CHAPTER 20
HYBRID FINANCING: PREFERRED STOCK, LEASING, WARRANTS, AND CONVERTIBLES

(Difficulty: E = Easy, M = Medium, and T = Tough)

Multiple Choice: Conceptual

Easy:

Lease cash flows **Answer: c Diff: E**

1. The riskiness of the cash flows to the lessee, with the possible exception of residual value, is about the same as the riskiness of the lessee's

   a. Equity cash flows.
   b. Capital budgeting project cash flows.
   c. Debt cash flows.
   d. Pension fund cash flows.
   e. None of the statements above is correct.

Operating lease **Answer: e Diff: E**

2. Operating leases usually have terms that include

   a. Maintenance of the equipment.
   b. Only partial amortization.
   c. Cancellation clauses.
   d. Statements a and c are correct.
   e. All of the statements above are correct.

Leasing **Answer: c Diff: E N**

3. Which of the following statements concerning leasing is most correct?

   a. A sale and leaseback is a lease under which the lessor maintains and finances the property; also called a service lease.
   b. The lessor is the party that uses the leased property.
   c. A financial lease is a lease that does not provide for maintenance services, is not cancelable, and is fully amortized over its life; also called a capital lease.
   d. An important characteristic of operating leases is the fact that they are frequently fully amortized; in other words, the payments required under the lease contract are sufficient to recover the full cost of the equipment.
   e. None of the statements above.

Reporting earnings **Answer: d Diff: E**

4. Which of the following are methods of reporting earnings when warrants or convertibles are outstanding?

   a. Basic EPS.
   b. Primary EPS.
   c. Diluted EPS.
   d. All of the statements above are correct.
   e. None of the statements above is correct.

Reporting earnings **Answer: d Diff: E**

5. Which of the following methods of reporting earnings when warrants or convertibles are outstanding are required under SEC rules?

   a. Basic EPS.
   b. Primary EPS.
   c. Diluted EPS.
   d. Statements a and c are correct.
   e. All of the statements above are correct.

Warrants **Answer: e Diff: E N**

6. Which of the following statements concerning warrants is most correct?

   a. Warrants cannot be traded separately from the bond with which they are associated.
   b. A warrant is a long-term option to buy a stated number of shares of common stock at a specified price.
   c. Warrants are long-term call options that have value because holders can buy the firm's common stock at the exercise price regardless of how high the market price climbs.
   d. Statements a, b, and c are correct.
   e. Statements b and c are correct.

Medium:

Lease decision **Answer: e Diff: M**

7. In the lease versus buy decision, leasing is often preferable

   a. Since it does not limit the firm's ability to borrow to make other investments.
   b. Because, generally, no down payment is required, and there are no indirect interest costs.
   c. Because lease obligations do not affect the riskiness of the firm.
   d. All of the statements above are correct.
   e. None of the statements above is correct.

Capitalizing leases **Answer: e Diff: M**

8. Financial Accounting Standards Board (FASB) Statement #13 requires that for an unqualified audit report, financial (or capital) leases must be included in the balance sheet by reporting the

   a. Value of the leased asset as a fixed asset.
   b. Present value of future lease payments as an asset.
   c. Present value of future lease payments as a liability.
   d. Statements a and b are correct.
   e. Statements a and c are correct.

Leasing **Answer: e Diff: M**

9. Which of the following statements is most correct?

   a. Firms that use "off balance sheet" financing, such as leasing, will show lower debt ratios once the effects of their leases are reflected in their financial statements.
   b. Capitalizing a lease means that the firm issues equity capital in proportion to its current capital structure, in an amount sufficient to support the lease payment obligation.
   c. The fixed charges associated with a lease can be as high as, but never greater than, the fixed payments associated with a loan.
   d. Capital, or financial, leases generally provide for maintenance service on the part of the lessor and can be refinanced at the discretion of the lessee.
   e. A key difference between a capital lease and an operating lease is that with a capital lease, the total lease payments on the asset are roughly equal to the full price of the asset plus a return on the investment in the asset.

Leasing **Answer: a Diff: M**

10. Which of the following statements is most correct?

   a. Financial leases are fully amortized.
   b. Financial leases can be canceled.
   c. Financial leases provide for maintenance services.
   d. Operating leases can never be canceled.
   e. All of the statements above are correct.

Off-balance sheet leasing **Answer: b Diff: M**

11. Heavy use of off-balance sheet lease financing will tend to

   a. Make a company appear more risky than it actually is because its stated debt ratio will appear higher.
   b. Make a company appear less risky than it actually is because its stated debt ratio will appear lower.
   c. Affect a company's cash flows but not its degree of risk.
   d. Have no effect on either cash flows or risk because the cash flows are already reflected in the income statement.
   e. None of the statements above is correct.

Lease analysis discount rate **Answer: a Diff: M**

12. The lease analysis should compare the cost of leasing to the

    a. Cost of owning using debt.
    b. Cost of owning using equity.
    c. After-tax cost of debt to measure the effect of leasing on the cost of equity.
    d. Average cost of all fixed charges.
    e. Cost of owning using the weighted average cost of capital for the firm.

Convertibles **Answer: e Diff: M**

13. Which of the following statements about convertibles is correct?

    a. The coupon interest rate on convertibles is generally higher than on straight debt.
    b. New equity funds are raised by the issuer when convertibles are converted.
    c. Investors are willing to accept lower interest rates on convertibles because they are less risky than straight debt.
    d. At issue, a convertible's conversion (exercise) price is often set equal to the current underlying stock price.
    e. None of the statements above is correct.

