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14MBAFM411

Fourth Semester MBA Degree Examination, Dec.2017/Jan.2018
Financial Derivatives

Time: 3 hrs. Max. Marks:100

SECTION – A

Note : Answer any FOUR questions from Q.No.1 to Q.No.7.

1 What is forward rate agreement? **(03 Marks)**

2 Differentiate between market rise and Credit risk. **(03 Marks)**

3 What is buying on margin? **(03 Marks)**

4 Share Z is currently available at ₹ 100. The risk free rate of interest is 8% per annum compounded continuously. What should be the ideal contract price of one month futures contract? **(03 Marks)**

5 What is LIBOR? **(03 Marks)**

6 Explain stress testing and back testing. **(03 Marks)**

7 What is historical simulation approach? **(03 Marks)**

SECTION – B

Note : Answer any FOUR questions from Q.No.1 to Q.No.7.

1 What are Financial Derivatives? Explain the economic benefits of derivatives. **(07 Marks)**

2 Differentiate between commodity and financial futures contracts. **(07 Marks)**

3 What is optimal hedge ratio? "Call writers and put buyers exhibit bearish sentiments." Do you agree? Explain. **(07 Marks)**

4 An investor trades grade 1 Rice in the market for ₹1600 per quintal. A 6 months future contract on this rice is traded at ₹ 1675. The size of one future contract is 1 quintal. An amount of ₹25 has to be paid for storing 1 quintal rice for 6 months. Calculate the price of futures contract? What position investor has to take in future market? **(07 Marks)**

5 A put option on share DQS has the following details:
Exercise price = ₹110 ; Expiration month = March 2016 ; Size of contract = 2000 shares ; Underlying shares price = ₹ 112 ; Price of put option on the date of contract = ₹ 7.50. Investor A writes a put option contract and receives a premium of ₹ 15,000/- on it from B who buys the option. How much does each of these investors stand to gain/loss in case of price movements? **(07 Marks)**

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

6 A trader buys for ₹ 42 a call with a strike price of ₹ 610 and sells for ₹ 26 a call with a strike price of ₹ 690. The possible price range of the underlying stock is: ₹450 ; ₹560 ; ₹ 620 ; ₹ 680 ; ₹ 750 ; ₹ 850.

i) What is the cost of the strategy?

ii) What is the net pay off for each of the possible price range? **(07 Marks)**

7 Two companies A and B are offered the following interest rates on a 5 year loan of ₹ 2 million.

Co.	A	B
Fixed	15%	18%
Floating	MIBOR +1%	MIBOR +2%

A is interested in floating rate and B wants fixed rate. Design an interest rate swap netting 0.5% to be intermediary and equally attractive to both A and B. **(07 Marks)**

SECTION – C

Note : Answer any FOUR questions from Q.No.1 to Q.No.7.

1 An investor took short position in 10 futures contract on rice @ an exercise price of ₹22/kg. The size of 1 future contract is 1000 kgs. The initial margin requirement on this contract is 12%. Maintenance margin is 7.5% on the initial margin. The futures price of first 10 days are given below. Prepare margin A/c for 1st 10 days assuming that all margin call are honored immediately and money in excess of the initial margin is withdrawn immediately.

Day	1	2	3	4	5	6	7	8	9	10
Price	21.50	22.25	22.75	22.40	22.70	22.50	23.75	23.25	22.80	23.00

(10 Marks)

2 A value weighted market index consists only 5 stocks. The index currently stands @ 1240. The market lot for index future is 100. The details regarding the stock is given below:

Co.	Price/ share	Mkt/cap (₹ crores)	Dividend per share (₹)	Payment days of dividend
A	72	50	5	30 days
B	115	250	15	45 days
C	425	350	20	60 days
D	48	75	-	-
E	220	275	-	-

The risk free rate of return continuously compounded is 10% p.a. Compute the price of the futures contract from the index with 6 months to maturity. **(10 Marks)**

3 Write short notes on :

a) Collateralized Debt Obligation (CDO) b) Credit Default Swaps (CDS)

c) Strips d) Straps

e) Straddle **(10 Marks)**

4 What is a put call parity? Explain the factors affecting option prices? **(10 Marks)**

5 The spot price of a share is ₹450. The exercise price of a six month option on the share is ₹425. The risk free rate of return continuously compounded is 10% p.a. The standard deviation of the return of the stock is 0.40. The value of d_1 and d_2 are 0.52 and 0.24 respectively. Comment on the sensitivity of option price by computing : Delta, Gamma, Theta , Vega and Rho. **(10 Marks)**

6 The following information is available on call option involving 1100 shares with two months expiration dates one sand stock.

Strike price	₹170	₹180	₹190
Premium	₹21.10	₹14.00	₹8.00

Explain how the option can be used to create a butterfly spread. Find the pay-off for the investor at various ranges of stock prices as ₹ 168; ₹ 176; ₹185; ₹189 and ₹198. **(10 Marks)**

7 An investor has a portfolio consisting of the following securities. He intends to safeguard his position by taking a short position in NSE Nifty futures. Determine the number of contract to be dealt with, when he intends to hedge the portfolio by (i) 100% and (ii) 130%. The current nifty value if 5145 and the multiplier is 50. What will be the number of contracts to be sold if the beta of the portfolio has to be brought down to 1.5?

Company	No. of Shares	Share price	Beta
Axis Bank	1250	1110	1.32
SBI	5200	320	0.89
Canara Bank	600	250	0.65
Hindustan Unilever	750	1860	1.46
Infosys Tech	1800	165	1.19
Yes Bank	3000	3500	2.45

(10 Marks)

SECTION – D
(Compulsory)

8 a. Mr. Jain is bearish about the index. Spot nifty stands at 4000. He decided to sell one contract [50 index] of Nifty call option at a strike price of 4000 for a premium of ₹50 per index. Two months later when the contract matures nifty closes at 4500. Find out the profit or loss to the seller of call option. **(05 Marks)**

b. From the following data, calculate the values of call options using Binomial option pricing model and determine the hedge ratio. The current market price of a share is ₹ 60 and it is believed that at the end of one month the price will be either ₹ 66 or ₹ 54. The risk free rate of interest is 15% per annum. A call option is available with an exercise price of ₹ 63. **(15 Marks)**

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