**Problems 2-5**

1. Assuming all of the following bonds are eligible for delivery, and given the last futures quote of 100.25, which bond would be deemed the cheapest-to-deliver from the seller’s perspective?

*Answer (b)*

* 1. *A bond priced at 99.25, with a conversion factor of 0.9714*

*100.25 x .9714 = 97.38285 sale proceeds – 99.25 cost to buy = -1.867 (this is a cost to the seller of $1.867 per bond).*

* 1. *A bond priced at 103.50, with a conversion factor of 1.0473*

*100.25 x 1.0473 = 104.99183 sale proceeds – 103.50 cost to buy = 1.49183 (this is a gain – like a negative cost -- to the seller of 1.49183 per bond).*

* 1. *A bond priced at 100.75, with a conversion factor of 0.9932*

*100.25 x .9932 = 99.5683 sale proceeds – 100.75 cost to buy = -1.1817 (this is a cost to the seller of $1.1817 per bond).*

1. Which is not a viable method of effectively closing out a long position in a commodity forward contract?
   1. Make payment at delivery for the contractual commodity.
   2. Take a reversing position in an identical commodity future that has a delivery date one month after your contract.
   3. Enter into an identical, but reverse position, contract with a third party.
   4. Enter into an identical, but reverse position, contract with the original party who holds the short forward contract.

*Answer (b). You can’t mismatch the contract size or delivery date as you take an opposite position to close out the contract.*

1. Briefly explain what the purpose is for the mark-to-market process. Does this process exist with forward contracts, future contracts, or both? If it does not exist in a particular market, explain why this is so?

*Marking to market tries to reduce walk-away risk. When one party is losing badly in a futures contract, collecting these losses in daily increments avoids them throwing in the towel and saying “sue me” for a large loss.*

*Forward contracts don’t use mark-to-market because forward contracts are “OTC” trades and not conducted on exchanges like futures contracts are. Since exchanges are the mechanisms for collecting margin in the mark to market process, only futures contracts have to contend with this process.*

1. Suppose it is mid-March and you wish to purchase five (5) June Treasury Bond futures contracts ($100,000 notional value per contract).

Given a 10% initial margin and a 75% maintenance margin, complete the following mark-to-market table. Assume that you remove any excess funds that are eligible for removal. Make sure to indicate what your initial and maintenance margins are for this trade.

***Remember that these prices are quoted in “32nds.” So, 100-24 means 100 24/32 = 100.75% of par.***

***Each day’s Gain or Loss is calculated as follows (using Mar 16th as example):***

***(101.875%-100.75%) x 100,000 x 5 =***

***1.125% x 100,000 x 5 =***

***.01125 x 100,000 x 5 = $5,625***

***Initial Margin:***

***5 x 100,000 x 100.75% x 0.10 = $50,375***

***Maintenance Margin:***

***$50,375 x 0.75 = $37,781.25***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Day | Futures Price  (in 32nds) | Futures Price  (in decimals) | Daily Gain/Loss | Cumulative Gain/Loss | Margin Account Balance | Maintenance Margin =  $37781.25  (indicate any deposits or withdrawals here) |
| Initial | 100-24 | 100.75 | N/A | N/A | 50375 | N/A |
| Mar 16 | 101-28 | 101.875 | 5625 | 5625 | 56,000 – 5625 = 50375 | Withdrawal -5625 |
| Mar 17 | 98-10 | 98.3125 | -17812.5 | -12187.5 | 32,562.50 + 17812.50 = 50,375 | Deposit 17,812.50 |
| Mar 18 | 97-24 | 97.75 | -2812.5 | -15000 | 47562.5 | 0 |
| Mar 19 | 99-04 | 99.125 | 6875 | -8125 | 54,437.50 – 4062.50 = 50375 | Withdrawal  -4062.5 |
| Mar 20 | 98-14 | 98.4375 | -3437.5 | -11562.5 | 46937.5 | 0 |

If you wanted to take your profit or loss at the end of March 20th, what steps would you take to exit the market?

***Short 5 identical June Treasury Bond Contracts.***