

Enrollment No.: _____

Seat No.: _____

GUJARAT TECHNOLOGICAL UNIVERSITY
MBA - SEMESTER - III EXAMINATION - WINTER 2025

Subject Code: 4539222

Date: 18-12-2025

Subject Name: Financial Derivatives

Time: 10:30 AM TO 01:30 PM

Total Marks: 70

Instructions

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Use of simple calculators and non-programmable scientific calculators are permitted

Q.1 Explain the following terms: **14**

- a) Nonperformance of the contract
- b) Delta
- c) OTC derivatives
- d) Implied volatility
- e) Forward Vs Futures
- f) Portfolio Insurance
- g) Arbitrage

Q.2 (A) BHEL shares are selling at Rs 166 on September 1. Futures on BHEL with a contract size of 1350 shares and expiry on September 28 are available at a price of Rs 168.5. The risk-free rate is 8%. No dividends are expected during September. How would you take advantage of an arbitrage opportunity, if any? What would be your arbitrage profit per future contract? **7**

(B) What is the role of clearing house in a future exchange? **7**

OR

(B) Under what conditions would a hedger not be able to get a perfect hedge using futures? **7**

Q.3 (A) How does the "Mark to Market" (MTM) process work in the Indian derivatives market, specifically with respect to a Nifty 50 Futures contract? Illustrate with an example using market data, including daily gains or losses for a long position.

Assumed Initial Nifty 50 Futures Price: ₹26,500

Current Market Data for Nifty 50 Futures (Day 1): ₹26,600

Current Market Data for Nifty 50 Futures (Day 2): ₹26,550

- Lot Size of Nifty 50 Futures: 50 units
- Initial Price of Contract: ₹26,500

7

(B) Briefly explain SWAP and discuss its primary purpose in financial market **7**

OR

Q.3 (A) A State Bank share is selling for INR 2,500 on January 1. It has a call option with maturity on March 31 with an exercise price of INR 2,700. This option is selling for INR 85. Draw a diagram showing the terminal value of this option as well as the gains from buying this option for possible stock prices of INR 2,300 to INR 3,000. 7

(B) What is meant by delta, gamma, theta, vega and rho of options? 7

Q.4 (A) What are the factors that determine the call price? How do changes in these factors affect call price? 7

(B) ABC Ltd.'s stock is currently trading at ₹1,000 in the spot market. An investor, Mr. Sharma, has ₹50,000 to invest. He is considering two options:

1. Invest in the spot market: Buy ABC Ltd. shares directly.
2. Invest in the futures market: Buy ABC Ltd.'s futures contract that requires a margin of 10%. The futures price is ₹1,020 per share.

Assume after one month, ABC Ltd.'s stock price rises to ₹1,100 in both the spot and futures markets. Ignore transaction costs and interest on margin money.

Calculate and compare the return on investment (ROI) for both the spot market and the futures market. 7

OR

Q.4 (A) What is put call parity explain with example. 7

(B) A stock is selling at INR 1,250. There exists a call option on this stock with expiry in 60 days and an exercise price of INR 1,300. The stock price volatility is 22%. The risk-free rate is 6%. Calculate the call price. 7

Q.5 Case Study:

Pushti, a portfolio manager at a mutual fund, is tracking the Indian stock market and believes that a specific stock (ABC Ltd.) will experience volatility in the upcoming months due to an anticipated government policy announcement. The stock is currently trading at ₹500 per share. Pushti has two strategic options for the situation, each involving derivative (options) instruments, based on her predictions:

Bullish Scenario: Pushti expects the stock price to rise significantly above ₹550 within the next two months.

Bearish Scenario: Pushti also considers the possibility that the policy announcement may negatively impact ABC Ltd., causing the stock price to drop below ₹450.

Call options on ABC Ltd. with a strike price of ₹550 and a premium of ₹10 per option is available on NSE. Put options with a strike price of ₹450, for a premium of ₹12 per option is also available.

(A) Identify Pushti's potential profit and loss in each scenario (call and put) if the stock price rises to ₹600 at the time of the option's expiration. 7

(B) Explain the concept of 'Breakeven Point' in the context of options. How is it calculated in both call and put strategies? 7

OR

(A) If the stock price falls to ₹400 by expiration, what would be the outcome of Pushti's put option strategy? Would she profit from this strategy? 7

(B) Assuming Pushti buys both a call and put option on the same stock, creating a straddle strategy, what is the reasoning behind this, and under what market conditions would this be profitable? 7
