CHAPTER 14

Options and Corporate Finance

I. DEFINITIONS

OPTIONS

a 1. A financial contract that gives its owner the right, but not the obligation, to buy or sell a specified asset at an agreed-upon price on or before a given future date is called a(n) _____ contract.
   a. option
   b. futures
   c. forward
   d. swap
   e. straddle

OPTION EXERCISE

b 2. The act where an owner of an option buys or sells the underlying asset, as is their right, is called _____ the option.
   a. striking
   b. exercising
   c. opening
   d. splitting
   e. strangling

STRIKE PRICE

c 3. The fixed price in an option contract at which the owner can buy or sell the underlying asset is called the option's:
   a. opening price.
   b. intrinsic value.
   c. strike price.
   d. market price.
   e. time value.

EXPIRATION DATE

d 4. The last day on which an owner of an option can elect to exercise is the _____ date.
   a. ex-payment
   b. ex-option
   c. opening
   d. expiration
   e. intrinsic

AMERICAN OPTIONS

e 5. An option that may be exercised at any time up its expiration date is called a(n) _____ option.
   a. futures
   b. Asian
   c. Bermudan
   d. European
   e. American

EUROPEAN OPTIONS

a 6. An option that may be exercised only on the expiration date is called a(n) _____ option.
   a. European
   b. American
   c. Bermudan
   d. futures
   e. Asian

CALL OPTION

b 7. A _____ is a derivative security that gives the owner the right, but not the obligation, to buy an asset at a fixed price for a specified period of time.
   a. futures contract
   b. call option
   c. put option
   d. swap
   e. forward contract

PUT OPTION

c 8. A _____ is a derivative security that gives the owner the right, but not the obligation, to sell an asset at a fixed price for a specified period of time.
   a. futures contract
   b. call option
   c. put option
   d. swap
   e. forward contract

ARBITRAGE

d 9. A trading opportunity that offers a riskless profit is called a(n):
   a. put option.
   b. call option.
   c. market equilibrium.
   d. arbitrage.
   e. cross-hedge.

INTRINSIC VALUE

e 10. The value of an option if it were to immediately expire, that is, it's lower pricing bound, is called an option's _____ value.
   a. strike
   b. market
   c. volatility
   d. time
   e. intrinsic

TIME VALUE

a 11. The time value of an option is equal to the:
   a. option's market price minus its intrinsic value.
   b. option's intrinsic value minus its market price.
   c. risk-free interest rate in the economy.
   d. net present value of the option's cash flows.
   e. net present value of the option's cash flows, discounted at the risk-free interest rate.

EMPLOYEE STOCK OPTION

c 12. An employee stock option gives an employee the right to _____ shares of stock in the company at a _____ price for a fixed period of time.
   a. sell; fixed
   b. sell; variable
   c. buy; fixed
   d. buy; variable
   e. either buy or sell; fixed

REAL OPTION

d 13. An option based on an underlying asset such as a building or land is called a _____ option.
   a. financial
   b. liquid
   c. fixed
   d. real
   e. tangible

STRATEGIC OPTIONS

b 14. Options for future, related business products or strategies are referred to as _____ options.
   a. financial
   b. strategic
   c. expansion
   d. real
   e. managerial

WARRANTS

b 15. A security that gives the holder the right, but not the obligation, to purchase shares of stock in a firm for a fixed price over a specified period of time is called a(n):
   a. convertible bond.
   b. warrant.
   c. initial public offering.
   d. seasoned equity offering.
   e. forward sale of equity.

CONVERTIBLE BONDS

c 16. A bond that can be exchanged for a fixed number of shares of stock in a firm over a specified period of time is called a _____ bond.
   a. secured
   b. warranted
   c. convertible
   d. junk
   e. callable

CONVERSION PRICE

d 17. The dollar amount of a convertible bond's par value that is exchangeable for one share of stock is the bond's:
   a. conversion premium.
   b. straight bond value.
   c. conversion value.
   d. conversion price.
   e. conversion ratio.

CONVERSION RATIO

e 18. The number of shares of stock received for each convertible bond converted into stock is called the:
   a. conversion premium.
   b. straight bond value.
   c. conversion value.
   d. conversion price.
   e. conversion ratio.

CONVERSION PREMIUM

a 19. The difference between the conversion price of a convertible bond and the current stock price, divided by the current stock price, is called the:
   a. conversion premium.
   b. straight bond value.
   c. conversion value.
   d. conversion price.
   e. conversion ratio.

STRAIGHT BOND VALUE

b 20. The value a convertible bond would have if it could not be converted into common stock is called the:
   a. conversion premium.
   b. straight bond value.
   c. conversion value.
   d. conversion price.
   e. conversion ratio.

