



Even Semester End Term Examination, May / June 2026

Date: 14/05/2026

Time: 01.00 PM - 04.00 PM

Course Code: MBA3097

Course Name: Derivatives and Risk Management

Semester: Fourth Semester

Max. Marks: 100

Weightage: 50%

CO - Levels	CO1	CO2	CO3	CO4
Marks	26	44	41	29

Part A: Answer Following Questions. 30 M

Qn.No	Questions	M	CO	BT
1	Define Value at Risk (VaR). Briefly explain its significance in measuring financial risk	3	CO1	BT2
2	State with examples two types of financial risks	3	CO1	BT1
3	A trader enters into a forward contract to buy gold at ₹60,000. At maturity, the spot price is ₹62,000. Calculate the payoff to the buyer	3	CO2	BT2
4	Spot price of a commodity is ₹1,000, and the futures price is ₹1,050. Calculate the basis. What does this indicate about the market condition?	3	CO2	BT1
5	Explain the concept of Mark-to-Market (MTM) in futures trading. Why is it important?	3	CO2	BT2
6	A call option has a strike price of ₹100 and a premium of ₹8. Calculate the intrinsic value if the market price is ₹110	3	CO3	BT1
7	Explain any two determinants of option pricing	3	CO3	BT1
8	Distinguish between Credit Default Swap (CDS) and Total Return Swap (TRS) on any two parameters	3	CO4	BT2
9	Explain the concept of an Interest Rate Swap with a simple example	3	CO4	BT1
10	List any three credit events as defined by The International Swaps and Derivatives Association (ISDA) and explain any one briefly	3	CO4	BT2

Part B: Answer Any 1 Following Questions. 10 M

Qn.No	Questions	M	CO	BT
11	A company holds an inventory of a commodity currently valued at	10	CO2	BT2

	₹25,00,000 and is concerned about a possible decline in prices over the next three months. To hedge this risk, the company decides to use futures contracts. The current spot price of the commodity is ₹2,500 per unit, while the three-month futures price is ₹2,550 per unit. Each futures contract consists of 100 units. After three months, the spot price falls to ₹2,300 and the futures price converges to ₹2,320. Based on this information, calculate the number of futures contracts required for hedging, determine the loss in the spot market, compute the gain or loss in the futures market, and evaluate the overall effectiveness of the hedge.			
12	Alpha Engineering Ltd., a manufacturing firm, regularly imports raw materials and faces uncertainty due to price fluctuations in the market. To manage this risk, the firm is considering the use of derivative instruments such as forward contracts with suppliers and exchange-traded futures contracts. While forward contracts offer flexibility in terms of quantity and maturity, futures contracts provide standardization, higher liquidity, and reduced counterparty risk due to daily settlement through margining. The finance manager must evaluate these alternatives by considering factors such as risk exposure, cost efficiency, and operational convenience. Based on this situation, explain the key features of forward and futures contracts, analyze the differences between them, and recommend the most suitable instrument for the firm with proper justification	10	CO2	BT2

Part C: Answer Any 1 Following Questions. 10 M

Qn.No	Questions	M	CO	BT
13	An Indian IT company, TechNova Solutions Ltd., has significant exposure to international markets, with revenues in US dollars and costs largely in Indian rupees. Recently, the company has also faced issues related to system failures and data security breaches. Additionally, fluctuations in interest rates have impacted its borrowing costs. The management is concerned about the various risks affecting its financial performance and is exploring appropriate risk measurement and management techniques. Question: Identify and explain the different types of financial risks faced by TechNova Solutions Ltd. Discuss how Value at Risk (VaR) can be used to measure one of these risks. Also, suggest suitable risk management strategies for the company	10	CO1	BT2
14	A large Indian agribusiness firm, AgroGrow Industries Ltd., deals in commodities such as wheat and soybean. The firm has recently experienced significant losses due to unpredictable price movements, liquidity constraints in the market, and operational inefficiencies in its supply chain. The firm is now considering entering the derivatives market through exchanges like NSE to manage its risk exposure. Question: Classify and explain the types of risks faced by AgroGrow Industries Ltd. Evaluate the role of derivatives in managing these risks. Explain the key participants in derivative markets and how they contribute	10	CO1	BT2

