  - C. effective annual rates.
  - D. real rates.
  - E.** nominal rates.

Refer to section 7.6

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-4*  
*Section: 7.6*  
*Topic: Nominal rate*

26. The Fisher effect is defined as the relationship between which of the following variables?
- A. default risk premium, inflation risk premium, and real rates
  - B. nominal rates, real rates, and interest rate risk premium
  - C. interest rate risk premium, real rates, and default risk premium
  - D.** real rates, inflation rates, and nominal rates
  - E. real rates, interest rate risk premium, and nominal rates

Refer to section 7.6

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-4*  
*Section: 7.6*  
*Topic: Fisher effect*

27. The pure time value of money is known as the:

- A. liquidity effect.
- B. Fisher effect.
- C.** term structure of interest rates.
- D. inflation factor.
- E. interest rate factor.

Refer to section 7.7

*AACSB: N/A*

*Bloom's: Knowledge*

*Difficulty: Basic*

*Learning Objective: 7-5*

*Section: 7.7*

*Topic: Term structure of interest rates*

28. Which one of the following premiums is compensation for expected future inflation?

- A. default risk
- B. taxability
- C. liquidity
- D.** inflation
- E. interest rate risk

Refer to section 7.7

*AACSB: N/A*

*Bloom's: Knowledge*

*Difficulty: Basic*

*Learning Objective: 7-5*

*Section: 7.7*

*Topic: Inflation premium*

29. The interest rate risk premium is the:

- A. additional compensation paid to investors to offset rising prices.
- B.** compensation investors demand for accepting interest rate risk.
- C. difference between the yield to maturity and the current yield.
- D. difference between the market interest rate and the coupon rate.
- E. difference between the coupon rate and the current yield.

Refer to section 7.7

*AACSB: N/A*

*Bloom's: Knowledge*

*Difficulty: Basic*

*Learning Objective: 7-5*

*Section: 7.7*

*Topic: Interest rate risk premium*

30. A Treasury yield curve plots Treasury interest rates relative to which one of the following?

- A. market rates
- B. comparable corporate bond rates
- C. the risk-free rate
- D. inflation
- E.** maturity

Refer to section 7.7

*AACSB: N/A*

*Bloom's: Knowledge*

*Difficulty: Basic*

*Learning Objective: 7-5*

*Section: 7.7*

*Topic: Treasury yield curve*



31. Which one of the following risk premiums compensates for the possibility of nonpayment by the bond issuer?

- A.** default risk
- B. taxability
- C. liquidity
- D. inflation
- E. interest rate risk

Refer to section 7.7

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-5*  
*Section: 7.7*  
*Topic: Default risk premium*

32. The taxability risk premium compensates bond holders for which one of the following?

- A. yield decreases in response to market changes
- B. lack of coupon payments
- C. possibility of default
- D.** a bond's unfavorable tax status
- E. decrease in a municipality's credit rating

Refer to section 7.7

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-5*  
*Section: 7.7*  
*Topic: Taxability premium*

33. The liquidity premium is compensation to investors for:
- A. purchasing a bond in the secondary market.
  - B.** the lack of an active market wherein a bond can be sold for its actual value.
  - C. acquiring a bond with an unfavorable tax status.
  - D. redeeming a bond prior to maturity.
  - E. purchasing a bond that has defaulted on its coupon payments.

Refer to section 7.7

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-5*  
*Section: 7.7*  
*Topic: Liquidity premium*

34. An 8 percent corporate bond that pays interest semi-annually was issued last year. Which two of the following most likely apply to this bond today if the current yield-to-maturity is 7 percent?
- I. a structure as an interest-only loan
  - II. a current yield that equals the coupon rate
  - III. a yield-to-maturity equal to the coupon rate
  - IV. a market price that differs from the face value
- A. I and III only
  - B.** I and IV only
  - C. II and III only
  - D. II and IV only
  - E. III and IV only

Refer to section 7.1

*AACSB: N/A*  
*Bloom's: Comprehension*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Bond features*

35. A bond has a market price that exceeds its face value. Which of the following features currently apply to this bond?

- I. discounted price
  - II. premium price
  - III. yield-to-maturity that exceeds the coupon rate
  - IV. yield-to-maturity that is less than the coupon rate
- A. III only
  - B. I and III only
  - C. I and IV only
  - D. II and III only
  - E. II and IV only**

Refer to section 7.1

*AACSB: N/A*  
*Bloom's: Comprehension*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Premium bonds*

36. All else constant, a bond will sell at \_\_\_\_\_ when the coupon rate is \_\_\_\_\_ the yield to maturity.

- A. a premium; less than
- B. a premium; equal to
- C. a discount; less than**
- D. a discount; higher than
- E. par; less than

Refer to section 7.1

*AACSB: N/A*  
*Bloom's: Comprehension*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Discount bond*

37. The Walthers Company has a semi-annual coupon bond outstanding. An increase in the market rate of interest will have which one of the following effects on this bond?

- A. increase the coupon rate
- B. decrease the coupon rate
- C. increase the market price
- D. decrease the market price**
- E. increase the time period

Refer to section 7.1

*AACSB: N/A*  
*Bloom's: Comprehension*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.1*  
*Topic: Interest rate risk*

38. Which of the following are characteristics of a premium bond?

- I. coupon rate < yield-to-maturity
  - II. coupon rate > yield-to-maturity
  - III. coupon rate < current yield
  - IV. coupon rate > current yield
- A. I only
  - B. I and III only
  - C. I and IV only
  - D. II and III only
  - E. II and IV only**

Refer to section 7.1

*AACSB: N/A*  
*Bloom's: Comprehension*  
*Difficulty: Intermediate*  
*Learning Objective: 7-1*  
*Section: 7.1*  
*Topic: Bond yields*

39. Which of the following relationships apply to a par value bond?

- I. coupon rate < yield-to-maturity
  - II. current yield = yield-to-maturity
  - III. market price = call price
  - IV. market price = face value
- A. I and II only
  - B. I and III only
  - C. II and IV only**
  - D. I, II, and III only
  - E. II, III, and IV only

Refer to sections 7.1 and 7.2

*AACSB: N/A*  
*Bloom's: Comprehension*  
*Difficulty: Intermediate*  
*Learning Objective: 7-1*  
*Section: 7.1 and 7.2*  
*Topic: Bond characteristics*

40. Which one of the following relationships is stated correctly?

- A. The coupon rate exceeds the current yield when a bond sells at a discount.
- B. The call price must equal the par value.
- C. An increase in market rates increases the market price of a bond.
- D. Decreasing the time to maturity increases the price of a discount bond, all else constant.**
- E. Increasing the coupon rate decreases the current yield, all else constant.

Refer to sections 7.1 and 7.2

*AACSB: N/A*  
*Bloom's: Comprehension*  
*Difficulty: Intermediate*  
*Learning Objective: 7-2*  
*Section: 7.1 and 7.2*  
*Topic: Bond characteristics*

41. Green Roof Inns is preparing a bond offering with a 6 percent, semiannual coupon and a face value of \$1,000. The bonds will be repaid in 10 years and will be sold at par. Given this, which one of the following statements is correct?

- A. The bonds will become discount bonds if the market rate of interest declines.
- B. The bonds will pay 10 interest payments of \$60 each.
- C.** The bonds will sell at a premium if the market rate is 5.5 percent.
- D. The bonds will initially sell for \$1,030 each.
- E. The final payment will be in the amount of \$1,060.

Refer to section 7.1

*AACSB: N/A*  
*Bloom's: Comprehension*  
*Difficulty: Intermediate*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Bond values*

42. A newly issued bond has a 7 percent coupon with semiannual interest payments. The bonds are currently priced at par value. The effective annual rate provided by these bonds must be:

- A. 3.5 percent.
- B. greater than 3.5 percent but less than 7 percent.
- C. 7 percent.
- D.** greater than 7 percent.
- E. Answer cannot be determined from the information provided.

