Chapter 20
Understanding Options

Multiple Choice Questions

1. Firms regularly use the following to reduce risk:
   (I) Currency options
   (II) Interest-rate options
   (III) Commodity options
   A) I only
   B) II only
   C) III only
   D) I, II, and III
   Answer: D   Type: Medium   Page: 541

2. The following are examples of disguised options for firm:
   (I) acquiring growth opportunities
   (II) ability of the firm to terminate a project when it is no longer profitable
   options that are associated with corporate securities that provide flexibility to change the terms of the
   issues
   A) I only
   B) II only
   C) I and III only
   D) I, II, and III
   Answer: D   Type: Medium   Page: 541

3. An investor, in practice, can buy:
   (I) an option on a single share of stock
   (II) options that are in multiples of 100
   (III) a minimum order of 100 options on a share of stock
   A) I only
   B) II and III only
   C) II only
   D) III only
   Answer: B   Type: Easy   Page: 542

4. An option that can be exercised any time before expiration date is called:
   A) an European option
   B) an American option
   C) a call option
   D) a put option
   Answer: B   Type: Easy   Page: 542
5. The two principal options exchanges in the U.S.A. are:
(I) International Securities Exchange
(II) New York Stock Exchange
(III) NASDAQ
(IV) Chicago Board of Options Exchange
A) II and III only
B) I and IV only
C) I and II only
D) III and IV only
Answer: B Type: Easy Page: 542

6. In November 2003, an investor buys a call option on Amgen stock with an exercise of price of $65 and expiring in January 2005. If the stock price in November 2003 is $60, then this option is:
(I) in-the-money
(II) out-of-the-money
(III) a LEAPS
A) I only
B) II only
C) III only
D) II and III only
Answer: D Type: Easy Page: 543

7. The payoff (Position) diagram for a put with the same exercise price and premium as the call on the same underlying asset with the same maturity is (like):
A) the inverse of the call diagram along the put price
B) unrelated to the call diagram no matter what the exercise price
C) the mirror image of the call diagram around the exercise price
D) exactly the same as the call diagram for the given exercise price
Answer: C Type: Difficult Page: 543

8. In November 2003, an investor buys a put option on Amgen stock with an exercise of price of $55 and expiring in January 2005. If the stock price in November 2003 is $60, then this option is:
(I) in-the-money
(II) out-of-the-money
(III) a LEAPS
A) I only
B) II only
C) III only
D) I and III only
Answer: D Type: Easy Page: 543
9. A put gives the owner the right
A) and the obligation to buy an asset at a given price
B) and the obligation to sell an asset at a given price
C) but not the obligation to buy an asset at a given price
D) but not the obligation to sell an asset at a given price
Answer: D   Type: Medium   Page: 543

10. The buyer of a call option has the choice to exercise, but the writer of the call option has:
A) The choice to offset with a put option
B) The obligation to deliver the shares at exercise
C) The choice to deliver shares or take a cash payoff
D) The choice of exercising the call or not
Answer: B   Type: Difficult   Page: 543

11. Suppose an investor sells (writes) a put option. What will happen if the stock price on the exercise date exceeds the exercise price?
A) The seller will need to deliver stock to the owner of the option
B) The seller will be obliged to buy stock from the owner of the option
C) The owner will not exercise his option
D) None of the above
Answer: C   Type: Medium   Page: 543

12. Suppose an investor buys one share of stock and a put option on the stock. What will be the value of her investment on the final exercise date if the stock price is below the exercise price? (Ignore transaction costs)
A) The value of two shares of stock
B) The value of one share of stock plus the exercise price
C) The exercise price
D) The value of one share of stock minus the exercise price
Answer: C   Type: Difficult   Page: 543

13. Which of the following investors would be happy to see the stock price rise sharply?
(I) Investor who owns the stock and a put option
(II) Investor who has sold a put option and bought a call option
(III) Investor who owns the stock and has sold a call option
(IV) Investor who has sold a call option
A) I and II only
B) III and IV only
C) III only
D) IV only
Answer: A   Type: Difficult   Page: 543
14. Figure-1 depicts the position diagram of:
A) the buyer of call option
B) the buyer of put option
C) the seller (writer) of call option
D) the seller (writer) of put option
Answer: A  Type: Medium  Page: 545

15. Figure-2 depicts the position diagram of:
\[ \text{Value of option} \]
\[ \text{Share Price} \]
A) the buyer of call option
B) the buyer of put option
C) the seller (writer) of call option
D) the seller (writer) of put option
Answer: B  Type: Medium  Page: 545

