46 BASICS OF DERIVATIVE PRICING AND VALUATION

1. Which of the following is most likelyto increase the price of a forward contract on an asset?
   (A) Lower convenience yield for a commodity.
   (B) Lower storage costs for a commodity.
   (C) Higher dividends from a stock.

2. Consider a put option on Deter, Inc., with an exercise price of $45. The current stock price of Deter is $52. What is the intrinsic value of the put option, and is the put option at-the-money or out-of-the-money?

Intrinsic Value	Moneyness
(A) $0	Out-of-the-money
(B) $7	At-the-money
(C) $7	Out-of-the-money

3. For a call option on a stock, if the stock price is greater than the exercise price at expiration, the payoff is equal to:
   (A) the exercise price.
   (B) the difference between the stock price and the exercise price.
   (C) zero.

4. It is possible to profit from arbitrage when there are no costs or benefits to holding the underlying asset and the forward contract price is:
   (A) less than the future value of the spot price.
   (B) less than the present value of the spot price.
   (C) greater than the present value of the spot price.

5. James Anthony has a short position in a put option with a strike price of $94. If the stock price is below $94 at expiration, what will happen to Anthony's short position in the option?
   (A) He will let the option expire.
   (B) He will have the option exercised against him at $94 by the person who is long the put option.
   (C) The person who is long the put option will not exercise the put option.

6. The spot price of an asset is 62 and the risk-free rate is 2.5%. If the net cost of carry for the asset over the next six months is -3 in present value terms, the no-arbitrage 6-month forward price is closest to:
   (A) 59.7
   (B) 65.8
   (C) 66.6

7. If an arbitrageur borrows money for three years and lends it out for one year, his position is most similar to:
   (A) a forward rate agreement.
   (B) an interest rate futures contract.
   (C) a fixed-for-floating interest rate swap.

8. A forward rate agreement (FRA):
   (A) can be used to hedge the interest rate exposure of a floating-rate loan.
   (B) is risk-free when based on the Treasury bill rate.
   (C) is settled by making a loan at the contract rate.

9. Other things equal, the no-arbitrage forward price of an asset will be higher if the asset has:
   (A) storage costs.
   (B) dividend payments.
   (C) convenience yield.

10. Derivatives valuation is based on risk-neutral pricing because:
   (A) the risk of a derivative is based entirely on the risk of its underlying asset.
   (B) this method provides an intrinsic value to which investors apply a risk premium.
   (C) risk tolerances of long and short investors are assumed to offset.

11. Greater volatility in the price of the underlying asset will have what effect on the value of a call option and the value of a put option?

	Value of a call option	Value of a put option
(A)	Increase	Increase
(B)	Increase	Decrease
(C)	Decrease	Increase

12. A one-period binomial model is useful for valuing options because it:
   (A) can account for contingent payoffs of options.
   (B) does not require an assumption about volatility.
   (C) considers the additional risk inherent in options.

13. A negative net cost of carry will:
    (A) increase the no-arbitrage forward price.
    (B) decrease the no-arbitrage forward price.
    (C) have no effect on the no-arbitrage forward price.

14. Given the following data regarding Printer, Inc.'s call options, which of the following statements is least accurate?

Stock Price	Expiration	Strike	Option Prime. (Last)
50	June	45	6
50	June	50	2
50	June	55	0.50

    (A) The intrinsic value of the June $45.00 call is $5.00.
    (B) The June $55.00 call is an in-the-money option.
    (C) The June $45.00 call is an in-the-money option.

15. Compared to an otherwise identical European put option, one that has a longer time to expiration:
    (A) must be worth more than the put that is nearer to expiration.
    (B) may be worth less than the put that is nearer to expiration.
    (C) must be worth at least as much as the put that is nearer to expiration.

16. The value of a forward or futures contract is:
    (A) specified in the contract.
    (B) typically zero at initiation.
    (C) equal to the spot price at expiration.

17. Which of the following statements about moneyness is most accurate? When the stock price is:
    (A) below the strike price, a call option is in-the-money.
    (B) above the strike price, a put option is in-the-money.
    (C) above the strike price, a put option is out-of-the-money.

18. Bidco Corporation common stock has a market value of $30.00. Which statement about put and call options available on Bidco common is mostaccurate?
    (A) A put with a strike price of $35.00 is in-the-money.
    (B) A call with a strike price of $25.00 is at-the-money.
    (C) A put with a strike price of $20.00 has intrinsic value.