Refer to section 7.1

*AACSB: N/A*  
*Bloom's: Comprehension*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.1*  
*Topic: Effective annual rate*

43. Which of the following increase the price sensitivity of a bond to changes in interest rates?

- I. increase in time to maturity
  - II. decrease in time to maturity
  - III. increase in coupon rate
  - IV. decrease in coupon rate
- A. II only
  - B. I and III only
  - C. I and IV only**
  - D. II and III only
  - E. II and IV only

Refer to section 7.1

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Interest rate sensitivity*

44. Which one of the following bonds is the least sensitive to interest rate risk?

- A. 3-year; 4 percent coupon
- B. 3-year; 6 percent coupon**
- C. 5-year; 6 percent coupon
- D. 7-year; 6 percent coupon
- E. 7-year; 4 percent coupon

Refer to section 7.1

*AACSB: N/A*  
*Bloom's: Comprehension*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Interest rate sensitivity*

45. As a bond's time to maturity increases, the bond's sensitivity to interest rate risk:
- A. increases at an increasing rate.
  - B.** increases at a decreasing rate.
  - C. increases at a constant rate.
  - D. decreases at an increasing rate.
  - E. decreases at a decreasing rate.

Refer to section 7.1

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Interest rate risk*

46. You own a bond that has a 6 percent annual coupon and matures 5 years from now. You purchased this 10-year bond at par value when it was originally issued. Which one of the following statements applies to this bond if the relevant market interest rate is now 5.8 percent?
- A. The current yield-to-maturity is greater than 6 percent.
  - B. The current yield is 6 percent.
  - C. The next interest payment will be \$30.
  - D. The bond is currently valued at one-half of its issue price.
  - E.** You will realize a capital gain on the bond if you sell it today.

Refer to section 7.1

*AACSB: N/A*  
*Bloom's: Comprehension*  
*Difficulty: Intermediate*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Interest rate effects*



47. You expect interest rates to decline in the near future even though the bond market is not indicating any sign of this change. Which one of the following bonds should you purchase now to maximize your gains if the rate decline does occur?

- A. short-term; low coupon
- B. short-term; high coupon
- C. long-term; zero coupon**
- D. long-term; low coupon
- E. long-term; high coupon

Refer to section 7.1

*AACSB: N/A*  
*Bloom's: Comprehension*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Interest rate risk*

48. A 6 percent, annual coupon bond is currently selling at a premium and matures in 7 years. The bond was originally issued 3 years ago at par. Which one of the following statements is accurate in respect to this bond today?

- A. The face value of the bond today is greater than it was when the bond was issued.
- B. The bond is worth less today than when it was issued.
- C. The yield-to-maturity is less than the coupon rate.**
- D. The coupon rate is greater than the current yield.
- E. The yield-to-maturity equals the current yield.

Refer to section 7.1

*AACSB: N/A*  
*Bloom's: Analysis*  
*Difficulty: Intermediate*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Bond yields*

49. Which of the following statements concerning bonds are correct?

- I. Bonds provide tax benefits to issuers.
- II. The risk of a firm financially failing increases when the firm issues bonds.
- III. Most long-term bond issues are referred to as unfunded debt.
- IV. All bonds are treated equally in a bankruptcy proceeding.

- A. II and III only
- B. I and II only**
- C. III and IV only
- D. II and IV only
- E. I, II, and III only

Refer to section 7.2

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.2*  
*Topic: Bond features*

50. Texas Foods has a 6 percent bond issue outstanding that pays \$30 in interest every March and September. The bonds are investment grade and sell at par. The bonds are callable at a price equal to the present value of all future interest and principal payments discounted at a rate equal to the comparable Treasury rate plus 0.50 percent. Which of the following correctly describe the features of this bond?

- I. bond rating of B
  - II. "make whole" call price
  - III. \$1,000 face value
  - IV. offer price of \$1,000
- A. I and III only
  - B. III and IV only
  - C. I, III, and IV only
  - D. II, III, and IV only**
  - E. I, II, III, and IV

Refer to section 7.2

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.2*  
*Topic: Bond features*

51. Last year, Lexington Homes issued \$1 million in unsecured, non-callable debt. This debt pays an annual interest payment of \$55 and matures 6 years from now. The face value is \$1,000 and the market price is \$1,020. Which one of these terms correctly describes a feature of this debt?

- A. semi-annual coupon
- B. discount bond
- C. note**
- D. trust deed
- E. collateralized

Refer to section 7.2

*AACSB: N/A*  
*Bloom's: Comprehension*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.2*  
*Topic: Bond features*

52. Callable bonds generally:

- A. grant the bondholder the option to call the bond anytime after the deferment period.
- B. are callable at par as soon as the call-protection period ends.
- C. are called when market interest rates increase.
- D. are called within the first three years after issuance.
- E. have a sinking fund provision.**

Refer to section 7.2

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.2*  
*Topic: Callable bonds*

53. Which of the following are negative covenants that might be found in a bond indenture?

- I. The company shall maintain a current ratio of 1.10 or better.
  - II. No debt senior to this issue can be issued.
  - III. The company cannot lease any major assets without approval by the lender.
  - IV. The company must maintain the loan collateral in good working order.
- A. I and II only
  - B. II and III only**
  - C. III and IV only
  - D. II, III, and IV only
  - E. I, II, and III only

Refer to section 7.2

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.2*  
*Topic: Negative covenants*

54. Protective covenants:

- A. apply to short-term debt issues but not to long-term debt issues.
- B. only apply to privately issued bonds.
- C. are a feature found only in government-issued bond indentures.
- D. only apply to bonds that have a deferred call provision.
- E. are primarily designed to protect bondholders.**

Refer to section 7.2

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.2*  
*Topic: Protective covenants*

55. Which one of the following statements concerning bond ratings is correct?

- A. Investment grade bonds are rated BB or higher by Standard & Poor's.
- B. Bond ratings assess both interest rate risk and default risk.
- C.** Split rated bonds are called crossover bonds.
- D. The highest rating issued by Moody's is AAA.
- E. A "fallen angel" is a term applied to all "junk" bonds.

Refer to section 7.3

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Intermediate*  
*Learning Objective: 7-3*  
*Section: 7.3*  
*Topic: Bond ratings*

56. A "fallen angel" is a bond that has moved from:

- A. being publicly traded to being privately traded.
- B. being a long-term obligation to being a short-term obligation.
- C. having a yield-to-maturity in excess of the coupon rate to having a yield-to-maturity that is less than the coupon rate.
- D. senior status to junior status for liquidation purposes.
- E.** investment grade to speculative grade.

Refer to section 7.3

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-3*  
*Section: 7.3*  
*Topic: Fallen angel*

57. Bonds issued by the U.S. government:

- A. are considered to be free of interest rate risk.
- B. generally have higher coupons than those issued by an individual state.
- C.** are considered to be free of default risk.
- D. pay interest that is exempt from federal income taxes.
- E. are called "munis".

Refer to section 7.4

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.4*  
*Topic: Government bonds*

58. Treasury bonds are:

- A. issued by any governmental agency in the U.S.
- B. issued only on the first day of each fiscal year by the U.S. Department of Treasury.
- C. bonds that offer the best tax benefits of any bonds currently available.
- D.** generally issued as semi-annual coupon bonds.
- E. totally risk-free.

Refer to section 7.4

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.4*  
*Topic: Treasury bonds*

59. Municipal bonds:

- A. are totally risk-free.
- B. generally have higher coupon rates than corporate bonds.
- C.** pay interest that is federally tax-free.
- D. are rarely callable.
- E. are free of default-risk.

Refer to section 7.4

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.4*  
*Topic: Municipal bonds*

60. The break-even tax rate between a taxable corporate bond yielding 7 percent and a comparable nontaxable municipal bond yielding 5 percent can be expressed as:

- A.**  $0.05/(1 - t^*) = 0.07$ .
- B.  $0.05 - (1 - t^*) = 0.07$ .
- C.  $0.07 + (1 - t^*) = 0.05$ .
- D.  $0.05 \times (1 - t^*) = 0.07$ .
- E.  $0.05 \times (1 + t^*) = 0.07$ .

Refer to section 7.4

*AACSB: N/A*  
*Bloom's: Comprehension*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.4*  
*Topic: Break-even tax rate*

61. A zero coupon bond:

- A. is sold at a large premium.
- B. pays interest that is tax deductible to the issuer when paid.
- C. can only be issued by the U.S. Treasury.
- D.** has more interest rate risk than a comparable coupon bond.
- E. provides no taxable income to the bondholder until the bond matures.