16. Put-call parity can be used to show:
A) How far in-the-money put options can get
B) How far in-the-money call options can get
C) The precise relationship between put and call prices given equal exercise prices and equal expiration dates
D) That the value of a call option is always twice that of a put given equal exercise prices and equal expiration dates
Answer: C  Type: Difficult  Page: 572

17. Buying a call option, investing the present value of the exercise price in T-bills, and selling the underlying share is the same as:
A) Buying a call and a put
B) Buying a put and a share
C) Buying a put
D) Selling a call
Answer: C  Type: Difficult  Page: 546
18. Suppose you buy a call and lend the present value of its exercise price. You could match the payoffs of this strategy by:
A) Buying stock and selling a call
B) Selling a put and lending the present value of the exercise price
C) Buying stock and buying a put
D) Buying stock and selling a put
Answer: C   Type: Difficult   Page: 547

19. Suppose an investor buys one share of stock and a put option on the stock and simultaneously sells a call option on the stock with the same exercise price. What will be the value of his investment on the final exercise date?
A) Above the exercise price if the stock price rises and below the exercise price if it falls
B) Equal to the exercise price regardless of the stock price
C) Equal to zero regardless of the stock price
D) Below the exercise price if the stock price rises and above if it falls
Answer: B   Type: Difficult   Page: 547

20. For European options, the value of a call minus the value of a put is equal to:
A) The present value of the exercise price minus the value of a share
B) The present value of the exercise price plus the value of a share
C) The value of a share plus the present value of the exercise price
D) The value of a share minus the present value of a put
Answer: D   Type: Difficult   Page: 549

21. If the stock makes a dividend payment before the expiration date then the put-call parity is:
A) Value of call = value of put + share price - present value of dividend - present value exercise price
B) Value of call = value of put - share price + present value of dividend - present value exercise price
C) Value of call = value of put + share price + present value of dividend + present value exercise price
D) Value of call = value of put + share price + present value of dividend - present value exercise price
Answer: A   Type: Difficult   Page: 549

22. For European options, the value of a call plus the present value of the exercise price is equal to:
A) The value of a put minus the value of a share
B) The value of a share minus the value of a call
C) The value of a put plus the value of a share
D) The value of a share minus the value of a put
Answer: C   Type: Difficult   Page: 549

23. For European options, the value of a put is equal to:
A) The value of a call minus the value of a share plus the present value of the exercise price
B) The value of a call plus the value of a share plus the present value of the exercise price
C) The value of the share minus the value of a call plus the present value of the exercise price
D) The value of the share minus the present value of the exercise price plus the value of a call
Answer: A   Type: Difficult   Page: 550
24. The higher the exercise price:
A) The higher the put price
B) The lower the put price
C) Has no effect on put price
D) The higher the stock price
Answer: A   Type: Medium   Page: 552

25. The higher the exercise price:
A) The higher the call price
B) The lower the call price
C) Has no effect on call price
D) The higher the stock price
Answer: B   Type: Medium   Page: 552

26. If the volatility of the underlying asset decreases, then the:
A) Value of the put option will increase, but the value of the call option will decrease
B) Value of the put option will decrease, but the value of the call option will increase
C) Value of both the put and call option will increase
D) Value of both the put and call option will decrease
Answer: D   Type: Difficult   Page: 552

27. Which of the following features increase(s) the value of a call option?
A) A high interest rate
B) A long time to maturity
C) A highly variable stock price
D) All of the above
Answer: D   Type: Medium   Page: 552

28. If the risk-free interest rate increases:
A) The direct effect of it on the call option price is positive
B) The direct effect of it on the call option price is negative
C) The direct effect of it on the call option price is unknown
Answer: A   Type: Difficult   Page: 552

29. A call option has an exercise price of $150. At the final exercise date, the stock price could be either $100 or $200. Which investment would combine to give the same payoff as the stock?
A) Lend PV of $100 and buy two calls
B) Lend PV of $100 and sell two calls
C) Borrow $100 and buy two calls
D) Borrow $100 and sell two calls
E) None of the above
Answer: A   Type: Difficult   Page: 554
Response: Value of two calls: 2(200-150) = 100 or value of two calls =: 2(100-150) = 0 (not exercised); payoff = 100 + 100 = 200 or payoff = 0 + 100 = 100
30. Relative to the underlying stock, a call option always has:
A) A higher beta and a higher standard deviation of return
B) A lower beta and a higher standard deviation of return
C) A higher beta and a lower standard deviation of return
D) A lower beta and a lower standard deviation of return
Answer: A  Type: Difficult  Page: 554

31. An option holder gains from volatility of the underlying stock because:
(I) the payoffs from an option are symmetric
(II) the payoffs from an option are asymmetric
(III) the stock price has a higher probability of going up than going down
A) I only
B) II only
C) III only
D) I and III only
Answer: B  Type: Difficult  Page: 555

