Topic 56: The Greek Letters

Test ID: 8451126

Questions #1-2 of 17

Ronald Franklin, CFA, has recently been promoted to junior portfolio manager for a large equity portfolio at Davidson-Sherman (DS), a large multinational investment-banking firm. He is specifically responsible for the development of a new investment strategy that DS wants all equity portfolio managers to implement. Upper management at DS has instructed its portfolio managers to begin overlaying option strategies on all equity portfolios. The relatively poor performance of many of their equity portfolios has been the main factor behind this decision. Prior to this new mandate, DS portfolio managers had been allowed to use options at their own discretion, and the results were somewhat inconsistent. Some portfolio managers were not comfortable with the most basic concepts of option valuation and their expected return profiles, and simply did not utilize options at all. Upper management of DS wants Franklin to develop an option strategy that would be applicable to all DS portfolios regardless of their underlying investment composition. Management views this new implementation of option strategies as an opportunity to either add value or reduce the risk of the portfolio.

Franklin gained experience with basic options strategies at his previous job. As an exercise, he decides to review the fundamentals of option valuation using a simple example. Franklin recognizes that the behavior of an option's value is dependent on many variables and decides to spend some time closely analyzing this behavior. His analysis has resulted in the information shown in Exhibits 1 and 2 for European style options.

Exhibit 1: Input for European Options

Stock Price (S)	100
Strike Price (X)	100
Interest Rate (r)	0.07
Dividend Yield (q)	0.00
Time to Maturity (years) (t)	1.00
Volatility (Std. Dev.)(Sigma)	0.20
Black-Scholes Put Option Value	$4.7809

Exhibit 2: European Option Sensitivities

Sensitivity	*Call*	*Put*
Delta	0.6736	-0.3264
Gamma	0.0180	0.0180
Theta	-3.9797	2.5470
Vega	36.0527	36.0527
Rho	55.8230	-37.4164

Question #1 of 17

Question ID: 439414

Which of the following is the best estimate of the change in the put option when the underlying equity increases by $1?

A) -$0.37.

B) -$0.33.

C) $0.67.

D) -$3.61.

Question #2 of 17

Question ID: 439415

Franklin computes the rate of change in the European put option delta value, given a $1 increase in the underlying equity. Using the information in Exhibits 1 and 2, which of the following is the *closest* to Franklin's answer?

A) 36.0527.

B) 0.6736.

C) -0.3264.

D) 0.0180.

Question #3 of 17

Question ID: 439425

Gamma-neutral hedging:

A) increases sensitivity to large changes in asset prices.

B) decreases sensitivity to small changes in asset prices.

C) increases sensitivity to small changes in asset prices.

D) decreases sensitivity to large changes in asset prices.

Question #4 of 17

Question ID: 439420

Which of the following is the *best* approximation of the gamma of an option if its delta is equal to 0.6 when the price of the underlying security is 100 and 0.7 when the price of the underlying security is 110?

A) 0.01.

B) 0.10.

C) 1.00.

D) 0.00.

Question #5 of 17

Question ID: 439418

The deltas of puts and calls are *most* sensitive to changes in the underlying when:

A) calls are deep out-of-the-money, but puts are deep in-the-money.

B) both puts and calls are deep out-of-the-money.

C) both calls and puts are deep in-the-money.

D) both calls and puts are at-the-money.

Question #6 of 17

Question ID: 439411

An option dealer is delta hedging a short call position on a stock. As the stock price increases, in order to maintain the hedge, the dealer would most likely have to:

A) buy T-bills.

B) sell some the shares of the stock.

C) buy more shares of the stock.

D) short T-bills.

Question #7 of 17

Question ID: 439423

Gamma is the greatest when an option:

A) is deep out of the money.

B) has a shorter maturity.

C) is deep in the money.

D) is at the money.

Question #8 of 17

Question ID: 439419

Which of the following is **FALSE**?

I. The delta of forwards and futures is 1.
II. Gamma is largest when options are at-the-money.
III. Two problems using stop-loss trading on naked options are transaction costs and stock price uncertainty.
IV. For a delta-neutral portfolio, although opposite in sign, theta can serve as a proxy for gamma.

