

BASICS OF EQUITY DERIVATIVES

CONTENTS

| | |
|--|-----------|
| 1. Introduction to Derivatives | 1 - 9 |
| 2. Market Index | 10 - 17 |
| 3. Futures and Options | 18 - 33 |
| 4. Trading, Clearing and Settlement | 34 - 62 |
| 5. Regulatory Framework | 63 - 71 |
| 6. Annexure I – Sample Questions | 72 - 79 |
| 7. Annexure II – Options – Arithmetical Problems | 80 - 85 |
| 8. Annexure III – Margins – Arithmetical Problems | 86 - 92 |
| 9. Annexure IV – Futures – Arithmetical Problems | 93 - 98 |
| 10. Annexure V – Answers to Sample Questions | 99 - 101 |
| 11. Annexure VI – Answers to Options – Arithmetical Problems | 102 - 104 |
| 12. Annexure VI I– Answers to Margins – Arithmetical Problems | 105 - 106 |
| 13. Annexure VII – Answers to Futures – Arithmetical Problems | 107 - 110 |



CHAPTER I - INTRODUCTION TO DERIVATIVES

The emergence of the market for derivative products, most notably forwards, futures and options, can be traced back to the willingness of risk-averse economic agents to guard themselves against uncertainties arising out of fluctuations in asset prices. By their very nature, the financial markets are marked by a very high degree of volatility. Through the use of derivative products, it is possible to partially or fully transfer price risks by locking-in asset prices. As instruments of risk management, these generally do not influence the fluctuations in the underlying asset prices. However, by locking in asset prices, derivative products minimize the impact of fluctuations in asset prices on the profitability and cash flow situation of risk-averse investors.

1.1 DERIVATIVES DEFINED

Derivative is a product whose value is derived from the value of one or more basic variables, called bases (underlying asset, index, or reference rate), in a contractual manner. The underlying asset can be equity, forex, commodity or any other asset. For example, wheat farmers may wish to sell their harvest at a future date to eliminate the risk of a change in prices by that date. Such a transaction is an example of a derivative. The price of this derivative is driven by the spot price of wheat which is the "underlying".

In the Indian context the Securities Contracts (Regulation) Act, 1956 (SCRA) defines "derivative" to include-

1. A security derived from a debt instrument, share, loan whether secured or unsecured, risk instrument or contract for differences or any other form of security.
2. A contract which derives its value from the prices, or index of prices, of underlying securities.

Derivatives are securities under the SC(R)A and hence the trading of derivatives is governed by the regulatory framework under the SC(R)A.

EMERGENCE OF FINANCIAL DERIVATIVE PRODUCTS

Derivative products initially emerged as hedging devices against fluctuations in commodity prices, and commodity-linked derivatives remained the sole form of such products for almost three hundred years.

Financial derivatives came into spotlight in the post-1970 period due to growing instability in the financial markets. However, since their emergence, these products have become very popular and by 1990s, they accounted for about two-thirds of total transactions in derivative products. In recent years, the market for financial derivatives has grown tremendously in terms of variety of instruments available, their complexity and also turnover. In the class of equity derivatives the world over, futures and options on stock indices have gained more popularity than on individual stocks, especially among institutional investors, who are major users of index-linked derivatives. Even small investors find these useful due to high correlation of the popular indexes with various portfolios and ease of use.

1.2 FACTORS DRIVING THE GROWTH OF DERIVATIVES

Over the last three decades, the derivatives market has seen a phenomenal growth. A large variety of derivative contracts have been launched at exchanges across the world. Some of the factors driving the growth of financial derivatives are:

1. Increased volatility in asset prices in financial markets,
2. Increased integration of national financial markets with the international markets,
3. Marked improvement in communication facilities and sharp decline in their costs,
4. Development of more sophisticated risk management tools, providing economic agents a wider choice of risk management strategies, and
5. Innovations in the derivatives markets, which optimally combine the risks and returns over a large number of financial assets leading to higher returns, reduced risk as well as transactions costs as compared to individual financial assets.

1.3 DERIVATIVE PRODUCTS

Derivative contracts have several variants. The most common variants are forwards, futures, options and swaps. We take a brief look at various derivatives contracts that have come to be used.

Forwards: A forward contract is a customized contract between two entities, where settlement takes place on a specific date in the future at today's pre-agreed price.

Futures: A futures contract is an agreement between two parties to buy or sell an asset at a certain time in the future at a certain price. Futures contracts are special types of forward contracts in the sense that the former are standardized exchange-traded contracts.

Options: Options are of two types - calls and puts. Calls give the buyer the right but not the obligation to buy a given quantity of the underlying asset, at a given price on or before a given future date. Puts give the buyer the right, but not the obligation to sell a given quantity of the underlying asset at a given price on or before a given date.

Warrants: Options generally have lives of upto one year, the majority of options traded on options exchanges having a maximum maturity of nine months. Longer-dated options are called warrants and are generally traded over-the-counter.

LEAPS: The acronym LEAPS means Long-Term Equity Anticipation Securities. These are options having a maturity of upto three years.

Baskets: Basket options are options on portfolios of underlying assets. The underlying asset is usually a moving average of a basket of assets. Equity index options are a form of basket options.

Swaps: Swaps are private agreements between two parties to exchange cash flows in the future according to a prearranged formula. They can be regarded as portfolios of forward contracts. The two commonly used swaps are:

- *Interest rate swaps:* These entail swapping only the interest related cash flows between the parties in the same currency.
- *Currency swaps:* These entail swapping both principal and interest between the parties, with the cash flows in one direction being in a different currency than those in the opposite direction.

Swaptions: Swaptions are options to buy or sell a swap that will become operative at the expiry of the options. Thus a swaption is an option on a forward swap. Rather than have calls and puts, the swaptions market has receiver swaptions and payer swaptions. A receiver swaption is an option to receive fixed and pay floating. A payer swaption is an option to pay fixed and receive floating.

1.4 PARTICIPANTS IN THE DERIVATIVES MARKETS

The following three broad categories of participants - hedgers, speculators, and arbitrageurs trade in the derivatives market. Hedgers face risk associated with the price of an asset. They use futures or options markets to reduce or eliminate this risk. Speculators wish to bet on future movements in the price of an asset. Futures and options contracts can give them an extra leverage; that is, they can increase both the potential gains and potential losses in a speculative venture. Arbitrageurs are in business to take advantage of a discrepancy between prices in two different markets. If, for example, they see the futures price of an asset getting out of line with the cash price, they will take offsetting positions in the two markets to lock in a profit.

1.5 ECONOMIC FUNCTION OF THE DERIVATIVE MARKET

In spite of the fear and criticism with which the derivative markets are commonly looked at, these markets perform a number of economic functions.

1. Prices in an organized derivatives market reflect the perception of market participants about the future and lead the prices of underlying to the perceived future level. The prices of derivatives converge with the prices of the underlying at the expiration of the derivative contract. Thus derivatives help in discovery of future as well as current prices.
2. The derivatives market helps to transfer risks from those who have them but may not like them to those who have an appetite for them.
3. Derivatives, due to their inherent nature, are linked to the underlying cash markets. With the introduction of derivatives, the underlying market witnesses higher trading volumes because of participation by more players who would not otherwise participate for lack of an arrangement to transfer risk.
4. Speculative trades shift to a more controlled environment of derivatives market. In the absence of an organized derivatives market, speculators trade in the underlying cash

markets. Margining, monitoring and surveillance of the activities of various participants become extremely difficult in these kind of mixed markets.

History of derivatives markets

Early forward contracts in the US addressed merchants' concerns about ensuring that there were buyers and sellers for commodities. However 'credit risk' remained a serious problem. To deal with this problem, a group of Chicago businessmen formed the Chicago Board of Trade (CBOT) in 1848. The primary intention of the CBOT was to provide a centralized location known in advance for buyers and sellers to negotiate forward contracts. In 1865, the CBOT went one step further and listed the first 'exchange traded' derivatives contract in the US, these contracts were called 'futures contracts'. In 1919, Chicago Butter and Egg Board, a spin-off of CBOT, was reorganized to allow futures trading. Its name was changed to Chicago Mercantile Exchange (CME). The CBOT and the CME remain the two largest organized futures exchanges, indeed the two largest "financial" exchanges of any kind in the world today.

The first stock index futures contract was traded at Kansas City Board of Trade. Currently the most popular stock index futures contract in the world is based on S&P 500 index, traded on Chicago Mercantile Exchange. During the mid eighties, financial futures became the most active derivative instruments generating volumes many times more than the commodity futures. Index futures, futures on T-bills and Euro-Dollar futures are the three most popular futures contracts traded today. Other popular international exchanges that trade derivatives are LIFFE in England, DTB in Germany, SGX in Singapore, TIFFE in Japan, MATIF in France, Eurex etc.

5. An important incidental benefit that flows from derivatives trading is that it acts as a catalyst for new entrepreneurial activity. The derivatives have a history of attracting many bright, creative, well-educated people with an entrepreneurial attitude. They often energize others to create new businesses, new products and new employment opportunities, the benefit of which are immense. In a nut shell, derivatives markets help increase savings and investment in the long run. Transfer of risk enables market participants to expand their volume of activity.

1.6 EXCHANGE-TRADED vs. OTC DERIVATIVES MARKETS

Derivatives have probably been around for as long as people have been trading with one another. Forward contracting dates back at least to the 12th century, and may well have been around before then. Merchants entered into contracts with one another for future delivery of specified amount of commodities at specified price. A primary motivation for pre-arranging a buyer or seller for a stock of commodities in early forward contracts was to lessen the possibility that large swings would inhibit marketing the commodity after a harvest.

As the word suggests, derivatives that trade on an exchange are called exchange traded derivatives, whereas privately negotiated derivative contracts are called OTC contracts. The OTC derivatives markets have witnessed rather sharp growth over the last few years, which has accompanied the modernization of commercial and investment banking and

globalisation of financial activities. The recent developments in information technology have contributed to a great extent to these developments. While both exchange-traded and OTC derivative contracts offer many benefits, the former have rigid structures compared to the latter. It has been widely discussed that the highly leveraged institutions and their OTC derivative positions were the main cause of turbulence in financial markets in 1998. These episodes of turbulence revealed the risks posed to market stability originating in features of OTC derivative instruments and markets.

The OTC derivatives markets have the following features compared to exchange traded derivatives:

1. The management of counter-party (credit) risk is decentralized and located within individual institutions,
2. There are no formal centralized limits on individual positions, leverage, or margining,
3. There are no formal rules for risk and burden-sharing,
4. There are no formal rules or mechanisms for ensuring market stability and integrity, and for safeguarding the collective interests of market participants, and
5. The OTC contracts are generally not regulated by a regulatory authority and the exchange's self-regulatory organization, although they are affected indirectly by national legal systems, banking supervision and market surveillance.

Some of the features of OTC derivatives markets embody risks to financial market stability. The following features of OTC derivatives markets can give rise to instability in institutions, markets, and the international financial system:

- (i) the dynamic nature of gross credit exposures;
- (ii) information asymmetries;
- (iii) the effects of OTC derivative activities on available aggregate credit;
- (iv) the high concentration of OTC derivative activities in major institutions; and
- (v) the central role of OTC derivatives markets in the global financial system.

Instability arises when shocks, such as counter-party credit events and sharp movements in asset prices that underlie derivative contracts occur, which significantly alter the perceptions of current and potential future credit exposures. When asset prices change rapidly, the size and configuration of counter-party exposures can become unsustainably large and provoke a rapid unwinding of positions.

There has been some progress in addressing these risks and perceptions. However, the progress has been limited in implementing reforms in risk management, including counter-party, liquidity and operational risks, and OTC derivatives markets continue to pose a threat to international financial stability. The problem is more acute as heavy reliance on OTC derivatives creates the possibility of systemic financial events, which fall outside the more formal clearing house structures. Moreover, those who provide OTC derivative products, hedge their risks through the use of exchange traded derivatives. In view of the inherent risks associated with OTC derivatives, and their dependence on exchange traded derivatives, Indian law considers them illegal.

1.7 BSE's Derivatives Market

BSE created history on June 9, 2000 by launching the first Exchange-traded Index Derivative Contract i.e. futures on the capital market benchmark index - the BSE Sensex. The inauguration of trading was done by Prof. J.R. Varma, member of SEBI and Chairman of the committee which formulated the risk containment measures for the derivatives market. The first historical trade of 5 contracts of June series was done that day between the Members Kaji & Maulik Securities Pvt. Ltd. and Emkay Share & Stock Brokers Ltd. at the rate of 4755.

In sequence of product innovation, BSE commenced trading in Index Options on Sensex on June 1, 2001, Stock Options were introduced on 31 stocks on July 9, 2001 and Single Stock Futures were launched on November 9, 2002.

September 13, 2004 marked another milestone in the history of the Indian capital market, when BSE launched Weekly Options, a unique product unparalleled worldwide in the derivatives markets. BSE permitted trading in weekly contracts in options in the shares of four leading companies namely Reliance Industries, Satyam, State Bank of India, and TISCO (now Tata Steel) in addition to the flagship index-Sensex.

1.7.1 ROADMAP TO BECOME A MEMBER OF THE BSE DERIVATIVES SEGMENT

Derivatives Membership application forms available at BSE India Website or with the Relationship Managers (BDM Department)



If any query, feel free to contact Relationship Managers (BDM Department)



Choose the type of Membership you want to apply for
See Annexure 1 & Annexure 2



The applications forms duly filled along with the required documents should be submitted to the Membership Services & Development – (MSD) (28th Floor,P.J.Towers)



Application will be placed before the BSE Committee of Executives



BSE Committee of Executives may call you for a personal interview



Applications approved by BSE Committee of Executives will be sent to SEBI for approval and registration

- After the BSE Committee of Executives approval, the MSD will issue election and admission letter to the Member.



