21COM3E1BL

M.Com. III Semester Degree Examination, April/May - 2023

COMMERCE

FINANCIAL DERIVATIVES

(CBCS)

Time : 3 Hours   Maximum Marks : 70

Note : Answer **any five** of the following questions with Question No. **1 (Q1) Compulsory.** Each question carries **fourteen** marks.

1. (a) Define Derivatives. Explain the usefulness and critiques against derivatives. **10**

 (b) Describe the functions of participants in derivatives market. **4**

2. (a) What are the orders placed by the investors in futures market ? Discuss. **10**

 (b) Trace out the evolution of derivatives market in India. **4**

3. (a) Discuss the features of different derivative instruments. **10**

 (b) List out the shortcomings of forwards and futures. **4**

4. On January 1, 2022 an investor has a portfolio of 5 shares as given here : **14**

Security	Price	No. of Shares	Beta
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 cost of capital to the investor is 12.5% per annum. You are required to compute :

(a) Calculate beta of his portfolio.

(b) Calculate the theoretical value of the NIFTY futures for February.

(c) If its current value is 1005 and NIFTY futures have a minimum 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 desires to reduce the beta of his portfolio to 0.9.

5. (a) The current market price of equity is Rs 80. The price may rise to Rs 100 or fall to Rs 70. The annual risk free rate is 10%, a call option on this equity has an exercise price of Rs 80 and an expiration date of one year from now. What is the fair value of call option today as per Binomial model ? **7**

(b) The shares of BSE Ltd. are currently priced at Rs 415 and a call option exercisable at 3 months' time as an exercise rate of Rs 400. Risk free rate of interest is 5% p.a. and standard deviation is 22%, based on the assumption that BSE Ltd. is not going to declare any dividend over the next 3 months. Calculate the value of call option as per Black Scholes Model. **7**

6. (a) Describe the trading mechanism. **7**

(b) Mr. Vikram enters into a short futures contract for two contracts consisting of 100 shares at Rs 600 per share. The exchange has fixed the initial margin at Rs 4000. The maintenance margin was fixed at Rs 75% of initial margin. Show the operation of Margin amount by taking the following information on futures prices of shares. **7**

Trading Day	Futures prices(Rs)	Trading Day	Futures prices(Rs)
1	600	8	612
2	602	9	607
3	608	10	603
4	605	11	600
5	610	12	598

7. (a) Calculate the value of stock index futures contract using following data : **7**

(i) Assume that the spot value of the index is 3090, the continuously compounded risk free rate of return is 8% p.a and time to expiration is 76 days. Find the value of futures contract, assuming multiplier to be 100.

(ii) Consider a three-month futures contract on NSE - 50. Assume that the spot value of the index is 1090, the continuously compounded risk free rate of return is 12% p.a and the continuously compounded yield on shares underlying the NSE-50 is 4% p.a. Find the value of futures contract, assuming multiplier to be 200.

(b) Calculate the pay-off of Long Put and Short Put from the following data and draw the pay-off diagram. Underlying - Wipro Company Ltd stock, style of option - European, exercise price is Rs 150 per share, option premium is Rs 10 per share, assume spot price at expiration is Rs 120, Rs 130, Rs 140, Rs. 150 Rs 160, Rs. 170 Rs. 180 per share. **7**

8. (a) Calculate the forward price from the following data   **5**

   (i) A forward contract is entered into to purchase a coupon (interest) bearing bond

   (ii) Current price of the bond Rs. 1,00,000

   (iii) Coupon rate 8% p.a.

   (iv) Interest is payable semi-annually

   (v) Interest is payable after 3 months and 9 months respectively from the data of entering into the forward contract.

   (vi) The maturity period of the forward contract is 10 months.

   (vii) Risk free interest = 6% p.a.

   (viii) Spot price of the bond is Rs 9500

(b) Explain the features of options contract.   **5**

(c) List out premier derivative exchanges operating across the world.   **4**

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