

**VPM's**  
**DR VN BRIMS, Thane**  
**Programme: PGDM (2016-18) (Finance)**  
**PGDM Trimester V Examination December 2017**

|                                   |  |                 |                   |
|-----------------------------------|--|-----------------|-------------------|
| <b>Subject</b>                    | <b>DERIVATIVES AND RISK MANAGEMENT</b> |                 |                   |
| <b>Roll No.</b>                   |  | <b>Marks</b>    | <b>60 Marks</b>   |
| <b>Total No. of Questions</b>     | <b>7</b>                               | <b>Duration</b> | <b>3 Hours</b>    |
| <b>Total No. of printed pages</b> | <b>2</b>                               | <b>Date</b>     | <b>27.12.2017</b> |

**Instructions:**

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

- Q1)** Explain the term hedging with Index futures.  
 An equity portfolio is worth Rs.60 Lakhs, with a beta of 1.25 relative to the benchmark Index. The benchmark Index futures contract is currently trading at 10000 and a lot size is 50.
- 1) What position should be taken in the Index futures contract to completely hedge the equity portfolio's market risk?
  - 2) What position should be taken in the Index futures contract to reduce the beta of the equity portfolio to 0.75?
  - 3) What position should be taken in the Index futures contract to increase the beta of the equity portfolio to 1.50? (20 Marks)
- Q2) Answer any two from (a) or (b) or (c) ————— (5x2) = 10 Marks**
- a) Explain the difference between hedgers and speculators with reference to derivatives market. (5 Marks)
  - b) Explain option based covered call writing strategy with an example.(5 Marks)
  - c) What are the differences between forward contract and futures contract?(5 Marks)
- Q3) Answer any two from (a) or (b) or (c) ————— (5x2) = 10 Marks**
- a) Explain the following option Greeks in brief
    - i. Vega
    - ii. Theta (5 Marks)
  - b) Explain time value and intrinsic value with reference to option premium. (5 Marks)
  - c) Explain and illustrate futures based Long hedge strategy. (5 Marks)
- Q4) Answer any two from (a) or (b) or (c) ————— (5x2) = 10 Marks**
- a) Explain the following terms with reference to options contract
    - i. Expiration date
    - ii. Option premium (5 Marks)
  - b) Explain the construction and calculate maximum profit and maximum loss of options based long straddle strategy with an example. (5 Marks)
  - c) The spot value of the Index is 12000. There are 90 days to maturity of the Index futures contract. The cost of financing is 10% p.a. and the dividend yield on the Index is 3% annualized. Calculate the fair value of the Index futures contract expiring after 90 days based on cost of carry model of futures pricing. (5 Marks)
- Q5) Answer any two from (a) or (b) or (c) ————— (5x2) = 10 Marks**
- a) Explain the following terms with reference to spot and futures prices
    - i. Narrowing of the basis
    - ii. Widening of the basis (5 Marks)
  - b) The standard deviation of change in prices of spot and futures contract is 0.05 and 0.06 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 Spot price of a stock is Rs.410 and the volatility of the stock is 30% p.a. European style call option is available with exercise price of Rs.400 and time to expiration of 2 months. The risk free interest rate is currently at 6% p.a. Calculate the call option price based on Black-Scholes option pricing model when no dividend is expected during the life of the options.(5 Marks)

**Q6) Answer any two from (a) or (b) or (c) ————— (5x2) = 10 Marks**

- a) Explain the following terms with reference to futures contract
- Contract size
  - Contract cycle (5 Marks)
- b) A trader buys 2 contracts of the index futures contract at 25000. The contract size is 25. What will be profit or loss to the trader if the contract is held till the maturity of the futures contract and the Index value on maturity of the contract is (i) 26000 or (ii) 24500? (5 Marks)
- c) A stock price is currently quoting at Rs.1000 and in one year period it may go up by 25% or down by 25%.The risk-free interest rate is 6% per annum. Calculate the value of one year European call option with a strike price of Rs.1000 using the one period binomial option pricing model. (5 Marks)

**Q7) Answer any two from (a) or (b) or (c) ————— (5x2) = 10 Marks**

- a) Explain the term Value at Risk with an example. (5 Marks)
- b) A call option on a stock with strike prices of Rs.400 and Rs.410 trades at Rs.15 and Rs.10 respectively. How can the above options be used to create a bull call spread strategy? Calculate maximum profit and maximum loss for the bull call spread strategy. (5 marks)
- c) Stock ABC is trading at Rs.2200 in the spot market. European Call and Put options of ABC for the strike price of Rs.2200 with 1 month to expiration are trading at Rs.75 and Rs.60 respectively. Risk free rate of interest is 6% p.a. Is there any arbitrage opportunity with the put call parity theory? If yes, explain the arbitrage strategy in detail. (5 marks)