After SEBI 's Approval

After receipt of SEBI registration, applicants account will be debited by Rs. 50,000.00 in case of Clearing Membership

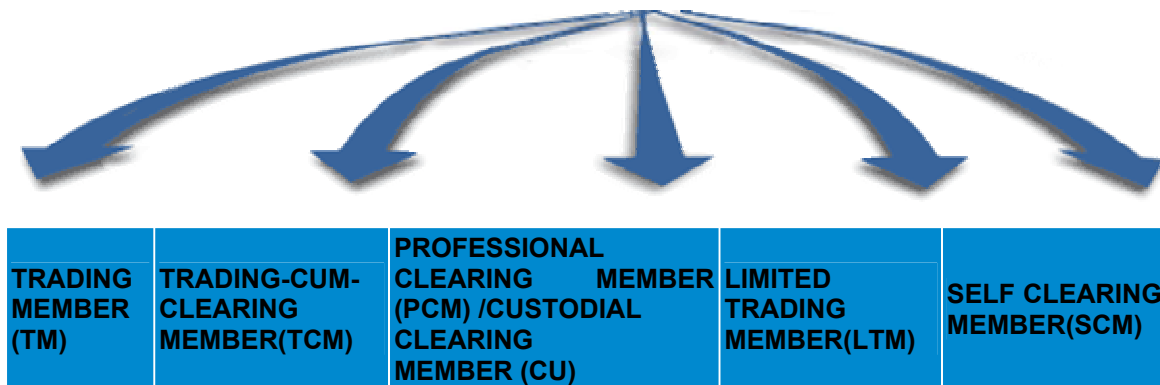


For Commencement of Business in the Derivatives Segment, please contact Relationship Managers (BDM Department)



**START TRADING IN
DERIVATIVES**

1.7.2 Types of Memberships in the BSE Derivatives Segment



Trading Member

- A Trading Member should be an existing Member of BSE cash segment.
- A Trading Member has only trading rights but no clearing rights. He has to associate with a Clearing Member to clear his trades.

Trading-Cum-Clearing Member

- A Trading-cum-Clearing Member should be an existing Member of BSE cash segment.
- A TCM can trade and clear his trades. In addition, he can also clear the trades of his associate Trading Members.

Professional Clearing Member / Custodial Clearing Member:

- A Professional Clearing Member need not be a Member of BSE cash segment.
- A PCM has no trading rights and has only clearing rights i.e. he just clears the trades of his associate Trading Members & institutional clients.

Limited Trading Member

- A Limited Trading Member need not be a Member of BSE cash segment.
- A LTM has only trading rights and no clearing rights. He has to associate with a Clearing Member to clear his trades.

Self Clearing Member

- A Self Clearing Member should be an existing Member of the BSE cash segment.
- An SCM can clear and settle trades on his own account or on account of his client only and not for any other Trading Member.

CHAPTER II - MARKET INDEX

MARKET INDEX

To understand the use and functioning of the index derivatives markets, it is necessary to understand the underlying index. In the following section, we take a look at index related issues. Traditionally, indexes have been used as information sources. By looking at an index, we know how the market is faring. In recent years, indexes have come to the forefront owing to direct applications in finance in the form of index funds and index derivatives. Index derivatives allow people to cheaply alter their risk exposure to an index (hedging) and to implement forecasts about index movements (speculation). Hedging using index derivatives has become a central part of risk management in the modern economy.

2.1 UNDERSTANDING THE INDEX NUMBER

An index is a number which measures the change in a set of values over a period of time. A stock index represents the change in value of a set of stocks which constitute the index. More specifically, a stock index number is the current relative value of a weighted average of the prices of a pre-defined group of equities. It is a relative value because it is expressed relative to the weighted average of prices at some arbitrarily chosen starting date or base period. The starting value or base of the index is usually set to a number such as 100 or 1000. For example, the base value of the Nifty was set to 1000 on the start date of November 3, 1995.

A good stock market index is one which captures the behaviour of the overall equity market. It should represent the market, it should be well diversified and yet highly liquid. Movements of the index should represent the returns obtained by "typical" portfolios in the country.

A market index is very important for its use

- as a barometer for market behaviour,
- as a benchmark portfolio performance,
- as an underlying in derivative instruments like index futures, and
- in passive fund management by index funds

2.2 ECONOMIC SIGNIFICANCE OF INDEX MOVEMENTS

How do we interpret index movements? What do these movements mean? They reflect the changing expectations of the stock market about future dividends of the corporate sector. The index goes up if the stock market thinks that the prospective dividends in the future will be better than previously thought. When the prospects of dividends in the future becomes pessimistic, the index drops. The ideal index gives us instant readings about how the stock market perceives the future of corporate sector.

Every stock price moves for two possible reasons:

1. News about the company (e.g. a product launch, or the closure of a factory)
2. News about the country (e.g. budget announcements)

The job of an index is to purely capture the second part, the movements of the stock market as a whole (i.e. news about the country). This is achieved by averaging. Each stock contains a mixture of two elements - stock news and index news. When we take an average of returns on many stocks, the individual stock news tends to cancel out and the only thing left is news that is common to all stocks. The news that is common to all stocks is news about the economy. That is what a good index captures. The correct method of averaging is that of taking a weighted average, giving each stock a weight proportional to its market capitalization.

Example: Suppose an index contains two stocks, A and B. A has a market capitalization of Rs.1000 crore and B has a market capitalization of Rs.3000 crore. Then we attach a weight of 1/4 to movements in A and 3/4 to movements in B.

2.3 INDEX CONSTRUCTION ISSUES

A good index is a trade-off between diversification and liquidity. A well diversified index is more representative of the market/economy. However there are diminishing returns to diversification. Going from 10 stocks to 20 stocks gives a sharp reduction in risk. Going from 50 stocks to 100 stocks gives very little reduction in risk. Going beyond 100 stocks gives almost zero reduction in risk. Hence, there is little to gain by diversifying beyond a point. The more serious problem lies in the stocks that we take into an index when it is broadened. If the stock is illiquid, the observed prices yield contaminated information and actually worsen an index.

2.4 TYPES OF INDEXES

Most of the commonly followed stock market indexes are of the following two types: Market capitalization weighted index or price weighted index. In a market capitalization weighted index, each stock in the index affects the index value in proportion to the market value of all shares outstanding. A price weighted index is one that gives a weight to each stock that is proportional to its stock price. Indexes can also be equally weighted. Recently, major indices in the world like the S&P 500 and the FTSE-100 have shifted to a new method of index calculation called the "Free float" method. We take a look at a few methods of index calculation.

Market capitalization weighted index calculation

In the example below we can see that each stock affects the index value in proportion to the market value of all the outstanding shares. In the present example, the base index = 1000 and the index value works out to be 1002.60

$$\text{Index} = \frac{7330566.20}{7311383.40} * 1000 = 1002.62$$

| Company | Current Market Capitalisation | Base Market Capitalisation |
|---------|-------------------------------|----------------------------|
|---------|-------------------------------|----------------------------|

| | (Rs. Lakh) | (Rs. Lakh) |
|-------------|--------------|--------------|
| Grasim Inds | 1,668,791.10 | 1,654,247.50 |
| Telco | 872,686.30 | 860,018.25 |
| SBI | 1,452,587.65 | 1,465,218.80 |
| Wipro | 2,675,613.30 | 2,669,339.55 |
| Bajaj | 660,887.85 | 662,559.30 |
| Total | 7,330,566.20 | 7,311,383.40 |

1. *Price weighted index*: In a price weighted index each stock is given a weight proportional to its stock price.

2. *Market capitalization weighted index*: In this type of index, the equity price is weighted by the market capitalization of the company (share price * number of outstanding shares). Hence each constituent stock in the index affects the index value in proportion to the market value of all the outstanding shares. This index forms the underlying for a lot of index based products like index funds and index futures.

In the market capitalization weighted method, where:

Current market capitalization = Sum of (current market price * outstanding shares) of all securities in the index.

Base market capitalization = Sum of (market price * issue size e) of all securities as on base date.

2.5 DESIRABLE ATTRIBUTES OF AN INDEX

A good market index should have three attributes:

1. It should capture the behaviour of a large variety of different portfolios in the market.
2. The stocks included in the index should be highly liquid.
3. It should be professionally maintained.

2.5.1 Capturing behaviour of portfolios

A good market index should accurately reflect the behaviour of the overall market as well as of different portfolios. This is achieved by diversified action in such a manner that a portfolio is not vulnerable to any individual stock or industry risk. A well-diversified index is more representative of the market. However there are diminishing returns from diversification. There is very little gain by diversifying beyond a point. The more serious problem lies in the stocks that are included in the index when it is diversified. We end up including illiquid stocks, which actually worsens the index. Since an illiquid stock does not reflect the current price behaviour of the market, its inclusion in index results in an index, which reflects, delayed or stale price behaviour rather than current price behaviour of the market.

2.5.2 Including liquid stocks

Liquidity is much more than trading frequency. It is about ability to transact at a price, which is very close to the current market price. For example, a stock is considered liquid if one can buy some shares at around Rs.320.05 and sell at around Rs. 319.95, when the market price is ruling at Rs.320. A liquid stock has very tight bid-ask spread.

2.5.3 Maintaining professionally

It is now clear that an index should contain as many stocks with as little impact cost as possible. This necessarily means that the same set of stocks would not satisfy these criteria at all times. A good index methodology must therefore incorporate a steady pace of change in the index set. It is crucial that such changes are made at a steady pace. It is very healthy to make a few changes every year, each of which is small and does not dramatically alter the character of the index. On a regular basis, the index set should be reviewed, and brought in line with the current state of market. To meet the application needs of users, a time series of the index should be available.

2.6 THE SENSEX®

SENSEX® or Sensitive Index is not only scientifically designed but also based on globally accepted construction and review methodology. First compiled in 1986, SENSEX® is a basket of 30 constituent stocks representing a sample of large, liquid and representative companies. The base year of SENSEX® is 1978-79 and the base value is 100. The index is widely reported in both domestic and international markets through print as well as electronic media.

The index was initially calculated based on the "Full Market Capitalization" methodology but was shifted to the free-float methodology with effect from September 1, 2003. The "Free-float Market Capitalization" methodology of index construction is regarded as an industry best practice globally. All major index providers like MSCI, FTSE, STOXX, S&P and Dow Jones use the Free-float methodology.

Due to its wide acceptance amongst the investors; SENSEX® is regarded to be the pulse of the Indian stock market. As the oldest index in the country, it provides the time series data over a fairly long period of time (from 1979 onwards). Small wonder, the SENSEX® has over the years become one of the most prominent brands in the Country.

2.6.1 THE OBJECTIVES OF SENSEX®

The SENSEX® is the benchmark index with wide acceptance among individual investors, institutional investors, foreign investors and fund managers. The objectives of the index are:

2.6.1.1 To measure Market Movements

Given its long history and its wide acceptance, no other index matches the SENSEX® in reflecting market movements and sentiments. SENSEX® is widely used to describe the mood in the Indian Stock markets.

2.6.1.2 Benchmark for Funds Performance

The inclusion of Blue chip companies and the wide and balanced industry representation in the SENSEX® makes it the ideal benchmark for fund managers to compare the performance of their funds.

2.6.1.3 For Index Based Derivatives Products

Institutional investors, money managers and small investors all refer to the SENSEX® for their specific purposes. The SENSEX® is in effect the proxy for the Indian stock markets. Since SENSEX® comprises of leading companies in all the significant sectors in the economy, we believe that it will be the most liquid contract in the Indian market and will garner a pre-dominant market share.

2.7 THE CRITERIA FOR SELECTION AND REVIEW OF SCRIPS FOR THE SENSEX®

The scrip selection and review policy for SENSEX® is based on the objective of:

- Transparency
- Simplicity

2.7.1 Index Review Frequency : The Index Committee meets every quarter to review all the BSE indices including SENSEX®. However, every review meeting need not necessarily result in a change in the index constituents. In case of a revision in the Index constituents, the announcement of the incoming and outgoing scrips is made six weeks in advance of the actual implementation of the replacements in the Index, in accordance with SEBI requirements.

2.7.2 Qualification Criteria : The general guidelines for selection of constituent scrips in SENSEX® are as follows.

2.7.2.1 Quantitative Criteria :

- **Market Capitalization :** The scrip should figure in the top 100 companies listed by full market capitalization. The weight of each SENSEX® scrip based on free-float should be at least 0.5% of the Index. (Market Capitalization would be averaged for last six months)
- **Trading Frequency :** The scrip should have been traded on each and every trading day for the last one year. Exception can be made for extreme reasons like scrip suspension etc.
- **Average Daily Trades :** The scrip should be among the top 150 companies listed by average number of trades per day for the last one year.
- **Average Daily Turnover :** The scrip should be among the top 150 companies listed by average value of shares traded per day for the last one year.
- **Industry Representation :** Scrip selection would take into account a balanced representation of the listed companies in the universe of BSE. The index companies should be leaders in their industry group.
- **Listed History :** The scrip should have a listing history of at least one year on BSE.

2.7.2.2 Qualitative Criteria :

- **Track Record** : In the opinion of the Committee, the company should have an acceptable track record.

2.8 THE BETA OF SENSEX® SCRIPS

Beta measures the sensitivity of a scrips Price movement relative to movement in the SENSEX®. Statistically Beta is defined as: $\text{Beta} = \frac{\text{Covariance (SENSEX® , Stock)}}{\text{Variance(SENSEX®)}}$.

Note: Covariance and variance are calculated from the Daily Returns data of the SENSEX® and SENSEX® scrips.

2.9 COMPUTATION OF SENSEX®

SENSEX® is calculated using the "Free-float Market Capitalization" methodology. As per this methodology, the level of index at any point of time reflects the Free-float market value of 30 component stocks relative to a base period. The market capitalization of a company is determined by multiplying the price of its stock by the number of shares issued by the company. This market capitalization is further multiplied by the free-float factor to determine the free-float market capitalization.

2.10 F & O Segment

The base period of SENSEX® is 1978-79 and the base value is 100 index points. This is often indicated by the notation 1978-79=100. The calculation of SENSEX® involves dividing the Free-float market capitalization of 30 companies in the Index by a number called the Index Divisor. The Divisor is the only link to the original base period value of the SENSEX®. It keeps the Index comparable over time and is the adjustment point for all Index adjustments arising out of corporate actions, replacement of scrips etc. During market hours, prices of the index scrips, at which latest trades are executed, are used by the trading system to calculate SENSEX® every 15 seconds and disseminated in real time.

2.11 FREQUENCY OF SENSEX® CALCULATION

During market hours, prices of the index scrips, at which trades are executed, are automatically used by the trading computer to calculate the SENSEX® every 15 seconds and continuously updated on all trading workstations connected to the BSE trading computer in real time. A day's opening, high and low prices are also given by the computer. But the closing prices are calculated using spreadsheet to ensure theoretical consistency.

One of the important aspects of maintaining continuity with the past is to update the base year average. The base year value adjustment ensures that replacement of stocks in Index, additional issue of capital and other corporate announcements like bonus etc. do not

destroy the historical value of the index. The beauty of maintenance lies in the fact that adjustments for corporate actions in the Index should not per se affect the index values.

The Index Cell of the exchange does the day-to-day maintenance of the index within the broad index policy framework set by the Index Committee. The Index Cell ensures that SENSEX® and all the other BSE indices maintain their benchmark properties by striking a delicate balance between frequent replacements in index and maintaining its historical continuity. The Index Committee of the Exchange comprises of experts on capital markets from all major market segments. They include Academicians, Fund-managers from leading Mutual Funds, Finance-Journalists, Market Participants, Independent Governing Board members, and Exchange administration.

