## **CHAPTER 16**

**Understanding Options**

## **Quiz Questions**

1. Complete the following passage:

 A \_\_\_\_\_\_\_\_ option gives its owner the opportunity to buy a sock at a specified price that is generally called the \_\_\_\_\_\_\_\_\_ price. A \_\_\_\_\_\_\_\_ option gives its owner the opportunity to sell stock at a specified price. Options that can be exercised only at maturity are called \_\_\_\_\_\_\_\_\_ options.

3. Suppose that you hold a share of stock and a put option on that share. What is the payoff when the option expires if (**a**) the stock price is below the exercise price? (**b**) the stock price is above the exercise price?

5. There is another strategy involving calls and borrowing or lending that gives the same payoffs as the strategy described in Quiz Question 3. What is the alternative strategy?

10. (**NO SOLUTION ONLINE**) How does the price of a call option respond to the following changes, other things equal? Does the call price go up of down?

 a. Stock price increases.

 b. Exercise price is increased.

 c. Risk-free rate increases.

 d. Expiration date of the option is extended.

 e. Volatility of the stock price falls.

 f. Time passes, so the option’s expiration date comes closer.

## **Practice Questions**

13. “The buyer of the call and the seller of the put both hope that the stock price will rise. Therefore the two positions are identical.” Is the speaker correct? Illustrate with a position diagram.

16. In March 2007, a four-month call on the stock of Amazon.com, with an exercise price of $40.00, sold for $2.85. The stock price was $39. The risk-free interest rate was 5.3%. How much would you be willing to pay for a put on Amazon stock with the same maturity and exercise price? Assume that the Amazon options are European options. (*Note*: Amazon does not pay a dividend.)

17. Go to **finance.yahoo.com**. Check out the delayed quotes for Apple (AAPL) for different exercise prices and maturities.

 a. Confirm that higher exercise prices mean lower call prices and higher put prices.

 b. Confirm that longer maturity means higher prices for both puts and calls.

 c. Choose a Genentech put and a call with the same exercise price and maturity. Confirm that put-call parity holds (approximately). *Note*: You will have to use an up-to-date risk-free interest rate.

20. Which *one* of the following statements is correct?

 a. Value of put + present value of exercise price = value of call + share price.

 b. Value of put + share price = value of call + present value of exercise price.

 c. Value of put – share price = present value of exercise price – value of call.

 d. Value of put + value of call = share price – present value of exercise price.

22. a. If you can’t sell a share short, you can achieve exactly the same final payoff by a combination of options and borrowing or lending. What is this combination?

 b. Now work out the mixture of stock and options that gives the same final payoff as investment in a risk-free loan.

23. The common stock of Triangular File Company is selling at $90. A 26-week call option written on Triangular File’s stock is selling for $8. The call’s exercise price is $100. The risk-free interest rate is 10% per year.

 a. Suppose that puts on Triangular stock are not traded, but you want to buy one. How do you do it?

 b. Suppose that puts *are* traded. What should a 26-week put with an exercise price of $100 sell for?

 c. How could you use the put to hedge your position in Triangular stock? What

 is your net gain/loss with this hedge if Triangular stock increases $20 and if it

 decreases $20.

 d. How could you form a more perfect hedge? What is your net gain/loss with

 this hedge if Triangular stock increases $20 and if it decreases $20.

27. Is it more valuable to own an option to buy a portfolio of stocks or to own a portfolio of options to buy each of the individual stocks? Say briefly why.