# ASSIGNMENT 1

1 . Option: it is an agreement b/w two parties to buy or sell an asset at a predetermined expiry date for a specific price and here buyer is not obliged to exercise their agreement to buy or sell.

Types:

1. Call option > it gives the buyer the right but not the obligation to buy a stock
2. Put option > It gives the right but not the obligation to sell a stock

Key differences from futures and equity:-

1 option provides the right but not the obligation to buy or sell but in future both parties are obliged to complete the contract

2 In option buying, max loss is the premium paid whereas in equity and futures, unlimited loss can be happen

3 IT gives more flexibility than futures and equity

2 . Various factors that affect the premium of option prices are:

1. Strike price
2. Spot price
3. Expiry date
4. Underlying assets
5. Option with longer expiration have high premium
6. Premium of option depends on certain forces called as Option Greeks

3 . 1 Strike price=13000(ITM)

Spot price goes to infinity

Then the buyer will buy the stock at 13000 and sell at infinite price. The profit from this will be infinite

2 strike price = 15000 (OTM)

Spot price goes to infinity

Initially it is a OTM stock the buyer will not buy it and loss from the stock will be equal to premium paid

3 strike price=14000(ATM)

Spot price goes to infinity

The seller will have infinite loss because the buyer will buy it.He has to sell it at 14000.

4 . Profit and loss depend on the premium paid.

For call option:

P&L= Max[0,spot price - strike price] - premium paid

For option (a) =700 P&L=Max[o,700-1000] - premium paid

P&L= 0-premium paid <0

Hence in this case It will be loss

For option (b)=1100 P&L=Max[0,1100-1000]-premium paid

P&L=100-premium paid { profit and loss depend on the premium paid . If it is less than 100 then it will be profit case otherwise it will be loss}

For put option:

P&L= Max[0,strike price - spot price] - premium paid

For option (a) =700 P&L=Max[o,1000-700] - premium paid

P&L= 300-premium paid { profit and loss depend on the premium paid . If it is less than 300 then it will be profit case otherwise it will be loss}

For option (b)=1100 P&L=Max[0,1000-1100]-premium paid

P&L=0-premium paid<0

Hence in this case It will be loss

6. (a) IV = stock price - strike price

= 90 - 100=-10

=0 (IV>=0)

It is OTM (strike price > stock price)

Time value = premium - IV

= 5$

(b) IV=105-100=5$

It is ITM ( Strike price < stock price)

Time value=5-5=0