CONVERSION VALUE

c 21. The value a convertible bond would have if it were to be immediately converted into common stock is called the:
   a. conversion premium.
   b. straight bond value.
   c. conversion value.
   d. conversion price.
   e. conversion ratio.

II. CONCEPTS

AMERICAN OPTIONS

e 22. Which one of the following statements correctly describes your situation as the owner of an American call option?
   a. You are obligated to buy at a set price at any time up to and including the expiration date.
   b. You have the right to sell at a set price at any time up to and including the expiration date.
   c. You have the right to buy at a set price only on the expiration date.
   d. You are obligated to sell at a set price if the option is exercised.
   e. You have the right to buy at a set price at any time up to and including the expiration date.

AMERICAN OPTIONS

c 23. Jeff opted to exercise his August option on August 10 and received $2,500 in exchange for his shares. Jeff must have owned a (an):
   a. warrant.
   b. American call.
   c. American put.
   d. European call.
   e. European put.

AMERICAN OPTIONS

c 24. Mary opted to exercise her option that expired in February on February 1st and paid $3,000 to acquire 100 shares of stock. Mary probably owned one of which two of the following?

I. a warrant
II. an American call
III. a European call
IV. a put

a. I and IV only
b. II and III only
c. I and II only
d. I and III only
e. I and IV only

EUROPEAN OPTIONS

a 25. Jillian owns an option which gives her the right to purchase shares of WAN stock at a price of $20 a share. Currently, WAN stock is selling for $24.50. Jillian would like to profit on this stock but is not permitted to exercise her option for another two weeks. Which of the following statements apply to this situation?

I. Jillian must own a European call option.
II. Jillian must own an American put option.
III. Jillian should sell her option today if she feels the price of WAN stock will decline significantly over the next two weeks.
IV. Jillian cannot profit today from the price increase in WAN stock.

a. I and III only
b. II and IV only
c. I and IV only
d. II and III only
e. I, III, and IV only

EUROPEAN OPTIONS

e 26. The difference between an American call and a European call is that the American call:

a. has a fixed exercise price while the European exercise price can vary within a small range.
b. is a right to buy while a European call is an obligation to buy.
c. has an expiration date while the European call does not.
d. is written on 100 shares of the underlying security while the European call covers 1,000 shares.
e. can be exercised at any time up to the expiration date while the European call can only be exercised on the expiration date.

CALL EXPIRATION VALUE

d 27. If a call has a positive intrinsic value at expiration the call is said to be:

a. funded.
b. unfunded.
c. at the money.
d. in the money.
e. out of the money.

PUT EXPIRATION VALUE

e 28. A 35 put option on ABC stock expires today. The current price of ABC stock is $36. The put is:
   a. funded.
   b. unfunded.
   c. at the money.
   d. in the money.
   e. out of the money.

CALL UPPER BOUND

d 29. The maximum value of a call option is equal to:
   a. the strike price minus the initial cost of the option.
   b. the exercise price plus the price of the underlying stock.
   c. the strike price.
   d. the price of the underlying stock.
   e. the purchase price.

CALL LOWER BOUND

b 30. The lower bound on a call's value is either the:
   a. strike price or zero, whichever is greater.
   b. stock price minus the exercise price or zero, whichever is greater.
   c. strike price or the stock price, whichever is lower.
   d. strike price or zero, whichever is lower.
   e. stock price minus the exercise price or zero, whichever is lower.

CALL LOWER BOUND

e 31. The lower bound of a call option:
   a. can be a negative value regardless of the stock or exercise prices.
   b. can be a negative value but only when the exercise price exceeds the stock price.
   c. can be a negative value but only when the stock price exceeds the exercise price.
   d. must be greater than zero.
   e. can be equal to zero.

CALL INTRINSIC VALUE

e 32. The intrinsic value of a call is:
   I. the value of the call if it were about to expire.
   II. equal to the lower bound of a call's value.
   III. another name for the market price of a call.
   IV. always equal to zero if the call is currently out of the money.
   a. I and III only
   b. II and IV only
   c. I and II only
   d. II, III, and IV only
   e. I, II, and IV only

PUT INTRINSIC VALUE

d 33. The intrinsic value of a put is equal to the:
   a. lesser of the strike price or the stock price.
   b. lesser of the stock price minus the exercise price or zero.
   c. lesser of the stock price or zero.
   d. greater of the strike price minus the stock price or zero.
   e. greater of the stock price minus the exercise price or zero.