Refer to section 7.4

*AACSB: N/A*  
*Bloom's: Comprehension*  
*Difficulty: Intermediate*  
*Learning Objective: 7-1*  
*Section: 7.4*  
*Topic: Zero-coupon bond*

62. Which one of the following risks would a floating-rate bond tend to have less of as compared to a fixed-rate coupon bond?

- A. real rate risk
- B.** interest rate risk
- C. default risk
- D. liquidity risk
- E. taxability risk

Refer to section 7.4

*AACSB: N/A*  
*Bloom's: Comprehension*  
*Difficulty: Intermediate*  
*Learning Objective: 7-5*  
*Section: 7.4*  
*Topic: Floating-rate bond*



63. The collar of a floating-rate bond refers to the minimum and maximum:

- A. call periods.
- B. maturity dates.
- C. market prices.
- D.** coupon rates.
- E. yields to maturity.

Refer to section 7.4

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.4*  
*Topic: Floating-rate bond*

64. Last year, you purchased a "TIPS" at par. Since that time, both market interest rates and the inflation rate have increased by 0.25 percent. Your bond has most likely done which one of the following since last year?

- A. decreased in value due to the change in inflation rates
- B. experienced an increase in its bond rating
- C.** maintained a fixed real rate of return
- D. increased in value in response to the change in market rates
- E. increased in value due to a decrease in time to maturity

Refer to section 7.4

*AACSB: N/A*  
*Bloom's: Analysis*  
*Difficulty: Intermediate*  
*Learning Objective: 7-1*  
*Section: 7.4*  
*Topic: TIPS*

65. Recently, you discovered a puttable income bond that is convertible. If you purchase this bond, you will have the right to do which of the following?

- I. force the issuer to repurchase the bond prior to maturity
  - II. choose when you wish to receive interest payments
  - III. convert the bond into a TIPS
  - IV. convert the bond into equity shares
- A. I and III only
  - B. I and IV only**
  - C. II and III only
  - D. III and IV only
  - E. I, II, and IV only

Refer to section 7.4

*AACSB: N/A*  
*Bloom's: Comprehension*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.4*  
*Topic: Bond types*

66. "Cat" bonds are primarily designed to help:

- A. municipalities survive economic recessions.
- B. corporations respond to overseas competition.
- C. the federal government cope with huge deficits.
- D. corporations recover from involuntary reorganizations.
- E. insurance companies fund excessive claims.**

Refer to section 7.4

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.4*  
*Topic: "Cat" bonds*

67. Mary is a retired widow who is financially dependent upon the interest income produced by her bond portfolio. Which one of the following bonds is the least suitable for her to own?

- A. 6-year, putable, high coupon bond
- B. 5-year TIPS
- C. 10-year AAA coupon bond
- D. 5-year floating rate bond
- E.** 7- year income bond

Refer to section 7.4

*AACSB: N/A*  
*Bloom's: Analysis*  
*Difficulty: Intermediate*  
*Learning Objective: 7-1*  
*Section: 7.4*  
*Topic: Bond features*

68. Al is retired and enjoys his daily life. His one concern is that his bonds provide a steady stream of income that will continue to allow him to have the money he desires to continue his active lifestyle without lowering his present standard of living. Although he has sufficient principal to live on, he only wants to spend the interest income provided by his holdings and thus is concerned about the purchasing power of that income. Which one of the following bonds should best ease Al's concerns?

- A. 6-year, putable, high coupon bond
- B.** 5-year TIPS
- C. 10-year AAA coupon bond
- D. 5-year municipal bond
- E. 7- year income bond

Refer to section 7.4

*AACSB: N/A*  
*Bloom's: Analysis*  
*Difficulty: Intermediate*  
*Learning Objective: 7-1*  
*Section: 7.4*  
*Topic: Bond features*

69. Phil has researched TLM Technologies and believes the firm is poised to vastly increase in value. He wants to invest in this company. Phil has decided to purchase TLM Technologies bonds so that he can have a steady stream of interest income. However, he still wishes that he could share in the firm's success along with TLM's shareholders. Which one of the following bond features will help Phil fulfill his wish?

- A. put provision
- B. positive covenant
- C. warrant**
- D. crossover rating
- E. call provision

Refer to section 7.4

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.4*  
*Topic: Bond features*

70. A U.S. Treasury bond that is quoted at 100:11 is selling:

- A. for 11 percent more than par value.
- B. at an 11 percent discount.
- C. for 100.11 percent of face value.
- D. at par and pays an 11 percent coupon.
- E. for 100 and 11/32nds percent of face value.**

Refer to section 7.5

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.5*  
*Topic: Treasury bond quote*

71. Which of the following correctly describe U.S. Treasury bonds?

- I. have a "tick" size of 1/32
  - II. highly liquid
  - III. quoted in dollars and cents
  - IV. quoted at the dirty price
- A. I and II only  
B. I and IV only  
C. II and III only  
D. II and IV only  
E. I, II, and III only

Refer to section 7.5

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.5*  
*Topic: Treasury bonds*

72. A 6-year, \$1,000 face value bond issued by Taylor Tools pays interest semiannually on February 1 and August 1. Assume today is October 1. What will the difference, if any, be between this bond's clean and dirty prices today?

- A. no difference
- B. one month's interest
- C. two month's interest
- D. four month's interest
- E. five month's interest

Refer to section 7.5

*AACSB: N/A*  
*Bloom's: Comprehension*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.5*  
*Topic: Clean and dirty prices*

73. Today, June 15, you want to buy a bond with a quoted price of 98.64. The bond pays interest on January 1 and July 1. Which one of the following prices represents your total cost of purchasing this bond today?

- A. clean price
- B. dirty price**
- C. asked price
- D. quoted price
- E. bid price

Refer to section 7.5

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.5*  
*Topic: Dirty price*

74. Which one of the following rates represents the change, if any, in your purchasing power as a result of owning a bond?

- A. risk-free rate
- B. realized rate
- C. nominal rate
- D. real rate**
- E. current rate

Refer to section 7.6

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-4*  
*Section: 7.6*  
*Topic: Real rate*

75. Which one of the following statements is correct?

- A. The risk-free rate represents the change in purchasing power.
- B. Any return greater than the inflation rate represents the risk premium.
- C. Historical real rates of return must be positive.
- D. Nominal rates exceed real rates by the amount of the risk-free rate.
- E.** The real rate must be less than the nominal rate given a positive rate of inflation.

Refer to section 7.6

*AACSB: N/A*  
*Bloom's: Comprehension*  
*Difficulty: Intermediate*  
*Learning Objective: 7-5*  
*Section: 7.6*  
*Topic: Bond yields*

76. The Fisher Effect primarily emphasizes the effects of \_\_\_\_\_ on an investor's rate of return.

- A. default
- B. market
- C. interest rate
- D.** inflation
- E. maturity

Refer to section 7.6

*AACSB: N/A*  
*Bloom's: Knowledge*  
*Difficulty: Basic*  
*Learning Objective: 7-4*  
*Section: 7.6*  
*Topic: Fisher effect*

77. You are trying to compare the present values of two separate streams of cash flows which have equivalent risks. One stream is expressed in nominal values and the other stream is expressed in real values. You decide to discount the nominal cash flows using a nominal annual rate of 8 percent. What rate should you use to discount the real cash flows?

- A. 8 percent
- B. EAR of 8 percent compounded monthly
- C. comparable risk-free rate
- D. comparable real rate**
- E. You cannot compare the present values of these two streams of cash flows.

Refer to section 7.6

*AACSB: N/A*

*Bloom's: Comprehension*

*Difficulty: Basic*

*Learning Objective: 7-4*

*Section: 7.6*

*Topic: Nominal and real rates*

78. Which of the following statements is correct concerning the term structure of interest rates?

- I. Expectations of lower inflation rates in the future tend to lower the slope of the term structure of interest rates.
  - II. The term structure of interest rates includes both an inflation premium and an interest rate risk premium.
  - III. The real rate of return has minimal, if any, affect on the slope of the term structure of interest rates.
  - IV. The term structure of interest rates and the time to maturity are always directly related.
- A. I and II only
  - B. II and IV only
  - C. I, II, and III only**
  - D. II, III, and IV only
  - E. I, II, and IV only

Refer to section 7.7

*AACSB: N/A*

*Bloom's: Comprehension*

*Difficulty: Intermediate*

*Learning Objective: 7-5*

*Section: 7.7*

*Topic: Term structure of interest rates*



79. Which two of the following factors cause the yields on a corporate bond to differ from those on a comparable Treasury security?

