Solutions to Financial Markets and Products Sectional Test

1. Correct Answer is B: At expiry, the value of call option = $38 - $35 = $3. Therefore, the profit of Eric from the transaction = $7 - $3 = $4.

2. Correct Answer is B: All the instruments except put option have unlimited profit potential and a limited loss potential. A put option doesn't have unlimited profit potential as it is limited to the value of strike price and also its loss is limited to the premium paid.

3. Correct Answer is C: Profit in stock = (50,000/40)*(50-40) = $12,500. Profit in option = (50,000/4)*(10-4) = $75,000. Profit ratio = 75,000/12,500 = 6

4. Correct Answer is D: The exchange sets a maximum number of contracts that a speculator may hold to avoid having speculators' undue impact on the market. However, there are no such limits for hedgers.

5. Correct Answer is D: The investor has taken a long position and the value of the underlying has increased. So he doesn't have to pay any variation margin as his margin account has increased in value.

6. Correct Answer is B: Tim should place a stop los sell order at $23 such that whenever market price reaches $23, it becomes a marker order to sell.

7. Correct Answer is D: Exchange for physicals is an ex-pit transaction and happens outside the floor of the exchange.

8. Correct Answer is C: Interest cost is the most volatile cost. An increase in interest rate causes the increase in opportunity cost to hold the asset.

9. Correct Answer is C: The optimal hedge ratio = $Cov_{S,F}/\sigma_F^2$ = 0.024/0.038 = 0.631

10. Correct Answer is A: Target beta, β^*=1.2. Number of contracts = $(\beta^*-\beta)*P/A$ = (1.2-0.8)*500,000,000/ (1,450*250) = 551.72. She needs to buy 552 futures contracts to increase portfolio beta to 1.2.

11. Correct Answer is A: $R_{Forward}$ = 0.04 + (0.04-0.03)*[1/(2-1)] = 0.05, $R_{Forward}$ (with semi-annual compounding) = $2*(e^{0.05/2}-1)$=5.063%, Value of FRA = $50,000,000*(0.06-0.05063)*(0.50-0.25)*e^{-0.04*0.5}$= $114,802.8

12. Correct Answer is D: Convexity has a positive impact on the price with both increase and decrease in interest rate.

13. Correct Answer is C: Modified duration = Duration / (1+y/m). So for continuous compounded yields, m tends to infinity and y/m tends to zero and modified duration and duration are equal.

14. Correct Answer is B: Forwards are futures are both priced to zero at contract initiation. They differ in regulation, standardization and counterparty.

15. Correct Answer is A: Let coupon rate be x% paid semi-annually. So, coupon to be received after 3 months = (x/2)*1,000/100 = 5x. The cost of carry for this coupon = $5x*e^{-0.04*0.25}$ =4.95x Price of forward = $(1,000-4.95x)*e^{0.04*0.5}$ = 990.25 =>x = 5.93%

16. Correct Answer is D: $F_0 = S_0 e^{(r+u-y) T}$ where y is the convenience yield, r is income yield and u is the storage cost yield. Convenience yield decreases the futures price while storage cost increases the futures price.

17. Correct Answer is C: Applying Interest rate parity equation, $F_0 = 0.84*e^{(0.025-0.03)*(6/12)} = 0.8379$ dollar/euro

18. Correct Answer is C: actual/360 would lead to the maximum accrued interest as in numerator actual days are counted while in denominator fewer days are counted. U.S. money market instruments like T-bills use this type of day count convention.

19. Correct Answer is B: Discount rate = (360/n)*(100-Y) =>4=(360/270)*(100-Y) =>Y=$97

20. Correct Answer is A: Conversion factor = (Present value-accrued interest)/face value =>1.38=(144-AI)/110 =>AI= $7.8

21. Correct Answer is B: The difference can be reduced by using the convexity adjustment. Actual forward rate = forward rate implied by futures – $(0.5*\sigma^2*T_1*T_2)$. As T_1 (maturity of the futures contract) increases, the convexity adjustment also increases.

22. Correct Answer is D: I, II and V statements are not correct.

23. Correct Answer is B: You will enter into a volatility swap in which you would be paying based on the pre-specified volatility and the other party would be paying based on the historical volatility.

