JAIPURIA

JAIPURIA INSTITUTE OF MANAGEMENT, NOIDA

PGDM / PGDM (M) / PGDM (SM)

V TRIMESTER (Batch 2023-25)

END TERM EXAMINATIONS (MAIN EXAM: SET - I)

Course Name	Financial Derivatives & Risk Management (FDRM)	Course Code	20223
Max. Time	2 Hours	Max. Marks	40

INSTRUCTIONS:

• Attempt all Questions. This is an open book exam. All questions need to done in an excel fie with separate sheets for each question.

Data for Q1 to Q5

Underlying Index: BEL = 291.95 as on 3rd Jan 2025.

CALL					PUTS							
LTP	Chng	Bid Qty	Bid	Ask	Ask Qty	Strike	Bid Qty	Bid	Ask	Ask Qty	Chng	LTP
-	-	8,550	61.1	64.35	17,100	230	85,500	0.05	0.2	2,850	-	2
-		8,550	51.45	54.55	8,550	240	51,300	0.15	0.25	2,850	-	0.2
44	-1.7	2,850	43.1	44.3	2,850	2.50	19,950	0.4	0.45	17,100	0.15	0.45
-	-	8,550	37.1	39.85	8,550	255	5,700	0.55	0.6	2,850	0.2	0.6
38	2.95	2,850	33.65	35.05	2.850	260	11,400	0.85	0.9	25,650	0.25	0.85
30	-0.65	2,850	28.6	30	2,850	265	14,250	1.2	1.3	11,400	0.35	1.25
26.15	-3.25	2,850	24.65	25.6	2,850	270	14,250	1.8	1.9	19,950	0.65	<u>1.9</u>
21.9	-2.95	2,850	20.55	21.5	2,850	275	28,500	2.7	2.8	11,400	0.95	2.8
17.4	-3.5	2,850	17.3	17.45	2,850	280	25,650	3.9	4	5,700	1.35	3.95
14	-2.95	11,400	13.9	14.05	2,850	285	25,650	5.5	5.6	19,950	1.85	5.55
11	-2.45	2,850	10.95	11.05	5,700	290	2.850	7.45	7.6	8,550	2.3	7.45
8.4	-2	11,400	8.4	8.5	14,250	295	2,850	9.9	10	11,400	2.9	9.95
6.3	-1.45	14,250	6.25	6.35	17,100	300	5,700	12.65	12.8	8,550	3.35	12.7
4.55	-1.1	5,700	4.55	4.65	28,500	305	2,850	15.85	16.05	2,850	3.9	<u>16</u>
3.25	-0.75	37,050	3.25	3.3	25,650	310	19,950	18.8	19.9	2,850	4.15	<u>19.6</u>
2.3	-0.45	11,400	2.2	2.3	5,700	315	2.850	23.35	24.25	2,850	3.75	22.9
1.55	-0.35	57.000	1.5	1.6	19.950	320	2.850	27.45	28.35	2,850	1.85	25.2
1.05	-0.25	17,100	1.05	1.1	22,800	325	2,850	32.1	33.05	2,850	0.25	28.75
0.75	-0.2	14,250	0.75	0.8	45,600	330	2,850	36.6	37.95	11,400	4.65	37
0.55	-0.15	14,250	0.55	0.6	22,800	335	2,850	41	43.15	2,850	-0.05	40
0.4	-0.15	3,24,900	0.4	0.45	62,700	340	2,850	45.9	48.25	22,800	-1.8	<u>43.35</u>
0.3	-0.1	1,85,250	0.3	0.35	91,200	345	17,100	50.3	53.4	8,550	-	44
0.3	-0.1	14,13,600	0.25	0.3	1,76,700	350	28,500	55.65	58.4	65,550	-	<u>55</u>
0.3	0.05	74,100	0.2	0.3	2,10,900	360	-	-	-	-	-	-

INSTRUMENT	EXPIRY	OPTION	STRIKE	OPEN ,	HIGH	LOW	CLOSE	LTP
ТҮРЕ	DATE	ТҮРЕ	PRICE	PRICE	PRICE	PRICE	PRICE	
Stock Futures (BEL LTD)	30-Jan- 2025	-	-	2979	298.5	293	293.55	298.35

MARKET LOT: 2850 SHARES. Expiry date: 30th Jan 2025.

Q1. The research analyst is optimistic about BEL and has set a price target of ₹341 per share, indicating a potential upside of nearly 16% from current levels. It is highlighted by the analyst that the company expects an order intake of over ₹30,000 erore in the coming years and remain positive on BEL. We have a target price of about ₹341, and over the next four to five years, there is still room for upside. BEL has strong upside potential driven by increased defence spending, technological innovation, a strong order book, and diversification into new sectors. If these factors materialize as expected, BEL could deliver solid returns over the next few years, with potential gains in the range of 10% to 20% per year. Moreover, technical analysis forecast for Bharat Electronics Stock is that its in a downtrend for short term, It is trading below an important moving average line. stock is semi over sold and there are some chances of seeing a recovery tomorrow. Use 287.3 as stoploss in an intraday buy trade for a target of 297.43. However, stock will show a bearish move below 287.3. The annualized volatility of Bharat Electronics Limited (BEL) is **42.80%** in comparison to 364-day treasury bills was **6.630%** per annum on December 18, 2024 (assume as continuous compounding rate). This will affect the future predictions to BEL.

To take the advantage of BEL volatility, risk and future predictions, Select a best option trading strategy using option chain of BEL and estimate the payoffs according to market predictions for BEL share price (consider minimum 10 price movements). Justify your strategy, keeping in mind the BEL performance. (CLO 2; BT Level I, V; Marks: 4 X2=8 marks)

Q2. Evaluate the arbitrage opportunities exist in the parity relationship between an appropriate ITM call and OTM put option and determine the arbitrage profit and loss with respect to stock price upward and downward movement. (CLO 3; BT Level V, III; 2 X 3= 6 marks)

Q3. Suppose you agree with BEL Ltd's downtrend prediction and would like to take the opportunity. You are holding a short position in 500 ITM 270 CALL. Using two more options positions, illustrate how you will make your portfolio perfectly hedged as per BSM, making it delta and gamma-neutral. (CLO 3; BT Level IV; 8 marks)

Q4. Suppose you are planning to invest in BEL on 30th Jan 2025. Determine the risk associated with your investment and suggest a hedging strategy using a BEL future contract for expiry. Also, analyse the risk and return in your position at expiry if the stock price becomes 295 and the future contract becomes 301, as well as the direction and impact of basis movement for your hedging position.

(CLO 2; BT Level II, IV; 2 X 3= 6 marks)

Q5. Evaluate the arbitrage opportunities in the future contract of BEL as on 3rd January 2024 and determine the arbitrage profit and loss with respect to stock price upward and downward movement. Moreover, if standard deviation of BEL share is 42.8% and Future Volatility is 44.5% and the coefficient of correlation between the two is placed at 0.85. In order to hedge spot position on BEL, examine what ratio of futures contract would be optimal (CLO 3; BT Level V, III; 6 marks)

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Q6. Company A is not happy with interest rate fluctuations and wants to be fixed in its liability. On the other hand, Company B thinks it is paying too much and thinks the interest rate will go down. They want a floating rate of interest and are looking for a swap to reduce their costs. Determine an appropriate interest rate swap strategy to fulfil their objective and reduce costs. The notional principal amount is 1 million. (CLO 3; BT Level III; 6 marks)

	Fixed Market	Floating Market	
Company A	9%	LIBOR +2%	-
Company B	8%	LIBOR + 3%	