- I. inflation risk
  - II. interest rate risk
  - III. taxability
  - IV. default risk
- A. I and II only
  - B. III and IV only**
  - C. I, II, and IV only
  - D. II, III, and IV only
  - E. I, II, III, and IV

Refer to sections 7.4 and 7.7

*AACSB: N/A*

*Bloom's: Comprehension*

*Difficulty: Basic*

*Learning Objective: 7-5*

*Section: 7.4 and 7.7*

*Topic: Determinants of bond yields*

80. The bonds issued by Stainless Tubs bear a 6 percent coupon, payable semiannually. The bonds mature in 11 years and have a \$1,000 face value. Currently, the bonds sell for \$989. What is the yield to maturity?

- A. 5.87 percent
- B. 5.92 percent
- C. 6.08 percent
- D. 6.14 percent**
- E. 6.20 percent

$$\$989 = \frac{0.06 \times \$1,000}{2} \times \left\{ \frac{1 - \left[ 1 / \left( 1 + \frac{r}{2} \right)^{11 \times 2} \right]}{\frac{r}{2}} \right\} + \frac{\$1,000}{\left( 1 + \frac{r}{2} \right)^{11 \times 2}}$$

This cannot be solved directly, so it's easiest to just use the calculator method to get an answer. You can then use the calculator answer as the rate in the formula just to verify that your answer is correct.

Enter	11×2	/2	-989	60/2	1,000
	N	I/Y	PV	PMT	FV
Solve for		6.14			

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Yield to maturity*

81. Greenbrier Industrial Products' bonds have a 7.60 percent coupon and pay interest annually. The face value is \$1,000 and the current market price is \$1,062.50 per bond. The bonds mature in 16 years. What is the yield to maturity?

- A.** 6.94 percent
- B. 7.22 percent
- C. 7.46 percent
- D. 7.71 percent
- E. 7.80 percent

$$\$1,062.50 = (0.076 \times \$1,000) \times \left\{ \frac{1 - [1/(1+r)^{16}]}{r} \right\} + \frac{\$1,000}{(1+r)^{16}}$$

This cannot be solved directly, so it's easiest to just use the calculator method to get an answer. You can then use the calculator answer as the rate in the formula just to verify that your answer is correct.

Enter	16	-1,062.50	76	1,000
	N	I/Y	PV	FV
Solve for		6.94		

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Yield to maturity*

82. Collingwood Homes has a bond issue outstanding that pays an 8.5 percent coupon and matures in 18.5 years. The bonds have a par value of \$1,000 and a market price of \$964.20. Interest is paid semiannually. What is the yield to maturity?

- A. 8.36 percent
- B. 8.42 percent
- C. 8.61 percent
- D. 8.74 percent
- E. 8.90 percent**

$$\$964.20 = \frac{0.085 \times \$1,000}{2} \times \left[ \frac{1 - \left[ 1 / \left( 1 + \frac{r}{2} \right)^{18.5 \times 2} \right]}{\frac{r}{2}} \right] + \frac{\$1,000}{\left( 1 + \frac{r}{2} \right)^{18.5}}$$

This cannot be solved directly, so it's easiest to just use the calculator method to get an answer. You can then use the calculator answer as the rate in the formula just to verify that your answer is correct.

Enter	18.5×2	/2	-964.20	85/2	1,000
	N	I/Y	PV	PMT	FV
Solve for		8.90			

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Yield to maturity*

83. Oil Well Supply offers 7.5 percent coupon bonds with semiannual payments and a yield to maturity of 7.68 percent. The bonds mature in 6 years. What is the market price per bond if the face value is \$1,000?

- A. \$989.70
- B. \$991.47**
- C. \$996.48
- D. \$1,002.60
- E. \$1,013.48

$$P = \frac{0.075 \times \$1,000}{2} \times \left\{ \frac{1 - \left[ 1 / \left( 1 + \frac{0.0768}{2} \right)^{6 \times 2} \right]}{\frac{0.0768}{2}} \right\} + \frac{\$1,000}{\left( 1 + \frac{0.0768}{2} \right)^{6 \times 2}} = \$991.47$$

Enter	6×2	7.68/2		75/2	1,000
	N	I/Y	PV	PMT	FV
Solve for			- 991.47		

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Bond price*

84. Roadside Markets has a 6.75 percent coupon bond outstanding that matures in 10.5 years. The bond pays interest semiannually. What is the market price per bond if the face value is \$1,000 and the yield to maturity is 6.69 percent?

- A. \$999.80
- B. \$999.85
- C. \$1,003.42
- D. \$1,004.47**
- E. \$1,007.52

$$P = \frac{0.0675 \times \$1,000}{2} \times \left\{ \frac{1 - \left[ 1 / \left( 1 + \frac{0.0669}{2} \right)^{10.5 \times 2} \right]}{\frac{0.0669}{2}} \right\} + \frac{\$1,000}{\left( 1 + \frac{0.0669}{2} \right)^{10.5 \times 2}} = \$1,004.47$$

Enter	10.5×2	6.69/2	67.50/2	1,000
	N	I/Y	PMT	FV
Solve for			-1,004.47	

AACSB: Analytic  
 Bloom's: Application  
 Difficulty: Basic  
 Learning Objective: 7-2  
 Section: 7.1  
 Topic: Bond price

85. Grand Adventure Properties offers a 9.5 percent coupon bond with annual payments. The yield to maturity is 11.2 percent and the maturity date is 11 years from today. What is the market price of this bond if the face value is \$1,000?

- A. \$895.43  
 B. \$896.67  
 C. \$941.20  
 D. \$946.18  
 E. \$953.30

$$P = (0.095 \times \$1,000) \times \left\{ \frac{1 - [1/(1 + 0.112)^{11}]}{0.112} \right\} + \frac{\$1,000}{(1 + 0.112)^{11}} = \$895.43$$

Enter	11	11.2		95	1,000
	N	I/Y	PV	PMT	FV
Solve for			-895.43		

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Bond price*

86. Redesigned Computers has 5.25 percent coupon bonds outstanding with a current market price of \$546.19. The yield to maturity is 16.28 percent and the face value is \$1,000. Interest is paid semiannually. How many years is it until these bonds mature?

- A. 6.64 years
- B. 7.08 years**
- C. 12.41 years
- D. 14.16 years
- E. 28.32 years

$$\$546.19 = \frac{.0525 \times \$1,000}{2} \times \left\{ \frac{1 - \left[ 1 / \left( 1 + \frac{0.1628}{2} \right)^{t \times 2} \right]}{\frac{0.1628}{2}} \right\} + \frac{\$1,000}{\left( 1 + \frac{0.1628}{2} \right)^{t \times 2}}$$

It's easiest to solve this problem using a financial calculator. You can then use the calculator answer as the time period in the formula just to verify that your answer is correct.

Enter		16.28/2	-546.19	52.5/2	1,000
	N	I/Y	PV	PMT	FV
Solve for	14.16				

The number of six-month periods is 14.16. The number of years is 7.08 years.

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Time to maturity*



87. Global Communications has a 7 percent, semiannual coupon bond outstanding with a current market price of \$1,023.46. The bond has a par value of \$1,000 and a yield to maturity of 6.72 percent. How many years is it until this bond matures?

- A. 12.26 years
- B. 12.53 years**
- C. 18.49 years
- D. 24.37 years
- E. 25.05 years

$$\$1,023.46 = \frac{0.07 \times \$1,000}{2} \times \left[ \frac{1 - \left[ 1 / \left( 1 + \frac{0.0672}{2} \right)^{t \times 2} \right]}{\frac{0.0672}{2}} \right] + \frac{\$1,000}{\left( 1 + \frac{0.0672}{2} \right)^{t \times 2}}$$

It's easiest to solve this problem using financial calculator. You can then use the calculator answer as the time period in the formula just to verify that your answer is correct.

Enter		6.72/2	-1,023.46	70/2	1,000
	N	I/Y	PV	PMT	FV
Solve for	25.052				

The number of six-month periods is 25.052. The number of years is 12.53 years.

