CBCS SCHEME

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20MBAFM402

Fourth Semester MBA Degree Examination, June/July 2024
Financial Derivatives

Time: 3 hrs. Max. Marks:100

Note: 1. ***Answer any FOUR full questions from Q.No.1 to Q.No.7.***
2. ***Question No. 8 is compulsory.***
3. ***Use of Logarithm, e^x, normal distribution tables is allowed.***

1 a. What is plain vanilla swap? **(03 Marks)**

b. Tata Power is trading in the spot market at Rs.70. The continuous compounded risk free rate is 8% per annum. Calculate the fair value of a 3 month future contract for each of the following scenarios:
(i) When stock pays no dividend
(ii) When stock pays a dividend of 5%
(iii) When stock pays a dividend of Rs.1.50 in one month's time **(07 Marks)**

c. An investor took short position in 10 future contract on rice at an exercise price of Rs.22/kg. The size of 1 future contract is 1000 kgs. The initial margin requirement on this contract is 12%. Maintenance margin is 75% on the initial margin. The future price of first 10 days are given below. Prepare margin account for 1st 10 days assuming that all margin call are honoured immediately and money in excess of the initial margin is withdrawn immediately.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	22.75	22.75	22.40	22.70	22.50	23.75	23.75	22.80	23.00

(10 Marks)

2 a. What is LIBID Rate? **(03 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.

Serial No.	Option	Stock price	Exercise price	Option price
01	Call	58	55	8.40
02	Call	40	42	5.60
03	Put	112	100	5.35
04	Put	104	110	9.70
05	Put	12	15	4.00
06	Call	37	35	10.50

(07 Marks)

c. The spot price of a share is Rs.450. The exercise price of a six month option on the share is Rs.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)**

3 a. What is meant by stress testing and back testing? **(03 Marks)**

b. Suppose that zero interest rates with continuous compounding are as follows:

Maturity (months)	3	6	9	12	15	18
Rate (% per annum)	8.0	8.2	8.4	8.5	8.6	8.7

Calculate RF for 2nd, 3rd, 4th and 5th. **(07 Marks)**

c. Briefly explain about trading and settlement system of commodity derivatives. **(10 Marks)**

4 a. What is a straddle? **(03 Marks)**

b. An Investor holds a portfolio consisting of five securities as shown below:

Serial No.	Security	No. of shares	Price of share	Beta
01	A	400	Rs.120	0.7
02	B	200	Rs.32	0.8
03	C	1000	Rs.68	1.6
04	D	6000	Rs.230	1.2
05	E	700	Rs.500	1.2

State the options available to the investors to protect the investor's port folio. **(07 Marks)**

c. What are the assumptions of Black and Schole's model? **(10 Marks)**

5 a. Differentiate between maintenance margin and variation margin. **(03 Marks)**

b. Discuss each of the following type of traders in a derivatives market: Hedgers, speculators and arbitrageurs. **(07 Marks)**

c. Two companies A and B are offered the following Interest Rates on a 5 year loan of Rs.2 Million.

Company	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. **(10 Marks)**

6 a. What is meant by Exotic Option? **(03 Marks)**

b. Differentiate between Commodity and Financial Future Contracts. **(07 Marks)**

c. Create a short straddle from the given information:
Call strike price Rs.310 per share
Put strike price Rs.310 per share
Premium for call Rs.21 per share
Premium for put Rs.42 per share.
Also show the net pay off diagram. Closing price on expiry date as follows:
220, 240, 260, 280, 300, 310, 320, 340, 360, 380, 400 **(10 Marks)**

7 a. What do you mean by mark to market? **(03 Marks)**

b. Explain the factors affecting option prices. **(07 Marks)**

c. Explain in brief the functions of derivative market. **(10 Marks)**

8 ***Case Study : (Compulsory)***

Using the following data, calculate values of call and put options on a stock. (Using Black and Schole's Model]
Spot price – 243
Exercise price – 250
Time to expiration – 65 days
Standard deviation of the rate of return – 0.54
Risk free rate of return – 9% p.a.
If the investor wants to buy a put option with the same exercise price and expiry date. What will be the value of the put option? **(20 Marks)**

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