Konvexity

Financial Markets and Products

1. Which of the following types of traders never take position in the derivative instruments?
   a) Speculators
   b) Hedgers
   c) Arbitrageurs
   d) None of the above

2. Which of the following statements is least likely to be accurate?
   a) The size of OTC derivative market is more than the size of exchange traded derivatives markets
   b) Trades in over-the-counter market are typically much larger than trades in the exchange traded markets
   c) In over-the-counter markets, financial institutions often act as market makers for more commonly traded instruments
   d) The advantage of OTC market over the exchange traded market is customized instruments and less credit risk

3. Under what circumstances the European call option price equals the European put option price assuming that both have the same underlying stock, same maturity and same strike price?
   a) Stock price is equal to the strike price of the options
   b) Present value of the stock price is equal to the strike price of the options
   c) Present value of the stock price is equal to the present value of the strike price of options
   d) Stock price is equal to the present value of the strike price of the options

4. Which of the following statements is least accurate about the position limits and price limits on the futures contract?
   a) The price limits can become an artificial barrier to trading when the price of the underlying commodity is advancing or declining rapidly
   b) The exchange can change the price limits within a trading day and trading can continue after earlier limit up or limit down
   c) Position limits are good for market efficiency
   d) Position limits are the maximum number of contracts that a speculator may hold

5. Which of the following orders is least likely a market order?
   a) Discretionary order
   b) Market-if-touched order
   c) Board order
   d) Good-till-cancelled order

6. Which of the following statements is least accurate about the futures contracts?

a) They have virtually no credit risk
b) They are usually close out before the maturity
c) They have a range of delivery dates
d) They are settled at the end of the contract

7. A clearinghouse member has 20 long positions in contract having an average clearing margin of \$15 and 15 short positions in the same contract. What is the difference between the clearing margin deposited by the member to the clearinghouse under gross and net basis?
a) \$450
b) \$300
c) \$225
d) \$75

8. GreenBull and YellowBull are two competitors in energy drink sector. Caffeine is one of the major inputs in making energy drink. It is a general trend that the players in the energy drink sector do not hedge the price of caffeine. GreenBull decides to hedge the price of caffeine using 6-months futures. The price of caffeine goes down by 20% in 6-months. YellowBull does not go for hedge. What would be the most likely impact of this on the profit margin of both companies? Assume that the market forces increase/decrease the price of final product by the same amount as the increase/decrease in the input caffeine.
a) Profit margin for GreenBull goes down and stays the same for YellowBull
b) Profit margin for YellowBull goes down and stays the same for GreenBull
c) Profit margin for GreenBull goes up and stays the same for YellowBull
d) Profit margin for YellowBull goes up and stays the same for GreenBull

9. A US based company is going to receive EUR 17 million in 5 months. The current spot exchange rate for EUR/USD is 0.7225 EUR/USD. The company decides to enter into a futures position to hedge the currency risk. It does not find any contract for 5 months expiry. So, it enters into a 6-months contract. The futures price of that contract is trading at 0.7350 EUR/USD. At the end of 5 months, the spot and futures price for that contract are 0.7325 EUR/USD and 0.7360 EUR/USD respectively. What is total amount received by the company in USD?
a) USD 12.4695 million
b) USD 23.0978 million
c) USD 23.1767 million
d) USD 23.2396 million

10. A sugar company wants to hedge the price of sugarcane. It needs a total of 15,000 tons of sugarcane. The spot price of sugarcane is USD 750 per ton and its futures price for a one-year contract is USD 775 per ton. The annual standard deviations for the change in spot price and the change in futures price are 112 and 118 respectively. The coefficient of correlation between the annual change in spot price and the annual change in futures price is 0.94. Calculate the optimal number of futures contracts required for hedging if the size of one futures contract is 100 ton.
a) 130 contracts
b) 134 contracts
c) 144 contracts
d) 149 contracts