Convertibles **Answer: b Diff: M**

14. A 10-year convertible bond has a face value of $1,000 and pays an annual coupon of $50. The bond's conversion price is $40. The issuing company's stock currently trades at $30 a share. The company can issue straight (non-convertible) debt with an 8 percent yield. Which of the following statements is most correct?

    a. The bond's conversion ratio is 20.
    b. The bond's conversion value is currently $750.
    c. The bond's straight-debt value is $750.
    d. The bond's straight-debt value is $1,000.
    e. The convertible bond should sell for less than $750.

Warrants and convertibles **Answer: c Diff: M**

15. Which of the following statements about warrants and convertibles is incorrect?

    a. Both warrants and convertibles are types of option securities.
    b. One primary difference between warrants and convertibles is that warrants bring in additional funds when exercised, while convertibles do not.
    c. The coupon rate on convertible debt is lower than the coupon rate on similar straight debt because convertibles are less risky.
    d. The value of a warrant depends on its exercise price, its term, and the underlying stock price.
    e. Warrants usually can be detached and traded separately from their associated debt.

Warrants **Answer: c Diff: M**

16. Which of the following statements is most correct?

a. A warrant is basically a long-term option that enables the holder to sell common stock back to the firm at an agreed upon price, at a specified time in the future.
b. Generally, warrants are distributed along with preferred stock in order to make the preferred stock less risky.
c. If a company issuing coupon-paying debt wanted to reduce the cash outflows associated with the coupon payments, it could issue warrants with the debt to accomplish this.
d. One of the disadvantages of warrants to the issuing firm is that they are detachable and can be traded separately from the debt with which they are issued.
e. Warrants are attractive to investors because when they are issued with stock investors receive dividends on the warrants they own, as well as on the underlying stock.

Bond with warrants **Answer: e Diff: M**

17. The straight-debt value of a 20-year, 10 3/8 annual coupon bond with 30 warrants is $760.00, and the bond would sell at par of $1,000 with market rates at 14 percent. Which of the following is most correct?

a. The total value of the warrants is $240.00.
b. The implied value of each warrant is $8.00.
c. The company will have a lower current cost of debt by using the bond with warrants than if it issued straight debt.
d. Statements a and b are correct.
e. All of the statements above are correct.

Preferred stock **Answer: c Diff: M**

18. Which of the following statements concerning preferred stock is most correct?

a. Preferred stock generally has a higher component cost to the firm than does common stock.
b. By law in most states, all preferred stock issues must be cumulative, meaning that the cumulative, compounded total of all unpaid preferred dividends must be paid before dividends can be paid on the firm’s common stock.
c. From the issuer’s point of view, preferred stock is less risky than bonds.
d. Preferred stock, because of the current tax treatment of dividends, is bought mostly by individuals in high tax brackets.
e. Unlike bonds, preferred stock cannot have a convertible feature.

Preferred stock **Answer: e Diff: M**

19. Which of the following statements is most correct?

a. From the issuing corporation's perspective, preferred stock is more risky than bonds.
b. From the investor's perspective, preferred stock is less risky than bonds.
c. Issuing preferred stock allows corporations to reduce their tax burden, since preferred stock dividends are deductible.
d. If a preferred issue is cumulative this means that the issuing company is permitted to pay dividends on its common stock even if it failed to pay the dividend on its preferred stock.
e. Most nonconvertible preferred stock is owned by corporations.

Preferred stock **Answer: c Diff: E N**

20. Which of the following statements concerning preferred stock is not correct?

a. Preferred stock has a par (or liquidating) value.
b. Most preferred issues are cumulative, meaning that the cumulative total of all unpaid preferred dividends must be paid before dividends can be paid on the common stock.
c. Unpaid preferred dividends are called warrants.
d. Preferred stock is a hybrid—it is similar to bonds in some respects and to common stock in other ways.
e. Preferred stock normally has no voting rights.

Preferred stock **Answer: d Diff: E N**

21. Which of the following statements concerning preferred stock is most correct?

a. Adjustable rate preferred stocks are preferred stocks whose dividends are tied to the rate on Treasury securities.
b. Preferred dividends in arrears do not earn interest; thus, arrearages do not grow in a compound interest sense—they only grow from additional nonpayments of the preferred dividend.
c. Failure to pay a preferred dividend precludes payment of common dividends.
d. Statements a, b, and c are correct.
e. None of the statements above is correct.

Multiple Choice: Problems

Easy:

Difference in lease and loan payments **Answer: c Diff: E**

22. Stanley Corporation is considering a 5-year, $6,000,000 bank loan to finance service equipment. The loan has an interest rate of 10 percent and is amortized over five years with end-of-year payments. Stanley can also lease the equipment for an end-of-year payment of $1,790,000. What is the difference in the actual out of pocket cash flows between the two payments? That is, by how much does one payment exceed the other?

a. $ 90,000
b. $125,500
c. $207,200
d. $251,000
e. $316,800

Conversion price **Answer: c Diff: E**

23. Reading Railroad's common stock is currently priced at $30, and its 8 percent convertible debentures (issued at par, or $1,000) are priced at $850. Each debenture can be converted into 25 shares of common stock at any time before 2010. What is the conversion price, P_c, and the conversion value, C_t, of the bond?

a. $25; $1,000
b. $25; $ 750
c. $40; $ 750
d. $40; $ 850
e. $40; $1,000

Conversion price **Answer: e Diff: E R**

24. B&O Railroad's convertible debentures were issued at their $1,000 par value in 1997. At any time prior to maturity on February 1, 2017, a debenture holder can exchange a bond for 20 shares of common stock. What is the conversion price, P_c?

