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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; May / June - 2019
Risk Management

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 calculator and Normal distribution table shall be allowed.

PART - A

1 a. Explain the important participants in derivative market. 10

  b. Explain the scope of financial derivatives. 10

OR

2 a. Write the differences between Forwards and Futures. 10

  b. Prepare a margin account for the first 10 days and investor takes long position in 2 Soya Bean futures contract. The initial margin for the contract is 2000 per contract and maintenance margin is Rs. 1500 per contract. Contract size is 100 per contract. The price entered (Excise price) is 600. Show the daily P and L and margin account balance, if the closing prices of this futures are : 10

Days	0	1	2	3	4	
Futures price	600	597	596.10	598.20	597.10	
	5	6	7	8	9	10
	596.70	595.40	593.3	593.6	591.80	592.7

3 a. Calculate equivalent continuously compounding interest rate, if annual compounding with different periods are given; 10

Interest Rate	Frequency
15%	Monthly
18%	4 times
20%	2 times
22%	1 time

  b. A 12 months forward contract is available for the price of Rs. 477. The underlying asset pays an income of Rs. 13 each at the end of 4th, 7th and 9th month. If the interest rate is 9% p.a. continuously compounded. 10

   i) What is its fair futures price?

   ii) If at the end of 5th month the underlying assets quoted at Rs. 450, what is its value of short and long?

OR

4 a. A stock index consists of five shares. The share price and other details are given below. Some of these shares are expected to pay dividend during the next six months. Stock index currently stands at 4560 points. The size of one futures contract on this index is 100. You are required to calculate fair value of index futures contract with 180 days to maturity. The Rise fee rate continuously compounding is 8% p.a. Assume 365 days in a year.

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Company	Share Price	Market Capitalization	DPS	Dividend payment due
Time Life	125	186	25	30 days
Mega shop	85	92	-	-
Blue lines	68	90	-	-
MB music	265	268	30	45 days
Soft tech	308	315	65	120 days
		951		

b. On 1st January 2019 an investor has a portfolio of five stocks as given below :

Securities	Price	No. of Shares	B_i
A	59.50	5000	1.05
B	81.85	8000	0.35
C	101.10	10000	0.80
D	125.15	15000	0.85
E	140.50	1500	0.75

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The cost of capital to be invested is 12.5% p.a. you are required to calculate Beta of the portfolio.

5. On 1st January 2018 an investor has portfolio consisting of 8 securities as shown below :

Security	Price	No. of shares	B_i
A	29.40	400	0.59
B	318.70	800	1.32
C	660.20	150	0.87
D	5.20	300	0.35
E	281.90	400	1.16
F	27.40	750	1.24
G	514.60	300	1.05
H	170.50	900	0.76

20

The current NIFTY value is 986, NIFTY futures can be traced in units of 200 only. The February futures are currently quoted at 1010 and march futures are quoted as 1019. The cost of capital for the investor is given to be 20% p.a. The investor fears of fall in price in the near future and approaches you for advice.

i) Calculate theoretical value of the future contract expiring in : I) Feb II) March

ii) Calculate the number of units of NIFTY that he would have to sell if he desires to hedge till march: I) his total portfolio II) 90% of his portfolio III) 120% of his portfolio

iii) Determine the number of future contracts the investor should track, if he desires to reduce the Beta of his portfolio to 0.9

OR

6 a. What is an option contract? Explain types of option contract. 10

 b. Consider the following data about calls on a hypothetical stock :

Option	Exercise price	Stock Price	Call option price	Classification
1	80	83.50	6.75	In-the money
2	82	83.50	2.50	Out-the-money

10

 Calculate Intrinsic value and time value.

7 a. What are the factors influencing options prices? 10

 b. The current price of the share is Rs. 50 and it is believed that the end of 1 month the price will be either Rs. 55 or Rs 45. What will be the European call option with an exercise price of Rs. 53 on the shares? The risk free rate of interest is 15% p.a. and also calculate the hedge ratio applying binomial formulation. 10

OR

8 a. Buying a call option at Rs. 320 and a premium of Rs. 40. Again buying a call option at a strike price of Rs. 400 and a premium of Rs. 20. Sell both the calls options at a strike price of Rs. 360 at a premium of Rs. 30 and the prices on the due date are Rs. 270, 300, 360, 380, 400, 450 and 500. 10

 i) Calculate Net P and L ii) Draw a pay off matrix of butterfly spread

 b. Write a note on any two of the following :

 i) American call option

 ii) Bull spread 10

 iii) In-the-money

PART - B (Case study - Compulsory)

9. From the following data calculate the value of call and put option using Black and Scholes model and also find out the values of Greek Terminologies.

 Current price is 120;

 Exercise price is 115;

 Expiration 3 months; 20

 Risk free rate continuously compounded 10%;

 Standard deviation of returns 0.6.

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