



CBCS SCHEME

16/17MBAFM405

Fourth Semester MBA Degree Examination, Jan./Feb.2021 Financial Derivatives

Time: 3 hrs.

Max. Marks: 80

- Note:** 1. Answer any **FOUR** full questions from Q1 to Q7.
2. Question No.8 is compulsory.
3. Use of Value table, Logarithm, e^x , Normal distribution tables, Interest factor tables and 'Z' tables are permitted.

- 1 a. What do you mean by mark of market? (02 Marks)
b. Explain the factors contributing to the growth of derivatives market in India. (06 Marks)
c. Using the following data, prepare the margin account of the investor. Assume that if a margin call is made at any time, the investor would deposit the amount called for. Position = short; contract size = 500 units; unit price = Rs.22; number of contracts = 8; maintenance margin = $\frac{3}{4}$ th of initial margin; date of contract = June 3; initial margin = 12%; closing prices are:

Date	June 4	June 5	June 6	June 7	June 10	June 11	June 12
Price (Rs.)	22.30	23.10	22.90	23.00	23.15	22.85	22.95

- 2 a. Describe 'Value at Risk' VaR. (08 Marks)
b. An investor holds a portfolio consisting of five securities as shown below: (02 Marks)

S.No.	Security	No. of Shares	Price of Share	Beta
1	A	400	Rs.120	0.7
2	B	200	Rs.32	0.8
3	C	1000	Rs.68	1.6
4	D	6000	Rs.230	1.2
5	E	700	Rs.500	1.2

Fearing a market crash, the investor is considering hedging his portfolio by using December put options on S and P CNX Nifty available with exercise value 1532 and delta = -0.432. What should he do? (06 Marks)

- c. What are the assumptions of Black and Scholes model? (08 Marks)
- 3 a. What is meant by exotic option? (02 Marks)
b. What is the future value on a wheat contract, which is currently quoting at Rs.800 per tone? The duration of contract is 6 months. If costs Rs.12 as storage cost per tone of wheat per month. $R_f = 10\%$, lot size = 25. (06 Marks)
c. Explain the factors affecting option pricing. (08 Marks)
- 4 a. What do you understand by "convenience yield" in commodities market? (02 Marks)
b. You are given below information on some options. State whether each one of these in-the-money, out-of-the-money, or at-the-money, and determine for each option the Intrinsic Value and Time Value. (06 Marks)

S.No.	Option	Stock Price	Exercise Price	Option Price
1	Call	58	55	8.40
2	Call	40	42	5.60
3	Put	112	100	5.30
4	Put	104	110	9.70
5	Put	12	15	4.00
6	Call	37	35	10.50

(06 Marks)

- c. An investor sold a two month future contract on wheat for the contract price of Rs.18.50/kg. The contract size is 1000 kg of wheat. The initial margin required on this contract is 20% of the contract value and the maintenance margin is 80% of the initial margin. The future price per kg of wheat fluctuated during the first 10 days of the contract as follows:

Days	1	2	3	4	5	6	7	8	9	10
Wheat Prices (in Rs.)	18.90	18.65	19.10	19.40	19.15	19.75	20.10	20.50	20.15	20.00

You are required to prepare a margin amount for the investor.

(08 Marks)

- 5 a. Give the meaning of scalpers. (02 Marks)
 b. Define and differentiate between futures and forwards. (06 Marks)
 c. An investor holds a long position in 1000 shares of a company. He bought these shares at Rs.210 each. Fearing a fall in the market, he has bought a put option contract involving 1000 shares with exercise price of Rs.212 at a premium of Rs.7.80 per share. Explain how this position will perform in different price scenarios on expiration. Assume 5 prices below 210 and above 210, with a Difference of Rs.5 i.e. $210 - 5 = 205$ or $210 + 5 = 215$. (08 Marks)
- 6 a. What is Covered call and Naked call? (02 Marks)
 b. Differentiate between stress testing and back testing. (06 Marks)
 c. What is Forward Market Commission? What are its functions? (08 Marks)
- 7 a. Define 'Derivative'. (02 Marks)
 b. The current price of a commodity is Rs 30,000 per Q. The risk free rate of interest is 10% pa (cc). Calculate the value of a nine month futures on the commodity if the contract size is 10 Q, Convenience yield associated with commodity is 2% pa (cc), storage cost is Rs 500 per Q payable at the end of contract period. (06 Marks)
 c. Consider the following data about call option on BHEL stocks, One contract involves 1100 shares.
 i) Create a butterfly spread and determine pay-off structure.
 ii) Calculate net profit/loss when the stock price takes the values Rs 176 per share and Rs 185 per share. (08 Marks)

Exercise price	Rs 170	Rs 180	Rs 190
Call premium	Rs 21.10	Rs 14.00	Rs 8.00

8 **Compulsory Question :**

An investor has a portfolio of five shares as given below (as on 1.1.2018)
 (Amount in Rs)

Security	Price per share	No. of shares	Beta
A	59.50	5000	1.05
B	81.85	8000	0.35
C	101.10	10000	0.80
D	125.15	15000	0.85
E	140.50	1500	0.75

The cost of capital to the investor is 12% pa.

- a. Calculate the beta of the portfolio.
 b. Assuming current index value as 2500, calculate theoretical value of index futures for February 2018 and March 2018, if the contract multiplier is 200.
 c. Determine number of index futures contracts required to hedge the entire portfolio until February 2018, assuming futures are traded at their fair value.
 d. Calculate the number of futures required to be used if the investor desires to reduce the portfolio beta to 0.60. (16 Marks)

* * * * *