



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 - 2018

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) Normal Distribution Tables and Scientific calculators are allowed.

PART - A

- 1 a. Why are futures and options termed as derivatives? Discuss the important economic functions performed by the derivatives markets. 10
- b. Discuss the various characteristic features of futures contracts. What is the role of clearing corporation in trading of such contracts? 10

OR

- 2 a. Differentiate between European and American calls. Discuss the various factors affecting the prices of options. 10
- b. I) A forward contract on 200 shares, currently trading at ` 112 per share, is due in 45 days. If the annual risk – free rate of interest is 9%. Calculate the value of the contract price. How would the value be changed, if a dividend of ` 4 per share is expected to be paid in 25 days before the due date? 10
- II) A certain share index provides a dividend yield of 3.5% per annum. The current value of the index is 1003. The continuously compounded risk – free rate of return is 8% 10
- i) Find the value of a one-month futures contract on the given index per unit
- ii) Find the value of a one-month futures contract on the given index assuming that each contract has 200 units

- 3 a. Using the following data, prepare the margin A/C of the investor. Assume that if a margin call is made at any time, the investor would deposit the amount called for; 10
- * Position : Short; * Initial Margin = 12%; * Contract size = 500 units;
- * Maintenance margin = $\frac{3}{4}$ th of initial margin; * Unit price ` 22/- ; * No of contracts = 8;
- * Date of contract = June 3

Closing price

Date	June 4	June 5	June 6	June 7	June 10	June 11	June 12
Price (₹)	22.30	23.10	22.90	23.00	23.15	22.85	22.95

- b. What are the major stock indices in India? Discuss in detail about the sensex and S and P, CN X Nifty Indices 10

OR

- 4 a. On January 1, 2003 an investor has a portfolio of 5 shares is given here: 10

Security	Price	No. of shares	Beta
A	59.50	5,000	1.05
B	81.85	8,000	0.35
C	101.10	10,000	0.80
D	125.15	15,000	0.85
E	140.50	1,500	0.75

The cost of capital to the investor is 12.5% p. a. You are required to:

- i) Calculate the beta of his portfolio
- ii) Calculate the theoretical value of the NIFTY futures for February
- iii) If its current value is 1005 and NIFTY futures have a minimum trade lot requirement 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 contracts the investor should trade, if he desires to reduce the beta of his portfolio to 0.7.

b. Explain how speculators and arbitrageurs can profitably use stock index futures. 10

5 a. Write short notes on :

- i) Naked and Covered calls ii) Option Premium iii) Open interest 10
- iv) Short stock long call v) Long stock short call

b. Consider the following data about April 2016 NIFTY options (all values taken are the opening value for the day)

Exercise Price	Call Premium	Put Premium
1060	-	1.10
1080	-	1.30
1100	50.00	2.60
1120	31.50	6.00
1140	17.45	12.25
1160	8.00	23.40
1180	4.95	-
1200	2.75	-
1220	1.00	-

10

The index opened @ 1146.05 based on these classify the options and

Identify whether the option is In-the-money, out-the money or At-the money and calculate Intrinsic and Time Values.

OR

6 a. An investor has a short position of 500 shares at ` 412 each. Expecting a rise in the market, he decides to hedge his position by way of buying call option contracts at ` 410 by the way of paying ` 5 premium. Each contract consists of 250 shares. How will this position perform in case of different share prices? 10

b. Q decides to create a 'Bull spread' by way of buying a February 2017 call option on a stock, with an exercise price of ₹ 100 for ₹ 5 and selling a call option on it involving an exercise price of ₹ 110 for ₹ 2. Find out how much profit / loss he makes in each of the following conditions:

- i) On settlement day, the price of underlying stock is ₹ 95 per share
- ii) On settlement day, the price of the underlying stock is ₹ 106 per share
- iii) On settlement day, the price of the underlying stock is ₹ 113 per share

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7 a. A butterfly spread is created when large price changes are not expected but instead small changes are anticipated. Consider the following data about call option on BHEL (Prices taken from the Economic times, April 9, 2017) for which one contract involves 1100 shares.

Strike Price	₹ 17	₹ 180	₹ 190
Premium	₹ 21.10	₹ 14.00	₹ 8.00

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Help an investor to build a butterfly spread. Find pay-off for him at various ranges of stock prices. Illustrate by taking stock price as ₹ 168, ₹ 176, ₹ 185, ₹ 189, and ₹ 198.

b. A call option on a share with exercise of ₹ 250 is priced at ₹ 15 and a put option on the same share with an exercise price of ₹ 240 is priced at ₹ 10. Both the options have one month maturity. Create a long strangle using these options. Compute pay-offs assuming a range of spot prices on maturity and illustrate with a pay off diagram. Briefly explain the characteristics of strangle.

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OR

8 a. What are commodity futures? State the benefits to investors, consumers and manufacture.

10

b. Define "Black-scholes model". State the assumptions of the Black-scholes option pricing model.

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PART - B (Case Study) Compulsory

9. Case Study:

Mr. Tisheel purchased a 3 month call option in the equity share of Reventh engineering company. It has a present market value per share of ₹ 120, exercise price of ₹ 130. At the end of 3 months, the investor expects the price of the share to be in the range of ₹ 90 to ₹ 200 with the following probabilities:

Expected Price (₹)	90	110	140	175	200
Probability	0.10	0.25	0.30	0.20	0.15

You are required to answer the following:

- a) What is the expected value of share price 3 months from now? What is the value of call option at expiry if the expected value of the share prevails at the end of 3 months?
- b) Determine the gain or loss to the call option holder and seller, if the share price at expiry is ₹ 146 show the pay off diagram. The call option premium is ₹ 6/-
- c) Determine the price per share on expiry at which call option buyer and seller will be at Break-even point
- d) Determine the maximum gain to the call option buyer and seller. What is its probability?

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