FACTORS AFFECTING OPTION VALUES

c 34. Which of the following statements are correct concerning option values?
   I. The value of a call increases as the price of the underlying stock increases.
   II. The value of a call decreases as the exercise price increases.
   III. The value of a put increases as the price of the underlying stock increases.
   IV. The value of a put decreases as the exercise price increases.
   a. I and III only
   b. II and IV only
   c. I and II only
   d. II and III only
   e. I, II, and IV only

FACTORS AFFECTING OPTION VALUES

e 35. The value of a call increases when:
   I. the time to expiration increases.
   II. the stock price increases.
   III. the risk-free rate of return increases.
   IV. the volatility of the price of the underlying stock increases.
   a. I and III only
   b. II, III, and IV only
   c. I, III, and IV only
   d. I, II, and III only
   e. I, II, III, and IV

FACTORS AFFECTING OPTION VALUES

d 36. Which one of the following will cause the value of a call to decrease?
   a. lowering the exercise price
   b. increasing the time to expiration
   c. increasing the risk-free rate
   d. lowering the risk level of the underlying security
   e. increasing the stock price

FACTORS AFFECTING OPTION VALUES

c 37. Assume that you own both a May 40 put and a May 40 call on ABC stock. Which one of the following statements is correct concerning your option positions? Ignore taxes and transaction costs.
   a. An increase in the stock price will increase the value of your put and decrease the value of your call.
   b. Both a May 45 put and a May 45 call will have higher values than your May 40 options.
   c. The time premium on both your put and call are less than the time premiums on equivalent June options.
   d. A decrease in the stock price will decrease the value of both of your options.
   e. You cannot profit on your position as your profits on one option will be offset by losses on the other option.

FACTORS AFFECTING OPTION VALUES

c 38. You own both a May 20 call and a May 20 put. If the call finishes in the money, then the put will:
   a. also finish in the money.
   b. finish at the money.
   c. finish out of the money.
   d. either finish at the money or in the money.
   e. either finish at the money or out of the money.

EMPLOYEE STOCK OPTION

c 39. Which of the following statements are correct concerning employee stock options (ESOs)?
   I. ESOs grant the employee the right to buy company stock at a fixed price.
   II. ESOs generally have a shorter life than call options.
   III. Employees may lose their ESOs if they leave their job.
   IV. ESOs are sometimes used as a substitute for cash wages.
   a. I and III only
   b. II and IV only
   c. I, III, and IV only
   d. II, III, and IV only
   e. I, II, III, and IV

EMPLOYEE STOCK OPTON

a 40. Employee stock options are designed to:
   a. align employee goals with shareholder goals.
   b. give the company a large tax deduction based on the substantial up-front cost to the employer.
   c. reward employees who leave the firm.
   d. utilize excess cash held by the firm.
   e. be traded on the open market.

EMPLOYEE STOCK OPTION

b 41. Employee stock options:
   a. usually have a positive intrinsic value when they are issued.
   b. are frequently granted on a regular basis such as quarterly or annually.
   c. are generally in the money when they are issued.
   d. are frequently repriced when they are in the money.
   e. are considered to be "underwater" when they have a positive intrinsic value.

EQUITY AS A CALL OPTION

e 42. You own stock in a firm that has a pure discount loan due in six months. The loan has a face value of $50,000. The assets of the firm are currently worth $62,000. The stockholders in this firm basically own a _____ option on the assets of the firm with a strike price of:
   a. put; $62,000.
   b. put; $50,000.
   c. warrant; $62,000.
   d. call; $62,000.
   e. call; $50,000.

REAL OPTIONS

e 43. You are shopping for a new home. You find House A that you like but you want to continue looking at other houses for one more week. To avoid having someone else come along and buy House A while you are looking at other houses, you decide to place a $1,000 deposit on House A. This deposit will apply to the purchase price if you buy House A. If you do not buy House A, you will lose your $1,000. Essentially, you have a _____ on House A.
   a. financial put
   b. financial call
   c. warrant
   d. real put
   e. real call

INVESTMENT TIMING DECISION

b 44. The investment timing decision relates to:
   a. how long the cash flows last once a project is implemented.
   b. the decision as to when a project should be started.
   c. how frequently the cash flows of a project occur.
   d. how frequently the interest on the debt incurred to finance a project is compounded.
   e. the decision to either finance a project over time or pay out the initial cost in cash.

OPTION TO WAIT

e 45. The option to wait:
I. may be of minimal value if the project relates to a rapidly changing technology.
II. is partially dependent upon the discount rate applied to the project being evaluated.
III. is defined as the situation where operations are shut down for a period of time.
IV. has a value equal to the net present value of the project if it is started today versus the net present value if it is started at some later date.
a. I and III only
b. II and IV only
c. I and II only
d. II, III, and IV only
e. I, II, and IV only

MANAGERIAL OPTIONS

e 46. Which one of the following statements is correct?
a. Having the ability to temporarily cease operations is referred to as the option to abandon.
b. Strategic options are relatively easy to evaluate using discounted cash flow analysis.
c. Ignoring the option to expand causes the net present value of a project to be overestimated.
d. The option to abandon a project has no real financial value.
e. Ignoring the option to abandon causes the net present value of a project to be underestimated.

