

VPM's
DR VN BRIMS, Thane
Programme: MMS (2015-17)
Third Semester Examination October 2016

Subject	DERIVATIVES AND RISK MANAGEMENT		
Roll No.		Marks	60 Marks
Total No. of Questions	7	Duration	3 Hours
Total No. of printed pages	1	Date	25.10.2016

- Instructions:**
1. **Q1 is compulsory.**
 2. **Answer any FOUR out of remaining SIX questions.**

Q1) An equity portfolio is worth Rs.40 Lacs, with a beta of 1.3 relative to the benchmark Index. The benchmark Index futures contract is currently trading at 8000 and a lot size is 50.

- i) Explain the difference between long hedge and short hedge with reference to Index futures.
- ii) What position should be taken in the Index futures contract to completely hedge the equity portfolio's market risk?
- iii) What position should be taken in the Index futures contract to reduce the beta of the equity portfolio to 0.9?
- iv) What position should be taken in the Index futures contract to increase the beta of the equity portfolio to 1.5? (20 Marks)

Q2) Answer any two from (a) or (b) or (c) ————— (5x2) = 10 Marks

- a) What are the assumptions of Binomial option pricing model? (5 Marks)
- b) Explain the effect of primary factors on pricing of a put option. (5 Marks)
- c) Explain the following terms with reference to a call option contract
 - i. In-the-money(ITM)
 - ii. Out-of-the-money(OTM) (5 Marks)

Q3) Answer any two from (a) or (b) or (c) ————— (5x2) = 10 Marks

- a) Explain the Put-Call parity theory for European options of non dividend paying stock. (5 Marks)
- b) Explain option based covered call writing strategy with an example. (5 Marks)
- c) Explain the difference between hedgers and arbitrageurs with reference to derivatives market. (5 Marks)

Q4) Answer any two from (a) or (b) or (c) ————— (5x2) = 10 Marks

- a) Explain the upper bound and lower bound of European style put option of non dividend paying stock. (5 Marks)
- b) Explain the following terms with reference to futures
 - i. Basis
 - ii. Spread (5 Marks)
- c) Explain time value and intrinsic value with reference to option value. (5 Marks)

- Q5) Answer any two from (a) or (b) or (c) ————— (5x2) = 10 Marks**
- a) Explain profit and loss accruing to a buyer of a call option with an example. (5 Marks)
 - b) What are the differences between forward contract and futures contract? (5 Marks)
 - c) Explain and illustrate futures based Cash and carry arbitrage strategy. (5 Marks)
- Q6) Answer any two from (a) or (b) or (c) ————— (5x2) = 10 Marks**
- a) Explain the following terms with reference to options contract
 - i. Option buyer
 - ii. Option seller (5 Marks)
 - b) The standard deviation of change in prices of spot and futures contract is 0.025 and 0.030 respectively and the coefficient of correlation between change in prices of spot and futures contract is 0.90. Calculate and explain the optimal hedge ratio? (5 Marks)
 - c) The current value of an equity share of XYZ is 500. There are 60 days to maturity of the XYZ futures contract. The cost of financing is 9% p.a. XYZ will be declaring dividend of Rs.5 per share after 15 days. Calculate the price of XYZ futures contract expiring after 60 days. (5 Marks)
- Q7) Answer any two from (a) or (b) or (c) ————— (5x2) = 10 Marks**
- a) Briefly explain historical volatility and implied volatility. (5 Marks)
 - b) A put option on a stock with strike prices of Rs.800 and Rs.810 trades at Rs.20 and Rs.26 respectively. How can the above options be used to create a bear put spread strategy? Calculate maximum profit and maximum loss for the bear put spread strategy. (5 marks)
 - c) Explain options based Long straddle strategy with an example. (5 Marks)