



CBCS SCHEME

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16MBAFM405

Fourth Semester MBA Degree Examination, Dec.2018/Jan.2019 Financial Derivatives

Time: 3 hrs.

Max. Marks:80

Note: 1. Answer any **FOUR** full questions from Q.No.1 to 7.
2. Q.No. 8 is compulsory.
3. Use of normal distribution tables be allowed.

- 1 a. What is meant by credit derivative? (02 Marks)
 b. Explain the types of financial derivatives. (06 Marks)
 c. What is mean by options? Explain the factors affecting option prices. (08 Marks)

- 2 a. What does "call back" mean under option strategies? (02 Marks)
 b. Define and differentiate between commodity and financial futures. (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; No. of contracts = 8; initial margin = 12%; [Maintenance margin = 3/4th of initial margin; date of contract = June 3.
 Closing prices:

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

(08 Marks)

- 3 a. What does marking to market mean? (02 Marks)
 b. Consider the following data about April 2016 NIFTY options, [all values are the opening values of the day].

Exercise Price	Call Premium	Put Premium
1060	-	1.10
1080	-	1.30
1100	50.00	2.60
1120	31.05	6.00
1140	17.45	12.25
1160	8.00	23.40
1180	4.95	-
1200	2.75	-
1220	1.00	-

The index opened at 1,146.05. Classify the options on the basis of their "moneyness" and segregate the intrinsic and time values. (06 Marks)

- c. Briefly explain the option trading strategies. (08 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.



- 4 a. Differentiate between futures and forward contract. (02 Marks)
 b. Calculate the delta of an at the money 6-month European call option for a non-dividend paying stock when the risk free rate of interest is 10% p.a. and the stock price volatility is 25% p.a. (06 Marks)
 c. Grade 1 wheat is traded in the market for Rs.1,600 per quintal, a 6 month. Futures contract on this wheat traded at Rs.1,675. The size of one future contract is 1 quintal. An amount of Rs.25 has to be paid storing 1 quintal wheat for 6 months. The riskfree rate of interest continuously compounded is 8% p.a.
 i) Is there any arbitrage opportunity here?
 ii) If so, design an arbitrage and state how much profit can be made from this? (08 Marks)
- 5 a. Share Z is currently selling at Rs.75. The risk free rate of interest is 9% p.a. What should be the fair contract price of a 2-month futures contract? (02 Marks)
 b. Differentiate between OTC and exchange traded derivatives. (06 Marks)
 c. The following call options are traded in the market at present with the same maturity:

Option	Exercise price	Call premium
1	Rs.60	Rs.7
2	Rs.75	Rs.5
3	Rs.90	Rs.4

Explain how an investor can create a butterfly spread using the above options. Draw his pay off diagram. Explain his profit/loss if the spot price at maturity is : i) Rs.55 ii) Rs.70 iii) Rs.80 and iv) Rs.95. (08 Marks)

- 6 a. What is meant by exotic option? (02 Marks)
 b. The current market price of a share is Rs.60 and it is believed that at the end of one month the price will be either Rs.66 or Rs.54. The risk free rate of interest is 15% p.a. A call option is available with an exercise price of Rs.63. Using the binomial option pricing model:
 i) Determine the value of call option
 ii) Determine the hedge ratio. (06 Marks)
 c. Company X and Y have been offered the following rates per annum on a \$5 million 10 year investment.

	Fixed Rate	Floating Rate
Company X	8%	LIBOR
Company Y	8.8%	LIBOR

Company X required a fixed rate investment; company Y requires a floating rate of investment. Design a swap that will net a bank, acting as intermediary 0.2% per annum and will appear equally attractive to X and Y. (08 Marks)

- 7 a. What is meant by covered and naked call? (02 Marks)
 b. What do you mean by VAR? Describe the three approaches to determine VAR. (06 Marks)
 c. Calculate the values of call and put options on S and P CNX nifty using black and scholes model.
 Spot value of the Index = 1,272
 Exercise price = 1,280
 Risk-free rate of return = 8% p.a.
 S.D. of the continuously
 Compounded rate of return = 0.2
 Time to expiration = 48 days. (08 Marks)

CASE STUDY

An investor has purchased a 4 month call option on the equity share of HONEY co. Ltd. for Rs.5. It has a present market price per share of Rs.112, exercise price of Rs.120. At the end of 4-months. The investor expects the price of share to be in the following range of Rs.90 to Rs.170 with varying probabilities.

Expected price	Rs.100	Rs.110	Rs.125	Rs.150	Rs.170
Probability	0.10	0.25	0.30	0.25	0.10

- What is the expected value of share price 4-months hence? What is the value of call option at its expiration (C_1) if the expected value of share price prevails at the end of 4-months? (04 Marks)
- Determine the expected value of option price at maturity, assuming that the call option is held to this time. Why does it differ from the option value determined in part (i)? (04 Marks)
- What is the theoretical value of the option, at the beginning of 4-month period? (04 Marks)
- Determine the maximum gain/loss to the call option holder and what is its probability. (04 Marks)