11. You are managing an equity portfolio. The value of your portfolio is $750 million and the beta of your portfolio is 1.2. You want to increase you beta from 1.2 to 1.5. The value of S&P 500 futures index is 1,250. Calculate the number of contracts required and the position taken by you to increase the beta to the required beta?
   a) Long position in 720 S&P futures contracts
   b) Short position in 720 S&P futures contracts
   c) Long position in 180,000 S&P futures contracts
   d) Short position in 180,000 S&P futures contracts

12. Mark is a hedge fund manager. He has a short position in equity portfolio. Mark wants to decrease the beta exposure of the equity portfolio to zero. So, he decides to take position into S&P futures contracts. What position should be taken by him?
   a) Long
   b) Short
   c) Can't say as it depends on the value of beta of his portfolio
   d) Can't say as it depends on the value of beta of his portfolio and the value of beta of futures contract

13. The spot rates for 2-years and 5-years are 3.6% and 4.2% respectively. What is the forward interest rate for the period of time between year 2 and year 5?
   a) 3.8%
   b) 4.4%
   c) 4.6%
   d) 4.8%

14. You enter into a FRA contract according to which you will receive a fixed rate of 4.5% on a principal of $1 million for a 6-month period starting in 2 years. What is the profit for you at the end of 2 years if the 6-month rate at the end of 2 years is 4.2%?
   a) $1,435.41
   b) $1,439.54
   c) $1,466.99
   d) $1,469.15

15. A bond is trading at a price of 97.24 and has duration of 7.8. The yield of the bond expressed with semi-annual compounding is 9.75%. What is the modified duration of the bond?
   a) 7.107
   b) 7.437
   c) 8.180
   d) 8.560

16. The zero rates for 6 months, 1 year, 1.5 years and 2 years are 4.5%, 5.0%, 5.8%, and 6.8%. What is the par yield (continuous compounding) for a semi-annual coupon paying bond having a maturity of 2 years?
   a) 6.52%
   b) 6.64%
   c) 6.72%
   d) 6.84%

17. Calculate the price of a 6-month forward contract on a stock with price of $25. The continuously compounded risk free rate is 6.5% and dividends of $0.5 per share are expected after 3 months. 6 months, and 9 months.
    a) $23.256
    b) $24.024
    c) $24.818
    d) $25.016

18. The continuous compounded risk-free rate is 6.0% and the storage cost per annum as a proportion of the spot price net of any yield earn on the asset is 4% and the convenience yield is 7%. What is the price of a 6-month futures contract of gold if the spot rate is $1,560?
    a) $1,552.22
    b) $1,572.48
    c) $1,583.58
    d) $1,607.51

19. The 3-year interest rates in USA and Germany are 3.5% and 2.5% respectively. The spot exchange rate between the US dollar (USD) and Euro (Germany) is 1.2800 USD/EUR. What should be the 3-year forward rate for the USD-EUR currency contract?
    a) 1.3190 USD/EUR
    b) 1.2929 USD/EUR
    c) 1.2673 USD/EUR
    d) 1.2422 USD/EUR

20. Which of the following statements is least accurate?
    I. If the return from the underlying asset is uncorrelated with the stock market, then the futures price is unbiased estimator of the expected future spot price
    II. If the return from the underlying asset is positively correlated with the stock market, the market is in normal backwardation
    III. If the return from the underlying asset is negatively correlated with the stock market, the market is in normal contango
    IV. Futures price overstates the expected spot price when the return from the asset is positively correlated with the stock market
    a) I and IV
    b) II and III
    c) IV only
    d) II,III and IV

21. The cash price of a Treasury bill with 120 days to maturity is 96. Calculate the quoted price.
    a) 4
    b) 12
    c) 68
    d) 88

22. Which of the following statements is/are least accurate?

I. The forward price is greater than futures price if the asset prices are positively correlated with the interest rates
II. The difference between the forward and futures prices decreases as the life of the contract increases
III. The negative correlation between the asset prices and the interest rates leads to higher forward price than futures price

a) I and II
b) II and III
c) III only
d) I only

23. The cheapest-to-deliver bond is the one for which
a) Quoted bond price – (Settlement*Conversion factor) is minimum
b) Quoted bond price – (Settlement*Conversion factor) is maximum
c) (Settlement price*Conversion factor) + Accrued interest is minimum
d) (Settlement price*Conversion factor) + Accrued interest is maximum