*AACSB: Analytic*  
*Bloom's: Analysis*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Time to maturity*

88. You are purchasing a 25-year, zero-coupon bond. The yield to maturity is 8.68 percent and the face value is \$1,000. What is the current market price?

- A. \$106.67
- B. \$108.18
- C. \$119.52**
- D. \$121.50
- E. \$128.47

$$P = \frac{\$1,000}{\left(1 + \frac{.0868}{2}\right)^{25 \times 2}} = \$119.52$$

Enter	25×2	8.68/2			1,000
	N	I/Y	PV	PMT	FV
Solve for		119.52			

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.1 and 7.4*  
*Topic: Zero bond price*

89. Today, you want to sell a \$1,000 face value zero coupon bond you currently own. The bond matures in 4.5 years. How much will you receive for your bond if the market yield to maturity is currently 5.33 percent? Ignore any accrued interest.

- A. \$696.60
- B. \$698.09
- C. \$741.08
- D. \$756.14
- E. \$789.22**

$$P = \frac{\$1,000}{\left(1 + \frac{0.0533}{2}\right)^{4.5 \times 2}} = \$789.22$$

Enter	4.5×2	5.33/2			1,000
	N	I/Y	PV	PMT	FV
Solve for			-789.22		

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.1 and 7.4*  
*Topic: Zero bond price*

90. The zero coupon bonds of D&L Movers have a market price of \$319.24, a face value of \$1,000, and a yield to maturity of 9.17 percent. How many years is it until these bonds mature?

- A. 11.92 years
- B. 12.28 years
- C. 12.73 years**
- D. 13.01 years
- E. 13.47 years

$$\$319.24 = \frac{\$1,000}{\left(1 + \frac{0.0917}{2}\right)^{t \times 2}}; t = 12.73 \text{ years}$$

Enter		9.17/2	-319.24		1,000
	N	I/Y	PV	PMT	FV
Solve for	25.47				

Number of years = 25.47 / 2 = 12.73 years

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Intermediate*  
*Learning Objective: 7-1*  
*Section: 7.1 and 7.4*  
*Topic: Time to maturity*

91. A 16-year, 4.5 percent coupon bond pays interest annually. The bond has a face value of \$1,000. What is the percentage change in the price of this bond if the market yield to maturity rises to 5.7 percent from the current rate of 5.5 percent?

- A.** 2.14 percent decrease  
 B. 1.97 percent decrease  
 C. 0.21 percent increase  
 D. 1.97 percent increase  
 E. 2.14 percent increase

$$P = (0.045 \times \$1,000) \times \left\{ \frac{1 - [1/(1+0.055)^{16}]}{0.055} \right\} + \frac{\$1,000}{(1+0.055)^{16}} = \$895.38$$

Enter	16	5.5		45	1,000
	N	I/Y	PV	PMT	FV
Solve for			- 895.38		

$$P = (0.045 \times \$1,000) \times \left\{ \frac{1 - [1/(1+0.057)^{16}]}{0.057} \right\} + \frac{\$1,000}{(1+0.057)^{16}} = \$876.19$$

Enter	16	5.7		45	1,000
	N	I/Y	PV	PMT	FV
Solve for			-876.19		

$$\text{Change in price} = \frac{\$876.19 - \$895.38}{\$895.38} = -2.14 \text{ percent}$$

*AACSB: Analytic*  
*Bloom's: Analysis*  
*Difficulty: Intermediate*  
*Learning Objective: 7-1*  
*Section: 7.1*  
*Topic: Interest rate risk*

92. The Corner Grocer has a 7-year, 6 percent annual coupon bond outstanding with a \$1,000 par value. The bond has a yield to maturity of 5.5 percent. Which one of the following statements is correct if the market yield suddenly increases to 6.5 percent?

- A. The bond price will increase by \$57.14.
- B. The bond price will increase by 5.29 percent.
- C. The bond price will decrease by \$53.62.
- D. The bond price will decrease by 5.43 percent.**
- E. The bond price will decrease by 5.36 percent.

$$P = (0.06 \times \$1,000) \times \left\{ \frac{1 - [1/(1 + 0.055)^7]}{0.055} \right\} + \frac{\$1,000}{(1 + 0.055)^7} = \$1,028.41$$

Enter	7	5.5		60	1,000
	N	I/Y	PV	PMT	FV
Solve for			-1,028.41		

$$P = (0.06 \times \$1,000) \times \left\{ \frac{1 - [1/(1 + 0.065)^7]}{0.065} \right\} + \frac{\$1,000}{(1 + 0.065)^7} = \$972.58$$

Enter	7	6.5		60	1,000
	N	I/Y	PV	PMT	FV
Solve for			-972.58		

Difference in prices = \$972.58 - \$1,028.41 = -\$55.83

Percentage difference in prices =  $\frac{\$972.58 - \$1,028.41}{\$1,028.41} = -5.43$  percent

*AACSB: Analytic*  
*Bloom's: Analysis*  
*Difficulty: Intermediate*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Interest rate risk*

93. Blackwell bonds have a face value of \$1,000 and are currently quoted at 98.4. The bonds have a 5 percent coupon rate. What is the current yield on these bonds?

- A. 4.67 percent
- B. 4.78 percent
- C. 5.08 percent**
- D. 5.33 percent
- E. 5.54 percent

$$\text{Current yield} = \frac{0.05 \times \$1,000}{.984 \times \$1,000} = 5.08 \text{ percent}$$

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Current yield*

94. The outstanding bonds of The River Front Ferry carry a 6.5 percent coupon. The bonds have a face value of \$1,000 and are currently quoted at 101.6. What is the current yield on these bonds?

- A. 1.60 percent
- B. 2.37 percent
- C. 6.40 percent**
- D. 6.49 percent
- E. 6.88 percent

$$\text{Current yield} = \frac{0.065 \times \$1,000}{1.016 \times \$1,000} = 6.40 \text{ percent}$$

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Current yield*

95. The 7 percent, semi-annual coupon bonds offered by House Renovators are callable in 2 years at \$1,054. What is the amount of the call premium on a \$1,000 par value bond?

- A. \$52
- B. \$54**
- C. \$72
- D. \$84
- E. \$89

$$\text{Call premium} = \$1,054 - \$1,000 = \$54$$

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.2*  
*Topic: Call premium*

96. A corporate bond was quoted yesterday at 102.16 while today's quote is 102.19. What is the change in the value of a bond that has a face value of \$6,000?

- A. \$0.30
- B. \$1.80**
- C. \$3.00
- D. \$18.00
- E. \$180.00

$$\text{Market price} = (1.0219 - 1.0216) \times \$6,000 = \$1.80$$

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.5*  
*Topic: Bond quote*



97. A 10-year, 4.5 percent, semiannual coupon bond issued by Tyler Rentals has a \$1,000 face value. The bond is currently quoted at 98.7. What is the clean price of this bond if the next interest payment will occur 2 months from today?

- A.** \$987.00
- B. \$994.50
- C. \$1,002.00
- D. \$1,011.25
- E. \$1,022.50

$$\text{Clean price} = 0.987 \times \$1,000 = \$987$$

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.5*  
*Topic: Clean price*

98. A Treasury bond is quoted at a price of 105:15. What is the market price of this bond if the face value is \$5,000?

- A. \$5,005.15
- B. \$5,105.15
- C. \$5,257.50
- D.** \$5,273.44
- E. \$5,515.00

$$\text{Price} = 105:15 = 105 \text{ and } 15/32 \text{ percent of face} = 1.0546875 \times \$5,000 = \$5,273.44$$

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.5*  
*Topic: Treasury bond quote*

99. A Treasury bond is quoted at a price of 101:14 with a current yield of 7.236 percent. What is the coupon rate?

- A. 7.20 percent
- B. 7.28 percent
- C. 7.30 percent
- D. 7.34 percent**
- E. 7.39 percent

Price = 101 and 14/32 percent of face =  $1.014375 \times \$1,000 = \$1,014.375$

Annual interest =  $0.07236 \times \$1,014.375 = \$73.40$

Coupon rate =  $\$73.40/\$1,000 = 7.34$  percent

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Intermediate*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Bond yields*

100. A corporate bond is quoted at a price of 103.16 and carries a 6.50 percent coupon. The bond pays interest semiannually. What is the current yield on one of these bonds?

