



M.Com. III Semester Degree Examination, April/May - 2024

COMMERCE

Financial Derivatives

(NEP)

Time : 3 Hours

Maximum Marks : 70

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

1. Define Derivatives. Discuss the features and types of derivatives in details. **14**
2. Write an explanatory note on types of orders and risks in derivatives trading. **14**
3. Using the following data prepare margin account if a margin call is made at any time the investor would deposit the amount called for : **14**

Position	:	Short
Contract size	:	1000 units
Unit price	:	Rs 44
No. of Contract	:	8
Initial margin	:	12%
Maintenance margin	:	75% of initial margin
Date of contract	:	June 4

Days	June 4	5	6	7	10	11	12
Prices	44.60	46.20	45.80	46.00	46.30	45.70	45.90

- (i) What is the Net gain/loss to June 12th.
 - (ii) Why it is necessary to collect margin in future trading.
4. (a) Explain how the stock index futures are used for adjusting the beta value of a portfolio (i) upward and (ii) downward. **7**



- (b) Assume that a market capitalization weighted index contains only three stocks A, B and C as shown below. The current value of the index is 1056. 7

Company	Share price (RS)	Market capitalization (Rs crores)
A	120	12
B	50	30
C	80	24

Calculate the price of the future contract with expiration in 60 days on this index if it is known that 25 days from today, company A would pay a dividend of Rs. 8 per share. Take the risk-free rate of interest to be 15% per annum. Assume the lot size to be 200 units.

5. (a) Write an explanatory note on butterfly spreads, straddle and strangle. 7
 (b) A butterfly spread is created when large price changes are not expected but instead small changes are anticipated. Consider the following data about call options of BHEL (prices taken from Economic times, April 9, 2002) for which one contract involves 1100 shares. 7

Strike price	Premium
Rs. 170	Rs. 21.10
Rs. 180	Rs. 14.00
Rs.190	Rs. 8.00

Help an investor to build a butterfly spread. Find the pay-off for him at various ranges of stock prices. Illustrate by taking stock price as Rs. 168, Rs. 176, Rs. 185, Rs. 189, and Rs. 198.

6. On January 1, 2023 an investor has a portfolio consisting of eight securities as shown below : 14

Security	Price	No. of Shares	Beta
A	29.40	400	0.59
B	318.70	800	1.32
C	660.20	150	0.87
D	5.20	300	0.35
E	281.90	400	1.16
F	275.40	750	1.24
G	514.60	300	1.05
H	170.50	900	0.76

If its current S & P CNX Nifty value is 986 and NIFTY futures have a minimum lot requirement of 200 units and the February futures are currently quoted at 1010 and the March futures being quoted at 1019. Assume that the futures are trading at their fair value. The cost of capital the investor is given to be 20% per annum. He approaches you to advice.



You are required to :

- (a) Calculate the beta of his portfolio.
- (b) Calculate the theoretical value of the futures for contract expiring in February and March.
- (c) Calculate the number of units of S & N CNX Nifty that he would have to sell if he desires to hedge until March (i) his total portfolio, (ii) 90 % of his portfolio and (iii) 120 % of his portfolio.
- (d) Determine the number of futures contract the investor should trade if he desires to reduce the beta of his portfolio to 0.9.

7. From the following calculate call option value and put option value. 14

Current market price (S)	:	₹100 per share
Exercise price (X)	:	₹80 per share
Volatility of share price (σ)	:	30%
Risk free interest rate (r)	:	10% p.a.
Time to expiration (T)	:	3 months

Use Block-Scholes formula.

8. (a) A stock is currently priced at ₹160. In one month, the stock price may go up by 25% or go down by 12.5%. The strike price is ₹180. 5

Find pay-off of a call option. Use binomial tree.

(b) Consider the following basics and calculate the payoff of put option 5

Underlying	:	Reliance stock
Type of option	:	Put option
Style of option	:	European
Position	:	Long
Exercise price	:	₹150 per share
Option Premium	:	₹10 per share
Spot price at expiration say	:	₹120, ₹130, ₹140, ₹150, ₹155, ₹160, ₹170, ₹180 per share.

(c) Discuss the characteristics of option contract. 4