STRATEGIC OPTIONS

a 47. Which one of the following is an example of a strategic option?
a. opening a new store with a totally new retail design concept to determine if the plan will be well received by consumers
b. halting production for one week due to slower than expected sales
c. stopping a five-year project after six months due to a lack of consumer demand
d. deciding to only open 5 new retail outlets instead of the 10 outlets that were planned
e. deciding to change the manufacturing process half way through a project

CONTINGENCY PLANNING

c 48. As part of your project analysis, you also review various actions that management could take if a project encounters certain situations after it is implemented. This additional analysis is referred to as _____ planning.
a. expansion
b. abandonment
c. contingency
d. strategic
e. suspension

OPTION TO EXPAND

b 49. Last month you introduced a new product to the market. Consumer demand has been overwhelming and appears that strong demand will exist over the long-term. Given this situation, management should consider the option to:
   a. suspend.
   b. expand.
   c. abandon.
   d. contract.
   e. withdraw.

OPTION TO EXPAND

c 50. Including the option to expand in your project analysis will tend to:
   a. extend the duration of a project but not affect the project's net present value.
   b. increase the cash flows of a project but decrease the project's net present value.
   c. increase the net present value of a project.
   d. decrease the net present value of a project.
   e. have no effect on either a project's cash flows or its net present value.

WARRANTS

e 51. Warrants are generally:
   a. issued in connection with publicly traded bonds.
   b. traded directly between individuals rather than on an exchange.
   c. structured similar to long-term put options.
   d. issued by individuals.
   e. separated from the security they were originally attached to and then traded.

WARRANTS

d 52. Which of the following statements are correct concerning warrants?
   I. Warrants are similar to put options.
   II. Warrants are similar to call options.
   III. When a warrant is exercised the firm is not involved in the transaction.
   IV. When a warrant is exercised the number of shares of stock outstanding increase.
   a. I only
   b. II only
   c. I and III only
   d. II and IV only
   e. I and IV only

WARRANTS

a 53. When warrants are exercised, the:
   a. earnings per share decrease.
   b. earnings per share remain constant.
   c. total equity in a firm remains constant.
   d. total equity in a firm decreases.
   e. number of bonds outstanding increases.

CONVERTIBLE BONDS

d 54. Which of the following statements are correct concerning convertible bonds?
- I. New shares of stock are issued when a convertible bond is converted.
- II. A convertible bond is similar to a bond with a put option.
- III. A convertible bond should never be worth less than its straight bond value.
- IV. A convertible bond can be described as having upside potential with downside protection.

a. I and III only
b. II and IV only
c. I, II, and III only
d. I, III, and IV only
e. II, III, and IV only

CONVERTIBLE BONDS

a 55. The conversion value of a convertible bond is computed as the:
a. conversion ratio multiplied by the price of the stock.
b. conversion ratio multiplied by the conversion price.
c. face value of the bond plus the conversion premium.
d. face value of the bond multiplied by (1 + conversion premium).
e. face value of the bond multiplied by (1 + conversion price).

CONVERTIBLE BONDS

e 56. The maximum value of a convertible bond is theoretically:
a. equal to the conversion value minus the straight bond value.
b. equal to the face value of the bond multiplied by (1 + conversion price).
c. limited to the maximum straight bond value.
d. limited by the face value of the bond.
e. unlimited.

III. PROBLEMS

OPTION QUOTES

e 57. What is the cost of five November 25 call option contracts on KNF stock given the following price quotes?

KNJ (KNJ) Underlying stock price: 30.86

		Call	Put
Expiration	Strike	Last	Last
Aug	25	6.15	.05
Nov	25	6.60	.10
Aug	35	.10	4.60
Nov	35	.70	5.10

a. $615
b. $660
c. $2,500
d. $3,075
e. $3,300

OPTION QUOTES

c 58. What is the value of one November 35 put contract?

KNJ (KNJ) Underlying stock price: 30.86

		Call	Put
Expiration	Strike	Last	Last
Aug	25	6.15	.05
Nov	25	6.60	.10
Aug	35	.10	4.60
Nov	35	.70	5.10

a. $70
b. $460
c. $510
d. $4,600
e. $5,100

OPTION QUOTES

b 59. What is the intrinsic value of the August 25 call?