2.12 CHHOTA (MINI) SENSEX

Chhota SENSEX was launched on January 1, 2008. With a small or 'mini' market lot of 5, it allows for comparatively lower capital outlay, lower trading costs, more precise hedging and flexible trading. It is a step to encourage and enable small investors to mitigate risk and enable easy access to India's most popular index, SENSEX, through futures & options. The Security Symbol for SENSEX Mini Contracts is MSX. The contract is available for one, two and three months along with weekly options.

2.13 SENSEX FUTURES

There are many reasons why SENSEX® futures makes sense:

- SENSEX® as compared with other indices shows less volatility and at the same time gives returns equivalent to the returns given by the other indices.
- SENSEX® is widely used to describe the mood in the Indian stock market. Because of its long history and wide acceptance, no other index matches the BSE SENSEX® in reflecting market movements and sentiments and it makes an attractive underlying for index-based products like Index Funds, Futures & Options and Exchange Traded Funds.
- SENSEX® is truly investible as it is the only broad based index in India that is "free float market capitalization weighted", which reflects the market trends more rationally and takes into consideration only those shares that are available for trading in the market.

It may be noted that in addition to the SENSEX®, five sectoral indices belonging to the 90/FF series are also available for trading in the Futures and Options Segment of BSE Limited. The term '90 /FF' means that the indices cover 90% of the market capitalisation of the sector to which the index belongs and is thus well representative of that sector. Also, FF stands for free float - i.e. the indices are based on the globally followed standard of free float market capitalisation methodology. The five sectoral indices that are presently available for F&O are BSE TECK, BSE FMCG, BSE Metal, BSE Bankex and BSE Oil & Gas.

CHAPTER III – FUTURES AND OPTIONS

3.1 FORWARDS

Imagine you are a farmer. You grow 1,000 dozens of mangoes every year. You want to sell these mangoes to a merchant but are not sure what the price will be when the season comes. You therefore agree with a merchant to sell all your mangoes for a fixed price for Rs 2 lakhs. This is a forward contract wherein you are the seller of mangoes forward and the merchant is the buyer. The price is agreed today in advance and The delivery will take place sometime in the future.

The essential features of a forward contract are:

Contract between two parties (without any exchange between them)

Price decided today

Quantity decided today (can be based on convenience of the parties)

Quality decided today (can be based on convenience of the parties)

Settlement will take place sometime in future (can be based on convenience of the parties)

No margins are generally payable by any of the parties to the other

Forwards have been used in the commodities market since centuries. Forwards are also widely used in the foreign exchange market.

3.2 FUTURES

Futures are similar to forwards in the sense that the price is decided today and the delivery will take place in future. But Futures are quoted on a stock exchange. Prices are available to all those who want to buy or sell because the trading takes place on a transparent computer system.

The essential features of a Futures contract are:

- Contract between two parties through an exchange
- Exchange is the legal counterparty to both parties
- Price decided today
- Quantity decided today (quantities have to be in standard denominations specified by the exchange)
- Quality decided today (quality should be as per the specifications decided by the exchange)

- Tick size (i.e. the minimum amount by which the price quoted can change) is decided by the exchange
- Delivery will take place sometime in future (expiry date is specified by the exchange)
- Margins are payable by both the parties to the exchange
- In some cases, the price limits (or circuit filters) can be decided by the exchange

Forwards have been used since centuries especially in commodity trades. Futures are specialized forwards which are supported by a stock exchange. Futures, as we know them now, were first traded in the USA, in Chicago.

3.3 LIMITATIONS OF FORWARDS

Forwards involve counter party risk. In the above example, if the merchant does not buy the mangoes for Rs 2 lakhs when the season comes, what can you do? You can only file a case in the court, but that is a difficult process. Further, the price of Rs 2 lakhs was negotiated between you and the merchant. If somebody else wants to buy these mangoes from you, there is no mechanism of knowing what the right price is.

Thus, the two major limitations of forwards are:

- Counter party risk
- Price not being transparent

Counter party risk is also referred to as default risk or credit risk.

3.4 ADVANTAGES OF FUTURES

An exchange (or its clearing corporation) becomes the legal counterparty in case of futures. Hence, if you buy any futures contract on an exchange, the exchange (or its clearing corporation) becomes the seller. If the other party (the real seller) does not deliver on the expiry date, you do not have to worry. The exchange (or its clearing corporation) will guarantee you the delivery. Further, prices of all Futures quoted on the exchange are known to all players. Transparency in prices is a big advantage over forwards.

3.5 LIMITATIONS OF FUTURES

Futures suffer from lack of flexibility. Suppose you want to buy 103 shares of Satyam for a future delivery date of 14th February, you cannot. The exchange will have standardized specifications for each contract. Thus, you may find that you can buy Satyam futures in lots of 1,200 only. You may find that expiry date will be the last Thursday of every month. Thus, while forwards can be structured according to the convenience of the trading parties involved, futures specifications are standardized by the exchange.

3.6 EXPIRY OF FUTURES

Futures contracts will expire on a certain pre-specified date. In India, futures contracts expire on the last Thursday of every month. For example, a February Futures contract will expire on the last Thursday of February. In this case, February is referred to as the Contract month. If the last Thursday is a holiday, Futures and Options will expire on the previous working day. On expiry, all contracts will be compulsorily settled. Settlement can be effected in cash or through delivery.

Cash settlement means that one of the parties will pay the other party the difference in cash. For example if you bought Sensex Futures for 3350 and the closing price on the last Thursday was 3360, you will be paid profit of 10 by the exchange. The exchange will collect the 10 from the party who sold the Futures, because that party would have made a loss of 10. In reality, the amount would not be 10, because the number of Sensex Units in a contract would be considered. One Sensex contract is made up of 50 Units. Therefore, a profit of 10 above would translate into a profit of Rs 500 (50 Sensex Units x 10). Thus, Cash Settlement means settlement by payment/receipt in cash of the difference between the contracted price and the closing price of the underlying on the expiry day. In the Cash settled system, you can buy and sell Futures on stocks without holding the stocks at any time. For example, to buy and sell Futures on Satyam, you do not have to hold Satyam shares.

In Delivery based Settlement, the seller of Futures delivers to the Buyer (through the exchange) the physical shares, on the expiry day. For example, if you have bought 1,200 Satyam Futures at Rs 250 each, then you will (on the day of expiry) get 1,200 Shares of Satyam at the contracted Futures price of Rs 250. It might happen that on the day of expiry, Satyam was actually quoting at Rs 280. In that case, you would still get Satyam at Rs 250, effectively generating a profit of Rs 30 for you.

Currently in India (as on the date of writing this Work Book), all Futures transactions are settled in Cash. There is no system of physical delivery. Students appearing for the exam should therefore assume that contracts will be settled in cash. It is widely expected that we will move to a physical delivery system soon. However, Index based Futures and options will continue to be based on Cash Settlement system.

Contract Value is the price per Futures Unit multiplied by the lot size. The lot size can also be referred to as the Contract Multiplier. For example, if Sensex Futures are quoting at 3,400 and the Contract Multiplier is 50 Units, the Value of one Futures contract will be Rs 1,70,000.

The profit on the Futures contract at the point of entering into the transaction is zero. Profit or loss will develop only after passage of time. If Futures prices move up, the buyer will make a profit and vice versa.

3.7 COMMON UNDERLYING ASSETS FOR DERIVATIVES ARE:

- Equity Shares

- Equity Indices
- Debt Market Securities
- Interest Rates
- Foreign Exchange
- Commodities
- Derivatives themselves

3.8 COMMODITIES THAT ARE EASY TO TRADE ON FUTURES EXCHANGES

- Commodities which possess the following characteristics are easy to trade:
- Standardisation
- Fungibility
- Large number of buyers and sellers
- Volatile prices
- Uncertain demand and supply conditions

Cash settlement allows parties to trade in Futures, even when they are not interested in delivery of the underlying. For example, you could buy and sell Silver Futures without actually buying Silver or selling Silver at any time.

In Futures, the exchange decides the specifications of each contract. For example, it would decide that Sensex Futures will have a lot size of 50 units. It would decide that Futures would expire on the last Thursday of every month, etc.

The exchange will also collect Margins from both buyers and sellers to ensure that trading operates smoothly without defaults. The exchange does not buy or sell any shares or index futures or commodities. It does not own any shares or index futures or commodities which might be traded on the exchange. For example, an exchange where gold futures are traded might not own any gold at all. It is not necessary that trading in commodities also should happen in those exchanges where commodity futures are traded. For example, an exchange where gold futures are traded might not allow trading in physical gold at all.

The exchange is supposed to carry out on-line surveillance of the derivatives segment. The exchange surveys the market movements, volumes, positions, prices, trades entered into by brokers on a continuous basis to identify any unusual trades. This process is called on-line surveillance.

Lot size for futures contracts differs from stock to stock and index to index. For example, the lot size for Sensex Futures and Options is 50 units, while the lot size for Satyam Futures and Options is 1,200 units.

Futures can be bought or sold in various circumstances. But the simplest of these circumstances could be:

- Buy Futures when you are Bullish
- Sell Futures when you are Bearish

Bullish means you expect the market to rise and Bearish means you expect the market to fall.

Prices of Futures are discovered during trading in the market. For example, who decides the price of Infosys in the regular cash market? It is discovered based on trading between various players during market hours. The same logic applies to Futures and Options.

3.9 ARBITRAGE

Arbitrage means the buying and selling of shares, commodities, futures, options or any combination of such products in different markets at the same time to take advantage of any mis-pricing opportunities in such markets. An arbitrageur generally has no view on the market and tries to capitalize on price differentials between markets.

3.10 HEDGERS

Hedgers are people who are attempting to minimize their risk. If you hold shares and are nervous that the price of these shares might fall in the short run, you can protect yourself by selling Futures. If the market actually falls, you will make a loss on the shares, but will make a profit on the Futures. Thus you will be able to set off your losses with profits. When you use some other asset for hedging purposes other than the asset you actually own, this kind of hedge is called a cross-hedge..

Hedging is meant for minimizing losses, not maximizing profits. Hedging helps to create a more certain outcome, not a better outcome.

Suppose you are a trader of rice. You expect to buy rice in the next month. But you are afraid that prices of rice could go up within the next one month. You can use Rice Futures (or Forwards) by buying Rice Futures (or Forwards) today itself, for delivery in the next month. Thus you are protecting yourself against price increases in rice.

On the other hand, suppose you are a jeweller and you will be selling some jewellery next month. You are afraid that prices of gold could fall within the next one month. You can use Gold Futures (or Forwards) by selling Gold Futures (or Forwards). Thus, if the price of jewellery and gold falls, you will make a loss on jewellery but make a profit on Gold Futures (or Forwards). If you are an importer and you need dollars to pay for your imports in the next month. You are afraid that dollar will appreciate before that. You should buy futures/forwards on Dollars. Thus even if the dollar appreciates, you will still be able to get Dollars at prices decided today.

If you are an exporter and you are expecting dollar payments in the next month. You are afraid that Dollar might depreciate in that period. You can sell futures/forwards on Dollars. Thus even if the dollar depreciates, you will still be able to get Dollars converted at the prices decided today.

3.11 ROLE OF PLAYERS IN THE DERIVATIVES MARKET

- Speculators provide liquidity and volume to the market.
- Hedgers provide depth.
- Arbitrageurs assist in proper price discovery and correct price abnormalities.
- Speculators are willing to take risks.
- Hedgers want to give away risks (generally to the speculators).

3.12 KINDS OF TRANSACTIONS IN FUTURES

- Opening Buy means creating a Long Position
- Opening Sell means creating a Short Position
- Closing Buy means offsetting (fully or partly) an earlier Short Position
- Closing Sell means offsetting (fully or partly) an earlier Long Position
- Equal and Opposite Transaction . means . Square Up

3.13 BID AND ASK PRICES

Bid prices are those provided by Buyers who want to buy shares or futures or other products at these Bid prices. Ask prices are those quoted by Sellers who want to sell shares or futures or other products at these Ask prices. The difference between Bid and Ask Prices is called as the Bid-Offer spread and also sometimes referred to as the Jobbing Spread. In highly liquid markets, the Bid-Offer Spread is small. In illiquid markets, the spread is high. The difference between Bid and Ask Prices is also called impact cost. If liquidity is poor, impact cost is high and vice versa.

3.14 IMPACT COST

Impact cost is the cost you end up paying because of movement in the market price resulting from your order. For example, if the market price of Infosys is Rs 3,410 and you place an order to buy 1,00,000 shares of Infosys, the market price may go up and your average cost of buying may come to say Rs 3,417. This difference of Rs 7 is the impact cost.

3.15 EXOTIC DERIVATIVES

Standardised derivatives are as specified by exchanges and have simple standard features. These are also called vanilla derivatives or plain vanilla derivatives. Exotic derivatives have many non-standard features, which might appeal to special classes of investors. These are generally not exchange traded and are structured between parties on their own.

3.16 OVER THE COUNTER (OTC) DERIVATIVES

OTC Derivatives are unlisted derivatives structured by parties based on their own convenience. These are generally popular in the developed markets where leading brokers and institutions create their own kind of special derivatives and sell to interested investors. OTC Derivatives generally do not require any margin payments. They are tailor made and are subject to counter party risk.

3.17 SQUARING UP A FUTURES CONTRACT

If you have bought a Futures contract, you can sell it and thus square up. If you sold a Futures contract, you can buy it back and square up. If you do not square up till the day of expiry, it will be automatically squared up by the exchange. You need not square up with the same party from whom you bought or sold. You can simply buy or sell through the computerized trading system. In practice, most Futures contracts are squared up before expiry date and hence never result in delivery.

3.18 KINDS OF RISKS ARE FACED BY INVESTORS IN EQUITY MARKETS

Risks faced by investors are categorized into two types. They are

- 1) Systematic Risk and
- 2) Non-systematic (unique risk).

Systematic risks arise from developments which affect the entire system (for example the entire stock market might be affected by a major earthquake or a war). Such risks can be minimized through Index Futures. If you sell Index Futures and the market drops, you will make profits. You might make losses on your shares and thus your profits from Index Futures will give you much needed protection. Unique risks are specific to each share. Thus the market might go up, while a particular share might move down. To protect against unique (or unsystematic risks), you should diversify your portfolio. If you hold shares of many companies, it might happen that some move up and some move down, thus protecting you.

