

Enrollment No./Seat No.:

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

Subject Code: MB03092041

Date: 18-12-2025

Subject Name: Financial Derivatives and Risk Management

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.**
- 5. Use of scientific calculator and N(x) table is allowed.**

	Marks
Q.1 ALL 7 Questions must be Compulsory.	14
(a) American Options	
(b) Closing Out Position	
(c) Currency Swap	
(d) LIBOR	
(e) Programme Trading	
(f) Put-Call Arbitrage	
(g) Spot Exchange Rate	
Q.2 (a) Discuss the cost of carry in pricing of commodity forward contracts with appropriate example.	07
(b) HDFC Bank sells a 1x4 FRA on April 1 with a principal amount of Rs.5million at an AR of 5.5%. The RR on the FRA is the MIBOR, and the cost of the loan is MIBOR +100. On the settlement date, which is one month ahead, the MIBOR is 5.4% and the RR is MIBOR +100. A year is said to have 360 days. Calculate, what will be the settlement payment?	07
OR	
(b) Contrast between the Forward and Futures.	07
Q.3 (a) If the current price of Dixon Technologies Ltd. is Rs.16,115 and it is likely to change in a month, but the trader is not sure, whether the price will rise or fall. So the trader buys 1 call and 1 put option, simultaneously, at Rs.16,000, with a call premium of Rs.758, and put premium of Rs.515. The	07

expiry of both the types of option is on 25/11/2025. Which appropriate strategy the trader must use? Name and explain the strategy too. Calculate the net pay-off using the appropriate strategy if the share price after a month is expected to be Rs.15,000, Rs.15,500, Rs.16,000, Rs.16,500, Rs.17000, Rs.18,000 and Rs.19,000.

- (b) Infosys stock is selling at INR1,130 on September 1. There exists a call option on Infosys with the expiry in 60 days at an exercise price of INR1,140. It is estimated that every 30 days, the Infosys share price could either increase by 6% or decrease by 4%. The risk-free rate is 8%. Calculate the call price by using the two-period Binomial Options Pricing Model. Use a continuous compounding approach. **07**

OR

- (a) On October 21, 2025, the MIDCPNIFTY is at 13,205.85 points. The risk-free rate is 5.4%. The average dividend yield on the stock is 1.7%. The actual MIDCPNIFTY is at 12,900 points. The contract multiplier is 140. Calculate the value of December futures contract expiring on 30/12/2025. Also prove through calculation, if there is any arbitrage opportunity. **07**

- (b) The contract size of Allahabad Bank options is 2,450. Allahabad Bank shares are selling at INR 95 on March 1. Call options and put options are available with expiry on April 29 and an exercise price of INR 100. The volatility of the stock price is 18%, and the risk-free rate is 8%. Using the Black-Scholes options pricing model, calculate the call option price on March 1. **07**

- Q.4 (a)** A trader takes a short position in ELCMBL (Monthly Electricity Futures), which derives its value from electricity. The position was taken on 22nd September 2025. The price is per Mega-Watt Hour (MWh). The settle price for 7 days is as under: **07**

Date	Rs. Per MWh
Entry price at 9.00 am	3,596
22-Sep	3,453
23-Sep	3,505
24-Sep	3,510
25-Sep	3,531
26-Sep	3,518
29-Sep	3,542

The trader takes the position in one contract of 50 MWh. The initial margin is 10% of the contract value. The Variation Margin is Rs.5,000. Calculate the daily mark-to-market.

- (b) Explain the regulatory mechanism in derivatives market. **07**

OR

- (a) On November 20, the spot price of cardamom is INR 774.50 per kg, the price of December cardamom futures with expiry on December 15 is INR 773.00, and the price of January cardamom futures with expiry on January 15 is INR 771.50. The contract size of cardamom futures is 500 kg. The standard deviation of spot price change is estimated as 22, and the standard

deviation of the futures price change is estimated as 20.2. The correlation coefficient between the spot price change and the futures price change is estimated to be 0.99. Indian Spice Corporation is planning to sell 1 MT of cardamom on January 5 and wants to hedge the price risk of jute.

- Explain how should Indian Spice Corporation hedge this exposure?

If the spot price of cardamom on December 15 is INR 773.75 and the spot price and January futures price of cardamom on January 5 are INR 772.50 and INR 772.00, respectively, calculate the result of hedging using January futures and December futures.

- (b) Explain the trading process in derivatives with the ethical concerns involved in the same. **07**

Q.5 A leading Indian textile to retail conglomerate, Arvind is a powerhouse of innovation driven, sustainability-led growth, which started on June 1, 1931. Headquartered in Ahmedabad, Gujarat, Arvind offers best-in-class quality, driven by technological excellence and state-of-the-art manufacturing facilities. It is ranked amongst the top suppliers of fabric globally. The Company straddles the entire value chain of textiles and apparel, from cotton cultivation, fabric and garment manufacturing to retail. The Company has also now become the bell-weather for the Technical Textiles industry as a leader in the segment.

The countries like Bangladesh, Vietnam, and Pakistan are low-cost manufacturers, who often compete with Arvind Ltd. Company has to also follow the stringent pollution control law. A big blow was faced during the COVID-19 time, when the entire supply-chain was disrupted. In May, 2025, the company mentioned that the prolonged geo-political tensions, led to new U.S. tariff policies, which would badly affect its profit margin.

Company's profit margin are always under pressure, due to high price volatility in the core raw-material i.e. cotton and cotton yarn. The company has borrowed a working capital loan from the Indian Bank, whose interest rate change with the change in the economy's interest rate, which further creates a burden on the profit margin of the company. Arvind Ltd. exports its flagship product i.e. Denim to US. The profit is vulnerable due to rupee appreciating against the dollar. The company's long-term loan (debt) portfolio is sensitive to the changes in the interest rates. The uninterrupted supply of cotton is also a key concern for the company.

- (a) Discuss the various types of risk that Arvind Ltd is facing. **07**
(b) Explain how can these risks be reduced using derivative securities? **07**

OR

- (a) Rahul, who has been trading in futures that resulted in huge losses, is now convinced that trading in options is a better alternative to trading in futures when the direction of price movement is uncertain. However, he would like to know what gains he can make if he enters into options contracts. He has collected the following details on options on Avenue Supermarts Ltd, **07**

whose retail outlets are popularly known as DMart. Hence, the options are listed on NSE with the underlying referred as DMart.

On October 20 2025, the company's shares are selling at Rs.4,280. Call options and put options are available on DMart with an exercise price of Rs.4,300, and an exercise date of October 28. A call is priced at Rs.50, and put is priced at Rs.60. The contract size is 150. The analysts have estimated that the share price of Avenue Supermarts Ltd, could be anywhere in the range of Rs.4,000 to 4,500.

Calculate the pay-off if he buys 2 call option.

(b) Calculate the pay-off if he buys 2 put option.

07