KNJ (KNJ) Underlying stock price: 30.86

		Call	Put
Expiration	Strike	Last	Last
Aug	25	6.15	.05
Nov	25	6.60	.10
Aug	35	.10	4.60
Nov	35	.70	5.10

a. $.10
b. $5.86
c. $6.15
d. $10.00
e. $25.00

CALL PAYOFF

c 60. You purchased six TJH call option contracts with a strike price of $40 when the option was quoted at $1.30. The option expires today when the value of TJH stock is $41.90. Ignoring trading costs and taxes, what is your total profit or loss on your investment?

a. $60
b. $320
c. $360
d. $420
e. $540

CALL PAYOFF

d 61. You sold (wrote) three TXA call option contracts with a strike price of $35 when the option was quoted at $2.60. The option expires today when the value of TXA stock is $33.70. Ignoring trading costs and taxes, what is your total profit or loss on your investment?

a. $0
b. $260
c. $390
d. $780
e. $1,170

CALL PAYOFF

c 62. You purchased four WXO 30 call option contracts at a quoted price of $.34. What is your net gain or loss on this investment if the price of WXO is $33.60 on the option expiration date?

a. -$1,576
b. -$136
c. $1,304
d. $1,440
e. $1,576

CALL PAYOFF

b 63. You wrote ten call option contracts on JIG stock with a strike price of $40 and an option price of $.40. What is your net gain or loss on this investment if the price of JIG is $46.05 on the option expiration date?

a. -$6,450
b. -$5,650
c. $400
d. $5,650
e. $6,450

CALL AND PUT PAYOFFS

b 64. The market price of ABC stock has been very volatile and you think this volatility will continue for a few weeks. Thus, you decide to purchase a one-month call option contract on ABC stock with a strike price of $25 and an option price of $1.30. You also purchase a one-month put option on ABC stock with a strike price of $25 and an option price of $.50. What will be your total profit or loss on these option positions if the stock price is $24.60 on the day the options expire?

a. -$180
b. -$140
c. -$100
d. $0
e. $180

CALL AND PUT PAYOFFS

b 65. Several rumors concerning Wyslow, Inc. stock have started circulating. These rumors are causing the market price of the stock to be quite volatile. Given this situation, you decide to buy both a one-month put and a call option on this stock with an exercise price of $15. You purchased the call at a quoted price of $.20 and the put at a price of $2.10. What will be your total profit or loss on these option positions if the stock price is $4 on the day the options expire?

a. -$230
b. $870
c. $890
d. $910
e. $1,310

PUT PAYOFF

b 66. Three months ago, you purchased a put option on WXX stock with a strike price of $60 and an option price of $.60. The option expires today when the value of WXX stock is $62.50. Ignoring trading costs and taxes, what is your total profit or loss on your investment?

a. -$310
b. -$60
c. $0
d. $60
e. $190

PUT PAYOFF

d 67. You sold ten put option contracts on PLT stock with an exercise price of $32.50 and an option price of $1.10. Today, the option expires and the underlying stock is selling for $34.30 a share. Ignoring trading costs and taxes, what is your total profit or loss on this investment?

a. -$2,900
b. -$1,100
c. $700
d. $1,100
e. $2,900

PUT PAYOFF

b 68. You sold a put contract on EDF stock at an option price of $.40. The option had an exercise price of $20. The option was exercised. Today, EDF stock is selling for $19 a share. What is your total profit or loss on all of your transactions related to EDF stock assuming that you close out your positions in this stock today? Ignore transaction costs and taxes.

a. -$140
b. -$60
c. $40
d. $60
e. $140

INTRINSIC VALUE

d 69. You own two call option contracts on ABC stock with a strike price of $15. When you purchased the shares the option price was $1.20 and the stock price was $15.90. What is the total intrinsic value of these options if ABC stock is currently selling for $14.50 a share?

a. -$280
b. -$180
c. -$100
d. $0
e. $100

INTRINSIC VALUE

e 70. You own five put option contracts on XYZ stock with an exercise price of $25. What is the total intrinsic value of these contracts if XYZ stock is currently selling for $24.50 a share?

a. -$250
b. -$50
c. $0
d. $50
e. $250

INTRINSIC VALUE

e 71. Last week, you purchased a call option on Denver, Inc. stock at an option price of $1.05. The stock price last week was $28.10. The strike price is $27.50. What is the intrinsic value per share if Denver, Inc. stock is currently priced at $29.03?

a. -$1.05
b. $0
c. $.48
d. $.93
e. $1.53

INTRINSIC VALUE

d 72. Three weeks ago, you purchased a July 45 put option on RPJ stock at an option price of $3.20. The market price of RPJ stock three weeks ago was $42.70. Today, RPJ stock is selling at $44.75 a share and the July 45 put is priced at $.80. What is the intrinsic value of your put contract?

