Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MBA – SEMESTER 04 – EXAMINATION – SUMMER 2017

Subject Code: 2840202 Date: 06/06/2017

Subject Name: RISK MANAGEMENT

Time: 10.30 AM TO 01.30 PM Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q1 (a) 06

1. A _____ involves buying a call and a put option with the same exercise price and date of expiration

a. Straddle b. Strangle
c. Strips d. straps

2. The future price would be greater than the spot price and therefore, the basis will be positive refers to

a. Inverted Market b. Normal Market
c. Both a & b d. None of above

3. BSE National Index of equity prices was launched in January 1989 with the base year as

a. 1978-79 b. 1989-90
c. 1987-88 d. 1983-84

4. The option being valued with no possibility of early exercise.

a. European Style Option b. American style option
c. Delta d. Gamma

5. SEBI directed all exchanges to have a separate surveillance department in the year

a. 1990 b. 1991
c. 1995 d. 1998

6. What is the intrinsic value of call option, with underlying deposit 100000Rs. strike price: 97.5 and market rate of interest: 2.5%?

a. Perfectly positive b. Zero
c. Negative d. Positive

Q1 (b) Explain the Terms: 04

1. Hedge ratio 2. Fill or Kill order
3. Pit 4.Out of the money

Q1 (c) Explain the factors affecting option prices 04

Q2 (a) State the assumptions underlying the black and schools model with proper justification. 07

Q2 (b) Mr. Prakash took a forward contract of 200 shares, currently trading at Rs. 112 per share, is due in 45 days. If the annual risk – free rate of interest is 9%, calculate the value of contract price. 07

How would the value be changed if a dividend of Rs. 4 per share is expected to be paid in 25 days before the due date?

OR

Q2 (b) The current price of the share is Rs. 50, and it is believed that at the end of one month the price will be either Rs. 55 or Rs. 45. What will a European call option with an exercise price of Rs. 53 on this share be valued at, if the risk free rate of interest is 15% per annum? Also calculate the hedge ratio. 07

Q3 (a) What is counter party risk and how exchange minimizes this risk through its margin system? 07

Q3 (b) Using the following data , calculate the values of call and put option using black and scholes model: 07

Current price of the share	Rs. 486
Exercise price	Rs. 500
Time to expiration	65 days
Standard deviation	0.54
Continuously compounding rate of interest	9% p.a.
Dividend expected	Nil

OR

Q3 (a) Discuss the Binomial model for the valuation of options. Why is it called Binomial? 07

Q3 (b) The value of 3-m at-the-money European call option on an asset whose current price is Rs 100 in terms of Black Scholes Model is expressed as follows: Call value c = 100 x 0.5698 – 100 x 0.9901 x 0.5382 07

a. What is the expected change in the value of the call if spot value goes up to Rs 102?

b. What is the expected change in the value of the put if the spot value moves to Rs 105?

Q4 (a) Write notes on the following terms :- (i) Short and long hedge (ii) Static and DynamicHedge (iii) Strip Hedge and Stack Rolling Hedges. 07

Q4 (b) An industrial firm uses tin as raw material and has a requirement of 400 kgs of tin to be procured 6 months from now. The prices of tin are expected to rise substantially. The firm needs to hedge against the price rise. There are no derivative contracts available on tin but futures contract on aluminum are popular. The prices of aluminum and tin are strongly correlated. A study has revealed that standard deviations of prices of tin and aluminum are 21% and 20% of their current prices of Rs 720 per Kg and Rs 90 per Kg respectively. The coefficient of correlation is placed at 0.95. One futures contract on aluminum is for 1,000 Kg. How can the firm hedge? 07

OR

Q4 (a) On January 1, 2016 an investor has a portfolio of 5 shares as given here: 07

Security	Price	No. of Shares	Beta
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

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

(a) Calculate the beta of the portfolio.
(b) Calculate the theoretical value of the NIFTY futures for February.
(c) 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 future are trading at fair value.
(d) Calculate the number of future contracts the investor should trade if he desires to reduce the beta of his portfolio to 0.7

Q4 (b) Explain Butterfly spread strategy with suitable example and payoff. 07

Q5 Discuss the following: 14

1. Bull spread using call with payoff
2. Bull spread using put with payoff
3. Bear spread using call with payoff
4. Bear spread using put with payoff

OR

Q5 (a) Firm A and Firm B have identical requirement of funds and both are exploring raising of fund either at fixed or floating rate. Following rates are offered by the market to both: 07

	Fixed rate market	**Floating rate market**
Firm A	10%	MIBOR + 1%
Firm B	11%	MIBOR + 3.50%

Firm A is more interested in raising a fixed rate loan perceiving increased rates in future while Firm B believes to the contrary and wants to issue floating rate debt instruments. Show how the cost of funds may be decreased for both the firms.

Q5 (b) Find swap rate Assuming 360 days in a year, simple interest rate and 180 days in each semi-annual period and a spread of 20 basis points find the swap rate for a five year swap with semi-annual payments. 07

Following is the term structures of interest rates as on today:

Term (months)	6	12	18	24	30	36	42	48	54	60
Yield % p.a.	4.00	4.20	4.40	4.50	4.60	4.80	5.00	5.20	5.40	5.50

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