24. The standard deviation of the change in the short-term interest rate in 1 year is 1.2%. The 4-year Eurodollar price is quoted as 97.2. What is the difference between the forward interest rate and futures interest rate?
a) 12.24 basis points
b) 12.96 basis points
c) 40.80 basis points
d) 81.60 basis points

25. You have a long position in the bond portfolio having forward value at the maturity of hedge as $2,500,000. The duration of the portfolio at the maturity of hedge is 4.8. The contract price for the futures contract is $100,000 and the duration of the asset underlying the futures contract at the maturity of the futures contract is 7.2. Calculate the number of futures contracts required to hedge the portfolio.
a) 37 contracts
b) 25 contracts
c) 17 contracts
d) 12 contracts

26. Following are the borrowing rates for two companies:

	Fixed	Floating
ABC Corp	5.5%	6-month LIBOR + 0.5%
XYZ Corp	6.5%	6-month LIBOR + 1.2%

Which of the following statements is least accurate?
a) ABC Corp has an absolute advantage over XYZ Corp
b) ABC Corp has comparative advantage in fixed rate borrowing
c) XYZ Corp has comparative advantage in floating rate borrowing
d) Only XYZ Corp will gain from the swap

27. A swap has a fixed swap rate of 6.5% (semi-annual compounding). It is a vanilla interest rate swap where the fixed and floating rates are exchanged after every 6 months. The swap has 14 months to expire. The 2-month, 8-month and 14-month LIBOR continuous compounding rates are 6.0%, 6.8% and 7.5%. The 6-month LIBOR rate at the last payment date was 6.2% (with semi-annual compounding). Calculate the value of swap to the pay-fixed party. The notional value of swap is $100 million.
   a) $ 0.564 million
   b) $ 0.873 million
   c) $ 0.904 million
   d) $ 1.151 million

28. Which of the following statements is least accurate about swaps?
   a) The swaps have credit, market and legal risks associated with them
   b) The credit risk of a swap is directly proportional to the value of the swap
   c) The diff swap has more credit risk than the normal currency swap
   d) In an accrual swap, the interest on one side of the swap accrues only when the floating reference rate is in certain range

29. A bank has fixed-rate liabilities. It is expecting a decrease in the floating interest rates in future. What kind of swap is ideal for the bank according to its expectations?
   a) Pay-fixed receive-floating swap
   b) Pay-floating receive-fixed swap
   c) Either of a or b
   d) Pay-floating receive-floating swap

30. Which of the following statements is least accurate about American options?
   a) The put option price is directly proportional to the strike price
   b) Higher is the risk-free rate, lower is the value of put option
   c) Lower is the volatility, the higher is the value of put option
   d) Higher is the amount of future dividends, the higher is the value of put option

31. A stock is trading at $45. The continuously compounded risk free rate is 6% per annum. What is the lower bound for the European put having a strike price of $55? The option contract is for 6 months.
   a) $11.33
   b) $10.00
   c) $8.37
   d) $6.80

32. Which of the following statements is least accurate about the options?
   a) The lower bound for the European and American put option is the same
   b) The lower bound for the European and American call option is the same
   c) The upper bound for the European and American call option is the same
   d) The upper bound for the European and American put option differs

33. A synthetic put option can be created by taking

a) Long position in call option and stock and short position in bond
b) Long position in stock and short position in call option and bond
c) Long position in bond and short position in call option and stock
d) Long position in call option and bond and short position in stock

34. The call option on a stock is trading at $4.5. The strike for the option is $75. The stock is trading at $74. What is the approximate value of put option of strike $75 if the continuous compounded risk free rate is 6% and the expiry for both the options is 6 months from today?
a) $1.13
b) $3.28
c) $4.12
d) $5.47