a. -$295
b. -$210
c. $0
d. $25
e. $110

CALL OPTION VALUE

d 73. You own a call option on Jasper Co. stock that expires in one year. The exercise price is $42.50. The current price of the stock is $56.00 and the risk-free rate of return is 3.5 percent. Assume that the option will finish in the money. What is the current value of the call option?
   a. $13.04
   b. $13.50
   c. $13.97
   d. $14.94
   e. $15.46

CALL OPTION VALUE

e 74. You currently own a one-year call option on Way-One, Inc. stock. The current stock price is $26.50 and the risk-free rate of return is 4 percent. Your option has a strike price of $20 and you assume that it will finish in the money. What is the current value of your call option?
   a. $6.25
   b. $6.50
   c. $6.76
   d. $7.13
   e. $7.27

CALL OPTION VALUE

e 75. The common stock of Mercury Motors is selling for $43.90 a share. U.S. Treasury bills are currently yielding 4.5 percent. What is the current value of a one-year call option on Mercury Motors stock if the exercise price is $37.50 and you assume the option will finish in the money?
   a. $6.12
   b. $6.40
   c. $6.69
   d. $7.67
   e. $8.01

CALL OPTION VALUE

d 76. The common stock of Winsson, Inc. is currently priced at $52.50 a share. One year from now, the stock price is expected to be either $54 or $60 a share. The risk-free rate of return is 4 percent. What is the value of one call option on Winsson stock with an exercise price of $55?
   a. $.39
   b. $.41
   c. $.45
   d. $.48
   e. $.51

CALL OPTION VALUE

a 77. You own one call option with an exercise price of $30 on Nadia Interiors stock. This stock is currently selling for $27.80 a share but is expected to increase to either $28 or $34 a share over the next year. The risk-free rate of return is 5 percent and the inflation rate is 3 percent. What is the current value of your option if it expires in one year?

a. $.76
b. $.79
c. $.89
d. $.92
e. $.95

EQUITY AS A CALL OPTION

b 78. The assets of Blue Light Specials are currently worth $2,100. These assets are expected to be worth either $1,800 or $2,300 one year from now. The company has a pure discount bond outstanding with a $2,000 face value and a maturity date of one year. The risk-free rate is 5 percent. What is the value of the equity in this firm?

a. $166.67
b. $231.42
c. $385.71
d. $405.00
e. $714.29

EQUITY AS A CALL OPTION

e 79. Big Ed's Electrical has a pure discount bond that comes due in one year and has a face value of $1,000. The risk-free rate of return is 4 percent. The assets of Big Ed's are expected to be worth either $800 or $1,300 in one year. Currently, these assets are worth $1,140. What is the current value of the debt of Big Ed's Electrical?

a. $222.46
b. $370.77
c. $514.28
d. $769.23
e. $917.54

EQUITY AS A CALL OPTION

b 80. Martha B's has total assets of $1,750. These assets are expected to increase in value to either $1,800 or $2,400 by next year. The company has a pure discount bond outstanding with a face value of $2,000.This bond matures in one year. Currently, U.S. Treasury bills are yielding 6 percent. What is the value of the equity in this firm?

a. $16.98
b. $34.59
c. $36.67
d. $37.08
e. $51.89

OPTION TO WAIT

a 81. You are considering a project which has been assigned a discount rate of 8 percent. If you start the project today, you will incur an initial cost of $480 and will receive cash inflows of $350 a year for three years. If you wait one year to start the project, the initial cost will rise to $520 and the cash flows will increase to $385 a year for three years. What is the value of the option to wait?

a. $15.23
b. $17.08
c. $18.67
d. $20.20
e. $50.20

OPTION TO WAIT

a 82. Wilson's Antiques is considering a project that has an initial cost today of $10,000. The project has a two-year life with cash inflows of $6,500 a year. Should Wilson's decide to wait one year to commence this project, the initial cost will increase by 5 percent and the cash inflows will increase to $7,500 a year. What is the value of the option to wait if the applicable discount rate is 10 percent?

a. $1,006.76
b. $1,235.54
c. $1,509.28
d. $1,606.76
e. $1,735.54

OPTION TO ABANDON

c 83. Your firm is considering a project with a five-year life and an initial cost of $120,000. The discount rate for the project is 12 percent. The firm expects to sell 2,100 units a year. The cash flow per unit is $20. The firm will have the option to abandon this project after three years at which time they expect they could sell the project for $50,000. At what level of sales should the firm be willing to abandon this project?

