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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Fourth Semester, Master of Business Administration (MBA)

Semester End Examination; August - 2023

Financial Derivations

Time: 3 hrs *Max. Marks: 100*

***Note**: i) Answer all **FOUR** full questions from **PART - A** and **PART - B** (Case Study) is compulsory.*
ii) Scientific calculators are allowed.

Q. No.	Questions	Marks	BLs	COs	POs
	PART - A				
1 a.	What are derivatives? Explain the features of financial derivatives.	10	L1,2	CO1	PO1
b.	The future trade of XYZ company AND its trade details are as follows: Symbol : XYZ LTD Trade type : Long Starting Date : 10th Dec 2022 Buy price : Rs. 938.7 / share Sell date : 23/12/2022 Sell Price : Rs 955 Lot size : 250 Contact value : 250 x 938.7 = 234675 Rs Ignition margin = 12.5% of C.V. Daily margin = 12.5% respective day C.V. If the final balance of the day is less than respective daily margin then the trader has to pump in 10,000 Rs on the beginning of the next day. Prepare the mark to market daily account adjustment with following detail for 10 days. Prepare the detailed MTM table daily basis.	10	L2	CO2	PO2,5

Date	10/12	11/12	12/12	15/12	16/12
Price (Rs.) close	940	939	942	949	933
Date	17/12	18/12	19/12	22/12	23/12
Close price (Rs.)	945	930	945	940	955

OR

2 a.	Briefly explain the difference between further and forwards.	10	L2	CO1	PO1

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.

Co. Name	Share price (Rs.)	Mkt capitalization (Rs. in Crores)
A	120	12
B	50	30
C	80	24

Calculate the price of a 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.

10 L3 CO2 PO2

3 a. The current stock price for ACC Ltd is 85 Rs. A Europen call option with an exercise price of 85 Rs. will expire in 160 days. The yield on 160 day treasury bill is 5.18%. The standard deviation of annual returns on ACC's stock is 44% compute the premium for a call option on this stock

10 L4 CO2 PO2

b. What are option contracts? Briefly explain different type of option contract with their silent factures

10 L4 CO1 PO1

OR

4 a. The stock index consists of 5 stocks. Currently the index stands at Rs. 970/- obtain the price of a future contract with expiration in 115 days on this index having references to the following additional information.

Dividend of 6/- per share is expected on share 'B' 20 days from now

Dividend of 3/- per share is expected on share 'E' 28 days from now.

Continuous compounding risk free rate is 8% Lot size is 300 units

10 L5 CO1 PO1,2

Company	Share Price	Market capitalization
A	22	110
B	85	170
C	124	372
D	54	216
E	25	200

b. Suppose that a financial institution pays six month LIBOR and receives 8% premium (with semiannual compounding on a swap with a notional principal op Rs. 100 million and the remaining payment dates are 3, 9 and 15 months. The swap has a remaining life of 15 months. The LIBOR rates with continuous compounding for 3 months, 9 – month and 15 month maturities are 10%, 10.5% and 11% respectively. The 6 month LIBOR rate at the last payment date was 10.2% (with semiannual compounding). In this case K = Rs. 4 million (fixed payment on each payment date). K = Floating rate of payment = Rs. 5.1 million determine the value of the swap.

10 L5 CO3 PO2,4

Contd… 3

5 a.	What are the major commodities exchanges (markets) in India? Explain their importance.	10	L4	CO1	PO1
b.	List out the SEBI guidelines for commodity market and trading.	10	L1	CO1	PO1
	OR				
6 a.	How option Greeks are used in option trading? Explain.	10	L1,4	CO2	PO1,5
b.	Assume an investor buys a 3 month 200 put option contracts (each contract involving 100 shares) of Reliance with strike price of Rs. 200 and put option premium of Rs. 8 per share. On the date of maturity Reliance is selling at (i) 180 Rs (ii) 210 Rs. Further if he invested (Opting premium) (iii) Directly in cash market Instead of option market (take second condition reference) calculate the pay off in the above three situations	10	L4	CO4	PO2
7 a.	A Rs. 100 million interest rate swap has a remaining life of 10 months. Under the terms of the swap, 6 – month LIBOR is exchanged for 7% per annum (compounded semi annually). The average of the bid offer rate being exchanged for 6 month LIBOR in swaps of all maturities is currently 5% per annum with continuous compounding. The 6 month LIBOR rate was 4.6% per annum 2 months ago. What is the current value of the swap to the party paying floating? What is the value to the party paying fixed?	10	L1	CO4	PO2
b.	What is exotic option? How it is different from vanila option? Explain.	10	L4	CO1	PO1
	OR				
8 a.	The following call options are traded in the market at present with same maturity. Explain how an investor can create a buffer fly spread using below options.				

Exercise price	65	70	75
Call price (Rs.)	11	8	6

10 L4 CO3 PO2,5

Explain his profit / loss if the spot price at maturity is Rs. 63, Rs. 68, Rs. 73, and Rs. 80.

b.	An investor is short 1000 shares of ABC company at Rs. 690 and the beta of the stock is 0.9. The investor predicts the share price will to up due to some positive news. The investor decides to hedge with near month stock index contract futures. By the expiry of this contract suppose market recovers and index becomes 4280 and price of the underlying stock become Rs. 761. Design suitable hedging strategy and calculate the pay off (assume market lot 100 contracts).	10	L6	CO4	PO2,5

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PART - B (Case Study is compulsory)

9. On January, 1, 2023 an investor has a portfolio of 5 shares as given below

Security	Price	No. of share	Beta
A	59.50	5000	1.05
B	81.85	8000	0.35
C	101.10	10000	0.80
D	125.5	15000	0.85
E	140.50	1500	0.75

The cost of capital to the investor is 12.5% per annum

Your required to: 20 L4 CO3 PO2,5

i) Calculate the beta of his portfolio

ii) Calculate the theoretical value of NIFTY futures for February

iii) If its current value is 1005 and NIFTY futures have minimum trade lot requirements of 200 units. Obtain the number of contracts of NIFTY he needs to sell in order to get a full hedge until February for his portfolio. Assume that the futures are trading at their fair value.

iv) Calculate the number of futures contract the investor should trade if he desires to reduce the beta of his portfolio to 0.7

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