# K.J. Somaiya Institute of Management Studies & Research

## Course : MFM – IV Trim End Term Exam

Batch: 2017-20

Sub : Derivatives and Risk Management

Date of Exam : 09/04/2019 Time : 3 Hours Marks : 50

Notes:
1. **Question 1** is **Compulsory**
2. Answer **ANY THREE** complete questions from the rest
3. Make suitable assumptions if required and state them

**Question 1 (20 Marks)**

(a) **Today is April 3, 2019. The spot gold price at Ahmedabad is quoted at Rs.31,454 while the gold futures contract expiring on June 5, 2019 is traded on MCX at Rs.31,715. Each futures contract is for 1 kg of gold. A jeweller requires 5 kg of gold on May 27. How should he hedge his price risk? If on May 27, (a) the spot price of gold is Rs.30,685 and the futures price is Rs.30,705 or (b) the spot price is Rs.33,895 and the futures price is Rs.33,904, show that the jeweller is adequately hedged in both the scenarios. (10 marks)**

(b) Explain the points of difference between forward and futures contracts. **(10 marks)**

**Question 2**
**(10 Marks)**

(a) Shares of Tata Motors are traded at Rs.201.80 on April 3. The call option expiring after one month and with a strike price of 200 is traded at Rs.11. What is the theoretical price of a one-month put option with the same strike price? Assume a risk-free interest rate of 8% p.a. (5 marks)

(b) Continuing the above example, if the one-month put option with a strike price of 200 is actually traded at Rs.7.70, how should an arbitrageur capture the arbitrage gain? (5 marks)

**Question 3**
**(10 Marks)**

(a) Shares of ICICI Bank are traded at Rs.392.55. If the risk-free rate is 8% p.a. continuously compounded, what is the lower boundary for a one-month put option on the shares with a strike price of 390? (5 marks)

(b) Explain the concept of 'basis risk' in case of futures contracts with an example. (5 marks)

**Question 4 (10 Marks)**

(a) The spot price of USDINR is Rs.68.43. The risk-free interest rate is 8% p.a. and 1% p.a in India and the United States respectively. Compute the fair price of a one-month futures contract on the USDINR. (5 marks)

(b) Explain the options strategy of 'bullish call spread'. In which situations will this strategy be appropriate? (5 marks)

**Question 5 (10 Marks)**

(a) A bakery expects that it will need 25 MT of wheat on April 25 for producing bread. In order to hedge against the rising wheat price the bakery uses the wheat futures traded on NCDEX. Wheat futures expiring on April 25 are trading at Rs.1625. Standard deviation of changes in spot price of wheat is historically found to be Rs.120 while standard deviation of changes in wheat futures is found to be Rs.125. Correlation between the two price changes is 0.95. What should be the hedge ratio? **(5 marks)**

(b) Explain the various factors determining the price of an option. **(5 marks)**

**Question 6 (10 Marks)**

(a) **When is the 'covered call' strategy appropriate? Explain with a suitable example.** (5 marks)

(b) Explain with suitable examples the terms 'intrinsic value' and 'time value' of an option. (5 marks)