a. 420 units
b. 1,041 units
c. 1,479 units
d. 1,618 units
e. 2,500 units

OPTION TO ABANDON

e 84. Your firm is considering a project with a five-year life and an initial cost of $120,000. The discount rate for the project is 12 percent. The firm expects to sell 2,100 units a year. The cash flow per unit is $20. The firm will have the option to abandon this project after three years at which time they expect they could sell the project for $50,000. You are interested in knowing how the project will perform if the sales forecast for years four and five of the project are revised such that there is a 50/50 chance that the sales will be either 1,400 or 2,500 units a year. What is the net present value of this project given your sales forecasts?

a. $23,617
b. $23,719
c. $25,002
d. $26,877
e. $28,746

OPTION TO ABANDON

b 85. Margerit is reviewing a project with projected sales of 1,500 units a year, a cash flow of $40 a unit and a three-year project life. The initial cost of the project is $95,000. The relevant discount rate is 15 percent. Margerit has the option to abandon the project after one year at which time she feels she could sell the project for $60,000. At what level of sales should she be willing to abandon the project?

a. 899 units
b. 923 units
c. 967 units
d. 1,199 units
e. 1,206 units

CONVERTIBLE BONDS

b 86. You own one convertible bond with a face value of $1,000. The bond can be converted into 15.625 shares of Zolo stock. This bond is currently selling for $1,128. What is the conversion price?

a. $63.33
b. $64.00
c. $72.00
d. $72.19
e. $86.49

CONVERTIBLE BONDS

d 87. You own six convertible bonds. These bonds have a 5 percent coupon, a $1,000 face value and mature in 8 years. The bonds are convertible into shares of common stock at a conversion price of $20. How many shares of stock will you receive if you convert all of your bonds?

a. 8.33 shares
b. 50.00 shares
c. 52.50 shares
d. 300.00 shares
e. 315.00 shares

CONVERTIBLE BONDS

b 88. A convertible bond has a face value of $1,000 and a conversion price of $22.50. The bond has a 6 percent coupon and pays interest semi-annually. The bond matures in six years. Similar bonds are yielding 7 percent. The current price of the stock is $21.24. What is the conversion value of this bond?

a. $882.24
b. $944.00
c. $980.85
d. $1,010.08
e. $1,059.32

CONVERTIBLE BONDS

a 89. A convertible bond has a face value of $1,000 and a conversion price of $22.50. The bond has a 6 percent coupon and pays interest semi-annually. The bond matures in six years. Similar bonds are yielding 9 percent. The current price of the stock is $23.24. What is the straight bond value?

a. $863.22
b. $865.42
c. $940.91
d. $1,000.00
e. $1,033.33

CONVERTIBLE BONDS

c 90. Kurt owns a convertible bond that matures in three years. The bond has an 8 percent coupon and pays interest annually. The face value of the bond is $1,000 and the conversion price is $16.67. Similar bonds have a market return of 9 percent. The current price of the stock is $17.50. What is the straight bond value?

a. $952.57
b. $974.21
c. $974.69
d. $1,000.00
e. $1,049.79

CONVERTIBLE BONDS

d 91. Kurt owns a convertible bond that matures in three years. The bond has an 8 percent coupon and pays interest annually. The face value of the bond is $1,000 and the conversion price is $16.67. Similar bonds have a market return of 9 percent. The current price of the stock is $17.50. What is the conversion value of this bond?

a. $952.57
b. $974.69
c. $1,038.30
d. $1,049.79
e. $1,144.27

IV. ESSAYS

OPTION QUOTES AND ARBITRAGE

92. Suppose you look in the newspaper and see ABC trading at $50 per share. Calls on ABC with one month to expiration and an exercise price of $45 are trading at $6.50 each. Puts on ABC with one month to expiration and an exercise price of $55 are trading at $3.50 each. Are these prices reasonable? Explain. (Ignore transactions costs.)

The calls are okay since the intrinsic value of each is $5 and the calls are trading at a price greater than this. However, the intrinsic value of the puts is $5 but the put is trading at $3.50. Thus, you could engage in arbitrage by buying puts for $3.50 each, exercising and selling the shares at the exercise price of $55, and purchasing shares to cover the sale in the market at $50 each, netting a profit of $150 per contract.

OUT OF THE MONEY CALLS

93. Suppose XYZ is priced at $125 a share, has a call with an exercise price of $150, and has two months to expiration costs $0.125 per contract. Why do you suppose investors would be willing to purchase a call that is so far out of the money?

    Students are basically expected to discuss the impact of time to maturity on option values. They should point out, at a minimum, that with two months left to maturity, there is a chance that the option could finish in the money. More astute students will point out that even though investors may be willing to purchase the option, the price of the option is very low, that is, investors aren't terribly confident the price will rise that far.