3.19 LEVERAGE IN THE CONTEXT OF DERIVATIVES

You need not invest the entire contract value when you buy futures or options, whereas in the cash market, you need to invest the whole amount. While in Futures, you invest an Initial Margin amount, in the case of Options, you will invest the amount of Option Premium as a buyer, or provide a certain Margin as a seller. Thus in derivatives, you can take a larger exposure with a lower investment requirement. This practice increases your risks and returns substantially. For example, if you buy Satyam shares and it goes up by

20%, you earn 20% on your investment. But if you buy Satyam Futures which go up by 20%, you will earn much more.

3.20 DETERMINATION OF PRICES OF FUTURES

Prices are determined based on forces of demand and supply and are discovered during trading hours. Prices of Futures are derived from the price of the underlying. For example, prices of Satyam Futures will depend upon the price of Satyam in the cash market. You can expect Futures prices to rise when Satyam price rises and vice-versa. A theoretical model called Cost of Carry Model provides that prices of Futures should be equal to Spot Prices (i.e. Cash market prices) plus Interest (also called Cost of Carry). If this price is not actually found in the market, arbitrageurs will step in and make profits.

Both buyers and sellers of Futures should pay an Initial Margin to the exchange at the point of entering into Futures contracts. This Initial Margin is retained by the exchange till these transactions are squared up. Further, Mark to Market Margins are payable based on closing prices at the end of each trading day. These Margins will be paid by the party who suffered losses and will be received by the party who made profits. The exchange thus collects these margins from the losers and pays them to the winners on a daily basis.

3.21 RISK MANAGEMENT

Risk Management is a process whereby the company (could be a broker, institution, stock exchange) lays down a clear process of how its risks should be managed. The process will include:

- Identifying risk
- Deciding how much credit should be given to each client
- Deciding the frequency of collection of margins
- Deciding how much risk is acceptable
- Controlling risk on continuous basis
- Monitoring risk taken on continuous basis

If you have bought Futures and the price goes up, you will make profits. If you have sold Futures and the price goes down, you will make profits.

3.22 SHORT SELLING

Short selling is selling of equity shares by a party who does not have delivery of these shares. In the Futures market (as per the current Indian system), short selling is freely permitted as Futures are cash settled.

The number of transactions open at the end of the day is referred to as Open Interest. For example, if on Day One of the Derivatives Market, 50,000 contracts have been executed

and none of them squared up so far, the Open Interest will be 50,000 contracts. If on Day Two, 10,000 contracts are squared up and 15,000 new contracts are executed, the Open Interest will become 55,000 contracts (50,000 minus 10,000 plus 15,000). The level of Open Interest indicates the depth of the market.

3.23 BETA

Beta is a measure of how sensitive a particular stock (or a particular portfolio of stocks) is with respect to a general market index. For example, if Reliance has a beta of 1.15 with respect to the Sensex, the implication is that Reliance fluctuations will be 1.15 times the fluctuations in the Sensex. If the Sensex moves up by 10%, Reliance will move up by 11.5%. Beta is widely used for hedging purposes. If you have Reliance shares worth Rs 10 lakhs and you want to hedge your portfolio using Sensex Futures, you will typically sell Rs 11.50 lakhs of Sensex Futures. Thus if Sensex moves down by 10%, Reliance will move down by 11.5%. On the Sensex Futures, you will gain Rs 1.15 lakhs (10% of Rs 11.50 lakhs), while on Reliance, you will lose Rs 1.15 lakhs (11.5% of Rs 10 lakhs). High beta stocks are termed aggressive stocks, while low beta stocks are termed defensive stocks. Hedge Ratio is related to beta and can be understood as the number of Futures contracts required to be sold to create a perfect hedge.

3.24 VOLATILITY

Derivative markets create risks, however, it will be more correct to say that Derivative Markets redistribute risks. There are some participants who want to take on risk (speculators) while some participants want to reduce risk (hedgers). Derivative Markets align the risk appetites of such players and thus redistribute risks.

Volatility is the extent of fluctuation in stock prices (or prices of other items like commodities and foreign exchange). Volatility is not related to direction of the movement. Thus, volatility can be high irrespective of whether the stock price is moving up or down. A market index (like the Sensex) would generally be less volatile than individual stocks (like Satyam). The level of Volatility will dictate the level of Margins. Higher volatility will result in higher margins and vice-versa. Daily Volatility, if known, can be used to calculate volatility for any given period. For example, Periodic Volatility will be Daily Volatility multiplied by the square root of the number of days in that period. For example, Annual Volatility is generally taken as the square root of 256 (working days approximately) i.e. 16 times the Daily Volatility.

3.25 OPTIONS

Meaning of Option

An Option is a contract in which the seller of the contract grants the buyer, the right to purchase from the seller a designated instrument or an asset at a specific price which is agreed upon at the time of entering into the contract. It is important to note that the option buyer has the right but not an obligation to buy or sell. If the buyer decides to exercise his right the seller of the option has an obligation to deliver or take delivery of the underlying asset at the price agreed upon. Seller of the option is also called the writer of the option.

Generic terms used in options

Call Option

An option contract is called a 'call option', if the writer gives the buyer of the option the right to purchase from him the underlying asset.

Put Option

An option contract is said to be a 'put option,' if the writer gives the buyer of the option the right to sell the underlying asset.

Exercise Date

The date at which the contract matures.

Strike Price

At the time of entering into the contract, the parties agree upon a price at which the underlying asset may be bought or sold. This price is referred to as the exercise price or the striking price. At this price, the buyer of a call option can buy the asset from the seller and the buyer of a put option can sell the asset to the writer of the option. This is regardless of the market price of the asset at the time of exercising.

Expiration Period

At the time of introducing an option contract, the exchange specifies the period (not more than nine months from the date of introduction of the contract in the exchange) during which the option can be exercised or traded. This period is referred to as the Expiration Period. An option can be exercised even on the last day of the Expiration Period. Beyond this date the option contract expires.

Such option, which can be exercised on any day during the Expiration Period are called American options. There is another class of options called European options. European options can be exercised only on the last day of the expiration period. For these options the expiration date is always the last day of the expiration period.

Depending on the expiration period an option can be short term or long term in nature. Warrants and convertibles belong to the latter category and are often issued by companies to finance their activities. (In India, Reliance Petroleum Ltd. has recently converted its warrants issued as a part of triple optional convertible debentures into fully paid equity shares.)

Option Premium or Option Price

This is the amount which the buyer of the option (whether it be a call or put option) has to pay to the option writer to induce him to accept the risk associated with the contract. It can also be viewed as the price paid to buy the option.

Expiration Cycle

The options listed in the stock exchanges and introduced in certain months expire in specific months of the year only. This is due to the fact that option contracts have to expire within nine months from the date of their introduction. Exchanges previously used to assign an issue to one of the three cycles. First is January, April, July and October; other is February, May, August and November; third is March, June, September and December. This has been modified now to include both the current month and the following month, plus the next two months in the expiration cycle so that the investors are always able to trade in the options. Therefore, now the first cycle will be January, February, April and July; the second cycle will be February, March, April and July and the third cycle will be March, April, July and October.

The types of Options available are Call Options and Put Options. Call Options give the buyer the right to buy a specified underlying at a set price on or before a particular date. For example, Satyam 260 Feb Call Option gives the Buyer the right to buy Satyam at a price of Rs 260 per share on or before the last Thursday of February. The price of 260 in the above example is called the strike price or the exercise price. Call Options are also called teji in the Indian markets. Put Options give the buyer the right to sell a specified underlying at a set price on or before a particular date. For example, Satyam 260 Feb Put Option gives the Buyer the right to sell Satyam at a price of Rs 260 per share on or before the last Thursday of February. Put Options are also called mandi in the Indian markets.

Call Option Sellers are under obligation to deliver shares whenever the Call Option Buyer exercises his right. Put Option Sellers are under obligation to buy shares whenever the Put Option Buyer exercises his right. In case of Index Options, delivery of Index is not possible. Hence, these Options are cash settled. The seller of Options is under obligation to pay the difference between Market Value of the Index and Strike Price of the Option to the Option Buyer.

American style Options can be exercised at any time on or before the expiry day. European style Options can be exercised on the day of expiry. In India, both styles are available. Index Options are European style, while individual stock options are American style. On exercise, the buyer calls upon the exchange to pay up the difference between the market price and the strike price. The exchange in turn asks one of the Option sellers to make this difference payment.

It is generally believed that American style Call Options should not be exercised early, as it does not generate any special benefit to the buyer. The Buyer may be advised to sell such Options rather than exercise. On the other hand, American style Put Options could be exercised in some circumstances.

American Options will have a value at least equal to European Options. They are more flexible. The minimum value of American Options will be the Intrinsic Value at all times. All Options on the same underlying, same expiry and same type (Calls or Puts) are called as one Option Class (for example Reliance Feb Calls). Within one Class, you can have several Series for each strike price (for example Reliance Feb 280 Calls). Market Makers are the players who offer continuous bid and ask quotes for particular securities/series. Strike Prices are decided by the exchange under SEBI guidelines. Margins are paid only by Sellers in the Options market. Buyers pay Premium and hence no Margins are applicable.

Options can be created on various underlying assets including Index, Shares, Foreign Exchange, Commodities, Swaps, other Derivatives. An option over a Swap is called a Swaption.

3.25.1 COMPONENTS OF OPTION VALUE

Option Value is made up of two components viz. Intrinsic Value and Time Value. Intrinsic Value is the amount the buyer would get if the option is exercised. The additional value (over and above the Intrinsic Value) is called Time Value. None of these three values can be negative. Intrinsic Value is also called .parity value. Time Value is also called .premium over parity.. For example, if a Satyam Feb 260 Call is quoting for Rs 25 while the Market Price of Satyam is Rs 262, the values are as under:

Total Option Value (i.e. Option Price) : Rs 25

Intrinsic Value (262 . 260) Rs 2

Time Value (25 . 2) Rs 23

Option Values depend on the following six factors:

- Market Price
- Strike Price
- Volatility
- Time to Expiry
- Interest Rates
- Dividends

Call Options:

Higher Market Price, Higher Option Value
Higher Strike Price, Lower Option Value
Higher Volatility, Higher Option Value
Longer Time to Expiry, Higher Option Value
Higher Interest Rates, Higher Option Value
Higher Dividends, Lower Option Value

Put Options:

Higher Market Price, Lower Option Value
Higher Strike Price, Higher Option Value
Higher Volatility, Higher Option Value
Longer Time to Expiry, Higher Option Value
Higher Interest Rates, Lower Option Value
Higher Dividends, Higher Option Value

3.26 THE GREEKS

3.26.1 Delta is the rate of change of option price with respect to the price of the underlying asset. For example, the delta of a stock is 1. It is the slope of the curve that relates the option price to the price of the underlying asset. Suppose the delta of a call option on a stock is 0.5. This means that when the stock price changes by one, the option price changes by about 0.5, or 50% of the change in the stock price. Expressed differently, it is the change in the call price per unit change in the spot.

3.26.2 Gamma is the rate of change of the option's Delta with respect to the price of the underlying asset. In other words, it is the second derivative of the option price with respect to price of the underlying asset.

3.26.3 Theta of a portfolio of options, is the rate of change of the value of the portfolio with respect to the passage of time with all else remaining the same. It is also referred to as the time decay of the portfolio. It is the change in the portfolio value when one day passes with all else remaining the same. We can either measure "per calendar day" or "per trading day". To obtain the per calendar day, the formula for Theta must be divided by 365; to obtain Theta per trading day, it must be divided by 250.

3.26.4 Vega of a portfolio of derivatives is the rate of change in the value of the portfolio with respect to volatility of the underlying asset. If it is high in absolute terms, the portfolio's value is very sensitive to small changes in volatility. If it is low in absolute terms, volatility changes have relatively little impact on the value of the portfolio.

3.24.5 Rho of a portfolio of options is the rate of change of the value of the portfolio with respect to the interest rate. It measures the sensitivity of the value of a portfolio to interest rates.

Option Greeks help us to understand Option behaviour better. They measure the extent of the impact of various factors on Option Prices. Delta stands for the change in Option Premium for a unit change in the Price of the Underlying Share or Index (also stands for Hedge Ratio). Gamma stands for the change in Delta for a unit change in the Price of the Underlying Share or Index. Vega stands for the change in Option Premium for a unit change in the Volatility of the Underlying Share or Index. Theta stands for the change in Option Premium for a unit change in the Time to expiry. Rho stands for the change in Option Premium for a unit change in the Interest Rates.

3.25 In the Money, At The Money and Out of the Money Options

Those options which, if exercised, will generate Positive Return can be understood as In the Money, without taking the premium paid by the buyer into consideration. For example, Satyam 260 Feb Call will be In the Money when Satyam share price is above Rs 260. If the share price is Rs 282, the Option will generate Rs 22 on exercise.

Infosys 3500 Feb Put will be In the Money when Infosys share price is below Rs 3,500. If the share price is Rs 3,375, the Option will generate Rs 125 on exercise. Out of the Money Options are those which will not generate Negative Return if exercised. That is why, out of the money, options are usually never exercised. For example, Satyam 300 Feb Call will be Out of the Money when Satyam share price is Rs 282. Infosys 3000 Feb Put will be Out of the Money when Infosys share price is Rs 3,375. At the Money Options are those whose

Strike Prices are equal to the Market Prices. Near the Money Options are those whose Strike Prices are very near the Market Prices. Out of the Money Options have zero Intrinsic Value. They only carry Time Value.

Call Options have positive Deltas for buyers and negative deltas for sellers (implying Call Option values will increase when the price of the underlying increases). Put Options have negative Deltas for buyers and positive deltas for sellers (imply Put Option values will decrease when the price of the underlying increases). Out of the Money Options have very low Deltas. In the Money Options have high Deltas. At the Money Call Options have Deltas nearly equal to 0.5 for the buyer and -0.5 for the seller (minus 0.5 in case of Puts for the buyer and plus 0.5 in case of seller). Far Out of the Money Options have Deltas nearly equal to zero. Far In the Money Options have Deltas nearly equal to 1/-1 (for buyer 1 /for seller -1) As the Option moves into the Money, Delta will increase in value. As the Option moves out of the Money, Delta will decrease in value.

3.26 NUMERIC OF DELTA

If Delta is 0.6 and the underlying share price moves up by Rs 20, the Option price is expected to move up by Rs 12 (i.e. 0.6×20).

3.27 TIME DECAY

On expiry, the value of the Option will be equal to zero (if it expires Out of the Money) or become equal to Intrinsic Value (if it expires In the Money). The Time Value component of the Option will become zero. Therefore Options are also called as Wasting Assets. Time Decay will benefit the Seller of Options and works against Buyers of Options.