- A. 6.24 percent
- B. 6.30 percent**
- C. 6.36 percent
- D. 6.62 percent
- E. 6.66 percent

Current yield =  $(0.065 \times \$1,000)/(\$1,031.6) = 6.30$  percent

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*Learning Objective: 7-1*  
*Section: 7.1*  
*Topic: Current yield*

101. A Treasury bond is quoted at a price of 106:23 with a 3.50 percent coupon. The bond pays interest semiannually. What is the current yield on one of these bonds?

- A. 3.06 percent
- B. 3.19 percent
- C. 3.28 percent**
- D. 3.33 percent
- E. 3.38 percent

Current price = 106 and 23/32nds percent of face =  $1.0671875 \times \$1,000 = \$1,067.1875$

Current yield =  $(0.035 \times \$1,000) / \$1,067.1875 = 3.28$  percent

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.1 and 7.5*  
*Topic: Treasury yield*

102. A Treasury bond is quoted as 99:11 asked and 99:09 bid. What is the bid-ask spread in dollars on a \$5,000 face value bond?

- A. \$0.03
- B. \$0.63
- C. \$1.00
- D. \$3.13**
- E. \$6.25

Bid-ask spread =  $99:11 - 99:09 = 2/32$  of 1 percent of \$5,000 = \$3.13

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.5*  
*Topic: Bid-ask spread*

103. The semiannual, 8-year bonds of Alto Music are selling at par and have an effective annual yield of 8.6285 percent. What is the amount of each interest payment if the face value of the bonds is \$1,000?

- A. \$41.50
- B. \$42.25**
- C. \$43.15
- D. \$85.00
- E. \$86.29

$$0.086285 = \left(1 + \frac{r}{2}\right)^2 - 1; r = .0845.$$

Because the bond is selling at par, the APR and the coupon rate are equal.

$$\text{Semiannual interest payment} = \frac{0.0845 \times \$1,000}{2} = \$42.25$$

*AACSB: Analytic*  
*Bloom's: Analysis*  
*Difficulty: Intermediate*  
*Learning Objective: 7-1*  
*Section: 7.1*  
*Topic: Bond yields and payments*

104. A bond that pays interest annually yielded 7.47 percent last year. The inflation rate for the same period was 6.10 percent. What was the actual real rate of return on this bond for last year?

- A. 1.19 percent
- B. 1.25 percent
- C. 1.29 percent**
- D. 1.36 percent
- E. 1.41 percent

$$r = \frac{1.0747}{1.0610} - 1 = 1.29 \text{ percent}$$

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*Learning Objective: 7-4*  
*Section: 7.6*  
*Topic: Real return*

105. Getty Markets has bonds outstanding that pay a 5 percent semiannual coupon, have a 5.28 percent yield to maturity, and a face value of \$1,000. The current rate of inflation is 4.1 percent. What is the real rate of return on these bonds?

- A. 0.86 percent
- B. 0.90 percent
- C. 1.04 percent
- D.** 1.13 percent
- E. 1.19 percent

$$r = \frac{1.0528}{1.041} - 1 = 1.13 \text{ percent}$$

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*Learning Objective: 7-4*  
*Section: 7.6*  
*Topic: Real rate*

106. The outstanding bonds of Winter Time Products provide a real rate of return of 3.03 percent. The current rate of inflation is 4.68 percent. What is the actual nominal rate of return on these bonds?

- A. 7.58 percent
- B. 7.33 percent
- C. 7.71 percent
- D. 7.76 percent
- E.** 7.85 percent

$$(1 + 0.0303) \times (1 + 0.0468) - 1 = 7.85 \text{ percent}$$

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*Learning Objective: 7-4*  
*Section: 7.6*  
*Topic: Fisher effect*

107. The yield to maturity on a bond is currently 8.46 percent. The real rate of return is 3.22 percent. What is the rate of inflation?

- A.** 5.08 percent
- B. 5.64 percent
- C. 6.24 percent
- D. 6.53 percent
- E. 6.71 percent

$$h = \frac{1 + 0.0846}{1 + 0.0322} - 1 = 5.08 \text{ percent}$$

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*Learning Objective: 7-4*  
*Section: 7.6*  
*Topic: Fisher effect*

108. A zero coupon bond with a face value of \$1,000 is issued with an initial price of \$212.56. The bond matures in 25 years. What is the implicit interest, in dollars, for the first year of the bond's life?

- A. \$12.72
- B.** \$13.58
- C. \$13.90
- D. \$15.63
- E. \$15.89

$$\$212.56 = \frac{\$1,000}{\left(1 + \frac{r}{2}\right)^{25 \times 2}}; r = 6.29104 \text{ percent}$$

$$PV_1 = \frac{\$1,000}{\left(1 + \frac{0.0629104}{2}\right)^{24 \times 2}} = \$226.14$$

$$\text{Implicit interest} = \$226.14 - \$212.56 = \$13.58$$

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Intermediate*  
*Learning Objective: 7-1*  
*Section: 7.4*  
*Topic: Implicit interest*

109. Northern Warehouses wants to raise \$11.4 million to expand its business. To accomplish this, it plans to sell 40-year, \$1,000 face value, zero-coupon bonds. The bonds will be priced to yield 8.75 percent. What is the minimum number of bonds it must sell to raise the \$11.4 million it needs?

- A. 210,411
- B. 239,800
- C. 254,907
- D. 326,029
- E.** 350,448

$$PV = \frac{\$1,000}{\left(1 + \frac{0.0875}{2}\right)^{40 \times 2}} = \$32.52976$$

$$\text{Number of bonds} = \frac{\$11,400,000}{\$32.52976} = 350,448$$

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*Learning Objective: 7-2*  
*Section: 7.4*  
*Topic: Zero-coupon bond*

110. You have won a contest and will receive \$2,500 a year in real terms for the next 3 years. Each payment will be received at the end of the period with the first payment occurring one year from today. The relevant nominal discount rate is 6.3 percent and the inflation rate is 4.5 percent. What are your winnings worth today?

- A.** \$7,249
- B. \$7,367
- C. \$7,401
- D. \$7,500
- E. \$7,838

$$r = \frac{1 + 0.063}{1 + 0.045} - 1 = 0.01722488$$

$$PV = \frac{\$2,500}{1.01722488^1} + \frac{\$2,500}{1.01722488^2} + \frac{\$2,500}{1.01722488^3} = \$7,249$$

Enter	3	1.722488		2,500	
	N	I/Y	PV	PMT	FV
Solve for			-7,249		

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Intermediate*  
*Learning Objective: 7-4*  
*Section: 7.6*  
*Topic: Real cash flows*



111. You purchased an investment which will pay you \$8,000, in real dollars, a year for the next three years. Each payment will be received at the end of the period with the first payment occurring one year from today. The nominal discount rate is 7.5 percent and the inflation rate is 2.9 percent. What is the present value of these payments?

- A. \$21,720
- B. \$22,004**
- C. \$22,511
- D. \$23,406
- E. \$23,529

$$r = \frac{1 + 0.075}{1 + 0.029} - 1 = 0.0447$$

$$PV = \frac{\$8,000}{1 + 0.0447^1} + \frac{\$8,000}{1 + 0.0447^2} + \frac{\$8,000}{1 + 0.0447^3} = \$22,004$$

Enter	3	4.47	8,000		
	N	I/Y	PV	PMT	FV
Solve for			-22,004		

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Intermediate*  
*Learning Objective: 7-4*  
*Section: 7.6*  
*Topic: Real cash flows*

**Essay Questions**

112. Define liquidity risk, default risk, and taxability risk and explain how these risks relate to bonds and bond yields.

Liquidity risk is the inability to quickly sell a bond for its full value. This risk exists primarily in thinly traded issues. Default risk is the likelihood the issuer will default on its bond obligations and is the basis for bond ratings. Taxability risk reflects the fact that bond interest can be taxed differently at the federal, state, and local levels and that these tax rates can change. Each of these risks increase bond yields as investors require compensation in exchange for risk acceptance.

Feedback: Refer to section 7.7

*AACSB: Reflective thinking*

*Bloom's: Analysis*

*Difficulty: Intermediate*

*Learning Objective: 7-5*

*Section: 7.7*

*Topic: Determinants of bond yields*

113. Inflation has remained low for the past three years but you have come to the conclusion that trend is ending and inflation will increase significantly over the next 18 months. Assume you have reached this conclusion prior to other investors reaching the same conclusion. What adjustments should you make to your bond portfolio in light of your conclusions?