WARRANTS, CALLS AND CONVERTIBLES

94. What are the basic differences between warrants, call options, and convertible bonds?

    (1) Warrants and convertibles are issued by corporations while call options are issued by individuals, (2) warrants are usually privately issued and bundled with a bond, and further they may be detached and traded separately in the market, (3) warrants and call options are exercised for cash, convertible bonds are exercised by exchange.

OPTION VALUE

95. Suppose your wealthy Aunt Minnie has asked you to manage her large stock portfolio. You would like to buy and/or sell options on many of the stocks she owns. Describe the types of options you would buy or sell, as well as your rationale, given the following circumstances:

    a. Aunt Minnie owns 10,000 shares of IBM common stock. You believe it is going to fall in price, but she won't let you sell it because her late husband told her never to let it go. How do you protect her from the impending price decline?
    b. Your analysis suggests that the common stock of Jet-Electro is poised to increase in value sharply over the next year. Aunt Minnie doesn't want to buy any of the stock, but does want you to use options to profit if the price rises. What do you do?
    c. Although Aunt Minnie doesn't want you to sell any of the stocks she owns, she would like you to use options to generate a little extra income. How might you do this?

    a. To profit from an expected price decline, you can offset your loss (assuming you don't wish to simply sell the stock) by either buying puts or selling (writing) *covered* calls on the stock. In this case, you would probably buy puts and sell them before expiration.
    b. In this case, the obvious solution is to buy calls and hope to sell them at a higher price later. You could also write puts, but Aunt Minnie would be forced to buy shares if you are wrong about the direction of the price change.
    c. You could sell puts as long as you are willing to buy the underlying security if the market moves against you. You do not want to sell covered calls if you are unwilling to sell your shares if the option is exercised. You do not want to sell naked calls as they have unlimited risk.

OPTION PRICING BOUNDS

96. What are the upper and lower bounds for an American call option? Explain what would happen in each case if the bound was violated.

    The upper bound on a call is the stock price. If the call price exceeded the stock price, you would be paying more for the option to buy an asset than the asset itself costs. The lower bounds are: $C \geq 0$ if $S - E < 0$ and $C \geq (S - E)$ if $(S - E) \geq 0$. In the first case, if the call exercise price exceeds the stock price, the call is out of the money and it will either be worthless or have some time value. In the second case, if the call is in the money, the call must be worth at least the difference between the asset's value and the exercise price. If the call was worth less than this value, rational investors would purchase calls, immediately exercise them, and then sell the stock at the current price, completing an arbitrage.

EQUITY AS A CALL OPTION ON ASSETS

97. Explain the rationale behind the statement that equity is a call option on the firm's assets. When would a shareholder allow the call to expire?

    The analogy only works for leveraged firms. At maturity of the firm's debt, the stockholders have the option to either pay the bondholders the par value of their debt or turn the firm's assets over to them. If the firm's assets are worth less than the par value of the debt, the stockholders will not exercise their call, that is, they will let the bondholders have the assets and the firm will be liquidated.

CONVERTIBLE BONDS

98. Recently, a U.S. oil firm wanted to invest in a Russian oil producer. However, the Russian firm's stock was not available for purchase. The Russian firm did have publicly traded convertible bonds outstanding. Can the U.S. firm achieve its objective in this case? Would it be ethical for the U.S. firm to take this route? What are the implications of convertible bonds for control of a firm?

    The U.S. firm can buy the convertibles and immediately convert, leaving them with stock ownership in the Russian oil producer, which was their objective. It would be difficult to argue that this is somehow unethical, but it is a backdoor way for investors to acquire equity in firms. Convertible bonds can be viewed as issuing equity, that is, it is possible for investors to acquire (or increase) equity stakes in firms by buying convertibles and converting. However, each purchase and conversion effectively increases the number of shares of stock outstanding which would most likely prevent the acquirer from gaining control of the firm.

CALLABLE BONDS

99. Call options are frequently attached to bonds, making them callable at the option of the issuer. Consider a firm that just issued two sets of bonds: One is callable, has an 8 percent coupon rate, 10 years to maturity, and can't be called in the first 5 years; the second is noncallable, has an 8 percent coupon rate, 10 years to maturity, and is identical to the first bond in every way except for the call option. Suppose the noncallable bonds are sold for $1,000 each. Will the callable bonds sell for more or less? Who "purchases" the option in this case and who "sells" it?

    The callable bond will obviously sell for less than par, the corporation buys the option and the bondholder writes it. If the callable bonds sell for $950 each, the call option will be worth the difference between the two bond prices, or $50 per bond.