a. $ 25
b. $1,000
c. $ 40
d. $1,025
e. $ 50

Convertible bond analysis **Answer: b Diff: E**

25. Newage Scientific Company is considering issuing 15-year convertible bonds at a price of $1,000 each. The bonds would pay an 8 percent coupon, with semiannual payments, and have a par value of $1,000. Each bond would be convertible into 25 shares of Newage's common stock. Without a conversion feature, investors would require an annual nominal yield of 10 percent. What is the straight-debt value of the bond at the time of issue?

a. $ 850
b. $ 846
c. $1,000
d. $ 895
e. $ 922

Earnings per share **Answer: e Diff: E**

26. Northeast Company has 200,000 shares of common stock and 50,000 warrants outstanding. Each warrant entitles its owner to buy one share at a price of $20 before 2010. The firm's basic earnings per share is $2.50. What is the firm's diluted earnings per share?

a. $2.50
b. $2.25
c. $1.50
d. $3.00
e. $2.00

Medium:

Lease analysis **Answer: a Diff: M**

27. Votron Enterprises is considering whether to lease or buy some special manufacturing equipment to be placed on a new production line. The net cash flows associated with owning the equipment are as follows. The initial purchase price is $1,000,000; the net cash inflows (after tax considerations) in Years 1 through 5 are: Year 1 = $104,000; Year 2 = $152,000; Year 3 = $100,000; Year 4 = $72,000; Year 5 = $128,000. The lease agreement calls for five beginning-of-year payments. The net cash outflow of each payment (after tax considerations) is $137,750. Compare the present values of the two alternatives using the relevant after-tax discount rate of 8 percent. What is the net advantage to leasing the equipment?

a. -$40,027
b. -$ 3,972
c. +$ 3,972
d. +$60,000
e. +$22,458

Lease analysis **Answer: b Diff: M**

28. Redstone Corporation is considering a leasing arrangement to finance some special manufacturing tools that it needs for production during the next three years. A planned change in the firm's production technology will make the tools obsolete after 3 years. The firm will depreciate the cost of the tools on a straight-line basis. The firm can borrow $4,800,000, the purchase price, at 10 percent to buy the tools or make three equal end-of-year lease payments of $2,100,000. The firm's tax rate is 40 percent and the firm's before-tax cost of debt is 10 percent. Annual maintenance costs associated with ownership are estimated at $240,000. What is the net advantage to leasing (NAL)?

a. $ 0
b. $106,200
c. $362,800
d. $433,100
e. $647,900

Breakeven lease payment **Answer: a Diff: M**

29. Lawrence Co. is considering the purchase of some manufacturing equipment. The equipment costs $1,600,000. The equipment lasts for 4 years and falls into the MACRS 3-year class; therefore, the equipment would be depreciated at the following rate:

Year	MACRS Depreciation Rate
1	33%
2	45
3	15
4	7

If the equipment is purchased, the company will need to also purchase a maintenance contract that costs $50,000 a year payable at the beginning of the year. After four years, the company estimates that the equipment's salvage (residual) value will be zero.

Alternatively, the company can lease the equipment for four years. The leasing contract would include maintenance, and the lease payments would be due at the beginning of each of the next four years. The company's before-tax cost of debt is 10 percent. If it purchases the equipment it will finance the equipment with a term loan. The company's tax rate is 40 percent. What is the breakeven lease payment per year (after taxes) that would make the company indifferent between buying and leasing the equipment?

a. $309,973.63
b. $328,572.05
c. $336,080.75
d. $342,916.76
e. $345,068.85

Bond with warrants **Answer: b Diff: M**

30. Shearson PLC's stock sells for $42 per share. The company wants to sell some 20-year, annual interest, $1,000 par value bonds. Each bond will have attached 75 warrants, each exercisable into one share of stock at an exercise price of $47. Shearson's straight bonds yield 10 percent. The warrants will have a market value of $2 each when the stock sells for $42. What coupon interest rate must the company set on the bonds-with-warrants if the bonds are to sell at par?

a. 8.00%
b. 8.24%
c. 8.96%
d. 9.25%
e. 10.00%

Bond with warrants **Answer: b Diff: M**

31. The Random Corporation is setting its terms on a new issue with warrants. The bonds have a 30-year maturity and semiannual coupon. Each bond will have 20 warrants attached that give the holder the right to purchase one share of Random stock per warrant. Random's investment banker estimates that each warrant has a value of $14.20. A similar straight-debt issue would require a 10 percent coupon. What coupon rate must be set on the bonds so that the package will sell for $1,000?

a. 6.0%
b. 7.0%
c. 8.0%
d. 9.0%
e. 10.0%

Bond with warrants **Answer: d Diff: M**

32. Dream Fashions recently sold bonds with warrants to finance its expansion into the retail market, and to support its new spring fashion line. The warrants each had an implied value at issue of $7.40, and 35 warrants were issued with each $1,000 par value bond. The bonds were sold for $1,000 each, have 10 years to maturity, and pay $40 semiannual coupon interest. What was the yield to maturity on the bonds when they were issued? (Hint: Use the warrants to help determine the straight-debt value of the bond.)

a. 8.00%
b. 10.18%
c. 12.50%
d. 12.63%
e. 12.72%

Warrants and yield on straight debt **Answer: b Diff: M**

33. Himes Beverage Co. recently issued 10-year bonds at par ($1,000) with a 6 percent annual coupon. The bonds also have 15 warrants attached, and each warrant is worth $10. If Himes were to instead issue 10-year straight debt with no warrants attached, what would be the yield?