Increases in inflation will increase interest rates according to the term structure of interest rates. Therefore, you should sell any long-term bonds you own and replace them with short-term bonds. You should also replace lower coupon bonds with higher coupon bonds. These changes should be done promptly before other investors commence taking the same actions.

Feedback: Refer to section 7.7

*AACSB: Reflective thinking*

*Bloom's: Analysis*

*Difficulty: Intermediate*

*Learning Objective: 7-5*

*Section: 7.7*

*Topic: Term structure and interest rate risk*

114. Explain the conditions that would need to exist for the Treasury yield curve to be downward sloping.

A downward sloping Treasury yield curve exists when current inflation rates are high but are expected to decline in the future. The decline in the inflation premium must be significant enough to overcome the rising interest rate risk premium as the time to maturity increases.

Feedback: Refer to section 7.7

*AACSB: Reflective thinking*

*Bloom's: Analysis*

*Difficulty: Intermediate*

*Learning Objective: 7-5*

*Section: 7.7*

*Topic: Treasury yield curve*

115. Describe the relationships that exist between the coupon rate, the yield to maturity, and the current yield for both a discount bond and a premium bond.

Discount bond: Yield to maturity > Current yield > Coupon rate

Premium bond: Yield to maturity < Current yield < Coupon rate

Feedback: Refer to section 7.1

*AACSB: Reflective thinking*

*Bloom's: Analysis*

*Difficulty: Intermediate*

*Learning Objective: 7-2*

*Section: 7.1*

*Topic: Bond yields*

### Multiple Choice Questions

116. Sylvan Trees has a 7 percent coupon bond on the market with ten years left to maturity. The bond makes annual payments and currently sells for \$861.20. What is the yield-to-maturity?

- A. 8.50 percent
- B. 8.68 percent
- C. 8.92 percent
- D. 9.18 percent**
- E. 9.27 percent

$$\$861.20 = (0.07 \times \$1,000) \times \left\{ \frac{1 - [1/(1+r)^{10}]}{r} \right\} + \frac{\$1,000}{(1+r)^{10}}$$

This cannot be solved directly, so it's easiest to just use the calculator method to get an answer. You can then use the calculator answer as the rate in the formula just to verify that your answer is correct.

Enter	10	-861.20	70	1,000
	N	I/Y	PV	PMT FV
Solve for		9.18		

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*EOC #: 7-4*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Yield to maturity*

117. Kaiser Industries has bonds on the market making annual payments, with 14 years to maturity, and selling for \$1,382.01. At this price, the bonds yield 7.5 percent. What is the coupon rate?

- A. 8.00 percent
- B. 8.50 percent
- C. 9.00 percent
- D. 10.50 percent
- E. 12.00 percent**

$$\$1,382.01 = C \times \left\{ \frac{1 - [1/(1 + 0.075)^{14}]}{0.075} \right\} + \frac{\$1,000}{(1 + 0.075)^{14}} ; C = \$120$$

Enter	14	7.5	-1,382.01		1,000
	N	I/Y	PV	PMT	FV
Solve for				120	

Coupon rate = \$120/\$1,000 = 12 percent

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*EOC #: 7-5*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Coupon rate*

118. Dexter Mills issued 20-year bonds a year ago at a coupon rate of 11.4 percent. The bonds make semiannual payments. The yield-to-maturity on these bonds is 9.2 percent. What is the current bond price?

- A. \$985.55
- B. \$991.90
- C. \$1,192.16
- D. \$1,195.84**
- E. \$1,198.00

$$P = \frac{0.114 \times \$1,000}{2} \times \left\{ \frac{1 - \left[ 1 / \left( 1 + \frac{0.092}{2} \right)^{(20-1) \times 2} \right]}{\frac{0.092}{2}} \right\} + \frac{\$1,000}{\left( 1 + \frac{0.092}{2} \right)^{(20-1) \times 2}}$$

C = \$1,195.84

Enter	19×2	9.2/2		114/2	1,000
	N	I/Y	PV	PMT	FV
Solve for			-1,195.84		

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*EOC #: 7-6*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Bond price*

119. Soo Lee Imports issued 17-year bonds 2 years ago at a coupon rate of 10.3 percent. The bonds make semiannual payments. These bonds currently sell for 102 percent of par value. What is the yield-to-maturity?

- A. 9.98 percent
- B. 10.04 percent**
- C. 10.13 percent
- D. 10.27 percent
- E. 10.42 percent

$$(1.02 \times \$1,000) = \frac{0.103 \times \$1,000}{2} \times \left\{ \frac{1 - \left[ 1 / \left( 1 + \frac{r}{2} \right)^{(17-2) \times 2} \right]}{\frac{r}{2}} \right\} + \frac{\$1,000}{\left( 1 + \frac{r}{2} \right)^{(17-2) \times 2}}$$

r = 10.04 percent

This cannot be solved directly, so it's easiest to just use the calculator method to get an answer. You can then use the calculator answer as the rate in the formula just to verify that your answer is correct.

Enter	15×2	/2	-1,020	103/2	1,000
	N	I/Y	PV	PMT	FV
Solve for		10.04			

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*EOC #: 7-7*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Yield to maturity*

120. Bryceton, Inc. has bonds on the market with 13 years to maturity, a yield-to-maturity of 9.2 percent, and a current price of \$895.09. The bonds make semiannual payments. What is the coupon rate?

- A.** 7.80 percent
- B. 8.00 percent
- C. 8.25 percent
- D. 8.40 percent
- E. 8.65 percent

$$\$895.09 = C \times \left[ \frac{1 - \left[ 1 / \left( 1 + \frac{0.092}{2} \right)^{13 \times 2} \right]}{\frac{0.092}{2}} \right] + \frac{\$1,000}{\left( 1 + \frac{0.092}{2} \right)^{13 \times 2}} ; C = \$39$$

Enter	13×2	9.2/2	-895.09		1,000
	N	I/Y	PV	PMT	FV
Solve for				39	

Coupon rate =  $(\$39 \times 2) / \$1,000 = 7.80$  percent

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*EOC #: 7-8*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Coupon rate*



121. Suppose the real rate is 9.5 percent and the inflation rate is 1.8 percent. What rate would you expect to see on a Treasury bill?

- A. 9.50 percent
- B. 11.30 percent
- C. 11.47 percent**
- D. 11.56 percent
- E. 11.60 percent

$$(1 + R) = (1 + 0.095) \times (1 + 0.018); R = 11.47 \text{ percent}$$

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*EOC #: 7-10*  
*Learning Objective: 7-4*  
*Section: 7.6*  
*Topic: Nominal rate*

122. An investment offers a 10.5 percent total return over the coming year. Sam Bernanke thinks the total real return on this investment will be only 4.5 percent. What does Sam believe the inflation rate will be for the next year?

- A. 5.60 percent
- B. 5.67 percent
- C. 5.74 percent**
- D. 6.00 percent
- E. 6.21 percent

$$(1 + 0.105) = (1 + 0.045) \times (1 + h); h = 5.74 \text{ percent}$$

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Basic*  
*EOC #: 7-11*  
*Learning Objective: 7-4*  
*Section: 7.6*  
*Topic: Inflation rate*

123. Bond S is a 4 percent coupon bond. Bond T is a 10 percent coupon bond. Both bonds have 11 years to maturity, make semiannual payments, and have a yield-to-maturity of 7 percent. If interest rates suddenly rise by 2 percent, what will the percentage change in the price of Bond T be?