A) II and IV only.

B) I only.

C) II only.

D) I and III only.

Question #9 of 17

Question ID: 439410

As an option approaches expiration, the value of rho for a put option:

A) increases and tends toward infinity.

B) increases and tends toward zero.

C) decreases and tends toward negative infinity.

D) decreases and tends toward zero.

Question #10 of 17

Question ID: 439424

Call and put option values are most sensitive to changes in the volatility of the underlying when:

A) both puts and calls are deep out-of-the-money.

B) both calls and puts are at-the-money.

C) both calls and puts are deep in-the-money.

D) calls are deep out-of-the-money and puts are deep in-the-money.

Question #11 of 17

Question ID: 439426

Which of the following is *least accurate* regarding a gamma hedge?

A) More frequent rebalancing of a gamma hedge should result in higher returns.

B) Gamma hedges require less frequent rebalancing than delta hedges.

C) Gamma measures the change in delta.

D) The gamma increases with larger changes in the stock price.

Question #12 of 17

Question ID: 439417

To create a delta-neutral portfolio, an investor who has written 5,000 call options that have deltas equal to 0.5 will be:

A) short 2,500 shares in the underlying and be short 2,500 more options.

B) short 2,500 shares in the underlying.

C) long 2,500 shares in the underlying and short 2,500 more options.

D) long 2,500 shares in the underlying.

Question #13 of 17

Question ID: 439416

Ronald Franklin, CFA, has recently been promoted to junior portfolio manager for a large equity portfolio at Davidson-Sherman (DS), a large multinational investment-banking firm. He is specifically responsible for the development of a new investment strategy that DS wants all equity portfolio managers to implement. Upper management at DS has instructed its portfolio managers to begin overlaying option strategies on all equity portfolios. The relatively poor performance of many of their equity portfolios has been the main factor behind this decision. Prior to this new mandate, DS portfolio managers had been allowed to use options at their own discretion, and the results were somewhat inconsistent. Some portfolio managers were not comfortable with the most basic concepts of option valuation and their expected return profiles, and simply did not utilize options at all. Upper management of DS wants Franklin to develop an option strategy that would be applicable to all DS portfolios regardless of their underlying investment composition. Management views this new implementation of option strategies as an opportunity to either add value or reduce the risk of the portfolio.

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Franklin wants to know if the option sensitivities shown in Exhibit 2 have minimum or maximum bounds. Which of the following are the minimum and maximum bounds, respectively, for the put option delta?

A) -1 and 0.

B) -1 and 1.

C) There are no minimum or maximum bounds.

D) -1 and no maximum bound.

Question #14 of 17

Question ID: 439412

Which of the following is the *best* interpretation of delta for an option? Delta is the change in the option price for:

A) an instantaneous change in interest rates.

B) an instantaneous change in the volatility of the underlying stock.

C) a change in the time until expiration of the option.

D) an instantaneous change in price of the underlying stock.

Question #15 of 17

Question ID: 439422

When an option's gamma is higher:

A) a delta hedge will be more effective.

B) delta will be higher.

C) a delta hedge will perform more poorly over time.

D) delta will be lower.

Question #16 of 17

Question ID: 439421

How is the gamma of an option defined? Gamma is the change in the:

A) delta as the price of the underlying security changes.

B) vega as the option price changes.

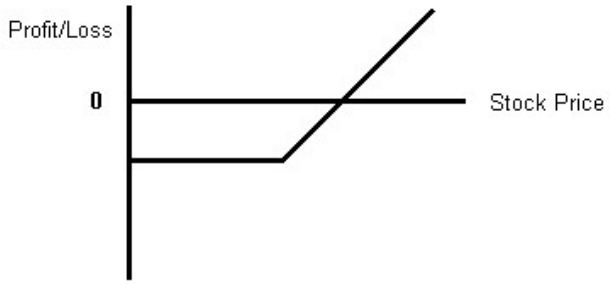
C) theta as the option price changes.

D) option price as the underlying security changes.

Question #17 of 17

Question ID: 439427

The following profit/loss diagram is for what type of position?



A) Long stock, long put (portfolio insurance).

B) Long stock, short call (covered call).

C) Short put.

D) Long put.