Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MBA – SEMESTER IV • EXAMINATION – SUMMER 2016

Subject Code: 2840202 **Date: 07/05/2016**

Subject Name: Risk Management

Time: 10.30 am to 1.30 pm **Total Marks: 70**

Instructions:

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

Q.1 (A) From the four alternative answers given against each of the following cases, indicate the correct answer: (just state A, B, C or D) **06**

1. Which of the following is the world's oldest derivative exchange commence Future Trading?
   A. Chicago Mercantile Exchange (CME)
   B. Chicago Board of Trade (CBOT)
   C. LIFFE, England
   D. TIFFE, Japan

2. Recently (in July,2015) SEBI has decided to increase the minimum lot value in equity derivative to --
   A. Rs.2 lakh
   B. Rs.3 lakh
   C. Rs.4 lakh
   D. Rs.5 lakh

3. The BEP point for a Put Option with an exercise price of Rs.100 and a premium of Rs.4 is ---
   A. Rs.104
   B. Rs.96
   C. Rs.100
   D. Rs.108

4. An investor expects a significant change in the market but not sure about its direction. He should use ---
   A. Bull Spread
   B. Box Spread
   C. Butterfly Spread
   D. Straddle

5. Which of the following is the part of Exotic Options?
   A. Binary Option
   B. Call Option
   C. Put Option
   D. All of the above

6. A trader enters into a one year forward contract to sell an asset for Rs.60 when the spot price is Rs.58. The spot price in one year proves to be Rs.64. What is the trader's gain or loss?
   A. Gain of Rs.4
   B. Loss of Rs.4
   C. Gain of Rs.6
   D. Loss of Rs.6

Q.1 (b) Explain the following term with appropriate example. **04**

i) Open Interest and Volume

ii) Cross Hedging

iii) Stack and Rolling Hedge
iv) Money-ness of Put Option

(c) "Futures contracts are improvised forward contracts." Do you agree with the statement – Explain the statement in the light of difference between forward and future contract. 04

Q.2 (a) Using the following data, prepare the margin account of the investor. Assume that if a margin call is made at any time, the investor would deposit the amount called for. 07

Position	:	Short
Contract Size	:	500 units
Unit Price	:	Rs.22
No. of contracts	:	8
Initial Margin	:	12 %
Maintenance Margin	:	3/4ths of Initial margin
Date of Contract	:	June 3

Closing Prices :

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) Define Option Contract. Explain the different factors that affect the price of an option. 07

OR

(b) From the following data, calculate the value of call option using Black and Scholes model and put option using put-call parity relationship: 07

Current price of the share	=	Rs.486
Exercise price	=	Rs.500
Time to expiration (Assume 365 days in a year)	=	65 days
Standard Deviation	=	0.54
Continuously compounded rate of interest	=	9%

Q.3 (a) In the recent past i.e. February and March 2016, the equity market faced high volatility. But after this mayhem in equity market, an investor now expects that the market is likely to remain stable in near future and hence the stocks. The following information is available on call options, with two months expiration date, on a stock:

Call	Exercise Price	Call Price
1	**50**	**8.00**
2	**55**	**4.50**
3	**60**	**2.00**

You are requested to suggest appropriate strategy with the help of the above data. Also, construct a table to show how profit/loss would vary with the stock price if it is (i) Rs.46, (ii) Rs.54 ,(iii) Rs.58 and (iv) Rs.67.

(b) Selan Exploration needs 1075 barrels of crude oil in the month of July whereas the current price of crude oil is Rs.3000 per barrel at the end of January month. July futures contract at MCX is trading at Rs.3200. The firm expects the price to go up further and beyond Rs.3200 in July. It has the option of buying the stock now or it can hedge through futures contract. Assume the size of futures contract is 100 barrels. 07

a. If the cost of capital, insurance and storage is 15% continuously compounding, examine if it is beneficial for the firm to buy now?

b. If the firm decides to hedge through futures, find out the effective price it would pay for crude oil if at the time of lifting the hedge (i) the spot and futures price are Rs.2900 and Rs2910 respectively and (ii) the spot and futures price are Rs.3300 and Rs.3315 respectively.

OR

Q.3 (a) A stock is currently trading at Rs.50. It can either go up by 20% or fall by 20% in a period of three months. If the risk-free interest rate is 8% continuously compounded, find the value of a call with an exercise price of Rs.45 and maturity of six months using the risk-neutral method under the binomial model for two periods. 07

(b) ABC Ltd. has invested Rs.50 crore in market-linked securities, providing them with a current return of 8%, with current MIBOR at 7.50%. Of late, yields in the market have started falling, adversely affecting income of the company. The company has to protect their income and hence HDFC Bank has offered a 3-year MIBOR based swap with rates at 7.30%-7.40%. Should ABC Ltd. accept the swap, what income can they lock-in for the next three years? What would be the advantage of Swap? Show the Swap arrangement. 07

Q.4 (a) Explain put-call parity relationship. 07

(b) Suppose that a call option involving 100 shares is selling for Rs.5.25 at maturity when the share price is Rs.64 and exercise price is Rs.60. Is arbitrageur can make any profit from the given scenario? 07

OR

Q.4 (a) Three zero coupon bonds X, Y and Z each having a face value of Rs.100 maturing after one, two and three years respectively are trading at Rs.95.43, Rs.90.68 and Rs.85.04 respectively. 07

(i) Find out the yield offered by each of the bonds.
(ii) What forward rates of interest would you expect for (a) a one year and a two year investment after one year and (b) a one year investment after two years?

(b) A future contract on 200 shares, currently trading at Rs.112 per share, is due in 45 days. If the annual risk-free rate of interest is 9% continuously 07

compounded, calculate the value of the contract price if a dividend of Rs.4 per share is expected to be paid in 25 days before the due date?

Q.5 A firm had issued 10-year bonds worth Rs 10 crore at fixed coupon of 12% payable annually. The coupon was consistent with the yield prevailing at the time of the issue. Since then the yield has fallen and the bond has 5 years remaining for maturity. 14

Swap rate offered by the bank is 9.00% - 9.20% against floating rate based on MIBOR.

Depict the swap arrangement of the firm with the bank and find out the cost of the bond after the swap is entered.

OR

Q.5 From the following data, 14

(i) Obtain the call option value based on Black & Scholes' formulation [2]
(ii) Obtain the value of put option using put call parity relationship. [2]
(iii) Calculate the value of the following Greek letters. [10]

1. Delta
2. Gamma
3. Theta
4. Rho
5. Vega

Stock price	=	Rs.120
Exercise price	=	Rs.115
Time to expiration	=	3 months
Standard deviation of the continuously		
Compounded rate of return on stock	=	0.60
Continuously compounded rate of return	=	10%

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