CBCS SCHEME

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Fourth Semester MBA Degree Examination, July/August 2022
Financial Derivatives

Time: 3 hrs.　　　　　　　　　　　　　　　　　　　　　　　　Max. Marks:100

Note: *1. Answer any FOUR full questions from Q1 to Q7.*
2. Question No. 8 is compulsory.

1　a.　Differentiate between exchange traded and OTC traded financial derivatives.　**(03 Marks)**
　　b.　What are the functions of derivatives market?　**(07 Marks)**
　　c.　What is Derivatives? Distinguish between hedgers, speculator and arbitrageur.　**(10 Marks)**

2　a.　What is Marketing – to – Market?　**(03 Marks)**
　　b.　What is forward and futures contract? What are the features of forward and future contract?　**(07 Marks)**
　　c.　Mr. Sharma took long position in five futures contracts on rice at an exercise price of Rs. 50 per Kg. The initial margin on this contract is 10% and maintenance margin is 85% of the initial margin. The size of each futures contract is 1000Kg. The futures prices for the first ten days of the contract are given below :

Day	1	2	3	4	5	6	7	8	9	10
Settlement Price (Rs. Kg)	52.50	51.25	51.00	51.80	51.40	51.10	49.75	50.30	50.50	50.25

Prepare a margin account assuming that all margin calls are honoured immediately and money is excess of the initial margin is withdrawn immediately.　**(10 Marks)**

3　a.　What is Contango and Backwardation market?　**(03 Marks)**
　　b.　Find out the theoretical price of a stock maturing in six months from now, which currently trading at Rs. 540. The annual risk free rate of return continuously compounded 9%.
　　　　i)　What would an arbitrager do if the six months future contract on this stock is trading at Rs. 600?
　　　　ii)　What are the risks involved in the arbitrage transactions in futures contracts? **(07 Marks)**
　　c.　A index is assumed to be consisting of only five stocks and is currently quoted at 2500 with lot size of 50. The market capitalization of the index is given below :

Stocks	A	B	C	D	E
MPS (Rs)	500	850	1500	950	450
Mkt. Capitalization (Rs. Cr)	25	50	150	100	75

The company 'C' is expected to pay dividend of Rs. 50 per share 25 days from now and company 'E' Rs. 20 per share 45 days from now. The annual continuously compounded risk – free rate of interest is 10%. Find out fair price of the index futures contract expiring in 90 days on this index.　**(10 Marks)**

4　a.　What is Triangular Swap?　**(03 Marks)**
　　b.　What is Financial Swap? Explain different types of financial swap.　**(07 Marks)**

c. Ranbaxy Ltd and Sun Pharma Ltd., requires Rs. 10 million for five years term and have been offered the following interest rates.

Company	Fixed	Floating
Ranbaxy Ltd	12%	MIBOR + 1.25%
Sun Pharma Ltd	15%	MIBOR + 1.75%

Ranbaxy Ltd is interested in floating and sun pharma Ltd., in fixed rate loan. How do you design an interest rate swap which is equally attractive to both the firms? The swap is arranged through a swap dealer who charges 0.4%. **(10 Marks)**

5 a. What is stress testing and Back testing? **(03 Marks)**
   b. What is VaR? What are the methods used for estimating VaR? **(07 Marks)**
   c. The following table gives the price of bonds :

Bond principal	Time to maturity	Annual coupon	Bond price
100	0.5	0.0	98
100	1.0	0.0	95
100	1.5	6.2	101
100	2.0	8.0	104

[Held the stated coupon is assumed to be paid every 6 months]
   i) Calculate the zero rates for maturities of 6 months, 18 months and 24 months
   ii) What are the forward rates? **(10 Marks)**

6 a. What is commodity trading? **(03 Marks)**
   b. Give a brief account of SEBI guidelines for commodity derivative market? **(07 Marks)**
   c. The current spot rate of IOC is Rs. 380 and which is expected to rise by 4% or fall by 2% after a month. The annual continuously compounded risk free interest rate is 9%.
   i) What is the value of one month European call option on the stock with strike price of Rs. 365?
   ii) How can call option are to be traded to hedge entire risk in the portfolio under Binomial option pricing model? **(10 Marks)**

7 a. What is Covered and Naked calls? **(03 Marks)**
   b. Explain the term intrinsic value and time value? From the following information. Calculate the intrinsic value and time value of the option?

Options	Stock Price	Exercise Price	Options Premium
put	38	34	7.30
call	47	52	7.80
call	111	105	8.40
put	38	45	9.70

(07 Marks)

   c. What is a butterfly spread? When do the investors prefer to use this strategy? The following data is given to you about the call options on a share which is currently traded Rs. 54 with the multiplier of 800.

Exercise price (Rs.)	50	55	60
Call price (Rs.)	8	4.5	2

Determine the profit or less from third strategy when the share price is Rs. 42, Rs. 55, Rs. 58 and Rs. 59 respectively. **(10 Marks)**

8   CASE STUDY [Compulsory]

Mr. Kairav on 1st May 2021 has constructed a portfolio consisting five shares the details of which is given below :

Scrips	Market Price	No. of shares	Beta
ACC	1,750	5,000	0.90
Cipla	550	8,000	0.85
BHEL	140	10,000	0.80
GAIL	390	15,000	0.75
IDBI	60	10,000	1.05

The annual cost of capital to the investor is 10% (continuously compounded) and current value of the Nifty is 9950. You are required to :

Questions :

a. Calculate beta of the portfolio.   **(10 Marks)**
b. Calculate the fair value of the Nifty June futures   **(05 Marks)**
c. In Nifty futures contract has a lot size of 75 units, find the number of contracts of Nifty futures the investor needs to short in order to get a full hedge until June for his portfolio. Assume that the Nifty futures are trading at their fair value.
   Calculate the number of futures contracts the investor should trade if he desires to reduce the beta of his portfolio to 0.75.   **(05 Marks)**

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