a. 6.00%
b. 8.26%
c. 8.78%
d. 9.16%
e. 10.00%

Convertibles **Answer: b Diff: M**

34. Florida Enterprises is considering issuing a 10-year convertible bond that will be priced at its $1,000 par value. The bonds have an 8 percent annual coupon rate, and each bond can be converted into 20 shares of common stock. The stock currently sells at $40 a share, has an expected dividend in the coming year of $5, and has an expected constant growth rate of 5 percent. What is the estimated floor price of the convertible at the end of Year 3 if the required rate of return on a similar straight-debt issue is 10 percent?

a. $ 902.63
b. $ 926.10
c. $ 961.25
d. $ 988.47
e. $1,000.00

Convertibles **Answer: b Diff: M**

35. Insight Incorporated just issued 20-year convertible bonds at a price of $1,000 each. The bonds pay 9 percent annual coupon interest, have a par value of $1,000, and are convertible into 40 shares of the firm's common stock. Investors would require a return of 12 percent on the firm's bonds if they were not convertible. The current market price of the firm's stock is $18.75 and the firm just paid a dividend of $0.80. Earnings and dividends are expected to grow at a rate of 7 percent into the foreseeable future. What is the expected straight-debt value, B_t, and conversion value, C_t, at the end of Year 5?

a. Bond value = $ 775.92; conversion value = $ 750.00.
b. Bond value = $ 795.67; conversion value = $1,051.91.
c. Bond value = $1,000.00; conversion value = $1,000.00.
d. Bond value = $ 816.26; conversion value = $1,250.40.
e. Bond value = $ 924.16; conversion value = $1,122.73.

Convertibles **Answer: e Diff: M**

36. Johnson Beverage's common stock sells for $27.83, pays a dividend of $2.10, and has an expected long-term growth rate of 6 percent. The firm's straight-debt bonds pay 10.8 percent. Johnson is planning a convertible bond issue. The bonds will have a 20-year maturity, pay $100 interest annually, have a par value of $1,000, and a conversion ratio of 25 shares per bond. The bonds will sell for $1,000 and will be callable after 10 years. Assuming that the bonds will be converted at Year 10, when they become callable, what will be the expected return on the convertible when it is issued?

a. 14.00%
b. 12.00%
c. 10.80%
d. 12.16%
e. 11.44%

Comparative after-tax yields **Answer: c Diff: M**

37. Deep River Power Corporation recently sold an issue of preferred stock that had an after-tax yield of 9.6 percent. The company's new bonds recently sold at par with an after-tax yield of 8.1 percent. Both issues were placed primarily with corporate investors in the 40 percent tax bracket. Given that the preferred stock enjoys a 70 percent dividend tax exclusion for corporate investors, what was the percentage point difference in the before-tax yields between the two issues to corporate investors?

a. 1.50%
b. 1.20%
c. 2.59%
d. 2.81%
e. 0.21%

Value of warrants **Answer: a Diff: M**

38. Charles River Company has just sold a bond issue with 10 warrants attached. The bonds have a 20-year maturity, an annual coupon rate of 12 percent, and they sold at their $1,000 par value. The current yield on similar straight bonds is 15 percent. What is the implied value of each warrant?

a. $18.78
b. $19.24
c. $20.21
d. $21.20
e. $22.56

Value of warrants **Answer: c Diff: M**

39. Moore Securities recently issued 30-year bonds with a 7 percent annual coupon at par ($1,000). The bonds also had 20 warrants attached. If Moore were to issue straight debt, the interest rate would be 9 percent. What is the value of each warrant?

a. $ 5.00
b. $ 7.96
c. $10.27
d. $18.00
e. $39.78

Value of warrants **Answer: b Diff: M**

40. Crerand Co. just issued 20-year noncallable bonds with a par value of $1,000, and a yield to maturity of 11 percent. At the same time, the company issued a package of 20-year noncallable bonds, with an annual coupon of 8 percent and 25 warrants attached to each bond. The value of this package is $1,000. What is the value of each of the warrants?

a. $ 7.17
b. $ 9.56
c. $ 30.44
d. $ 32.83
e. $238.90

Tough:

Lease analysis **Answer: b Diff: T**

41. Furman Industries is negotiating a lease on a new piece of equipment that would cost $100,000 if purchased. The equipment falls into the MACRS 3-year class, and it would be used for 3 years and then sold, because Furman plans to move to a new facility at that time. The applicable MACRS depreciation rates are 0.33, 0.45, 0.15, and 0.07. It is estimated that the equipment could be sold for $30,000 after 3 years of use. A maintenance contract on the equipment would cost $3,000 per year, payable at the beginning of each year of usage. Conversely, Furman could lease the equipment for 3 years for a lease payment of $29,000 per year, payable at the beginning of each year. The lease would include maintenance. Furman is in the 20 percent tax bracket, and it could obtain a loan to purchase the equipment at a before-tax cost of 10 percent. Furman should

a. Either lease or buy; the costs are the same.
b. Lease; the PV of leasing costs is $5,736 less than the PV of owning costs.
c. Lease; the PV of leasing costs is $1,547 less than the NPV of owning costs.
d. Buy; the PV of owning costs is $5,736 less than the PV of leasing costs.
e. Buy; the PV of owning costs is $1,547 less than the PV of leasing costs.