- A. -15.16 percent
- B. -14.87 percent
- C. -13.56 percent
- D. -12.92 percent**
- E. -12.67 percent

$$P = \frac{0.10 \times \$1,000}{2} \times \left\{ \frac{1 - \left[ 1 / \left( 1 + \frac{0.07}{2} \right)^{11 \times 2} \right]}{\frac{0.07}{2}} \right\} + \frac{\$1,000}{\left( 1 + \frac{0.07}{2} \right)^{11 \times 2}} ; P = \$1,227.51$$

Enter	11×2	7/2		100/2	1,000
	N	I/Y	PV	PMT	FV
Solve for			-1,227.51		

$$P = \frac{0.10 \times \$1,000}{2} \times \left\{ \frac{1 - \left[ 1 / \left( 1 + \frac{0.09}{2} \right)^{11 \times 2} \right]}{\frac{0.09}{2}} \right\} + \frac{\$1,000}{\left( 1 + \frac{0.09}{2} \right)^{11 \times 2}} ; P = \$1,068.92$$

Enter	11×2	9/2		100/2	1,000
	N	I/Y	PV	PMT	FV
Solve for			-1,068.92		

Percentage change in price =  $(\$1,068.92 - \$1,227.51) / \$1,227.51 = -12.92$  percent

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Intermediate*  
*EOC #: 7-17*  
*Learning Objective: 7-1*  
*Section: 7.1*  
*Topic: Interest rate risk*

124. Technical Sales, Inc. has 6.6 percent coupon bonds on the market with 9 years left to maturity. The bonds make semiannual payments and currently sell for 88.79 percent of par. What is the effective annual yield?

- A. 8.34 percent
- B. 8.40 percent
- C. 8.52 percent
- D. 8.58 percent**
- E. 8.60 percent

$$(0.8879 \times \$1,000) = \frac{0.066 \times \$1,000}{2} \times \left\{ \frac{1 - \left[ 1 / \left( 1 + \frac{r}{2} \right)^{9 \times 2} \right]}{\frac{r}{2}} \right\} + \frac{\$1,000}{\left( 1 + \frac{r}{2} \right)^{9 \times 2}} ; r = 8.40 \text{ percent}$$

This cannot be solved directly, so it's easiest to just use the calculator method to get an answer. You can then use the calculator answer as the rate in the formula just to verify that your answer is correct.

Enter	9×2	/2	-887.90	66/2	1,000
	N	I/Y	PV	PMT	FV
Solve for		8.40			

$$\text{Effective annual rate} = [1 + (0.0840/2)]^2 - 1 = 8.58 \text{ percent}$$

*AACSB: Analytic*  
*Bloom's: Analysis*  
*Difficulty: Intermediate*  
*EOC #: 7-18*  
*Learning Objective: 7-2*  
*Section: 7.1*  
*Topic: Effective bond yield*

125. Bonner Metals wants to issue new 18-year bonds for some much-needed expansion projects. The company currently has 11 percent bonds on the market that sell for \$1,459.51, make semiannual payments, and mature in 18 years. What should the coupon rate be on the new bonds if the firm wants to sell them at par?

- A. 5.75 percent
- B. 6.23 percent
- C. 6.41 percent
- D. 6.60 percent**
- E. 6.79 percent

$$\$1,459.51 = \frac{0.11 \times \$1,000}{2} \times \left[ \frac{1 - \left[ 1 / \left( 1 + \frac{r}{2} \right)^{18 \times 2} \right]}{\frac{r}{2}} \right] + \frac{\$1,000}{\left( 1 + \frac{r}{2} \right)^{18 \times 2}} ; r = 6.60 \text{ percent}$$

This cannot be solved directly, so it's easiest to just use the calculator method to get an answer. You can then use the calculator answer as the rate in the formula just to verify that your answer is correct.

Enter	18×2	/2	-1,459.51	110/2	1,000
	N	I/Y	PV	PMT	FV
Solve for		6.60			

To sell a bond at par, the coupon rate must be set equal to the required return.

*AACSB: Analytic*  
*Bloom's: Analysis*  
*Difficulty: Intermediate*  
*EOC #: 7-19*  
*Learning Objective: 7-1*  
*Section: 7.1*  
*Topic: Bond yields*

126. You purchase a bond with an invoice price of \$1,460. The bond has a coupon rate of 9.4 percent, and there are 3 months to the next semiannual coupon date. What is the clean price of this bond?

- A. \$1,436.50
- B. \$1,452.17
- C. \$1,460.00
- D. \$1,467.83
- E. \$1,483.50

$$\text{Accrued interest} = (0.094 \times \$1,000) \times (3/12) = \$23.50$$

$$\text{Clean price} = \$1,460 - \$23.50 = \$1,436.50$$

*AACSB: Analytic*  
*Bloom's: Application*  
*Difficulty: Intermediate*  
*EOC #: 7-20*  
*Learning Objective: 7-1*  
*Section: 7.5*  
*Topic: Accrued interest*

127. Suppose the following bond quote for the Beta Company appears in the financial page of today's newspaper. Assume the bond has a face value of \$1,000 and the current date is April 15, 2009. What is the yield to maturity on this bond?

<u>Coupon</u>	<u>Maturity</u>	<u>Last Price</u>	<u>EST spread</u>	<u>UST</u>
9.595	April 15, 2023	76.915	431	10

- A. 6.64 percent
- B. 8.96 percent
- C. 10.23 percent
- D. 12.47 percent
- E. 13.27 percent**

$$\$769.15 = \frac{0.09595 \times \$1,000}{2} \times \left[ \frac{1 - \left[ 1 / \left( 1 + \frac{r}{2} \right)^{14 \times 2} \right]}{\frac{r}{2}} \right] + \frac{\$1,000}{\left( 1 + \frac{r}{2} \right)^{14 \times 2}} ; r = 13.27 \text{ percent}$$

This cannot be solved directly, so it's easiest to just use the calculator method to get an answer. You can then use the calculator answer as the rate in the formula just to verify that your answer is correct.

Enter	14×2	/2	-769.15	95.95/2	1,000
	N	I/Y	PV	PMT	FV
Solve for		13.27			

*AACSB: Analytic*  
*Bloom's: Analysis*  
*Difficulty: Intermediate*  
*EOC #: 7-23*  
*Learning Objective: 7-5*  
*Section: 7.7*  
*Topic: Using bond quotes*

128. You want to have \$1.04 million in real dollars in an account when you retire in 46 years. The nominal return on your investment is 8 percent and the inflation rate is 3.5 percent. What is the real amount you must deposit each year to achieve your goal?

- A. \$6,667.67
- B. \$6,878.49
- C. \$7,433.02**
- D. \$7,515.09
- E. \$7,744.12

$$(1 + 0.08) = (1 + r) \times (1 + 0.035); r = 4.347826 \text{ percent}$$

$$\$1,040,000 = C \times \frac{(1 + 0.04347826)^{46} - 1}{0.04347826}; C = 7,433.02$$

*AACSB: Analytic*  
*Bloom's: Analysis*  
*Difficulty: Intermediate*  
*EOC #: 7-28*  
*Learning Objective: 7-4*  
*Section: 7.6*  
*Topic: Real cash flows*

129. The yield-to-maturity on a bond is the interest rate you earn on your investment if interest rates do not change. If you actually sell the bond before it matures, your realized return is known as the holding period yield. Suppose that today, you buy a 12 percent annual coupon bond for \$1,000. The bond has 13 years to maturity. Two years from now, the yield-to-maturity has declined to 11 percent and you decide to sell. What is your holding period yield?

- A. 8.84 percent
- B. 9.49 percent
- C. 12.00 percent
- D. 13.01 percent
- E. 14.89 percent**

The yield-to-maturity at the time of purchase must be 12 percent, which is the coupon rate, because the bond was purchased at par value.

Yield-to-maturity in 2 years = 12 percent - 1 percent = 11 percent

$$P_2 = (0.12 \times \$1,000) \times \left\{ \frac{1 - [1/(1 + 0.11)^{13-2}]}{0.11} \right\} + \frac{\$1,000}{(1 + 0.11)^{13-2}} ; P_2 = \$1,062.07$$

Enter	13-2	11	120	1,000
	N	I/Y	PMT	FV
Solve for		-1,062.07		

$$\$1,000 = (0.12 \times \$1,000) \times \left\{ \frac{1 - [1/(1+r)^2]}{r} \right\} + \frac{\$1,000}{(1+r)^2} ; r = 14.89 \text{ percent}$$

This cannot be solved directly, so it's easiest to just use the calculator method to get an answer. You can then use the calculator answer as the rate in the formula just to verify that your answer is correct.

Enter	2	-1,000	120	1,062.07
	N	I/Y	PMT	FV
Solve for	14.89			

*AACSB: Analytic*  
*Bloom's: Analysis*  
*Difficulty: Challenge*  
*EOC #: 7-30*  
*Learning Objective: 7-1*  
*Section: 7.1*  
*Topic: Holding period yield*