Part D: Answer Any 1 Following Questions. 10 M

Qn.No	Questions	M	CO	BT
15	An investor is evaluating a European call option on the shares of ABC Ltd., currently trading at ₹120. The option has a strike price of ₹125 and expires in one period. The stock price is expected to either increase by 20% or decrease by 10%. The risk-free rate of interest is 5% per period. The investor wants to determine the fair value of the option using the Binomial Option Pricing Model. i) Calculate the possible stock prices at maturity. ii) Compute the payoffs of the call option in both scenarios. iii) Calculate the present value of the expected payoff (option price).	10	CO3	BT3
16	A trader in the options market expects that the price of XYZ Ltd. will remain relatively stable over the next month. To benefit from this expectation, the trader constructs a butterfly spread using call options with the following details: • Buy 1 call with strike price ₹90 for a premium of ₹12 • Sell 2 calls with strike price ₹100 for a premium of ₹7 each • Buy 1 call with strike price ₹110 for a premium of ₹3 • Calculate the net initial cost. Determine the payoff at expiry when the stock price is: ₹85; ₹100; ₹120. Compute the profit/loss at each price level. Identify the maximum profit and maximum loss from this strategy	10	CO3	BT3

Part E: Answer Any 1 Following Questions. 10 M

Qn.No	Questions	M	CO	BT
17	An Indian commercial bank, SecureBank Ltd., has extended a large loan to a corporate borrower. Due to rising default risk, the bank is exploring credit derivatives to manage its exposure. It is considering entering into either a Credit Default Swap (CDS) or a Total Return Swap (TRS) with a financial institution. Explain how a Credit Default Swap (CDS) would help SecureBank Ltd. manage its credit risk. Illustrate how a Total Return Swap (TRS) works in this context. Compare CDS and TRS in terms of risk transfer, cash flows, and ownership of the underlying asset.	10	CO4	BT2
18	A manufacturing company, Prime Engineering Ltd., has taken a floating-rate loan linked to MIBOR but expects interest rates to rise in the near future. To manage this risk, the company is considering entering into an Interest Rate Swap (IRS) with a financial institution. Explain how an Interest Rate Swap can help the company convert its floating-rate liability into a fixed-rate liability. Illustrate the cash flow mechanism between the parties in the swap arrangement. Analyze the advantages and potential risks associated with using	10	CO4	BT2

Part F: Answer Following Questions. 30 M

Qn.No	Questions	M	CO	BT
19	An investor is evaluating a European call option on the shares of ABC Ltd. using the Black-Scholes Model. The following information is available: Volatility (σ) = 25% per annum Risk-free rate (r) = 8% per annum • Current stock price (S_0) = ₹200 • Exercise price (K) = ₹210 • Time to maturity (T) = 6 months (0.5 years) Calculate the values of d_1 and d_2 (both having usual meanings) using the Black-Scholes Model. Determine the price of the European call option. Interpret the result—should the investor consider buying this option if the market premium is ₹12?	15	CO3	BT3
20	A portfolio manager holds a diversified equity portfolio currently valued at ₹1,20,00,000, with a beta of 1.4. The manager expects increased market volatility over the next two months and decides to hedge the portfolio using Nifty index futures. The current Nifty index level is 18,000, and each futures contract has a lot size of 75 units. Questions: i) Calculate the number of Nifty futures contracts the manager should sell to achieve a full hedge. ii) Suppose after two months, the market declines, and the Nifty index falls to 16,800. Assuming the portfolio value changes in line with its beta: • Calculate the expected value of the portfolio • Determine the loss on the portfolio iii) Calculate the gain on the futures position. iv) Determine the net gain or loss after hedging and comment on the effectiveness of the hedge. v) If the manager decides to hedge only 75% of the portfolio, calculate the revised number of futures contracts and briefly comment on the outcome.	15	CO2	BT4