

CBCS SCHEME

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20MBAFM402

Fourth Semester MBA Degree Examination, June/July 2026

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.**

- 1 a. What is the difference between a Long forward position and a Short forward position?
(03 Marks)
- b. At the end of one day, a clearing house member is long 100 contracts and the settlement price is Rs 50,000 per contract. The original margin is Rs 2,000 per contract. On the following day, the member becomes responsible for clearing an additional 20 long contracts, entered into a price of Rs 51,000 per contract. The settlement price at the end of this day is Rs 50,200. How much does the member have to add to its margin account with the exchange clearing house?
(07 Marks)
- c. A Rs 100 million interest rate swap has a remaining life of 10 months. Under the terms of swap, six – months LIBOR is exchanged for 7% p.a (compounded semi annually). The average bid – offer rate being exchanged for six month LIBOR in swaps of all maturities is currently 5% p.a. with continuous compounding. The 6 – month LIBOR rate was 4.6% p.a. six months ago. What is the current value of swap to the party paying floating? What is the value to the party paying fixed?
(10 Marks)
- 2 a. Differentiate between futures and forwards.
(03 Marks)
- b. Explain the mechanics of buying and selling futures and forwards.
(07 Marks)
- c. Calculate the valuation of futures using the cost of carry model. The current spot price of stock is Rs 1000 and the risk – free interest rate is 8% per annum (compounded annually). The cost of storage and insurance is Rs 10 per year. If the contract is for 6 months. Calculate the fair price of the futures contract using the cost of carry model.
(10 Marks)

P)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.

- 3 a. What is Swap rate? What is the relationship between Swap rate and Par yields? (03 Marks)
- b. Explain why a future contract can be used for either speculation or hedging. (07 Marks)
- c. A one year long forward contract on a non – dividend paying stock is entered into when the stock price is Rs 40 and the risk free rate of interest is 10% with continuous compounding.
- What are the forward price and the initial value of forward contract?
 - Six months later, the price of the stock is Rs 45 and risk free rate of interest is still 10%, what are the forward price and the value of the forward contract? (10 Marks)
- 4 a. Explain why margins are required when clients write options, but not when they buy options. (03 Marks)
- b. “Companies with high credit risks are the ones that cannot access fixed rate markets directly. They are the companies that are most likely to be paying fixed and receiving floating in an interest rate swap”. Assume that this statement is true. Do you think it increases or decreases the risk of a financial institutions swap portfolio? Assume that companies are most likely to default when interest rates are high. (07 Marks)
- c. A stock price has an expected return of 16% and a volatility of 35%. The current price is Rs 38.
- What is the probability that a European call option on the stock with an exercise price of Rs 40 and a maturity date is 6 months will be exercised.
 - What is the probability that a European put option on the stock with the same exercise price and maturity will be exercised? (10 Marks)
- 5 a. Define commodity derivatives and their types. (03 Marks)
- b. Explain the role of SEBI in regulating commodity derivatives in India. (07 Marks)
- c. A trader enters into a futures contract to buy 200 barrels of crude oil at futures price of Rs 5000 per barrel. At the time of contract expiration, the spot price changes as follows :
- Scenario 1 : The spot price rises to Rs 5,200 per barrel
- Scenario 2 : The spot price falls to Rs 4,800 per barrel.
- Calculate the trader's gain or loss in both cases. (10 Marks)

- 6 a. What is Value at Risk? (03 Marks)
- b. Elucidate the use of credit default and total return swaps. (07 Marks)
Suppose that the spot (zero) rates with continuous compounding are as follows :

Maturity (years)	1	2	3	4	5
Rate (% pa)	12.00	13.00	13.70	14.20	14.50

- c. Calculate forward interest rates for the second, third, fourth and fifth year. (10 Marks)
- 7 a. What is the meaning of Stop – limit order to sell at 20.30 with a limit of 20.10 means? (03 Marks)
- b. The price of an non – dividend paying stock is Rs 19 and the price of a three month European call option on the stock with a strike price of Rs 20 is Re. 1. The risk free rate is 4% per annum. What is the price of a three month European put option with a strike price of Rs 20? (07 Marks)
- c. A 4 month European call option on a dividend paying stock is currently selling at Rs 5. The stock price is Rs 60 and the dividend of Rs 0.80 is expected in one month. The risk free interest rate is 12% per annum for all maturities. What opportunities are there for an arbitrageur? (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)