19. At time t, prior to its settlement date at time T, the value Vt of a long forward with a price of F will be related to the spot price, 5, of an asset that has a zero net cost of carry by:
    (A) $V_t = (S - F)/(1 + Rf)^{(T - t)}$
    (B) $V_t = 5 - F/(1 + Rf)^{(T - t)}$
    (C) $V_t = F - 5/(1 + Rf)^{(T - t)}$

20. Consider a European call option and put option that have the same exercise price, and a forward contract to buy the same underlying asset as the two options. An investor buys a risk-free bond that will pay, on the expiration date of the options and the forward contract, the difference between the exercise price and the forward price. According to the put-call-forward parity relationship, this bond can be replicated by:
    (A) writing the call option and buying the put option.
    (B) buying the call option and writing the put option.
    (C) writing the call option and writing the put option.

21. An analyst is determining the value of a put option with a one-period binomial model. Using an up-move size of 25% and a risk-free rate of 3%, the analyst calculates the following:
    Down-move size = 0.80
    Up-move probability = 0.51
    Down-move probability = 0.49
    Value after up-move = $1.07
    Value after down-move = $5.01
    Probability-weighted average = 0.51($1.07) + 0.49($5.01) = $3.00
    The analyst should determine that the value of the put option is:
    (A) less than $3.00.
    (B) equal to $3.00.
    (C) greater than $3.00.

22. The time value of an option is most accurately described as:
    (A) the amount by which the intrinsic value exceeds the option premium.
    (B) equal to the entire premium for an out-of-the-money option.
    (C) increasing as the option approaches its expiration date.

23. Which of the following is typically equal to zero at the initiation of an interest rate swap contract?
    (A) Its value.
    (B) Its price.
    (C) Neither its value nor its price.

24. A call option's intrinsic value:
    (A) increases as the stock price increases above the strike price, while a put option's intrinsic value decreases as the stock price decreases below the strike price.
    (B) decreases as the stock price increases above the strike price, while a put option's intrinsic value increases as the stock price decreases below the strike price.
    (C) increases as the stock price increases above the strike price, while a put option's intrinsic value increases as the stock price decreases below the strike price.

25. As a forward contract approaches its expiration date, its value:
    (A) approaches zero.
    (B) depends on the price of the underlying asset.
    (C) increases to the forward contract price.

26. The intrinsic value of an option is equal to:
    (A) zero or the amount that it is in the money.
    (B) the amount that it is in or out of the money.
    (C) its speculative value.

27. When interest rates and futures prices for an asset are uncorrelated and forwards are less liquid than futures, it is most likely that the price of a forward contract is:
    (A) greater than the price of a futures contract.
    (B) equal to the price of a futures contract.
    (C) less than the price of a futures contract.

28. An option's intrinsic value is equal to the amount the option is:
    (A) in the money, and the time value is the market value minus the intrinsic value.
    (B) in the money, and the time value is the intrinsic value minus the market value.
    (C) out of the money, and the time value is the market value minus the intrinsic value.

29. The spot price of an asset is $35 and the risk-free rate is 3%. If the net cost of carry for the asset over the next three months is $1 in present value terms, the no-arbitrage 3-month forward price is closest to:
    (A) $33.75
    (B) $34.00
    (C) $34.25

30. Compared to an American call option on a stock that does not pay a dividend, an otherwise identical European call option will have:
    (A) a lower value.
    (B) a higher value.
    (C) the same value.

31. Which of the following will increase the value of a call option?
    (A) An increase in the exercise price.
    (B) A dividend on the underlying asset.
    (C) An increase in volatility.

32. Which of the following is a nonmonetary benefit of holding an asset?
    (A) Dividends.
    (B) Storage and insurance.
    (C) Convenience yield.

33. Dividends or interest paid by the asset underlying a call option:
    (A) decrease the value of the option.
    (B) increase the value of the option.
    (C) have no effect on the value of the option.

34. An investor holds two options on the same underlying stock, a call option with an exercise price of 25 and a put option with an exercise price of 30. If the market price of the stock is 27:
    (A) only one of the options is in the money.
    (B) neither option is in the money.
    (C) both options are in the money.

35. An investor will exercise a European put option on a stock at its expiration date if the stock price is:
    (A) equal to the exercise price.
    (B) greater than the exercise price.
    (C) less than the exercise price.

