

S. F. M. - OPTIONS

- All questions are compulsory
- Marks 40 – Time 1.15 hours

Problem-1

8 Marks

The shares of COAL INDIA LTD. are selling at ₹ 245 per share. Mr. X wants to chip in with buying a three months call option at a premium of ₹ 5 per option. The exercise price is ₹ 250. Six possible prices per share on the expiration date ranging from ₹ 230 to 260 with intervals of ₹ 5 are possible.

- (i) Is the option is In/At/Out the money today?
- (ii) What is an intrinsic value of an option ? What is a time value of an option?
- (i) What is Ranjit's pay off as call option holder on expiration?
- (ii) Draw the pay off graph.
- (iii) What is the call writer's pay off on expiration?
- (iv) Draw the pay off graph.

Problem-2

5 Marks

Mr. X buys a put option having an Exercise/Strike Price of ₹ 200 for ₹ 15.

- (i) What is the maximum loss that Mr. X could occur?
- (ii) What is the maximum profit, which could accrue to Mr. X?
- (iii) Determine break even stock price.
- (iv) Derive all answers as above for the position of put writer.

Problem-3

5 Marks

A call option due to mature is selling for ₹ 4 on share which is selling at ₹ 60. The option has an exercise price equal to ₹ 55. Is there an arbitrage opportunity? If yes, show how it works.

Problem-4

5 Marks

In November 2010 a six month's call option on Reliance Ltd.'s share with an exercise price of ₹ 1200 sold for ₹ 5. The share price is ₹ 1090. The risk free rate is 5% per annum. How much would you be willing to pay for a put on Reliance Ltd.'s share with the same maturity and same exercise price? What happens if the actual price is different from what you are willing to pay?

Problem-5

7 Marks

Valuation of Options

Stock price = ₹ 88

Risk free rate = 3%

In 3 month time, stock could either go up to ₹ 95 or down to ₹ 82. The strike price is ₹ 90.

Compute the value of put option using risk neutral probability. (Decision tree not required)

Problem-6

6 Marks

Mr. Bean purchased Reliance Future (1 lot) at ₹ 542 and wrote call option (1 lot) of EP ₹ 580 at a premium of ₹ 6. After 15 days, the spot prices rose and so also the future prices and the call premium. Future price rises to ₹ 575 and call premium rises to ₹ 12. Find out profit/loss of Mr. Bean, if he settles the whole transaction at stated price/premium. Consider brokerage on

transaction at 0.05% of (i) the transaction value of futures and (ii) strike price less premium in options. Do you think the strategy taken by Mr. Bean was logical?

Problem-7

4 Marks

Differentiate Straddle and Strangle strategy.