

**Hull: Options, Futures, and Other Derivatives, Ninth Edition, Global Edition**

**Chapter 1: Introduction**

**Multiple Choice Test Bank: Questions with Answers**

1. A one-year forward contract is an agreement where
  - A. One side has the right to buy an asset for a certain price in one year's time.
  - B. One side has the obligation to buy an asset for a certain price in one year's time.
  - C. One side has the obligation to buy an asset for a certain price at some time during the next year.
  - D. One side has the obligation to buy an asset for the market price in one year's time.

Answer: B

A one-year forward contract is an obligation to buy or sell in one year's time for a predetermined price. By contrast, an option is the right to buy or sell.

2. Which of the following is NOT true
  - A. When a CBOE call option on IBM is exercised, IBM issues more stock
  - B. An American option can be exercised at any time during its life
  - C. An call option will always be exercised at maturity if the underlying asset price is greater than the strike price
  - D. A put option will always be exercised at maturity if the strike price is greater than the underlying asset price.

Answer: A

When an IBM call option is exercised the option seller must buy shares in the market to sell to the option buyer. IBM is not involved in any way. Answers B, C, and D are true.

3. A one-year call option on a stock with a strike price of \$30 costs \$3; a one-year put option on the stock with a strike price of \$30 costs \$4. Suppose that a trader buys two call options and one put option. The breakeven stock price above which the trader makes a profit is
  - A. \$35
  - B. \$40
  - C. \$30
  - D. \$36

Answer: A

When the stock price is \$35, the two call options provide a payoff of  $2 \times (35 - 30)$  or \$10. The put option provides no payoff. The total cost of the options is  $2 \times 3 + 4$  or \$10. The stock price in A, \$35, is therefore the breakeven stock price above which the position is profitable because it is the price for which the cost of the options equals the payoff.

4. A one-year call option on a stock with a strike price of \$30 costs \$3; a one-year put option on the stock with a strike price of \$30 costs \$4. Suppose that a trader buys two call options and one

put option. The breakeven stock price below which the trader makes a profit is

- A. \$25
- B. \$28
- C. \$26
- D. \$20

Answer: D

When the stock price is \$20 the two call options provide no payoff. The put option provides a payoff of  $30 - 20$  or \$10. The total cost of the options is  $2 \times 3 + 4$  or \$10. The stock price in D, \$20, is therefore the breakeven stock price below which the position is profitable because it is the price for which the cost of the options equals the payoff.

5. Which of the following is approximately true when size is measured in terms of the underlying principal amounts or value of the underlying assets
- A. The exchange-traded market is twice as big as the over-the-counter market.
  - B. The over-the-counter market is twice as big as the exchange-traded market.
  - C. The exchange-traded market is ten times as big as the over-the-counter market.
  - D. The over-the-counter market is ten times as big as the exchange-traded market.

Answer: D

The OTC market is about \$600 trillion whereas the exchange-traded market is about \$60 trillion.

6. Which of the following best describes the term “spot price”
- A. The price for immediate delivery
  - B. The price for delivery at a future time
  - C. The price of an asset that has been damaged
  - D. The price of renting an asset

Answer: A

The spot price is the price for immediate delivery. The futures or forward price is the price for delivery in the future

7. Which of the following is true about a long forward contract
- A. The contract becomes more valuable as the price of the asset declines
  - B. The contract becomes more valuable as the price of the asset rises
  - C. The contract is worth zero if the price of the asset declines after the contract has been entered into
  - D. The contract is worth zero if the price of the asset rises after the contract has been entered into

Answer: B

A long forward contract is an agreement to buy the asset at a predetermined price. The contract becomes more attractive as the market price of the asset rises. The contract is only worth zero

when the predetermined price in the forward contract equals the current forward price (as it usually does at the beginning of the contract).

8. An investor sells a futures contract on an asset when the futures price is \$1,500. Each contract is on 100 units of the asset. The contract is closed out when the futures price is \$1,540. Which of the following is true
- A. The investor has made a gain of \$4,000
  - B. The investor has made a loss of \$4,000
  - C. The investor has made a gain of \$2,000
  - D. The investor has made a loss of \$2,000

Answer: B

An investor who buys (has a long position) has a gain when a futures price increases. An investor who sells (has a short position) has a loss when a futures price increases.

9. Which of the following describes European options?
- A. Sold in Europe
  - B. Priced in Euros
  - C. Exercisable only at maturity
  - D. Calls (there are no European puts)

Answer: C

European options can be exercised only at maturity. This is in contrast to American options which can be exercised at any time. The term "European" has nothing to do with geographical location, currencies, or whether the option is a call or a put.

10. Which of the following is NOT true
- A. A call option gives the holder the right to buy an asset by a certain date for a certain price
  - B. A put option gives the holder the right to sell an asset by a certain date for a certain price
  - C. The holder of a call or put option must exercise the right to sell or buy an asset
  - D. The holder of a forward contract is obligated to buy or sell an asset

Answer: C

The holder of a call or put option has the right to exercise the option but is not required to do so. A, B, and D are correct

11. Which of the following is NOT true about call and put options:
- A. An American option can be exercised at any time during its life
  - B. A European option can only be exercised only on the maturity date
  - C. Investors must pay an upfront price (the option premium) for an option contract

- D. The price of a call option increases as the strike price increases

Answer: D

A call option is the option to buy for the strike price. As the strike price increases this option becomes less attractive and is therefore less valuable. A, B, and C are true.