24. Correct Answer is C: B_{fixed} = (25,000*$e^{-0.042*0.1666}$) + [(1,000,000+25,000)*$e^{-0.046*0.666}$] = $1,018,869. $B_{floating}$ = [1,000,000 + (20,000)]*$e^{-0.042*0.1666}$] = $1,018,825. Value of swap = B_{fixed} – $B_{floating}$ = $5,984.4

25. Correct Answer is C: In equity swap, in case of decrease in portfolio value, the floating rate receiver will receive negative payment i.e. the fixed rate payer has to pay the floating payment as well equal to the decrease in the portfolio value.

26. Correct Answer is B: Butterfly spread has the similar payoff diagram as that of a calendar spread. Both have a positive payoff when the stock remains in a narrow range.

27. Correct Answer is A: Premium paid while taking butterfly spread position= 6.8+1.2-2*3 = $2. Payoff at the expiry = 44-40 = $4. Total profit = 4-2 = $2

28. Correct Answer is D: Strip and strap bet on the volatility. While strip pays more on the downside, the strap pays more on the upside.

29. Correct Answer is B: The premium paid on the straddle is more than the premium paid on the strangle. While the premium paid on the butterfly spread is very small and is usually lesser than the premium paid in the strangle.

30. Correct Answer is C: The volatility has the same impact on all the options. Time to expiration can have a negative impact on deep in the money European put options.

31. Correct Answer is C: The maximum and minimum value of European and American put options can differ while those are the same for the call options.

32. Correct Answer is A: According to call-put parity: $c + Xe^{-rT} = p + S$ => $S – c = Xe^{-rT} – p$. $S – c$ is covered call and its payoff would be similar to the short put option.

33. Correct Answer is A: Minimum value for a European put = $max(0,Xe^{-rT}-S_0) = 40e^{-0.5*0.04}-35=4.21 and maximum value for a European put=$Xe^{-rT}=40e^{-0.5*0.04}=39.21

34. Correct Answer is B: These kinds of bonds are called as fallen angels.

35. Correct Answer is A: The issuer retains the voting rights for stocks used as a collateral in case of collateral trust bonds.

36. Correct Answer is C: On decreasing the credit spread of a bond, its price will go up. Increase in price = 3*200=600 basis points = 6%

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37. Correct Answer is D: This is the characteristic of an income bond.
38. Correct Answer is B: The value of put on bond price decreases with decrease in interest rate as decrease in interest rate would make the bond prices higher.
39. Correct Answer is D: Payoff from cap = max [0, (notional price)*(index rate-cap strike)*(actual days/360)]. Here, index rate is lesser than the cap strike, so payoff would be zero.
40. Correct Answer is C: A net positive exposure would profit if the foreign currency appreciates with respect to the domestic currency.
41. Correct Answer is C: FX exposure will reduce if a bank is buying or selling currency for hedging purposes.
42. Correct Answer is A: Forward rate (DC/FC) = Spot rate (DC/FC) *$(1+r_{DC})/(1+r_{FC})$. So, if domestic rate is higher than forward rate would be more than the spot rate and hence trade at a premium.
43. Correct Answer is D: The bill of lading does not specify the quality of goods.
44. Correct Answer is C: Free-on-board (FOB) buyer is responsible for both ordinary and extraordinary transportation risk.
45. Correct Answer is A: Hedgers take only the basis risk, the price risk is taken by the speculators.
46. Correct Answer is A: Hedge effectiveness = 1 − (variance of basis)/(variance of spot) = 1-(0.005/0.10) = 0.95
47. Correct Answer is B: With increase in margin, speculators face more chances of funding liquidity risk.
48. Correct Answer is B: The underlying commodity is bought at the initiation.
49. Correct Answer is C: $F_{0,T} = S_0 e^{(r-\delta 1)T} = 8e^{(0.075-0.06)*0.5}$ = $8.06
50. Correct Answer is D: The 5-3-2 spread means buying 5 barrels of crude oil and producing 3 barrels of gasoline and 2 barrels of kerosene. Profit from the spread = 3*58 + 2*47.5 − 5*45 = $44