3.28 THE COMMON MATHEMATICAL OPTION PRICING MODELS

The most common mathematical Option Pricing Models are:

- Binomial Model (this model assumes that share prices and index values follow a Binomial Distribution)
- Black-Scholes Model (this model assumes that share prices and index values follow a Log-Normal Distribution)

3.29 PROFIT PROFILE OF THE BUYERS AND SELLERS OF OPTIONS?

Buyers of options enjoy the potential of unlimited profits, but suffer limited losses. Sellers of options face the potential of unlimited losses, but make limited profits. In Options market, Buyers are also called Holders. Sellers of Options are also called Writers. This profit profile is called .asymmetric.. In contrast, Futures payoffs are symmetric. Both parties (buyers and sellers) can make unlimited profits and losses in Futures.

3.30 SPECULATIVE VIEWS OF OPTION MARKET PARTICIPANTS

Call Buyer . Bullish

Call Seller . Bearish or Neutral
Put Buyer . Bearish
Put Seller . Bullish or Neutral

3.31 OPTION PREMIUM

Option Premium is paid by the Buyer of the Options to the Seller of Options through the exchange. The Option Premium paid is the maximum loss a Buyer can ever make and represents the maximum profit the Seller can ever make.

3.32 OPTION STRATEGIES

Option strategies are complex positions created including a combination of options and underlying shares (and futures) which help the investor to benefit from his views.
Some common examples are:

Writing a Covered Call . where you hold the underlying shares and sell a Call Option with an objective to earn Call premium

Protective Put . where you hold the underlying shares and buy a Put Option to provide protection against fall in the value of the underlying shares

Bull Spread . where you buy one call option at a low strike price and sell another call option at a higher strike price (on the same underlying) and want to benefit in a limited manner from bullish view . you could also do this through put options.

Bear Spread . where you buy one call option with a high strike price and sell another call option with a lower strike price (on the same underlying) and want to benefit in a limited manner from bearish view . you could also do this through put options

Straddle . where you sell a call option and a put option at the same strike price (or alternatively buy a call option and a put option at the same strike price) (these are also called Jhota / Duranga in the Indian markets)

Strangle . where you sell a call option and a put option at different strike prices on the same underlying (or alternatively buy a call option and a put option at different strike prices)

Combinations . other strategies involving a put and a call (also called fatah in Indian markets)

3.33 SQUARING UP OF OPTIONS

A buyer can square up his position by selling a similar option (same underlying, same option type, same expiry month, same strike price). A seller can square up his position by buying a similar option. The positions which expire worthless at the expiry automatically get squared up. The option may be exercised by the buyer and thus the position extinguished.

There are currently no restrictions on who can buy or sell Options. Accordingly, all investors can buy or sell Options.

3.34 OVER THE COUNTER OPTIONS

Over the Counter Options are non-exchange traded products. These are generally structured by large broking firms and institutions and sold to their clients directly, without the intervention of the exchange. These Options are generally customized to suit client needs. Participants do face counterparty risk in such Options.

CHAPTER IV – TRADING, CLEARING AND SETTLEMENT

4.1 TRADING

4.1.1 Trading Rules

The Derivatives Trading at BSE takes place through a fully automated screen-based trading platform called DTSS (Derivatives Trading and Settlement System). The DTSS is designed to allow trading on a real-time basis. In addition to generating trades by matching opposite orders, the DTSS also generates various reports for the member participants.

4.1.2 Order Matching Rules

Order Matching takes place after order acceptance wherein the system searches for an opposite matching order. If a match is found, a trade is generated. The order against which the trade has been generated is removed from the system. In case the order is not exhausted further matching orders are searched for and trades generated till the order gets exhausted or no more match-able orders are found. If the order is not entirely exhausted, the system retains the order in the pending order book. Matching of the orders is in the priority of price and timestamp. A unique trade-id is generated for each trade and the entire information of the trade is sent to the relevant Members.

4.1.3 Order Conditions

The derivatives market is order driven i.e. the traders can place only orders in the system. Following are the order types allowed for the derivative products. These order types have characteristics similar to the ones in the cash market.

- Limit Order: An order for buying or selling at a limit price or better, if possible. Any unexecuted portion of the order remains as a pending order till it is matched or its duration expires.
- Market Order: An order for buying or selling at the best price prevailing in the market at the time of submission of the order. There are two types of Market Orders:
 1. Partial Fill Rest Kill (PF): execute the available quantity and kill any unexecuted portion.
 2. Partial Fill Rest Convert (PC): execute the available quantity and convert any unexecuted portion into a limit order at the traded price.
- Stop Loss: An order that becomes a limit order only when the market trades at a specified price.

All orders have the following attributes:

- Order Type (Limit / Market PF/Market PC/ Stop Loss)
- Asset Code, Product Type, Maturity, Call/Put and Strike Price
- Buy/Sell Indicator
- Order Quantity
- Price
- Client Type (Proprietary / Institutional / Normal)

- Client Code
- Order Retention Type (GFD / GTD / GTC)
 - Good For Day (GFD) - The lifetime of the order is that trading session
 - Good Till Date (GTD) - The life of the order is till the number of days as specified by the Order Retention Period.
 - Good Till Cancelled (GTC) - The order if not traded will remain in the system till it is cancelled or the series expires, whichever is earlier.
- Order Retention Period (in calendar days): This field is enabled only if the value of the previous attribute is GTD. It specifies the number of days the order is to be retained.
- Protection Points Protection Points: This is a field relevant in Market Orders and Stop Loss orders. The value enterable will be in absolute underlying points and specifies the band from the touchline price or the trigger price within which the market order or the stop loss order respectively can be traded.
- Risk Reducing Orders (Y/N): When a Member's collateral falls below 50 lakhs, he will be allowed to put only risk reducing orders and will not be allowed to take any fresh positions. It is not essentially a type of order but a mode into which the Member is put into when he violates his collateral limit. A Member who has entered the risk-reducing mode will be allowed to put only one risk reducing order at a time.

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CLEARING AND SETTLEMENT

BOI Shareholding Ltd. a joint company between BSE and Bank of India handles the operations of funds and securities for the Exchange.

4.2 CLEARING ENTITIES

Clearing and settlement activities in the F&O segment are undertaken by BOISL with the help of the following entities:

4.2.1 Clearing members

In the F&O segment, some members, called self clearing members, clear and settle their trades executed by them only either on their own account or on account of their clients. Some others called trading member-cum-clearing member, clear and settle their own trades as well as trades of their trading members (TMs). Besides, there is a special category of members, called professional clearing members (PCM) who clear and settle trades executed by TMs. The members clearing their own trades and trades of the TMs, and the PCMs are required to bring in additional security deposits in respect of every TM whose trades they undertake to clear and settle.

4.2.2 Clearing banks

Funds settlement takes place through clearing banks. For the purpose of settlement all clearing members are required to open a separate bank account with BOISL designated clearing bank for F&O segment. The Clearing and Settlement process comprises of the following three main activities:

- 1) Clearing
- 2) Settlement
- 3) Risk Management

4.3 CLEARING MECHANISM

The clearing mechanism essentially involves working out open positions and obligations of clearing (self-clearing/trading-cum-clearing/professional clearing) members. This position is considered for exposure and daily margin purposes. The open positions of CMs are arrived at by aggregating the open positions of all the TMs and all custodial participants clearing through him, in contracts in which they have traded. A TM's open position is arrived at as the summation of his proprietary open position and clients' open positions, in the contracts in which he has traded. While entering orders on the trading system, TMs are required to identify the orders, whether proprietary (if they are their own trades) or client (if entered on behalf of clients) through 'Pro/Cli' indicator provided in the order entry screen. Proprietary positions are calculated on net basis (buy - sell) for each contract. Clients' positions are arrived at by summing together net (buy - sell) positions of each individual client. A TM's open position is the sum of proprietary open position, client open long position and client open short position.

4.4 SETTLEMENT MECHANISM

All futures and options contracts are cash settled, i.e. through exchange of cash. The underlying for index futures/options of the SENSEX cannot be delivered. These contracts, therefore, have to be settled in cash. Futures and options on individual securities can be delivered as in the spot market. However, it has been currently mandated that stock options and futures would also be cash settled. The settlement amount for a CM is netted across all their TMs/clients, with respect to their obligations on MTM, premium and exercise settlement.

4.4.1 Settlement of futures contracts

Futures contracts have two types of settlements, the MTM settlement which happens on a continuous basis at the end of each day, and the final settlement which happens on the last trading day of the futures contract.

MTM settlement:

All futures contracts for each member are mark-to-market (MTM) to the daily settlement price of the relevant futures contract at the end of each day. The profits/losses are computed as the difference between:

- The trade price and the day's settlement price for contracts executed during the day but not squared up.
- The previous day's settlement price and the current day's settlement price for brought forward contracts.
- The buy price and the sell price for contracts executed during the day and squared up.

The CMs who have a loss are required to pay the mark-to-market (MTM) loss amount in cash which is in turn passed on to the CMs who have made a MTM profit. This is known as daily mark-to-market settlement. CMs are responsible to collect and settle the daily MTM

profits/losses incurred by the TMs and their clients clearing and settling through them. Similarly, TMs are responsible to collect/pay profits/losses from/to their clients by the next day. The pay-in and pay-out of the mark-to-market settlement are effected on the day following the trade day. In case a futures contract is not traded on a day, or not traded during the last half hour, a 'theoretical settlement price' is computed as per specified formula.

After completion of daily settlement computation, all the open positions are reset to the daily settlement price. Such positions become the open positions for the next day.

Final settlement for futures

On the expiry day of the futures contracts, after the close of trading hours, BOISL marks all positions of a CM to the final settlement price and the resulting profit/loss is settled in cash. Final settlement loss/profit amount is debited/ credited to the relevant CM's clearing bank account on the day following expiry day of the contract.

Settlement prices for futures

Daily settlement price on a trading day is the closing price of the respective futures contracts on such day. The closing price for a futures contract is currently calculated as the last half an hour weighted average price of the contract in the F&O Segment of BSE. Final settlement price is the closing price of the relevant underlying index/security in the capital market segment of BSE, on the last trading day of the contract. The closing price of the underlying Index/security is currently its last half an hour weighted average value in the capital market segment of BSE.

4.4.2 Settlement of options contracts

Options contracts have three types of settlements, daily premium settlement, exercise settlement, interim exercise settlement in the case of option contracts on securities and final settlement.

Daily premium settlement

Buyer of an option is obligated to pay the premium towards the options purchased by him. Similarly, the seller of an option is entitled to receive the premium for the option sold by him. The premium payable amount and the premium receivable amount are netted to compute the net premium payable or receivable amount for each client for each option contract.

Exercise settlement

Although most option buyers and sellers close out their options positions by an offsetting closing transaction, an understanding of exercise can help an option buyer determine whether exercise might be more advantageous than an offsetting sale of the option. There is always a possibility of the option seller being assigned an exercise. Once an exercise of an option has been assigned to an option seller, the option seller is bound to fulfil his obligation (meaning, pay the cash settlement amount in the case of a cash-settled option) even though he may not yet have been notified of the assignment.

Interim exercise settlement

Interim exercise settlement takes place only for option contracts on securities. An investor can exercise his in-the-money options at any time during trading hours, through his trading member. Interim exercise settlement is effected for such options at the close of the trading hours, on the day of exercise. Valid exercised option contracts are assigned to short positions in the option contract with the same series (i.e. having the same underlying, same expiry date and same strike price), on a random basis, at the client level. The CM who has exercised the option receives the exercise settlement value per unit of the option from the CM who has been assigned the option contract.

Final exercise settlement

Final exercise settlement is effected for all open long in-the-money strike price options existing at the close of trading hours, on the expiration day of an option contract. All such long positions are exercised and automatically assigned to short positions in option contracts with the same series, on a random basis. The investor who has long in-the-money options on the expiry date will receive the exercise settlement value per unit of the option from the investor who has been assigned the option contract.

Exercise process

The period during which an option is exercisable depends on the style of the option. On BSE, index options are European style, i.e. options are only subject to automatic exercise on the expiration day, if they are in-the-money. As compared to this, options on securities are American style. In such cases, the exercise is automatic on the expiration day, and voluntary prior to the expiration day of the option contract, provided they are in-the-money. Automatic exercise means that all in-the-money options would be exercised by BOISL on the expiration day of the contract. The buyer of such options need not give an exercise notice in such cases. Voluntary exercise means that the buyer of an in-the-money option can direct his TM/CM to give exercise instructions to BOISL. In order to ensure that an option is exercised on a particular day, the buyer must direct his TM to exercise before the cut-off time for accepting exercise instructions for that day. Usually, the exercise orders will be accepted by the system till the close of trading hours. Different TMs may have different cut -off times for accepting exercise instructions from customers, which may vary for different options. An option, which expires unexercised becomes worthless. Some TMs may accept standing instructions to exercise, or have procedures for the exercise of every option, which is in the money at expiration. Once an exercise instruction is given by a CM to BOISL, it cannot ordinarily be revoked. Exercise notices given by a buyer at anytime on a day are processed by BOISL after the close of trading hours on that day. All exercise notices received by NSCCL from the NEAT F&O system are processed to determine their validity. Some basic validation checks are carried out to check the open buy position of the exercising client/TM and if option contract is in-the-money. Once exercised contracts are found valid, they are assigned.

Assignment process

The exercise notices are assigned in standardized market lots to short positions in the option contract with the same series (i.e. same underlying, expiry date and strike price) at the client level. Assignment to the short positions is done on a random basis. BOISL

determines short positions, which are eligible to be assigned and then allocates the exercised positions to any one or more short positions. Assignments are made at the end of the trading day on which exercise instruction is received by BOISL and notified to the members on the same day. It is possible that an option seller may not receive notification from its TM that an exercise has been assigned to him until the next day following the date of the assignment to the CM by BOISL.

Exercise settlement computation

In case of index option contracts, all open long positions at in-the-money strike prices are automatically exercised on the expiration day and assigned to short positions in option contracts with the same series on a random basis. For options on securities, where exercise settlement may be interim or final, interim exercise for an open long in-the-money option position can be effected on any day till the expiry of the contract. Final exercise is automatically effected by BOISL for all open long in-the-money positions in the expiring month option contract, on the expiry day of the option contract. The exercise settlement price is the closing price of the underlying (index or security) on the exercise day (for interim exercise) or the expiry day of the relevant option contract (final exercise). The exercise settlement value is the difference between the strike price and the final settlement price of the relevant option contract. For call options, the exercise settlement value receivable by a buyer is the difference between the final settlement price and the strike price for each unit of the underlying conveyed by the option contract, while for put options it is difference between the strike price and the final settlement price for each unit of the underlying conveyed by the option contract. Settlement of exercises of options on securities is currently by payment in cash and not by delivery of securities. It takes place for in-the-money option contracts. The exercise settlement value for each unit of the exercised contract is computed as follows:

Call options = Closing price of the security on the day of exercise — Strike price

Put options = Strike price — Closing price of the security on the day of exercise

For final exercise the closing price of the underlying security is taken on the expiration day. The exercise settlement value is debited / credited to the relevant CMs clearing bank account on T + 1 day (T = exercise date).