Lease analysis **Answer: b Diff: T**

42. Carolina Trucking Company (CTC) is evaluating a potential lease agreement on a truck that costs $40,000 and falls into the MACRS 3-year class. The applicable MACRS depreciation rates are 0.33, 0.45, 0.15, and 0.07. The loan rate would be 10 percent, if CTC decided to borrow money and buy the asset rather than lease it. The truck has a 4-year economic life, and its estimated residual value is $10,000. If CTC buys the truck, it would purchase a maintenance contract that costs $1,000 per year, payable at the end of each year. The lease terms, which include maintenance, call for a $10,000 lease payment at the beginning of each year. CTC's tax rate is 40 percent. Should the firm lease or buy?

a. Lease; it costs $842 less than buying.
b. Lease; it costs $997 less than buying.
c. Buy; it costs $997 less than leasing.
d. Buy; it costs $842 less than leasing.
e. Neither lease nor buy; the truck's NPV is negative.

Breakeven lease payment **Answer: c Diff: T**

43. The Garfield Group leases office space. It recently offered one of its tenants a long-term lease where the company would pay $20,000 at the end of each of the next seven years (t = 1, 2, 3, 4, 5, 6, and 7). The tenant has instead proposed to make four equal payments beginning four years from now (t = 4, 5, 6, and 7). Garfield is willing to accommodate the tenant, but wants the present value of its rent payments to be the same as they are under the 7-year lease. Garfield earns 10.25 percent on its alternative investments. Assume that there are no taxes. What should be the size of the lease payments under the tenant's proposal?

a. $35,000.00
b. $40,728.75
c. $41,048.09
d. $45,255.51
e. $57,626.83

ROI of bond with warrants **Answer: c Diff: T**

44. Taylor Technologies recently issued 12-year bonds with 20 warrants attached. The bonds were sold at par ($1,000). In return for their investment, bondholders receive $70 in interest at the end of each of the next 12 years plus $1,000 at the end of 12 years. The warrants have an exercise price of $30 a share, and expire in 10 years. The stock currently sells for $15 a share and the price is expected to increase 12 percent a year. Assuming that the warrants are not exercised before the end of the 10-year period, what is the investor's expected rate of return on this investment?

a. 7.00%
b. 8.16%
c. 8.96%
d. 9.18%
e. 12.00%

CHAPTER 20
ANSWERS AND SOLUTIONS

1. Lease cash flows **Answer: c Diff: E**

2. Operating lease **Answer: e Diff: E**

3. Leasing **Answer: c Diff: E N**

Statement a is the definition of an operating lease. Statement b is the definition of the lessee. Statement d is incorrect; an important characteristic of an operating lease is that they are frequently not fully amortized. Therefore, the correct statement is c.

4. Reporting earnings **Answer: d Diff: E**

5. Reporting earnings **Answer: d Diff: E**

6. Warrants **Answer: e Diff: E N**

Statement a is not correct. Warrants can be detached from the bonds with which they are associated and can be traded separately from the bond.

7. Lease decision **Answer: e Diff: M**

8. Capitalizing leases **Answer: e Diff: M**

9. Leasing **Answer: e Diff: M**

10. Leasing **Answer: a Diff: M**

11. Off-balance sheet leasing **Answer: b Diff: M**

12. Lease analysis discount rate **Answer: a Diff: M**

13. Convertibles **Answer: e Diff: M**

14. Convertibles **Answer: b Diff: M**

Statement b is correct; the other statements are incorrect. The bond's conversion ratio is 25 ($1,000/Conversion Price). The bond's conversion value is $750. (The conversion ratio multiplied by the current stock price.) The bond's straight-debt value is $798.70. (N = 10; I = 8; PMT = 50; FV = 1,000), so both statements c and d are incorrect. Clearly, the bond should also sell for more than its straight-debt value, so statement e is incorrect.

15. Warrants and convertibles **Answer: c Diff: M**

16. Warrants **Answer: c Diff: M**

17. Bond with warrants **Answer: e Diff: M**

18. Preferred stock **Answer: c Diff: M**

19. Preferred stock **Answer: e Diff: M**

20. Preferred stock **Answer: c Diff: E N**

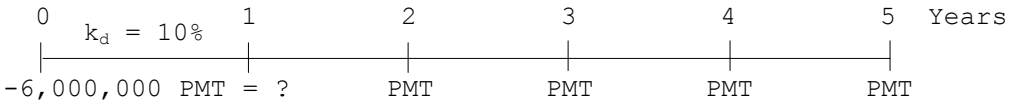
Statements a, b, d, and e are all correct statements regarding preferred stock. Unpaid preferred dividends are called arrearages; thus, statement c is incorrect.

21. Preferred stock **Answer: d Diff: E N**

Statements a, b, and c are correct; therefore, statement d is the correct answer.

22. Difference in lease and loan payments **Answer: c Diff: E**

Time line:



Financial calculator solution:
Inputs: N = 5; I = 10; PV = -6000000. Output: PMT = $1582784.88.

$$\text{Difference in payments} = \$1{,}790{,}000 - \$1{,}582{,}784.88 = \$207{,}215.16 \approx \$207{,}200.$$

23. Conversion price **Answer: c Diff: E**

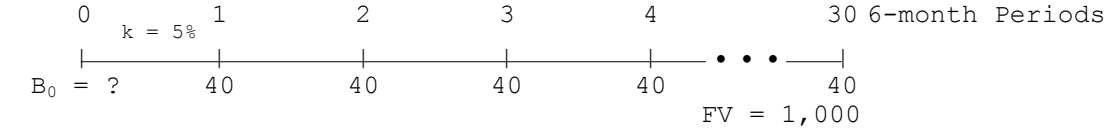
Conversion price = Face value/Conversion ratio = $1,000/25 = $40.00.
Conversion value of bond = $30 × 25 = $750.

24. Conversion price **Answer: e Diff: E R**

P_c = Par value/Shares received = $1,000/20 = $50.

