77 VALUING A DERIVATIVE USING A ONE-PERIOD BINOMIAL MODEL

1. In order to value an option with a one-period binomial model, three things an analyst would need to know are:
    (A) the risk-adjusted discount rate, the volatility of the price of the underlying asset, and option exercise price.
    (B) the risk-free rate, the volatility of the price of the underlying, and the current asset price.
    (C) the probability of an up-move, the option exercise price, and the current asset price.

2. If a European put option is trading at a higher price than that implied from the binomial model, investors can earn a return in excess of the risk-free rate by:
    (A) buying the underlying, selling the call, and investing at the risk-free rate.
    (B) selling the underlying, buying the call, and investing at the risk-free rate.
    (C) buying the underlying, buying the call, and borrowing at the risk-free rate.

3. We can use the risk-free rate to value an option with a one-period binomial model because:
    (A) combining options with the underlying asset in a specific ratio will produce a risk future payment.
    (B) combining put and call options in specific ratio can produce a risk-free future payment.
    (C) options investors are risk-neutral, on average.

4. Consider a stock that will have a value of either 22 or 14 one year from now. If the risk-free rate is 5%, what is the ratio of shares to short call options with an exercise price of18 for a portfolio that will have the same value at expiration regardless of the stock price at the end of the year?
    (A) 0.48.
    (B) 0.53.
    (C) 0.50.

5. One method of valuing a call option with a one-period binomial model involves:

(A) using the probabilities of an up-move and a down-move to get the expected value of the payment at expiration.

(B) discounting the average call value at expiration by the risk-free rate.

(C) finding a combination of the call option and the underlying that will have the same value regardless of the price of the underlying at expiration.

6. An option's value is affected by:

(A) expected probabilities of underlying price increases or decreases only.

(B) actual probabilities of underlying price increases or decreases only.

(C) both actual and expected probabilities of underlying price increases or decreases.

7. Which of the following statements best describes the effect on the no-arbitrage price of a call option on Drinsky Inc. (Drinsky) shares? A decrease in the risk-free rate will:

(A) increase Drinsky's call option price.

(B) have no effect on Drinsky's call option price.

(C) decrease Drinsky's call option price.

8. A stock's price is currently $30 and at the end of three months when its options expire, the stock price is expected to either go up or down by 10%. What is the value of a call option with a strike price of $31?

(A) $0.70.

(B) $1.30.

(C) $1.00.

9. Which of the following statements regarding risk-neutrality is most accurate?

(A) Risk-neutral pricing requires using expected return to price an option.

(B) Risk-neutral probabilities are determined by investor views on risk and the risk-free rate.

(C) Risk-neutral pricing can be applied to any model that uses future underlying asset price movements.