Special facility for settlement of institutional deals

BOISL provides a special facility to Institutions/Foreign Institutional Investors (FIIs)/Mutual Funds etc. to execute trades through any TM, which may be cleared and settled by their own CM. Such entities are called custodial participants (CPs). To avail of this facility, a CP is required to register with BOISL through his CM. A unique CP code is allotted to the CP by BOISL. All trades executed by a CP through any TM are required to have the CP code in the relevant field on the trading system at the time of order entry. Such trades executed on behalf of a CP are confirmed by their own CM (and not the CM of the TM through whom the order is entered), within the time specified by BSE on the trade day through the on-line confirmation facility. Till such time the trade is confirmed by CM of concerned CP, the same is considered as a trade of the TM and the responsibility of settlement of such trade vests with CM of the TM. Once confirmed by CM of concerned CP, such CM is responsible for clearing and settlement of deals of such custodial clients.

FII's have been permitted to trade in all the exchange traded derivative contracts subject to compliance of the position limits prescribed for them and their subaccounts, and compliance with the prescribed procedure for settlement and reporting. A FII/a sub-account of the FII, as the case may be, intending to trade in the F&O segment of the exchange, is required to obtain a unique Custodial Participant (CP) code allotted from the BOISL. FII/sub-accounts of FII's which have been allotted a unique CP code by BOISL are only permitted to trade on the F&O segment. The FD/sub-account of FII ensures that all orders placed by them on the Exchange carry the relevant CP code allotted by BOISL.

4.4.3 ADJUSTMENTS FOR CORPORATE ACTIONS

The basis for any adjustment for corporate actions is such that the value of the position of the market participants, on the cum and ex-dates for the corporate action, continues to remain the same as far as possible. This facilitates in retaining the relative status of positions, namely in-the-money, at-the-money and out-of-money. This also addresses issues related to exercise and assignments.

Corporate actions can be broadly classified under stock benefits and cash benefits. The various stock benefits declared by the issuer of capital are bonus, rights, merger/de-merger, amalgamation, splits, consolidations, hive off, warrants and secured premium notes (SPNs) among others. The cash benefit declared by the issuer of capital is cash dividend. Any adjustment for corporate actions is carried out on the last day on which a security is traded on a cum basis in the underlying equities market, after the close of trading hours. Adjustments may entail modifications to positions and/or contract specifications as listed below, such that the basic premise of adjustment laid down above is satisfied:

- Strike price
- Position
- Market lot/multiplier

The adjustments are carried out on any or all of the above, based on the nature of the corporate action. The adjustments for corporate actions are carried out on all open, exercised as well as assigned positions.

4.5 RISK MANAGEMENT

4.5.1 EQUITY DERIVATIVES

4.5.1.1 Stock Futures

A portfolio based margining model is adopted by the exchange which takes an integrated view of the risk involved in the portfolio of each individual client comprising of his positions in all the derivatives contract traded on Derivatives Segment. The parameters for such a model is as follows:

I) Initial Margin or Worst Case Scenario Loss:

The Initial Margin requirement is based on the worst-case loss of portfolio at client level to cover 99% VaR over one day horizon. The initial margin requirement is net at client level and shall be on gross basis at the Trading/Clearing member level. The initial margin requirement for the proprietary position of Trading / Clearing Member shall also be on net basis.

a) Worst Scenario Loss

The worst-case loss of a portfolio is calculated by valuing the portfolio under several scenarios of changes in the respective stock prices. The scenarios to be used for this purpose is:

| Risk Number | Scenario | Price Move in Multiples of Price Range | Fraction of Loss to be Considered |
|-------------|----------|--|-----------------------------------|
| 1. | | 0 | 100% |
| 2. | | 0 | 100% |
| 3. | | +1/3 | 100% |
| 4. | | +1/3 | 100% |
| 5. | | -1/3 | 100% |
| 6. | | -1/3 | 100% |
| 7. | | +2/3 | 100% |
| 8. | | +2/3 | 100% |
| 9. | | -2/3 | 100% |
| 10. | | -2/3 | 100% |
| 11. | | +1 | 100% |
| 12. | | +1 | 100% |
| 13. | | -1 | 100% |
| 14. | | -1 | 100% |
| 15. | | +2 | 35% |
| 16. | | -2 | 35% |

The price scan range is taken at three and a half standard deviations (3.5σ) where σ is daily volatility of respective underlying stock. The price scan range shall be linked to liquidity, measured in terms of impact cost for an order size of Rs.5 lakh, calculated on the basis of order book snapshots in the previous six months. Accordingly, if the mean value of impact cost exceeds 1%, the price scanning range is scaled up by square root of three. This is in addition to the requirement of scaling up for the look-ahead period i.e. the time in

which mark to market margin is collected. However, the Derivatives Segment may specify a higher price scan range than the said 3σ values for better risk management.

To cover a 99% VaR over 'T' day's horizon, the price scan range is based on $3\sigma \sqrt{T}$ where T is number of days.

The computation of risk arrays for various stock future contracts is done only at discrete time points each day and the latest available risk arrays is applied to the portfolios on a real time basis. The risk arrays is updated 5 times in a day taking the closing price of the previous day at the start of trading and taking the last available traded prices at 11:00 a.m., 12:30 p.m., 2:00 p.m., and at the end of the trading session taking closing price of the day.

b) Minimum Margin

The minimum initial margin equal to 7.5% of the notional value of the contract based on the last available price of the futures contract is applied at all times. To achieve the same, the price scan range is adjusted to ensure that the minimum margin collected doesn't fall below 7.5% at any time.

The Minimum Initial Margin for Stock Futures Contract shall further be scaled up by square root of three in respect of stocks which have a mean value of impact cost of more than 1%. This would be in addition to the look ahead period.

c) Calendar Spread

The margin on calendar spread is calculated and benefit is given to the members for such position. The calendar-spread margin is charged in addition to worst-scenario loss of the portfolio. A calendar spread is treated as a naked position in the far month contract as the near month contract approaches expiry. A calendar spread will be treated as naked positions in the far month contract three trading days before the near month contract expires.

The margin on calendar spread is calculated on the basis of delta of the portfolio consisting of futures and option contracts in each month. Thus, a portfolio consisting of a near month contract with a delta of 100 and a far month contract with a delta of -100 will attract a spread charge equal to the spread charge for a portfolio, which is long 100 near month futures and short 100 far month futures. The spread charge is specified as 0.5% per month for the difference between the two legs of the spread subject to minimum 1% and maximum 3% as specified in the J. R. Varma committee report. While calculating the spread charge, the last available closing price of the far month contract is used to determine the spread charge.

II) Exposure Limits/Second Line of Defence:

In case of stock futures contracts, the notional value of gross open positions at any point in time should not exceed 20 times the available liquid networth of a member, i.e. 10% of the notional value of gross open position in single stock futures or 1.5σ of the notional value of gross open position in single stock futures, whichever is higher, would be collected / adjusted from the liquid networth of a member on a real time basis.

This is calculated as mentioned below:

Long /Short Stock Futures:

Last available closing price of the future series * No. of Market lots * x %.

Where "x%" is the higher of 5% or 1.5σ . For the purpose of computing 1.5σ , the σ of daily logarithmic returns of prices in the underlying stock in the cash market in the last six months shall be computed. This value shall be applicable for a month and shall be re-calculated at the end of the month by once again taking the price data on a rolling basis for the past six months.

However, BSE may specify higher exposure margin for better risk management. In case of a calendar spread contracts, the calendar spread is regarded as an open position of one third (1/3rd) of the far month contract. As the near month contract approaches expiry, the spread shall be treated as a naked position in the far month contract three days prior to the expiry of the near month contract.

III) Mark-to-Market Margin:

The clients' positions are marked to market on a daily basis at the portfolio level. However, for payment of mark-to-market margin to the Exchange, the same are netted out at the member level.

a) Collection / Payment : The mark-to-market margin is paid in / out in cash on T+1 day.

b) Methodology for calculating Closing Price for mark-to-market: The daily closing price of the stock futures contract for mark-to-market settlement is arrived at using the following algorithm:

- Weighted average price of all the trades in last half an hour of the continuous trading session.
- If there are no trades during the last half an hour, then the theoretical price is taken as the official closing price.

The theoretical price is arrived at using following algorithm:

*Theoretical price = Closing value of underlying stock + {closing value of underlying stock * No. of days to expiry * risk free interest rate (at present 7%) / 365}*

The Bank Rate + 1% would be taken as risk free interest rate percentage and dividend yield is taken as zero for simplicity.

IV) Final Settlement:

On the expiry of a stock futures contract, the contract is settled in cash at the final settlement price. However, the profit /loss is paid in /paid out in cash on T+1 basis. The final settlement price of the expiring futures contract is taken as the closing price of the underlying stock. The following algorithm is presently being used for calculating closing value of the underlying scrips (including other scrips) in the Cash Segment of BSE:

- Weighted average price of all the trades in the last thirty minutes of the continuous trading session.
- If there are no trades during the last thirty minutes, then the last traded price in the continuous trading session would be taken as the official closing price.

V) Position Limits:

a) Market Level:

A market wide limit on the open position (in terms of the number of underlying stock) on stock options and futures contract of a particular underlying stock is :-

20% of the number of shares held by non-promoters i.e. 20% of the free float, in terms of number of shares of a company.

The limit would be applicable on all open positions in all futures and option contracts on a particular underlying stock.

The Market Wide limit is enforced in the following manner:

At the end of the day, the Exchange tests whether the market wide-open interest for any scrip exceeds 95% of the market wide position limit for that scrip. If so, the Exchange takes note of open position of all client/Trading Members as at the end of that day in that scrip and from next day onwards the members / client are required to trade only to decrease their positions through offsetting positions. Though the action is taken only at the end of the day, the real time information about the market wide-open interest as a percentage of the market wide position limits is disclosed to the market participants.

At the end of each day during which the ban on fresh positions is in force for any scrip, the Exchange tests whether any member or client has increased his existing positions, or has created a new position in that scrip. If so, the client shall be subject to a penalty equal to a specified % of the increase in the position. The penalty is recovered along with the Mark to Market on the next day.

The normal trading in the scrip is resumed after the open outstanding position comes down to 80% or below of the market wide position limit.

b) Trading Member Level:

For stocks having applicable market-wide position limit (MWPL) of Rs. 500 crores or more, the combined futures and options position limit shall be 20% of applicable MWPL or Rs. 300 crores, whichever is lower and within which stock futures position cannot exceed 10% of applicable MWPL or Rs. 150 crores, whichever is lower.

For stocks having applicable market wide position limit (MWPL) less than Rs. 500 crores, the combined futures and options position limit would be 20% of applicable MWPL and futures position cannot exceed 20% of applicable MWPL or Rs. 50 crores whichever is lower.

Once a member reaches the position limit in a particular underlying then the member is permitted to take only offsetting positions (which results in lowering the open position of the member) in derivative contracts on that underlying. The position limit at trading member level will be computed on a gross basis across all clients of the trading member.

c) Client Level:

The Client's gross open position across all derivative contracts on a particular underlying shall not exceed **higher of-**

1% of the free float market capitalization (in terms of number of shares)

OR

5% of the open interest in the underlying stock (in terms of number of shares).

The position is applicable on the combined positions in all derivatives contracts on an underlying stock. The members are advised to disclose the position of the clients in case the client crosses the aforesaid limits. The members are also advised to inform their clients about the disclosure requirement to the Exchange on part of the client.

d) FII Level:

For stocks having applicable market-wide position limit (MWPL) of Rs. 500 crores or more, the combined futures and options position limit shall be 20% of applicable MWPL or Rs. 300 crores, whichever is lower and within which stock futures position cannot exceed 10% of applicable MWPL or Rs. 150 crores, whichever is lower.

For stocks having applicable market wise position limit (MWPL) less than Rs. 500 crores, the combined futures and options position limit would be 20% of applicable MWPL and futures position cannot exceed 20% of applicable MWPL or Rs. 50 crores whichever is lower.

e) Sub Account level

Each Sub-account of a FII would have the following position limits:

The gross open position across all derivative contracts on a particular underlying stock of a sub-account of a FII should not exceed the **higher of:**

1% of the free float market capitalisation (in terms of number of shares).

or

5% of the open interest in the derivative contracts on a particular underlying stock (in terms of number of contracts).

This position limits would be applicable on the combined position in all derivative contracts on an underlying stock at an exchange.

f) NRI Level

For stock option and single stock futures contracts, the gross open position across all derivative contracts on a particular underlying stock of a NRI shall not exceed the **higher of:**

1% of the free float market capitalization (in terms of number of shares).

or

5% of the open interest in the derivative contracts on a particular underlying stock (in terms of number of contracts).

This position limits would be applicable on the combined position in all derivative contracts on an underlying stock at an exchange.

g) Mutual Fund Level:

For stocks having applicable market-wide position limit (MWPL) of Rs. 500 crores or more, the combined futures and options position limit shall be 20% of applicable MWPL or Rs. 300 crores, whichever is lower and within which stock futures position cannot exceed 10% of applicable MWPL or Rs. 150 crores, whichever is lower.

For stocks having applicable market wide position limit (MWPL) less than Rs. 500 crores, the combined futures and options position limit would be 20% of applicable MWPL and futures position cannot exceed 20% of applicable MWPL or Rs. 50 crores whichever is lower.

h) Limits of each scheme of Mutual Fund:

For Stock Futures and Option Contracts, the gross open position across all derivative contracts on a particular underlying stock of a scheme of mutual fund shall not exceed the higher of:

1% of the free float market capitalisation (in terms of number of shares)

Or

5% of the open interest in the derivative contracts on a particular underlying stock (in terms of number of contracts)

This position limits is applicable on the combined position in all derivative contracts on an underlying stock.