12. The price of a stock on July 1 is \$57. A trader buys 100 call options on the stock with a strike price of \$60 when the option price is \$2. The options are exercised when the stock price is \$65. The trader's net profit is
- A. \$700
  - B. \$500
  - C. \$300
  - D. \$600

Answer: C

The payoff from the options is  $100 \times (65 - 60)$  or \$500. The cost of the options is  $2 \times 100$  or \$200. The net profit is therefore  $500 - 200$  or \$300.

13. The price of a stock on February 1 is \$124. A trader sells 200 put options on the stock with a strike price of \$120 when the option price is \$5. The options are exercised when the stock price is \$110. The trader's net profit or loss is
- A. Gain of \$1,000
  - B. Loss of \$2,000
  - C. Loss of \$2,800
  - D. Loss of \$1,000

Answer: D

The payoff that must be made on the options is  $200 \times (120 - 110)$  or \$2000. The amount received for the options is  $5 \times 200$  or \$1000. The net loss is therefore  $2000 - 1000$  or \$1000.

14. The price of a stock on February 1 is \$84. A trader buys 200 put options on the stock with a strike price of \$90 when the option price is \$10. The options are exercised when the stock price is \$85. The trader's net profit or loss is
- A. Loss of \$1,000
  - B. Loss of \$2,000
  - C. Gain of \$200
  - D. Gain of \$1000

Answer: A

The payoff is  $90 - 85$  or \$5 per option. For 200 options the payoff is therefore  $5 \times 200$  or \$1000. However the options cost  $10 \times 200$  or \$2000. There is therefore a net loss of \$1000.

15. The price of a stock on February 1 is \$48. A trader sells 200 put options on the stock with a strike price of \$40 when the option price is \$2. The options are exercised when the stock price is \$39. The trader's net profit or loss is
- A. Loss of \$800
  - B. Loss of \$200
  - C. Gain of \$200
  - D. Loss of \$900

Answer: C

The payoff is  $40 - 39$  or \$1 per option. For 200 options the payoff is therefore  $1 \times 200$  or \$200. However the premium received by the trader is  $2 \times 200$  or \$400. The trader therefore has a net gain of \$200.

16. A speculator can choose between buying 100 shares of a stock for \$40 per share and buying 1000 European call options on the stock with a strike price of \$45 for \$4 per option. For second alternative to give a better outcome at the option maturity, the stock price must be above
- A. \$45
  - B. \$46
  - C. \$55
  - D. \$50

Answer: D

When the stock price is \$50 the first alternative leads to a position in the stock worth  $100 \times 50$  or \$5000. The second alternative leads to a payoff from the options of  $1000 \times (50 - 45)$  or \$5000. Both alternatives cost \$4000. It follows that the alternatives are equally profitable when the stock price is \$50. For stock prices above \$50 the option alternative is more profitable.

17. A company knows it will have to pay a certain amount of a foreign currency to one of its suppliers in the future. Which of the following is true
- A. A forward contract can be used to lock in the exchange rate
  - B. A forward contract will always give a better outcome than an option
  - C. An option will always give a better outcome than a forward contract
  - D. An option can be used to lock in the exchange rate

Answer: A

A forward contract ensures that the effective exchange rate will equal the current forward exchange rate. An option provides insurance that the exchange rate will not be worse than a certain level, but requires an upfront premium. Options sometimes give a better outcome and sometimes give a worse outcome than forwards.

18. A short forward contract on an asset plus a long position in a European call option on the asset with a strike price equal to the forward price is equivalent to
- A. A short position in a call option
  - B. A short position in a put option
  - C. A long position in a put option
  - D. None of the above

Answer: C

Suppose that  $S_T$  is the final asset price and  $K$  is the strike price/forward price. A short forward contract leads to a payoff of  $K - S_T$ . A long position in a European call option leads to a payoff of  $\max(S_T - K, 0)$ . When added together we see that the total position leads to a payoff of  $\max(0, K - S_T)$ , which is the payoff from a long position in a put option. C can also be seen to be true by plotting the payoffs as a function of the final stock price.

19. A trader has a portfolio worth \$5 million that mirrors the performance of a stock index. The stock index is currently 1,250. Futures contracts trade on the index with one contract being on 250 times the index. To remove market risk from the portfolio the trader should
- A. Buy 16 contracts
  - B. Sell 16 contracts
  - C. Buy 20 contracts
  - D. Sell 20 contracts

Answer: B

One futures contract protects a portfolio worth  $1250 \times 250$ . The number of contract required is therefore  $5,000,000 / (1250 \times 250) = 16$ . To remove market risk we need to gain on the contracts when the market declines. A short futures position is therefore required.

20. Which of the following best describes a central clearing party
- A. It is a trader that works for an exchange
  - B. It stands between two parties in the over-the-counter market
  - C. It is a trader that works for a bank
  - D. It helps facilitate futures trades

Answer: B

A central clearing party (CCP) is a clearing house that stands between two parties in the over-the-counter market. It serves the same purpose as an exchange clearing house.