25. Convertible bond analysis **Answer: b Diff: E**

Time line:



Financial calculator solution:
Inputs: N = 30; I = 5; PMT = 40; FV = 1000.
Output: PV = -$846.28 ≈ $846.

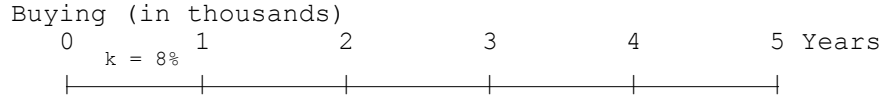
26. Earnings per share **Answer: e Diff: E**

Total earnings = 200,000($2.50) = $500,000.
Diluted earnings per share = $500,000/(200,000 + 50,000) = $2.00.

27. Lease analysis **Answer: a Diff: M**

The after-tax cash flows are provided, along with the after-tax discount rate. Essentially, the problem is reduced to a time value exercise.

Time lines:
Buying (in thousands)



-1,000 104 152 100 72 128
NPV = ?

Leasing (in thousands)

137.75 137.75 137.75 137.75 137.75
NPV = ?

Financial calculator solution:
Buying: Inputs: CF_0 = -1000000; CF_1 = 104000; CF_2 = 152000, CF_3 = 100000; CF_4 = 72000; CF_5 = 128000; I = 8. Output: NPV = -$553,968.18.

Leasing: Using time value, first change to Beginning mode:
Inputs: N = 5; I = 8; PMT = 137750. Output: PV = -$593,995.47.

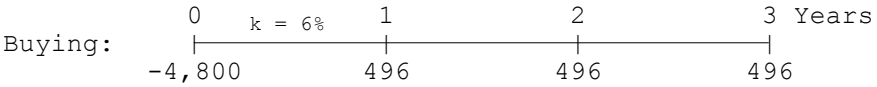
NAL = PV cost of owning - PV cost of leasing
= $553,968 - $593,995 = -$40,027.

28. Lease analysis **Answer: b Diff: M**

Annual depreciation = $4,800,000/3 = $1,600,000.

(In thousands)	Year 0	1	2	3
I. Cost of owning				
1) Net purchase price	($4,800)			
2) Maintenance cost		($ 240)	($ 240)	($ 240)
3) Maintenance tax savings (Line 2 × 0.4)		96	96	96
4) Depreciation		1,600	1,600	1,600
5) Depreciation tax savings (Line 4 × 0.4)		640	640	640
6) Net cash flow	($4,800)	$ 496	$ 496	$ 496
7) PV cost of owning (@6%)	($3,474.2)			
II. Cost of leasing				
8) Lease payment		($2,100)	($2,100)	($2,100)
9) Lease pmt tax savings		840	840	840
10) Net cash flow	$ 0	($1,260)	($1,260)	($1,260)
11) PV cost of leasing (@6%)	($3,368.0)			
III. Cost comparison				
12) Net advantage to leasing: NAL = PV cost of owning - PV cost of leasing = $3,474.2 - $3,368.0 = $106.2.				

Time lines (in thousands):



PV = ?

PV = ?

Financial calculator solution: (In thousands)

Buying: Inputs: $CF_0 = -4800$; $CF_1 = 496$; $N_j = 3$; I = 6.
Output: NPV = -$3,474.2.

Leasing: Inputs: $CF_0 = 0$; $CF_1 = -1260$; $N_j = 3$; I = 6.
Output: NPV = -$3,368.0.

NAL = $3,474.2 - $3,368.0 = $106.2. Since the answer is stated in thousands, NAL = $106.2 × 1,000 = $106,200.

29. Breakeven lease payment **Answer: a Diff: M**

The first step is to find all of the cash flows associated with buying the equipment.

Time	Cash Flows			
0	-$1,600,000	- $50,000(0.6)	=	$1,630,000
1	$528,000(0.4)	- $50,000(0.6)	=	181,200
2	$720,000(0.4)	- $50,000(0.6)	=	258,000
3	$240,000(0.4)	- $50,000(0.6)	=	66,000
4	$112,000(0.4)		=	44,800

Use the CF key to find the NPV of these cash flows. Use I/YR = 10(1 - 0.4) = 6. NPV = -$1,138,536.85.
This amount is also the present value of the breakeven lease payment:
N = 4; I/YR = 6; PV = -1138536.85; FV = 0; BEGIN MODE ON, PMT = $309,973.63.

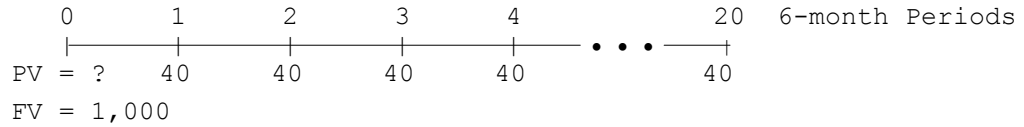
30. Bond with warrants **Answer: b Diff: M**

Total value = Straight-debt value + Warrant value.
$1,000 = V + 75($2)
V = $850.
Enter N = 20; I = 10; PV = -850; FV = 1000; and then solve for PMT.
PMT = INT = $82.38; Coupon rate = $\frac{\$82.38}{\$1{,}000}$ = 8.24%.

31. Bond with warrants **Answer: b Diff: M**

Total value = Straight-debt value + Warrant value.
$1,000 = V + 20($14.20)
V = $716.
Enter N = 60; I = 5; PV = -716; FV = 1000; and then solve for PMT.
PMT = INT/2 = $35.00; INT = $70.00; Coupon rate = $\frac{\$70}{\$1{,}000}$ = 7.0%.