4.5.1.2 STOCK OPTIONS

A portfolio based margining model is adopted which will take an integrated view of the risk involved in the portfolio of each individual client comprising of his positions in all the derivatives contract traded on Derivatives Segment. The parameters for such a model is as follows:

I) Initial Margin or Worst Case Scenario Loss:

The Initial Margin requirement is based on the worst-case loss of portfolio at client level to cover 99% VaR over one day horizon. The initial margin requirement is net at client level and shall be on gross basis at the Trading/Clearing member level. The initial margin requirement for the proprietary position of Trading / Clearing Member shall also be on net basis. The initial margin (or the worst scenario loss) is adjusted against the available liquid networth of the member. The members in turn will collect the initial margin from their clients on an up front basis.

a) Worst Scenario Loss

The worst-case loss of a portfolio is calculated by valuing the portfolio under several scenarios of changes in the underlying stock price and also the changes in the volatility of the underlying stocks. The scenarios to be used for this purpose is:

| Risk Scenario Number | Price Move in Multiples of Price Range | Volatility Move in Multiples of Volatility Range | Fraction of Loss to be Considered |
|-----------------------------|---|---|--|
| 1. | 0 | +1 | 100% |
| 2. | 0 | -1 | 100% |
| 3. | +1/3 | +1 | 100% |
| 4. | +1/3 | -1 | 100% |
| 5. | -1/3 | +1 | 100% |
| 6. | -1/3 | -1 | 100% |
| 7. | +2/3 | +1 | 100% |
| 8. | +2/3 | -1 | 100% |
| 9. | -2/3 | +1 | 100% |
| 10. | -2/3 | -1 | 100% |
| 11. | +1 | +1 | 100% |
| 12. | +1 | -1 | 100% |
| 13. | -1 | +1 | 100% |

| | | | |
|-----|----|----|------|
| 14. | -1 | -1 | 100% |
| 15. | +2 | 0 | 35% |
| 16. | -2 | 0 | 35% |

The price scan range is taken at three and a half standard deviations 3.5σ where σ is daily volatility of respective stocks. However, the Derivatives Segment may specify a higher price scan range than the said 3.5σ values for better risk management. The price scan range shall be linked to liquidity, measured in terms of impact cost for an order size of Rs.5 lakh, calculated on the basis of order book snapshots in the previous six months. Accordingly, if the mean value of impact cost exceeds 1%, the price scanning range is scaled up by square root of three. The value of σ is computed in line with the guidelines specified under J.R. Varma Committee report. The volatility scan range is levied at 10%. The Black-Scholes model is used for valuing options.

The computation of risk arrays for Stock option contract is done only at discrete time points each day and the latest available risk arrays is applied to the portfolios on a real time basis. The risk arrays is updated 5 times in a day taking the closing price of the previous day at the start of trading and taking the last available traded prices at 11:00 a.m., 12:30 p.m., 2:00 p.m., and at the end of the trading session taking closing price of the day.

b) Short Option minimum margin

The short option minimum margin equal to 7.5% of the notional value of all short stock options shall be charged if sum of the worst-scenario loss and the calendar spread margin is lower than the short option minimum margin. The notional value of option positions is calculated by applying the last closing price of the underlying stock.

The Short Option Minimum Charge for Stock Options Contract, shall be scaled up by square root of three in respect of stocks which have a mean value of impact cost of more than 1%.

c) Net Option Value (NOV)

The net option value shall be calculated as the current market value of the option times the number of options (positive for long options and negative for short options) in the portfolio. This NOV is added to the liquid networth of the Clearing Member i.e. the value of short options will be deducted from the liquid networth and the value of long options will be added thereto. Thus mark-to-market gains and losses on option positions will be adjusted against the available liquid networth of the clearing member. Since the options are premium style, there will be no mark-to-market profit or loss.

d) Cash Settlement of Premium

The premium is paid in by the buyers in cash and paid out to the sellers in cash on T+1 day.

e) Unpaid Premium

Until the buyer pays in the premium, the premium due shall be deducted from the available liquid network on a real time basis. However, the premium is deducted only for those portfolios where open position is long for a particular series.

II) Exposure Limits/Second Line of Defence:

In case of stock options contracts, the notional value of gross short open positions at any point in time would not exceed 20 times the available liquid network of a member, i.e. 5% of the notional value of gross short open position in single stock options or 1.5σ of the notional value of gross short open position in single stock options, whichever is higher, will be collected / adjusted from the liquid network of a member on a real time basis over and above the margin calculated by SPAN.

This is calculated as mentioned below:

Long Call / Put Options:

No Capital Adequacy required

Short Call / Put Options:

Last available closing price of underlying stock * No. of Market lots * x%.

Where "x%" is the higher of 5% or 1.5σ .

For the purpose of computing 1.5σ , the σ of daily logarithmic returns of prices in the underlying stock in the cash market in the last six months shall be computed. This value shall be applicable for the next month and shall be re-calculated at the end of the month by once again taking the price data on a rolling basis for the past six months.

However, the Exchange may specify higher exposure margin for better risk management.

III) Position Limits:

a) Market Level:

A market wide limit on the open position (in terms of the number of underlying stock) on stock options and futures contract of a particular underlying stock is :-

20% of the number of shares held by non-promoters i.e. 20% of the free float, in terms of number of shares of a company. The limit would be applicable on all open positions in all futures and option contracts on a particular underlying stock.

The Market Wide limit is enforced in the following manner:

At the end of the day, the Exchange tests whether the market wide-open interest for any scrip exceeds 95% of the market wide position limit for that scrip. If so, the Exchange takes note of open position of all client/Trading Members as at the end of that day in that scrip and from next day onwards the members / client are required to trade only to decrease their positions through offsetting positions. Though the action is taken only at the end of the day,

the real time information about the market wide-open interest as a percentage of the market wide position limits is disclosed to the market participants.

At the end of each day during which the ban on fresh positions is in force for any scrip, the Exchange tests whether any member or client has increased his existing positions, or has created a new position in that scrip. If so, the client shall be subject to a penalty equal to a specified % of the increase in the position. The penalty is recovered along with the Mark to Market on the next day.

The normal trading in the scrip is resumed after the open outstanding position comes down to 80% or below of the market wide position limit.

b) Trading Member Level:

For stocks having applicable market-wide position limit (MWPL) of Rs. 500 crores or more, the combined futures and options position limit shall be 20% of applicable MWPL or Rs. 300 crores, whichever is lower and within which stock futures position cannot exceed 10% of applicable MWPL or Rs. 150 crores, whichever is lower.

For stocks having applicable market wide position limit (MWPL) less than Rs. 500 crores, the combined futures and options position limit would be 20% of applicable MWPL and futures position cannot exceed 20% of applicable MWPL or Rs. 50 crores whichever is lower.

Once a member reaches the position limit in a particular underlying then the member is permitted to take only offsetting positions (which results in lowering the open position of the member) in derivative contracts on that underlying. The position limit at trading member level will be computed on a gross basis across all clients of the trading member.

c) Client Level:

The Client's gross open position across all derivative contracts on a particular underlying shall not exceed **higher of-**

1% of the free float market capitalization (in terms of number of shares)

OR

5% of the open interest in the underlying stock (in terms of number of shares).

The position is applicable on the combined positions in all derivatives contracts on an underlying stock. The members are advised to disclose the position of the clients in case the client crosses the aforesaid limits. The members are also advised to inform their clients about the disclosure requirement to the Exchange on part of the client.

d) FII Level:

For stocks having applicable market-wide position limit (MWPL) of Rs. 500 crores or more, the combined futures and options position limit shall be 20% of applicable MWPL or

Rs. 300 crores, whichever is lower and within which stock futures position cannot exceed 10% of applicable MWPL or Rs. 150 crores, whichever is lower.

For stocks having applicable market wide position limit (MWPL) less than Rs. 500 crores, the combined futures and options position limit would be 20% of applicable MWPL and futures position cannot exceed 20% of applicable MWPL or Rs. 50 crores whichever is lower

e) Sub Account level

Each Sub-account of a FII would have the following position limits:

The gross open position across all derivative contracts on a particular underlying stock of a sub-account of a FII should not exceed the **higher of:**

1% of the free float market capitalisation (in terms of number of shares).

or

5% of the open interest in the derivative contracts on a particular underlying stock (in terms of number of contracts).

This position limits would be applicable on the combined position in all derivative contracts on an underlying stock at an exchange.

f) NRI Level

For stock option and single stock futures contracts, the gross open position across all derivative contracts on a particular underlying stock of a NRI shall not exceed the **higher of:**

1% of the free float market capitalisation (in terms of number of shares).

or

5% of the open interest in the derivative contracts on a particular underlying stock (in terms of number of contracts).

This position limits would be applicable on the combined position in all derivative contracts on an underlying stock at an exchange.

g) Mutual Fund Level:

For stocks having applicable market-wide position limit (MWPL) of Rs. 500 crores or more, the combined futures and options position limit shall be 20% of applicable MWPL or Rs. 300 crores, whichever is lower and within which stock futures position cannot exceed 10% of applicable MWPL or Rs. 150 crores, whichever is lower.

For stocks having applicable market wide position limit (MWPL) less than Rs. 500 crores, the combined futures and options position limit would be 20% of applicable MWPL and

futures position cannot exceed 20% of applicable MWPL or Rs. 50 crores whichever is lower.

h) Limits of each scheme of Mutual Fund:

For Stock Futures and Option Contracts, the gross open position across all derivative contracts on a particular underlying stock of a scheme of mutual fund shall not exceed the higher of:

1% of the free float market capitalisation (in terms of number of shares)

Or

5% of the open interest in the derivative contracts on a particular underlying stock (in terms of number of contracts)

This position limits is applicable on the combined position in all derivative contracts on an underlying stock.

IV) Exercise Limits:

At present, there would not be any exercise limit for trading in Stock Option contracts. However, the Derivatives Segment may specify such limit as it may deem fit from time to time.

V) Assignment of Options:

On Exercise of an Option by an option holder, it will be assigned to the option writer on random basis at client level. The system will use the same algorithm as in case of Assignment of Stock Option Contracts.

VI) Settlement of Options:

On Exercise/ Assignment of options, the settlement will take place on T+1 basis. The Settlement shall take place on the closing price of the underlying in the Cash Segment.

4.6 INDEX DERIVATIVES

4.6.1 INDEX FUTURES

A portfolio based margining model is adopted which will take an integrated view of the risk involved in the portfolio of each individual client comprising of his positions in all the derivatives contract traded on Derivatives Segment. The parameters for such a model is as follows:

I) Initial Margin or Worst Case Scenario Loss:

The Initial Margin requirement is based on the worst-case loss of portfolio at client level to cover 99% VaR over one day horizon. The initial margin requirement is net at client level and shall be on gross basis at the Trading/Clearing member level. The initial margin

requirement for the proprietary position of Trading / Clearing Member shall also be on net basis.

a) *Worst Scenario Loss*

The worst-case loss of a portfolio is calculated by valuing the portfolio under several scenarios of changes in the respective Index prices. The scenarios to be used for this purpose is:

| Risk Number | Scenario | Price Move in Multiples of Price Range | Fraction of Loss to be Considered |
|-------------|----------|--|-----------------------------------|
| 1. | | 0 | 100% |
| 2. | | 0 | 100% |
| 3. | | +1/3 | 100% |
| 4. | | +1/3 | 100% |
| 5. | | -1/3 | 100% |
| 6. | | -1/3 | 100% |
| 7. | | +2/3 | 100% |
| 8. | | +2/3 | 100% |
| 9. | | -2/3 | 100% |
| 10. | | -2/3 | 100% |
| 11. | | +1 | 100% |
| 12. | | +1 | 100% |
| 13. | | -1 | 100% |
| 14. | | -1 | 100% |
| 15. | | +2 | 35% |
| 16. | | -2 | 35% |

The price scan range is taken at three standard deviations ($100 * e^{(3\sigma-1)}$) where σ is daily volatility of respective underlying Index or Index Futures whichever is higher. However, the Derivatives Segment may specify a higher price scan range than the said 3σ values for better risk management.

To cover a 99% VaR over 'T' day's horizon, the price scan range is based on $3\sigma T$ where T is number of days.

The computation of risk arrays for various Index future contracts is done only at discrete time points each day and the latest available risk arrays is applied to the portfolios on a real time basis. The risk arrays is updated at 5 times in a day taking the closing price of the previous day at the start of trading and taking the last available traded prices at 11:00 a.m., 12:30 p.m., 2:00 p.m., and at the end of the trading session taking closing price of the day.

b) Minimum Margin

The minimum initial margin equal to 5% of the notional value of the contract based on the last available price of the futures contract is applied at all times. To achieve the same, the price scan range is adjusted to ensure that the minimum margin collected doesn't fall below 5% at any time. In addition the minimum margin shall also be scaled up by the look ahead point.

c) Calendar Spread

The margin on calendar spread is calculated and benefit is given to the members for such position. The calendar-spread margin is charged in addition to worst-scenario loss of the portfolio. A calendar spread is treated as a naked position in the far month contract as the near month contract approaches expiry. A calendar spread will be treated as naked positions in the far month contract three trading days before the near month contract expires.

The spread charge is specified as 0.5% per month for the difference between the two legs of the spread subject to minimum 1% and maximum 3% as specified in the J. R. Varma committee report. While calculating the spread charge, the last available closing price of the far month contract is used to determine the spread charge.

II) Exposure Limits/Second Line of Defence:

In case of Index futures & Index options contracts, the notional value of gross open positions at any point in time would not exceed 33 1/3 times the available liquid networth of a member. In case of Index futures contract, 3% of the notional value of gross open position in Index future contract would be collected / adjusted from the liquid networth of a member on a real time basis.

This is calculated as mentioned below:

Long /Short Index Futures:

Last available closing price of the future series * Quantity * 3%

However, the Exchange may specify higher exposure margin for better risk management.

In case of a calendar spread contracts, the calendar spread is regarded as an open position of one third (1/3rd) of the far month contract. As the near month contract approaches expiry, the spread shall be treated as a naked position in the far month contract three days prior to the expiry of the near month contract.

III) Mark-to-Market Margin:

The clients' positions are marked to market on a daily basis at the portfolio level. However, for payment of mark-to-market margin to the Exchange, the same is netted out at the member level.

a) Collection / Payment : The mark-to-market margin is paid in / out in cash on T+1 day.

b) Methodology for calculating Closing Price for mark-to-market: The daily closing price of the Index futures contract for mark-to-market settlement is arrived at using the following algorithm:

- Weighted average price of all the trades in last half an hour of the continuous trading session.
- If there were no trades during the last half an hour, then the theoretical price is taken as the official closing price.

The theoretical price is arrived at using following algorithm:

Theoretical price = Closing value of underlying Index + {closing value of underlying Index * No. of days to expiry * risk free interest rate (at present 7%) / 365}

The Bank Rate + 1% would be taken as risk free interest rate percentage and dividend yield is taken as zero for simplicity.

IV) Final Settlement:

On the expiry of an Index futures contract, the contract is settled in cash at the final settlement price. However, the profit /loss is paid in /paid out in cash on T+1 basis. The final settlement price of the expiring futures contract is taken as the closing price of the underlying Index. The following algorithm is presently being used for calculating closing value of the (individual scrips including the scrips constituting the Index) in the equity segment of BSE:

- Weighted average price of all the trades in the last thirty minutes of the continuous trading session.
- If there are no trades during the last thirty minutes, then the last traded price in the continuous trading session would be taken as the official closing price.