36. A synthetic European call option includes a short position in:
    (A) the underlying asset.
    (B) a risk-free bond.
    (C) a European put option.

37. Which of the following statements about American and European options is most accurate?
    (A) There will always be some price difference between American and European options because of exchange-rate risk.
    (B) Prior to expiration, an American option may have a higher value than an equivalent European option.
    (C) European options allow for exercise on or before the option expiration date.

38. The underlying instrument in a forward rate agreement is:
    (A) an asset.
    (B) an interest rate.
    (C) a fixed-income security.

39. A decrease in the riskless rate of interest, other things equal, will:
    (A) decrease call option values and decrease put option values.
    (B) increase call option values and decrease put option values.
    (C) decrease call option values and increase put option values.

40. The time value of a European call option with 30 days to expiration will most likely be:
    (A) less than the current option premium if the option is currently in-the-money.
    (B) greater than the current option premium if the option is currently out-of-the-money.
    (C) equal to the intrinsic value if the exercise price is greater than the current spot price.

41. Compared to European put options on an asset, otherwise identical American put options on the asset are most likely to be more valuable if:
    (A) the asset value is significantly lower than the exercise price.
    (B) the asset pays dividends during the life of the option.
    (C) the options are out-of-the-money.

42. A fiduciary call is a portfolio that is made up of:
    (A) a call that is synthetically created from other instruments.
    (B) a call option and a bond that pays the exercise price of the call at option expiration.
    (C) a call option and a share of stock.

43. One of the principal characteristics of swaps is that swaps:
    (A) are standardized derivative instruments.
    (B) may be likened to a series of forward contracts.
    (C) are highly regulated over-the-counter agreements.

44. Which of the following instruments is a component of the put-call-forward parity relationship?
    (A) The spot price of the underlying asset.
    (B) The present value of the forward price of the underlying asset.
    (C) The future value of the forward price of the underlying asset.

45. A call option that is in the money:
    (A) has an exercise price less than the market price of the asset.
    (B) has an exercise price greater than the market price of the asset.
    (C) has a value greater than its purchase price.

46. Which of the following portfolios has the same future cash flows as a protective put?
    (A) Long call option, long risk-free bond, short the underlying asset.
    (B) Short call option, long risk-free bond.
    (C) Long call option, long risk-free bond.

47. Other things equal, a short put position would become more valuable as a result of an increase in:
    (A) the time to expiration.
    (B) the price of the underlying asset.
    (C) the volatility of the price of the underlying asset.

48. A net benefit from holding the underlying asset of a forward contract will:
    (A) increase the value of the forward contract during its life.
    (B) decrease the no-arbitrage forward price at initiation.
    (C) decrease the value of the forward contract at expiration.

49. The value of a put option on a stock trading at 35 will decrease when:
    (A) the dividends paid on the stock are higher.
    (B) the risk-free rate is higher.
    (C) the volatility of the stock price is higher.

50. The price of a fixed-for-floating interest rate swap contract:
    (A) may vary over the life of the contract.
    (B) is established at contract initiation.
    (C) is directly related to changes in the floating rate.

51. The payoff of a call option on a stock at expiration is equal to:
    (A) the maximum of zero and the stock price minus the exercise price.
    (B) the maximum of zero and the exercise price minus the stock price.
    (C) the minimum of zero and the stock price minus the exercise price.

52. Using put-call parity, it can be shown that a synthetic European call can be created by a portfolio that is:
    (A) long the stock, short the put, and short a pure discount bond that pays the exercise price at option expiration.
    (B) long the stock, long the put, and long a pure discount bond that pays the exercise price at option expiration.
    (C) long the stock, long the put, and short a pure discount bond that pays the exercise price at option expiration.

53. The price of a pay-fixed receive-floating interest rate swap is:
    (A) negative when floating rates are highly volatile.
    (B) zero when floating rates and fixed rates are equal.
    (C) determined by expected future short-term rates.

54. Basil, Inc., common stock has a market value of $47.50. A put available on Basil stock has a strike price of $55.00 and is selling for an option premium of $10.00. The put is:
    (A) out-of-the-money by $2.50.
    (B) in-the-money by $7.50.
    (C) in-the-money by $10.00.

55. At expiration, exercise value is equal to time value for:
    (A) an out-of-the-money call or an in-the-money put.
    (B) an in-the-money call or an out-of-the-money put.
    (C) an out-of-the-money call or an out-of-the-money put.