32. The value of an option (both call and put) is positively related to:
(I) volatility of the underlying stock price
(II) time to expiration
(III) risk-free rate
A) I and II only
B) II and III only
C) I and III only
D) III only
Answer: A  Type: Medium  Page: 557

33. The value of a call option is positively related to the following:
(I) underlying stock price
(II) risk-free rate
(III) time to expiration
(IV) volatility of the underlying stock price
A) I only
B) II only
C) III only
D) I, II, III, and IV
Answer: D  Type: Medium  Page: 557
34. The value of a call option is negatively related to:
(I) Exercise price
(II) Risk-free rate
(III) Time to expiration
A) I only
B) II only
C) III only
D) II and III only
Answer: A Type: Medium Page: 557

35. The value of a put option is positively related to:
(I) Exercise price
(II) Time to expiration
(III) Volatility of the underlying stock price
(IV) Risk-free rate
A) I, II, and III only
B) II, III, and IV only
C) I, II, and IV only
D) IV only
Answer: A Type: Medium Page: 557

36. The value of a put option is negatively related to:
(I) Stock price
(II) Risk-free rate
(III) Exercise price
A) I only
B) II only
C) I and II only
D) III only
Answer: C Type: Medium Page: 557

True/False Questions

T  F  37. A call options gives its owner the right to buy stock at a fixed strike price.
Answer: True Type: Easy Page: 542

T  F  38. An European option gives its owner the right to exercise the option at any time before maturity.
Answer: False Type: Medium Page: 542

T  F  39. If you write a put option, you acquire the right to buy stock at a fixed strike price.
Answer: False Type: Medium Page: 544
T  F  40.  The writer of a put option loses if the stock price declines.
Answer: True   Type: Medium   Page: 544

T  F  41.  For an European option: Value of call + PV(exercise price) = Value of put + share price.
Answer: True   Type: Medium   Page: 549

T  F  42.  Options can have a value even when the stock is worthless.
Answer: False   Type: Medium   Page: 549

T  F  43.  An increase in the stock price results in an increase in the call option price.
Answer: True   Type: Medium   Page: 553

T  F  44.  An increase in the exercise price results in an increase in the call option price.
Answer: False   Type: Medium   Page: 553

T  F  45.  The value of a call option increases with the variability of the stock prices.
Answer: True   Type: Medium   Page: 555

T  F  46.  It is possible to replicate an investment in a call option by a levered investment in the underlying asset.
Answer: True   Type: Medium   Page: 557

Essay Questions

47.  Define the term "option."
Type: Easy   Page: 541
Answer:
An option is defined as a right, but not an obligation, to buy or sell an underlying asset at a fixed price during a specified period of time.

48.  Explain the difference between a European option and an American option.
Type: Easy   Page: 542
Answer:
A European option may be exercised only on the expiration date.  An American option may be exercised anytime up to the expiration date.
49. Define the term "call option."
Type: Easy   Page: 542
Answer:
A call option is defined as a right, but not an obligation, to buy an underlying asset at a fixed price during a specified period of time.

50. Define the term "put option."
Type: Easy   Page: 544
Answer:
A put option is defined as a right, but not an obligation, to sell an underlying asset at a fixed price during a specified period of time.

51. Briefly explain how position diagrams are useful?
Type: Medium   Page: 545
Answer:
Position diagrams show payoffs at option exercise. Share price is plotted on the x-axis and option value on the y-axis. They are useful in analyzing the position of option buyers and sellers at exercise. They do not consider the cost of options.

52. Briefly explain what is meant by "protective put."
Type: Easy   Page: 547
Answer:
The combination of a stock and a put option is known as a "Protective put." It is like buying insurance against declining stock price. The exercise price of the put option provides a floor to investment in stock. The cost is the price of the put option.

53. Briefly explain what is meant by put-call parity?
Type: Medium   Page: 549
Answer:
The relationship between the value of a European option and the value of an equivalent put option is called put-call parity. It holds only if the investor is committed to holding the options until the exercise date. It does not hold good for American options.

54. Discuss the factors that determine the value of a call option.
Type: Medium   Page: 552
Answer:
The value of a call option is determined by five factors. They are: stock price, exercise price, risk free interest rate, variability of the stock price, and time to expiration.
55. Briefly explain the relationship between risk and option values
Answer:
Options on volatile (risky) assets are more valuable than options on safer assets. This is in contrast to most financial settings in which risk is a bad thing and investors have to be paid to bear it. The value of an option increases with the volatility of the underlying stock price.