35. The profit/loss graph of covered call strategy is similar to the graph of
a) Long call option
b) Short call option
c) Long put option
d) Short put option

36. Which of the following option strategies do not have limited profit/loss?.
a) Butterfly spread
b) Bear put spread
c) Collar
d) Strangle

37. You think that market is going to remain volatile in coming future and the chances of it going down is more than the chances of it going up. Which of the following option strategies is best suited for you?
a) Long strangle
b) Short straddle
c) Long strip
d) Long strap

38. An investor buys at-the-money strap when the stock was trading at $50. The call option and put option price with strike price of $50 was at $4 and $3 respectively. At the expiry, the price of the underlying stock becomes $45. What is the total profit/loss from the strategy?
a) Loss of $1
b) Loss of $6
c) No profit no loss
d) Profit of $2

39. What is the payoff from the 6% interest rate cap for a quarter having 3-month LIBOR rate as 5.5%? The notional principal is $10 million.
a) $50,000
b) $16,667
c) $12,500
d) 0

40. If you have a positive net exposure, you would be making a profit from the exposure if
    a) Foreign currency fall in value against the domestic currency
    b) Foreign currency doesn't change in value against the domestic currency
    c) Foreign currency rises in value against the domestic currency
    d) Both (a) and (b)

41. What will happen to the FX exposure if a bank is buying or selling a currency for hedging purposes?
    a) Increase
    b) No change
    c) Decrease
    d) All of the above

42. If the forward rate and spot rate are quoted as DC/FC and domestic interest rate is higher than the foreign interest rate, then according to interest rate parity
    a) Forward rate will trade at a premium to the spot rate
    b) Forward rate will be same as the spot rate
    c) Forward rate will trade at a discount to the spot rate
    d) Can't conclude anything from given information

43. Which of the following is least likely to be specified by the bill of lading?
    a) Commodity owner
    b) Package weights
    c) Dates of shipment
    d) Quality of goods

44. Which of the following statements is accurate with regard to the transportation risk?
    a) Free-on-board (FOB) buyer is responsible only for the ordinary transportation risk
    b) Free-on-board (FOB) buyer is responsible only for the extraordinary transportation risk
    c) Free-on-board (FOB) buyer is responsible for both ordinary and extraordinary transportation risk
    d) Free-on-board(FOB) buyer is neither responsible for ordinary transportation risk nor extraordinary transportation risk

45. Which of the following statements is accurate for hedgers?
    a) Hedgers take only the basis risk
    b) Hedgers take only the price risk
    c) Hedgers take both price and basis risk
    d) Hedgers don't take either of the price or basis risk

46. The variance of a commodity futures price is 8% and the variance of the spot price is 10%. The variance of the basis price is 0.5%. What is the hedge effectiveness?
    a) 0.95
    b) 0.9375
    c) 0.925
    d) 0.92

47. Which of the following statements is least accurate?
    a) The market depth generally decreases with increase in maturity of the instrument
    b) Funding liquidity risk decreases with increasing margins
    c) Basis is the difference between the spot price and the futures price
    d) Transportation costs to an acceptable destination in included into the basis risk

48. Which of the following statements is least accurate about the cash-and-carry arbitrage?
    a) At the initiation money is borrowed for the term of the contract at market interest rates
    b) At the initiation the underlying commodity is sold at the spot price
    c) At the initiation futures contract is sold at the current futures price
    d) At the expiry, loan is repaid with interest

49. What is the 6-month forward rate for a bushel of corn that has a spot rate of $8 and an annual lease rate of 6%? Assume the continuously compounding annual risk-free rate for the commodity to be 7.5%.
    a) $7.88
    b) $7.94
    c) $8.06
    d) $8.12

50. The 1-month futures price of the crude oil is $45 per barrel. The 2-month futures prices for gasoline and heating oil are $58 and $47.5 respectively. It takes 1 month to produce and sell gasoline and kerosene from crude oil. What is the profit for the 5-3-2 spread? Ignore the interest cost.
    a) $33.50
    b) $34.50
    c) $38.50
    d) $44.00

