

00173

**MASTERS OF BUSINESS ADMINISTRATION
(FINANCIAL MARKETS)**

(MBAFM)

Term-End Examination

December, 2012

MCT-074 : DERIVATIVES

Time : 3 hours

Maximum Marks : 100

1. **Instructions :** Please attempt *all* questions. Write the correct answer in the answer sheet.

Multiple Choice :

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- (a) A deep in - the money call option seller will have a delta of :
- (i) Close to 1
 - (ii) Close to -1
 - (iii) Close to 0
 - (iv) Close to 0.5
 - (v) Close to -0.5
- (b) Which of the following is true ?
- (i) Delta for all the bullish positions is positive.
 - (ii) Delta for all the bullish positions is negative.
 - (iii) Delta for all long positions is positive.
 - (iv) Delta for all short positions is positive.
 - (v) None of the above

- (c) Decline in Market Price of underlying asset would result in :
- (i) Value of call option going up.
 - (ii) Value of call option going down.
 - (iii) Value of put option going up.
 - (iv) Value of put option going down
 - (v) both (ii) and (iii)

2. **Instructions** : Attempt each of the following questions with one line computations. All questions are compulsory. **2x15=30**

- (a) Does a put options give the buyer an obligations to sell to the seller an underlying at the prevailing market price on or before expiry date ?
- (b) Can a long position in call option be closed out by taking a long position in a put option with identical exercise date and exercise price with same underlying ?
- (c) In an Index Futures Contract, if the tick size is 0.5 of an index point and the index multiple is Rs. 5, a tick is valued at (in Rs.).
- (d) Which call option would be more expensive - option with delta .74 or option with delta .47 ?
- (e) A covered call is one where ? (Complete the sentence)

- (f) A client C1 purchases 2 contracts of March Series of XYZ futures (contract multiplier 50) at 4,500. The closing price of this series in the evening is 4,480. What is the mark to market margin for the client ?
- (g) A fund manager, who wishes to hedge a Rs. 5 crore fund with beta of 1 using Index futures (contract multiplier 50) currently quoted at 4,000, would buy or sell how many contracts ? (Please give nearest approximation.)
- (h) A member and his client have an open position of 28 and 83 contracts in XYZ futures (contract multiplier 50) January Series. If the rate of initial margin is 6% and the price of the January Series is 3,500, what is the initial margin requirement for the member ?
- (i) A member has two clients C1 and C2. C1 has purchased and sold 900 and 1800 contracts respectively and C2 has purchased and sold 2000 and 1000 contracts respectively in a XYZ futures series. The member has purchased and sold 1100 and 2300 contracts respectively, in the same series. What is the members outstanding position towards clearing corporation/ house in number of contracts ?

- (j) A stock Index is currently at 3100. The risk-free rate of return is 12% and the dividend yield on the index is 2% per annum. What would be the approximate futures price for a contract with 2 months to expiration ?
- (k) An F11 has an open short position of 5 contracts in XYZ futures/contract multiplier 50 August series. The Initial Margin was 6% till yesterday, but has been revised to 7% today. The closing price was Rs. 4,500 yesterday and Rs. 4,600 today. How much additional Initial Margin will the F11 be required to bring in ?
- (l) An Investor has a short open position of 24 contracts in XYZ futures (contract multiplier 50) February series that was marked to market at previous day's closing price at Rs. 48,00,000. Today, the closing price of the series is 4,050. How much mark to market will the investor pay (-) or receive (+) ?
- (m) An investor has an open long position of 7 contracts in XYZ futures August series (contract multiplier 50). The initial margin on XYZ futures was 6% till yesterday, but has been revised to 7% today. The closing XYZ futures price both yesterday and today was 4,500. How much additional initial margin will the investor be required to bring in ?

- (n) An investor has done the following two XYZ futures (contract multiplier 50) Spread trades. What is her profit (+) or loss (-) ?
Bought 22 lots of Jan. - Feb. Spread (Sold Jan. @ 3660; Bought Feb. @ 3662), sold 22 lots of Jan. - Feb. Spread (Bought, Jan. @ 3700; Sold Feb @ 3717).
- (o) At price level of 4700, what will be the value of one XYZ futures contract (contract multiplier 50) ?

3. *Instructions* : Mark each of the following questions True/False. 1x24=24

- (a) American option cannot have a value less than that of European option (keeping all other option features same).
- (b) An option contract may have future contracts as underlying asset.
- (c) As long as put option remains out - of-the - money or at - the-money, the option will have intrinsic value.
- (d) Delta is the rate of change in option premium for a unit change in time.
- (e) Exercise price is the price for which the underlying may be purchased (in case of a call) or sold (in case of put) by the option seller upon exercise of the option.

- (f) Gamma is the rate of change in option premium for a unit change in price of the underlying.
- (g) In exercising call option on an index, the option holder receives from the option writer cash amount equal to excess of spot price, at the time of exercise, over exercise price.
- (h) At present, no Individual investor can write an equity option on Exchange.
- (i) Intrinsic value of an option is sum of option Premium and Time Value.
- (j) Option premium is adjustable against the exercise price on settlement, if the option is exercised on maturity.
- (k) Premium of an ACC call option cannot be more than the market price of ACC Stock.
- (l) Time value is always lesser than Intrinsic Value.
- (m) Vega is the change in delta of an option for a unit change in volatility in underlying's price.
- (n) Contract multiplier, along with the price, determines the value of the futures contract.
- (o) Impact cost is low when the liquidity in the system is poor.

- (p) In forward contracts, the maximum amount by which the price would change (tick) and the price limits for a day's operations are specified by an authority.
- (q) Backwardation is a situation, where price for later delivery stands below the price for earlier delivery.
- (r) "Basis" is the difference between the futures price and cash or spot price of an asset.
- (s) A long position in a futures contract can be reversed only with the same counterparty from whom the contract was initially purchased.
- (t) In case of futures, the initial margin is paid only by the seller and not the buyer.
- (u) Contract month is the month in which the futures contract is entered into.
- (v) Hedgers are sufficient for efficient working of a derivatives market and there is no real economic need of either speculators or arbitrageurs.
- (w) If a mutual fund wants to increase its exposure to equity, say from 30% to 40% without actual buying of equity in the cash market, it can buy index futures.
- (x) In a futures contract, the party who is buying the futures, provides a guarantee to the clearing corporation, while the selling party offers no such guarantee.

4. **Instructions** : Attempt any of the *four* questions.
No answer to be more than 2 pages. **10x4=40**

- (a) Warren Buffett stated "Derivatives are tools of mass destruction". Do you agree with this statement or no ? Substantiate your arguments with proper examples.
 - (b) Differentiate between OTC and Exchange Traded Derivative Products.
 - (c) If you sell index futures at 4880, sell a put options at 4900 and buy a call option at the same strike of 4900. Net premium on these two option contracts is INR 25 receivable by you. Show the pay off diagram along with maximum profit, maximum loss and breakeven positions.
 - (d) You sell a call option at 4900 and a put option at the same strike of 4900 by receiving. Net premium of Rs. 200. Show the pay off diagram along with maximum profit, maximum loss and breakeven positions.
 - (e) A farmer has to hedge his wheat price risk. What are the different ways with help of forward and options, he can hedge his price risk ? Explain with proper examples.
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