32. Bond with warrants **Answer: d Diff: M**



Calculate the value of the warrants:

$$\text{Total value}_{\text{Warrants}} = \text{Implied value each warrant} \times \text{No. of warrants per bond}$$

259.00 = 7.40 × 35.

Calculate straight-debt value of bond, V_B:
V_B = $1,000 - $259.00 = $741.00.
Calculate yield to maturity on bonds when issued:
Financial calculator solution:
Inputs: N = 20; PV = -741; PMT = 40; FV = 1000.
Output: I = 6.316% per semiannual period.
YTM = 6.316% × 2 = 12.63%.

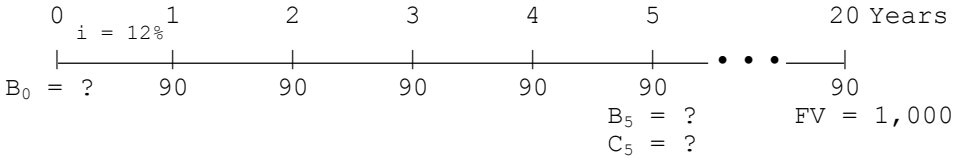
33. Warrants and yield on straight debt **Answer: b Diff: M**

The price of the bonds with the warrants attached ($1,000) equals the straight-debt value of the bonds plus the value of the warrants. The total value of the warrants is $150 (15 × $10). Therefore the value of the straight debt is $850. It follows that the yield on straight-debt is 8.26% (N = 10; PV = -850; PMT = 60; FV = 1000.) Solving for the interest rate you get 8.26%.

34. Convertibles **Answer: b Diff: M**

Financial calculator solution:
N = 7; I = 10; PMT = 80; FV = 1000. Solve for PV = -$902.63; V_B = $902.63.
Conversion V = 20($40)$(1.05)^3$ = $926.10.
The floor value is the greater of the bond value or the conversion value. Thus, the floor value is $926.10.

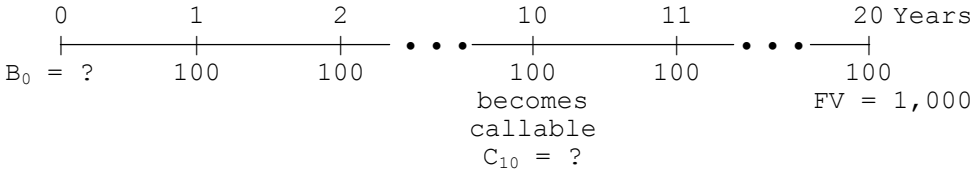
35. Convertibles **Answer: b Diff: M**



Financial calculator solution:
Calculate the pure-bond value, B_t, at year 5:
Inputs: N = 15; I = 12; PMT = 90; FV = 1000. Output: PV = -$795.67.
Calculate the conversion value, C_t, at year 5:
Conversion value = $C_5 = P_0(1 + g)^t(CR) = \$18.75(1 + 0.07)^5(40)$.
Inputs: N = 5; I = 7; PV = 18.75(40) = -750; PMT = 0.
Output: FV = $1,051.91.

36. Convertibles **Answer: e Diff: M**

Time line:



Financial calculator solution:
Calculate the expected stock price at year 10:
Inputs: N = 10; I = 6; PV = -27.83; PMT = 0. Output: FV = $49.84.
Calculate the conversion value, C_t, at year 10:
Information given: P_0 = 27.83; g = 6; t = 10; CR = 25.
Conversion value, $C_{10} = \$27.83(1.06)^{10}(CR)$
$= \$49.84(25) = \$1,246.00$.
Calculate expected return using expected conversion value:
Inputs: N = 10; PV = -1000; PMT = 100; FV = 1246.
Output: I = 11.44%.

37. Comparative after-tax yields **Answer: c Diff: M**

Note: $Yield_{BT}$ = Before-tax yield
Bonds: $Yield_{After\text{-}tax} = 8.1\% = Yield_{BT}(1 - T)$
$Yield_{BT} = 8.1\%/0.6 = 13.50\%$.
Preferred stock:
$Yield_{After\text{-}tax} = Yield_{BT} - Yield_{BT}(1 - Exclusion)(T)$
$9.6\% = Yield_{BT}[1 - (1 - 0.7)(0.4)]$
$9.6\% = Yield_{BT}(1 - 0.12)$
$Yield_{BT} = 9.6\%/0.88 = 10.91\%$.

Difference in before-tax yields = 13.50% - 10.91% = 2.59%.

38. Value of warrants **Answer: a Diff: M**

Financial calculator solution:
Enter N = 20; I = 15; PMT = 120; FV = 1000; and then solve for PV = -$812.22; V_B = 812.22.
Total value = Straight-debt value + Warrant value.
$1,000 = $812.22 + 10(Warrant value); Warrant value = $18.78.

39. Value of warrants **Answer: c Diff: M**

The price of the bonds with the warrants attached ($1,000) equals the straight-debt value of the bonds plus the value of the warrants. The straight-debt value is $794.53. This can be found by inputting into the calculator: N = 30; I = 9; PMT = 70; FV = 1,000; and then solve for PV. This implies that the warrants are worth $1,000 - $794.53 = $205.47. It follows that each warrant is worth $10.27 ($205.47/20).

40. Value of warrants **Answer: b Diff: M**

Value of the bond is: N = 20; I/YR = 11; PMT = 80; FV = 1000; and then solve for PV = $761.10. The total value of the warrants must be: $1,000 - $761.10 = 238.90. So, the value of an individual warrant is: $238.90/25 = $9.56.

41. Lease analysis **Answer: b Diff: T**

Time line:
Owning

-102,400 4,200 6,600 28,400

PV_{Owning} = ?

