

CBCS SCHEME

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18MBAFM405

Fourth Semester MBA Degree Examination, November 2020 Financial Derivatives

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions.

- 1 a. What is "PUT-CALL Parity"? (03 Marks)
b. Bring out the difference between forward contract and futures contract. (07 Marks)
c. Calculate the price of a forward contract using the following data:
Price of the share = Rs.75
Dividend expected = Rs.2.20 per share
Time of expiration = 9 months
Time to dividend = 4 months
Continuously compounded risk free rate of return = 12% p.a. (10 Marks)

- 2 a. What do you understand by "Convenience yield" in commodity market? (03 Marks)
b. Discuss the important economic functions performed by the derivative market. (07 Marks)
c. Mr. XYZ bought SBI September futures @3003 on 01/09/2020. The contract expires on 25th September. Lot size is 200 shares, margin required is 18% of contract value. Using the following prices, prepare statement showing marking to market.

| Day | 1 | 2 | 3 | 4 | 5 | 6 |
|---------------------|------|------|------|------|------|------|
| Closing prices (Rs) | 3050 | 3102 | 3150 | 3026 | 3158 | 3103 |

(10 Marks)

- 3 a. Define European style option and American style option. (03 Marks)
b. Define SWAP. What are the types of SWAPS? (07 Marks)
c. A 5 year bond with a yield of 11% (continuously compounded) pays an 8% coupon at the end of each year. (face value Rs.100), $PVIF(N=5, r=11\%) = 0.5935$, $PVIFA(N=5, r=11\%) = 3.6959$
i) What is the Bond's price?
ii) What is the Bond's duration? (10 Marks)

- 4 a. Define Credit Default SWAP. (03 Marks)
b. Discuss the various factors affecting the prices of option. (07 Marks)
c. Consider the following data about call option on INFOSYS for which one contract involves 1000 shares. Design butterfly spread strategy (long).

| | | | |
|--------------------|-----|-----|-----|
| Strike Price (Rs.) | 175 | 185 | 195 |
| Premium (Rs.) | 21 | 14 | 8 |

Consider closing price (Rs.): (on date of expiry): 155, 170, 190, 210.

(10 Marks)

- 5 a. Define Value of Risk (VaR). (03 Marks)
b. Compute the value at risk for portfolio from the following:

| | |
|---------------------|---------------------|
| Reliance | HDFC |
| Rs. 1 crore | Rs.50,00,000 |
| Daily volatility 2% | Daily volatility 1% |

Return on two shares have a bivariate normal distribution with a correlation of 0.3.
 $N = 10$ days, $X = 99\%$ (i.e, confident level = 2.33) (07 Marks)

- c. Write a note on any two commodity exchange in India. (10 Marks)

- 6 a. Define "Variation Margin". (03 Marks)
 b. Explain the structure of credit default swap. What are its advantages? (07 Marks)
 c. The following information is available about a share and a call option on the same.
 Spot price = Rs.150
 Exercise price = Rs.140
 Time to expiration = 6 months
 Standard deviation of stock return = 0.49%
 Risk free rate of return (continuous compound) = 10% p.a.
 Compute the value of the call option using Black and Schole's model. (10 Marks)

- 7 a. Define "Asset Back Securities" (03 Marks)
 b. Discuss features of financial derivatives. (07 Marks)
 c. ICICI Bank and Axis Bank wish to borrow a certain sum of money and have been offered the following rates:

| Company | Fixed rate | Floating rate |
|------------|------------|---------------|
| ICICI Bank | 11% | LIBOR + 0.4% |
| Axis Bank | 12.6% | LIBOR + 1% |

ICICI Bank require floating rate loan and Axis Bank require fixed rate. Design a swap that is accepted. Swap banker charges 0.1%. (10 Marks)

- 8 On January 1, 2020 an investor has a portfolio of 5 shares as gives here:

| Security | Price | No. of Shares | Beta value |
|----------|--------|---------------|------------|
| A | 59.50 | 5,000 | 1.05 |
| B | 81.85 | 8,000 | 0.35 |
| C | 101.10 | 10,000 | 0.80 |
| D | 125.15 | 15,000 | 0.85 |
| E | 140.50 | 1,500 | 0.75 |

The required rate of return to the investor is 12.5% per annum.

You are required to:

- a. Calculate the Beta of his portfolio
 b. Calculate the theoretical value of the Nifty Futures for February.
 c. If the current value is at 1005 and Nifty Futures have a minimum trade lot requirement of 200 units. Obtain the number of contracts of Nifty he needs to sell in order to get a full hedge until February for his portfolio. Assume that the futures are trading at their fair value.
 d. Calculate the number of futures contracts the investor should trade, if he desired to reduce the Beta of his portfolio to 0.7. (20 Marks)
