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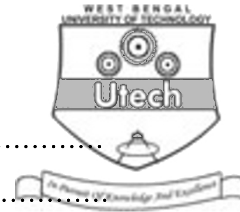


Name : ....

Roll No. : ....

Invigilator's Signature : ....

CS / MBA (NEW) / SEM-4 FT & 6 PT / FM-406 / 2011

2011

DERIVATIVES & RISK MANAGEMENT

Time Allotted : 3 Hours *Full Marks* : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following : $10 \times 1 = 10$

i) When the futures prices exceeds the theoretically correct price as per the cost of carry principle an arbitrage opportunity is available

a) by selling spot and buying futures

b) by selling futures and buying spot

c) by selling spot and futures

d) by buying spot and futures.

ii) In respect of futures prices in an efficient market

a) the longer dated futures will have a higher price

b) the shorter dated futures will have a higher price

c) both futures can have an equal price

d) cannot say.

iii) A covered call writer

a) buys a call and buys a stock

b) sells the call and holds the stock

c) sells the call and buys the stock

d) sells the call and sells the stock.

iv) What is a swaption ?

a) An option granting its buyer the right but not the obligation to enter into an underlying swap

b) A swap to enter into an underlying option

c) An option granting its seller the right but not the obligation to enter into an underlying swap

d) An swap to return an underlying option.

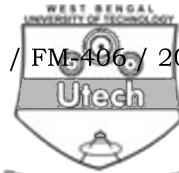
v) What is a Strangle ?

a) An investment strategy involving the purchase or sale of particular option derivatives which expire at the same time and have same strike prices

b) An investment strategy involving the purchase or sale of particular option derivatives which expire at the same time and have different strike prices

c) An investment strategy involving the purchase or sale of particular option derivatives which expire at the different times and have same strike prices

d) An investment strategy involving the purchase or sale of particular option derivatives which expire at the different times and have different strike prices.



vi) What is straddle ?

a) An investment strategy involving the purchase or sale of particular option derivatives which expire at the same time and have same strike price

b) An investment strategy involving the purchase or sale of particular option derivatives which expire at the same time and have different strike prices

c) An investment strategy involving the purchase or sale of particular option derivatives which expire at the different times and have same strike price

d) An investment strategy involving the purchase or sale of particular option derivatives which expire at the different times and have different strike prices.

vii) Which of the following is true ?

a) Forwards are exchange traded contracts

b) Forward do not have counterparty risk

c) Forwards contracts have infinite maturity

d) Forwards are customised contracts.

viii) The call option price is higher, when

a) the striking price is higher than the stock price

b) the striking price is lower than the stock price

c) the option period is shorter

d) the option period is longer and the striking price is lower.

ix) The put option buyer gains

a) in the Bullish Market

b) in the Bearish Market

c) in the Stable Market

d) when the strike price is lower than stock price.

x) An option trader who feels that a stock price will be range bound having only small fluctuations around its current price will go for a

a) Bull spread   b) Bear spread

c) Butterfly spread   d) none of these.

xi) If the price increases over the life of a futures contract, it is a case of

a) Normal backwardation

b) Contango

c) none of these

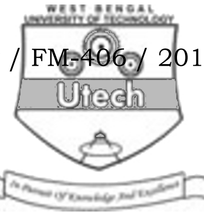
xii) The minimum balance allowed in a margin account is

a) the initial margin

b) the maintenance margin

c) $ 1000

d) none of these.



GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. How are options different from futures ?

3. Assume that the spot corn price is $ 3·50, that it costs $ 0·017 cents to store a bushel of corn for 1 month, and that the relevant cost of financing is 1 per cent per month. If a corn futures contract matures in 6 months and the current futures price for this contract is $ 3·95 per bushel, explain how you would respond. Explain your transactions for one contract, assuming 5,000 bushels per contract and assuming that all storage costs must be paid at the outset of the transaction.

4. Describe the difference between a stack hedge and strip hedge. What are the advantages and disadvantages of each ?

5. "Futures rely on a great deal of expected spot prices. The theoretical framework suggests that forward rates reflect the expected spot rates." How do futures differ from forwards ? Explain.

6. Use the Black-Scholes model to value the following call option :

Stock price	Rs. 210
Strike price	Rs. 220
Time to expiration	167 days
Risk-free interest rate	10%
Variance of annual stock returns	20%.

GROUP – C

(Long Answer Type Questions)

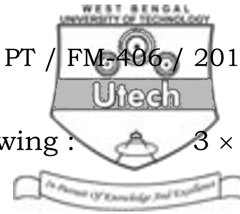
Answer any *three* of the following. 3 × 15 = 45

7. a) Discuss the Black-Scholes option valuation model with various assumptions make for the model.

   b) Rakesh Sharma is interested in writing a six months call option on L&T's share. L&T's share is currently selling for Rs. 120. Volatility (standard deviation) of the share returns is estimated as 67 per cent. Rakesh would like the exercise price to be Rs. 120. The risk-free rate is assumed to be 10 per cent. How much premium should Rakesh change for writing the call option ? 8 + 7

8. a) A share is currently selling for Rs. 120. There are two possible prices of the share after one year : Rs. 132 or Rs. 105. Assume that risk free rate of return in 9 per cent per annum. What is the value of a one-year call option (European) with an exercise price Rs. 125 ?

   b) A one-year call option with an exercise price of Rs. 60 is available at a premium of Rs. 6. You can also buy a one year put with an exercise price of Rs. 55 at a premium of Rs. 3. If you set up a portfolio of a put and a call, what will be your pay off if the share price after one year is (i) Rs. 58, (ii) Rs. 45, or (iii) Rs. 75 ? 8 + 7



9. Write short notes on any *three* of the following : 3 × 5

   i) Option Gamma

   ii) Arbitrage

   iii) Vega

   iv) Option theta

   v) Covered call.

10. a) Define the term 'Swap Contract'. What are the advantages of Swaps ?

    b) What do you mean by 'Hedging' ? Discuss the process of Hedging through futures. 7 + 8

11. a) Elucidate the major distinctive features of Base1-II.

    b) How does a bank mitigate its credit risk and operational risk ?

12. "Swap is a private arrangement between two parties in which both parties one obligated to exchange some specified cash flows at periodic intervals." Explain in context of interest rate swap and currency swap.

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