Seminar 9
Solutions

A. Multiple Choice Questions

A1.

The part of the value of an option that is due to its positive time to expiration.
The time value of a call option is always greater than zero in that it gives the buyer the chance to reach higher return in the future, even though in the case of out-of-the money situation.

A2. The important distinction between a futures contract and an options contract is that the futures contract is an obligation. When an investor purchases or sells a futures contract, the investor has an obligation to accept or deliver, respectively, the underlying commodity on the expiration date. In contrast, the buyer of an option contract is not obligated to accept or deliver the underlying commodity but instead has the right, or choice, to accept delivery (for call holders) or make delivery (for put holders) of the underlying commodity anytime during the life of the contract.
Futures and options modify a portfolio's risk in different ways. Buying or selling a futures contract affects a portfolio's upside risk and downside risk by a similar magnitude. This is commonly referred to as symmetrical impact. On the other hand, the addition of a call or put option to a portfolio does not affect a portfolio's upside risk and downside risk to a similar magnitude. Unlike futures contracts, the impact of options on the risk profile of a portfolio is asymmetrical.

A3. Choice 3 is the correct. Since she expects the underlying stock price to stay the same, she should write (or sell) both options and keep the premiums.

A4. Total cost of the acquiring the option is 100×$2.50 = $250
Value of the call at expiration is $72 - $68 = $4×100=$400
Profit/loss equals the value of the call less the option premium paid: $400-$250 = **$150**

A5. Choice 3 is the correct. This is a protective put strategy where the investor buys "insurance" to protect from a large decrease in the stock price. If the stock price does not move, the investor loses the put premium, which is small, relative to the price of the stock.

A6.

Correct answer is B. The farmer will be concerned about the impact of falling commodity prices, so will seek a position which gives them a higher payoff as the price of a commodity falls. Only a short futures position will achieve this. (Alternatively, as with all hedger's, if they are LONG the underlying, they need to be SHORT in the futures contract)

A7.
Correct answer is A. Theoretical price, \$102 x $e^{0.03}$ = \$105.11. Actual price \$106, therefore profit to be made \$106-\$105.11 = \$0.89. Given the futures price is too high, this is a cash and carry arbitrage

A8.
Answer "a" is correct. The airline will be concerned about the impact of rising oil prices, so will seek a position which gives them a higher payoff as the price of oil rises. Only a long futures position will achieve this.

A9.
Answer "d" is correct. Universal stock futures on UK stocks are based on 1000 shares, so the profit is: 10 contracts x 1000 shares x (£4.95 - £4.50) = £4500.

A10.
Answer "a" is correct. Worst that could happen with any long option position is that you may lose the premium you pay for it.

A11.
Answer "b" is correct. Speculators provide liquidity, arbitrageurs provide price correction, and hedgers obtain risk management from derivatives. A well-functioning derivatives market is needed for price transparency.

A12.
Answer "c" is correct. The maximum you can lose from a long option is the premium which is 100% of investment. All the other investments involve a potential loss of much more than 100% of your investment and these are often known as contingent liability positions.

B. Long Answer Questions

B1. $F_0 = S_0(1 + rf – d) = 1,200 (1 + .065 – .02) = 1254$