

**VPM's**  
**DR VN BRIMS, Thane**  
**Programme: PGDM (2014-16)**  
**Fifth Semester Examination January 2016**

<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>13.01.2016</b>

**Note: Q1 is compulsory and solve any FOUR from the remaining SIX questions.**

**Q1) 20 Marks (Compulsory)**

What are the assumptions of Black-Scholes option pricing model?

The Spot price of a stock is Rs.550 and the volatility of the stock is 25% p.a. European style call and put options are available with exercise price of Rs.500 and time to expiration of 3 months. The risk free interest rate is currently at 7% p.a. Calculate the call and put option prices based on Black-Scholes option pricing model when no dividend is expected during the life of the options.

**Attempt Any FOUR from the Remaining SIX Questions**

**Q2) Any two from (a) or (b) or (c) ————— (5x2) = 10 Marks**

- a) Explain the upper bound and lower bound of European style call option.
- b) What are the differences between futures contract and options contract?
- c) Explain the following terms with reference to futures
  - i) Basis , ii) Spread

**Q3) Any two from (a) or (b) or (c) ————— (5x2) = 10 Marks**

- a) Briefly explain the following option Greeks
  - i) Delta, ii) Vega
- b) Explain the effect of primary factors on pricing of a put option.
- c) Explain and illustrate futures based Long hedge strategy.

**Q4) Any two from (a) or (b) or (c) ————— (5x2) = 10 Marks**

- a) Explain profit and loss accruing to a seller of a call option with an example.
- b) Explain option based protective put buying strategy with an example.
- c) Explain and illustrate futures based Reverse Cash and carry arbitrage strategy.

**Q5) Any two from (a) or (b) or (c) ————— (5x2) = 10 Marks**

- a) Explain the following terms with reference to futures
  - i) Trading Volume, ii) Open Interest
- b) Briefly explain historical volatility and implied volatility.
- c) A stock price is currently quoting at Rs.500 and in one year period it may go up by 15%

or down by 15%. The risk-free interest rate is 7% per annum. Calculate the value of one year European call option with a strike price of Rs.500 using the one period binomial option pricing model.

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

- a) Explain option based Long strangle strategy with an example.
- b) Explain profit and loss accruing to a seller of a futures contract with an example.
- c) The current value of an Index is 5000 and the Index trade with a multiplier of 100. There are 60 days to maturity of the Index futures contract. The cost of financing is 7% p.a. XYZ Ltd. has a weight of 3% in the Index and its current value is 300. XYZ Ltd. will be declaring dividend of Rs.20 per share after 30 days. Based on the above information calculate the price of Index futures contract expiring after 60 days.

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

- a) Explain the term volatility smile with reference to options.
- b) A call option on a stock with strike price of Rs.500 costs Rs.30 and a put option on the same strike price and expiration date costs Rs.20. Calculate and explain what range of the stock prices on the expiry would lead long straddle strategy to a loss.
- c) Explain options based Bull call spread strategy with an example.