Depreciation Table

Year	MACRS Factor	Depreciation
1	0.33	$33,000
2	0.45	45,000
3	0.15	15,000
4	0.07	7,000
	1.00	$100,000

Year	0	1	2	3
I. Initial outlay				
1) New asset net investment	($100,000)			
II. Operating cash flows				
2) Maintenance expense	($ 3,000)	($ 3,000)	($ 3,000)	$ 0
3) Maintenance cost (After-tax) (Line 2 × (1 - T)) = (Line 2 × 0.8)	(2,400)	(2,400)	(2,400)	0
4) Depreciation (from table)		33,000	45,000	15,000
5) Depreciation tax savings (Line 4 × 0.2)		6,600	9,000	3,000
6) Net operating CFs	($102,400)	$ 4,200	$ 6,600	$ 3,000
III. Terminal year cash flows				
7) Estimated salvage value				$30,000
8) Tax on salvage value ($30,000 - $7,000)(0.20)				-4,600
9) Net terminal cash flow				$25,400
IV. Net cash flows				
10) Total net CFs	($102,400)	$ 4,200	$ 6,600	$28,400

PV cost of owning at 8% = $70,308.

Time line:
Leasing

-23,200 -23,200 -23,200

$PV_{Leasing}$ = ?

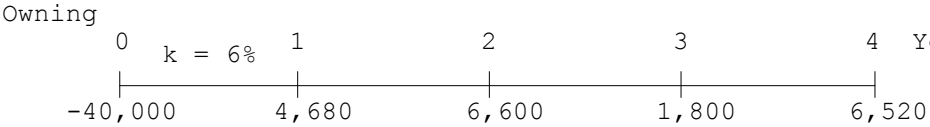
Financial calculator solution:
Owning
Inputs: CF_0 = -102400; CF_1 = 4200; CF_2 = 6600; CF_3 = 28400; I = 8.
Output: NPV = -$70,307.84 ≈ -$70,308.

Leasing
Inputs: CF_0 = -23200; CF_1 = -23200; N_j = 2; I = 8.
Output: NPV = -$64,571.74 ≈ -$64,572.

Net advantage to leasing
$PV_{Leasing}$ - PV_{Owning} = -$64,572 - ($70,308) = $5,736.

42. Lease analysis **Answer: b Diff: T**

Time line:
Owning



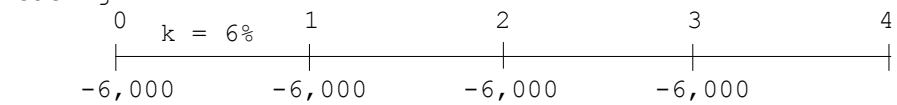
PV_{Owning} = ?

Depreciation Table

Year	MACRS Factor	Depreciation
1	0.33	$13,200
2	0.45	18,000
3	0.15	6,000
4	0.07	2,800
	1.00	$40,000

Year	0	1	2	3	4
I. Initial outlay					
1) New asset cost	($40,000)				
II. Operating cash flows					
2) Maintenance		($ 1,000)	($ 1,000)	($ 1,000)	($ 1,000)
3) Maintenance (After-tax) (Line 2 × (1 - t)) = (Line 2 × 0.6)		(600)	(600)	(600)	(600)
4) Depreciation new asset		13,200	18,000	6,000	2,800
5) Depreciation tax savings (Line 3 × 0.40)		5,280	7,200	2,400	1,120
6) Net operating CFs		$ 4,680	$ 6,600	$ 1,800	$ 520
III Terminal year cash flows					
7) Est. residual value (Before-tax)					$10,000
8) Tax on residual value (0.40 × $10,000)					4,000
9) Net terminal cash flow					$ 6,000
IV Net cash flows					
10) Total net CFs	($40,000)	$ 4,680	$ 6,600	$ 1,800	$ 6,520

Time line:
Leasing



$PV_{Leasing}$ = ?

Financial calculator solution:
Owning: Inputs: CF_0 = -40000; CF_1 = 4680; CF_2 = 6600; CF_3 = 1800; CF_4 = 6520; I = 6.
Output: NPV = -$23,035.16 ≈ -$23,035.

Leasing: Inputs: CF_0 = -6000; CF_1 = -6000; N_j = 3; I = 6.
Output: NPV = -$22,038.07 ≈ -$22,038.

$PV_{Leasing}$ - PV_{Owning} = -$22,038 - (-$23,035) = -$997. Net advantage to leasing is $997.

43. Breakeven lease payment **Answer: c Diff: T**

First, find the PV of the offered lease: N = 7; I = 10.25; PMT = 20,000; FV = 0; and then solve for PV = -$96,572.11. The alternative lease calls for payments beginning at t = 4, so find the value these lease payments must have at the end of Year 3: N = 3; I = 10.25; PV = -96572.11; PMT = 0; and then solve for FV = $129,415.86. The lease payments can now be calculated as a 4-year regular annuity with N = 4; I = 10.25; PV = -129415.86; FV = 0; and then solve for PMT = $41,048.09.

44. ROI of bond with warrants **Answer: c Diff: T**

The stock's expected price 10 years from now is $46.5877 [$15$(1.12)^{10}$]. The profit from each warrant 10 years from now is therefore $16.5877 ($46.5877 - the $30 exercise price). The total value of the warrants is $331.7545 (20 × $16.5877). Looking at a time line we can see the investment's cash flows:

t = 0: -1,000; t = 1-9: 70; t = 10: 331.7545 + 70 = 401.7545; t = 11: 70; t = 12: 70 + 1,000 = 1,070. The IRR of this stream is 8.96%.