56. Using put-call parity, it can be shown that a synthetic European put can be created by a portfolio that is:
    (A) short the stock, long the call, and long a pure discount bond that pays the exercise price at option expiration.
    (B) short the stock, long the call, and short a pure discount bond that pays the exercise price at option expiration.
    (C) long the stock, short the call, and short a pure discount bond that pays the exercise price at option expiration.

57. For an underlying asset that has no holding costs or benefits, the no-arbitrage forward price at initiation of a forward contract is:
    (A) zero.
    (B) the future value of the spot price.
    (C) equal to the spot price.

58. The most likely use of a forward rate agreement is to:
    (A) lock in an interest rate for future borrowing or lending.
    (B) exchange a floating-rate obligation for a fixed-rate obligation.
    (C) obtain the right, but not the obligation, to borrow at a certain interest rate.

59. During its life the value of a long position in a forward or futures contract:
    (A) is equal to the value of the short position.
    (B) can differ in size from the value of the short position.
    (C) is opposite to the value of the short position.

60. For an underlying asset that has no holding costs or benefits, the value of a forward contract to the long during the life of the contract is the:
    (A) spot price minus the present value of the forward price.
    (B) difference between the spot price and the forward price.
    (C) present value of the difference between the spot price and the forward price.

61. Other things equal, a decrease in the value of a put option on a stock is most likely consistent with which of the following changes in the risk-free rate and stock return volatility?

	Risk-free rate	Volatility
(A)	Decrease	Decrease
(B)	Increase	Decrease
(C)	Decrease	Increase

62. The calculation of derivatives values is based on an assumption that:
    (A) arbitrage opportunities do not arise in real markets.
    (B) arbitrage opportunities are exploited rapidly.
    (C) investors are risk neutral.

63. For a European style put option:
    (A) time value is equal to its market price minus its exercise value.
    (B) intrinsic value is equal to its market price plus its exercise value.
    (C) exercise value is equal to the underlying stock price minus its exercise price.

64. A synthetic European put option includes a short position in:
    (A) the underlying asset.
    (B) a risk-free bond.
    (C) a European call option.

65. If the price of a forward contract is greater than the price of an identical futures contract, the most likely explanation is that:
    (A) the futures contract is more difficult to exit.
    (B) the futures contract requires daily settlement.
    (C) the forward contract is more liquid.

66. For a series of forward contracts to replicate a swap contract, the forward contracts must have:
    (A) values at swap initiation that sum to zero.
    (B) values at swap expiration that sum to zero.
    (C) values at swap initiation that are equal to zero.

67. The relationship referred to as put-call-forward parity states that at time = 0, if there is no arbitrage opportunity, the value of a call at X on an asset that has no holding costs or benefits plus the present value of X is equal to:
    (A) the asset price minus the value of a put option at X.
    (B) the forward contract price plus the value of a put option at X.
    (C) the value of a put option at X plus the present value of the forward contract price.

68. An increase in the riskless rate of interest, other things equal, will:
    (A) decrease call option values and increase put option values.
    (B) increase call option values and decrease put option values.
    (C) decrease call option values and decrease put option values.

69. If futures prices are positively correlated with interest rates, futures prices will be:
    (A) greater than forward prices.
    (B) less than forward prices.
    (C) unaffected relative to forward prices.

70. For two European put options that differ only in their time to expiration, which of the following is most accurate? The longer-term option:
    (A) is worth at least as much as the shorter-term option.
    (B) can be worth less than the shorter-term option.
    (C) is worth more than the shorter-term option.

71. Bea Moran wants to establish a long derivatives position in a commodity she will need to acquire in six months. Moran observes that the six-month forward price is 45.20 and the six-month futures price is 45.10. This difference most likely suggests that for this commodity:
    (A) long investors should prefer futures contracts to forward contracts.
    (B) futures prices are negatively correlated with interest rates.
    (C) there is an arbitrage opportunity among forward, futures, and spot prices.

72. Which of the following statements about long positions in put and call options is most accurate? Profits from a long call:
    (A) and a long put are positively correlated with the stock price.
    (B) are negatively correlated with the stock price and the profits from a long put are positively correlated with the stock price.
    (C) are positively correlated with the stock price and the profits from a long put are negatively correlated with the stock price.