V) Position Limits:

a) Trading Member Level:

The trading member position limits in equity index futures contracts shall be higher of:

- Rs.500 Crore

Or

- 15% of the total open interest in the market in equity index futures contracts.

This limit would be applicable on open positions in all futures contracts on a particular underlying index as prescribed by SEBI.

b) Client Level:

Any person or persons acting in concert who hold 15% or more of the open interest in all derivatives contracts on the Index shall be required to report the fact to the Exchange and failure to do so shall attract a penalty as laid down by the exchange / clearing corporation / SEBI.

c) FII position limits in Index Futures Contracts.

FII position limits in equity index futures contracts shall be higher of:

- Rs.500 Crore

Or

- 15% of the total open interest in the market in equity index futures contracts.

This limit would be applicable on open positions in all futures contracts on a particular underlying index as prescribed by SEBI.

In addition to the above, FIIs can take exposure in equity index derivatives subject to the following limits

- Short positions in Index Derivatives (Short Futures, Short Calls and Long puts) not exceeding (in notional value) the FIIs holding of stocks. The stocks shall be valued at the closing price in the cash market as on the previous trading day.
- Long positions in Index Derivatives (long futures, long calls and short puts) not exceeding (in notional value) the FIIs holding of cash, government securities, T-Bills and similar instruments. The government securities and T-Bills are to be valued at book value. Money Market Mutual Funds and Gilt Funds shall be valued at Net Asset Value (NAV).

d) Sub-account Level

Each Sub-account of a FII would have the following position limits: A disclosure requirement for any person or persons acting in concert who together own 15% or more of the open interest of all derivative contracts on a particular underlying index.

e) NRI Level

The position limits for NRIs shall be the same as the client level position limits specified above. Therefore, the NRI position limits shall be – For Index based contracts, a disclosure requirement for any person or persons acting in concert who together own 15% or more of the open interest of all derivative contracts on a particular underlying index.

f) Mutual Fund Level:

Mutual Fund position limits in equity index futures contracts shall be higher of:

- Rs.500 Crore

Or

- 15% of the total open interest in the market in equity index futures contracts.

This limit would be applicable on open positions in all futures contracts on a particular underlying index as prescribed by SEBI.

In addition to the above, Mutual Funds can take exposure in equity index derivatives subject to the following limits:

- Short positions in Index Derivatives (Short Futures, Short Calls and Long puts) not exceeding (in notional value) the Mutual Fund holding of stocks. The stocks shall be valued at the closing price in the cash market as on the previous trading day.
- Long positions in Index Derivatives (long futures, long calls and short puts) not exceeding (in notional value) the Mutual Fund holding of cash, government securities, T-Bills and similar instruments. The government securities and T Bills are to be valued at book value. Money Market Mutual Funds and Gilt Funds shall be valued at Net Asset Value (NAV).

g) Limits of each scheme of Mutual Fund:

For Index based Contracts, Mutual Funds are required to disclose the total open interest held by its scheme or all schemes put together in a particular underlying index, if such open interest equals to or exceeds 15% of the open interest of all derivative contracts on that underlying index.

4.6.2 INDEX OPTIONS

A portfolio based margining model is adopted which will take an integrated view of the risk involved in the portfolio of each individual client comprising of his positions in all the derivatives contract traded on Derivatives Segment. The parameters for such a model is as follows:

I) Initial Margin or Worst Case Scenario Loss:

The Initial Margin requirement is based on the worst-case loss of portfolio at client level to cover 99% VaR over one day horizon. The initial margin requirement is net at client level and shall be on gross basis at the Trading/Clearing member level. The initial margin requirement for the proprietary position of Trading / Clearing Member shall also be on net basis. The initial margin (or the worst scenario loss) is adjusted against the available liquid networth of the member. The members in turn will collect the initial margin from their clients on an up front basis.

a) *Worst Scenario Loss*

The worst-case loss of a portfolio is calculated by valuing the portfolio under several scenarios of changes in the underlying Index value and also the changes in the volatility of the underlying Index. The scenarios to be used for this purpose is:

| Risk Scenario Number | Price Move in Multiples of Price Range | Volatility Move in Multiples of Volatility Range | Fraction of Loss to be Considered |
|----------------------|--|--|-----------------------------------|
| 1. | 0 | +1 | 100% |
| 2. | 0 | -1 | 100% |
| 3. | +1/3 | +1 | 100% |
| 4. | +1/3 | -1 | 100% |
| 5. | -1/3 | +1 | 100% |
| 6. | -1/3 | -1 | 100% |
| 7. | +2/3 | +1 | 100% |
| 8. | +2/3 | -1 | 100% |
| 9. | -2/3 | +1 | 100% |
| 10. | -2/3 | -1 | 100% |
| 11. | +1 | +1 | 100% |
| 12. | +1 | -1 | 100% |
| 13. | -1 | +1 | 100% |
| 14. | -1 | -1 | 100% |
| 15. | +2 | 0 | 35% |
| 16. | -2 | 0 | 35% |

The price scan range is taken at three standard deviations ($100 * e^{(3\sigma-1)}$) where σ is daily volatility of respective Index. However, the Derivatives Segment may specify a higher price scan range than the said 3σ values for better risk management. The value of σ is computed in line with the guidelines specified under J.R. Varma Committee report. The volatility scan range is levied at 4%. The Black-Scholes model is used for valuing options.

The computation of risk arrays for Index option contract is done only at discrete time points each day and the latest available risk arrays is applied to the portfolios on a real time basis. The risk arrays is updated 5 times in a day taking the closing price of the previous day at the start of trading and taking the last available traded prices at 11:00 a.m., 12:30 p.m., 2:00 p.m., and at the end of the trading session taking closing price of the day.

b) *Short Option minimum margin*

The short option minimum margin equal to 3% of the notional value of all short Index options shall be charged if sum of the worst-scenario loss and the calendar spread margin is lower than the short option minimum margin. The notional value of option positions is calculated by applying the last closing price of the underlying Index.

c) *Net Option Value (NOV)*

The net option value shall be calculated as the current market value of the option times the number of options (positive for long options and negative for short options) in the portfolio. This NOV is added to the liquid networth of the Clearing Member i.e. the value of short options will be deducted from the liquid networth and the value of long options will be added thereto. Thus mark-to-market gains and losses on option positions will be adjusted against the available liquid networth of the clearing member. Since the options are premium style, there will be no mark-to-market profit or loss.

d) *Cash Settlement of Premium*

The premium is paid in by the buyers in cash and paid out to the sellers in cash on T+1 day.

e) *Unpaid Premium*

Until the buyer pays in the premium, the premium due shall be deducted from the available liquid networth on a real time basis. However, the premium is deducted only for those portfolios where open position is long for a particular series.

II) Exposure Limits/Second Line of Defence:

In case of Index Futures & Index options contracts, the notional value of gross short open positions at any point in time would not exceed 33 1/3 times the available liquid networth of a member. The 3% of the notional value of gross short open position in Index options, will be collected / adjusted from the liquid networth of a member on a real time basis over and above the margin calculated by SPAN.

This is calculated as mentioned below:

Long Call / Put Options:

No Capital Adequacy required

Short Call / Put Options:

Last available closing price of underlying Index * Quantity * 3%.

However, the Exchange may specify higher exposure margin for better risk management.

III) Position Limits:

a) Trading Member Level:

The trading member position limits in equity index options contracts shall be higher of:

- Rs.500 Crore

Or

- 15% of the total open interest in the market in equity index options contracts.

This limit would be applicable on open positions in all Options contracts on a particular underlying index as prescribed by SEBI.

b) Client Level:

Any person or persons acting in concert who hold 15% or more of the open interest in all derivatives contracts on the Index shall be required to report the fact to the Exchange and failure to do so shall attract a penalty as laid down by the exchange / clearing corporation / SEBI.

c) FII position limits in Index options Contracts:

FII position limits in equity index options contracts shall be higher of:

- Rs.500 Crore

Or

- 15% of the total open interest in the market in equity index options contracts.

This limit would be applicable on open positions in all Options contracts on a particular underlying index as prescribed by SEBI.

In addition to the above, FIIs can take exposure in equity index derivatives subject to the following limits

- Short positions in Index Derivatives (Short Futures, Short Calls and Long puts) not exceeding (in notional value) the FIIs holding of stocks. The stocks shall be valued at the closing price in the cash market as on the previous trading day.
- Long positions in Index Derivatives (long futures, long calls and short puts) not exceeding (in notional value) the FIIs holding of cash, government securities, T-Bills and similar instruments. The government securities and T-Bills are to be valued at book value. Money Market Mutual Funds and Gilt Funds shall be valued at Net Asset Value (NAV).

d) Sub-account Level

Each Sub-account of a FII would have the following position limits: A disclosure requirement for any person or persons acting in concert who together own 15% or more of the open interest of all derivative contracts on a particular underlying index.

e) NRI Level

The position limits for NRIs shall be the same as the client level position limits specified above. Therefore, the NRI position limits shall be –

For Index based contracts, a disclosure requirement for any person or persons acting in concert who together own 15% or more of the open interest of all derivative contracts on a particular underlying index.

f) Mutual Fund Level

Mutual Fund position limits in equity index options contracts shall be higher of

- Rs.500 Crore

Or

- 15% of the total open interest in the market in equity index options contracts.

This limit would be applicable on open positions in all options contracts on a particular underlying index as prescribed by SEBI.

In addition to the above, Mutual Funds can take exposure in equity index derivatives subject to the following limits

- Short positions in Index Derivatives (Short Futures, Short Calls and Long puts) not exceeding (in notional value) the Mutual Fund holding of stocks. The stocks shall be valued at the closing price in the cash market as on the previous trading day.
- Long positions in Index Derivatives (long futures, long calls and short puts) not exceeding (in notional value) the Mutual Fund holding of cash, government securities, T-Bills and similar instruments. The government securities and T-Bills are to be valued at book value. Money Market Mutual Funds and Gilt Funds shall be valued at Net Asset Value (NAV).

g) Limits of each scheme of Mutual Fund:

For Index based Contracts, Mutual Funds are required to disclose the total open interest held by its scheme or all schemes put together in a particular underlying index, if such open interest equals to or exceeds 15% of the open interest of all derivative contracts on that underlying index.

IV) Exercise Limits:

At present, there would not be any exercise limit for trading in Index Option contracts. However, the Derivatives Segment may specify such limit, as it may deem fit from time to time.

V) Assignment of Options:

On Exercise of an Option by an option holder, it will be assigned to the option writer on random basis at client level.

CHAPTER V – REGULATORY FRAMEWORK

The trading of derivatives is governed by the provisions contained in the SC(R) A, the SEBI Act, the rules and regulations framed there under and the rules and bye-laws of stock exchanges.

5.1 SECURITIES CONTRACTS (REGULATION) ACT, 1956

SC(R)A aims at preventing undesirable transactions in securities by regulating the business of dealing therein and by providing for certain other matters connected therewith. This is the principal Act, which governs the trading of securities in India. The term “securities” has been defined in the SC(R)A. As per Section 2(h), the ‘Securities’ include:

1. Shares, scrips, stocks, bonds, debentures, debenture stock or other marketable securities of a like nature in or of any incorporated company or other body corporate.
2. Derivatives
3. Units or any other instrument issued by any collective investment scheme to the investors in such schemes.
4. Government securities
5. Such other instruments as may be declared by the Central Government to be securities.
6. Rights or interests in securities.

“Derivative” is defined to include:

1. A security derived from a debt instrument, share, loan whether secured or unsecured, risk instrument or contract for differences or any other form of security.
2. A contract which derives its value from the prices, or index of prices, of underlying securities.

Section 18A provides that notwithstanding anything contained in any other law for the time being in force, contracts in derivative shall be legal and valid if such contracts are:

- Traded on a recognized stock exchange
- Settled on the clearing house of the recognized stock exchange, in accordance with the rules and bye-laws of such stock exchanges.

5.2 SECURITIES AND EXCHANGE BOARD OF INDIA ACT, 1992

SEBI Act, 1992 provides for establishment of Securities and Exchange Board of India(SEBI) with statutory powers for (a) protecting the interests of investors in securities (b) promoting the development of the securities market and (c) regulating the securities

market. Its regulatory jurisdiction extends over corporates in the issuance of capital and transfer of securities, in addition to all intermediaries and persons associated with securities market. SEBI has been obligated to perform the aforesaid functions by such measures as it thinks fit. In particular, it has powers for:

- regulating the business in stock exchanges and any other securities markets.
- registering and regulating the working of stock brokers, sub-brokers etc.
- promoting and regulating self-regulatory organizations.
- prohibiting fraudulent and unfair trade practices.
- calling for information from, undertaking inspection, conducting inquiries and audits of the stock exchanges, mutual funds and other persons associated with the securities market and intermediaries and self-regulatory organizations in the securities market.
- performing such functions and exercising according to Securities Contracts (Regulation) Act, 1956, as may be delegated to it by the Central Government.

5.3 REGULATION FOR DERIVATIVES TRADING

SEBI set up a 24- member committee under the Chairmanship of Dr. L. C. Gupta to develop the appropriate regulatory framework for derivatives trading in India. On May 11, 1998 SEBI accepted the recommendations of the committee and approved the phased introduction of derivatives trading in India beginning with stock index futures. The provisions in the SC(R)A and the regulatory framework developed there under govern trading in securities. The amendment of the SC(R)A to include derivatives within the ambit of 'securities' in the SC(R)A made trading in derivatives possible within the framework of that Act.

1. Any Exchange fulfilling the eligibility criteria as prescribed in the L. C. Gupta committee report can apply to SEBI for grant of recognition under Section 4 of the SC(R)A, 1956 to start trading derivatives. The derivatives exchange/segment should have a separate governing council and representation of trading/clearing members shall be limited to maximum of 40% of the total members of the governing council. The exchange would have to regulate the sales practices of its members and would have to obtain prior approval of SEBI before start of trading in any derivative contract.
2. The Exchange should have minimum 50 members.
3. The members of an existing segment of the exchange would not automatically become the members of derivative segment. The members of the derivative segment would need to fulfil the eligibility conditions as laid down by the L. C. Gupta committee.

4. The clearing and settlement of derivatives trades would be through a SEBI approved clearing corporation/house. Clearing corporations/houses complying with the eligibility conditions as laid down by the committee have to apply to SEBI for grant of approval.
5. Derivative brokers/dealers and clearing members are required to seek registration from SEBI. This is in addition to their registration as brokers of existing stock exchanges. The minimum networth for clearing members of the derivatives clearing corporation/house shall be Rs.300 Lakh. The networth of the member shall be computed as follows:
 6. Capital + Free reserves Less non-allowable assets viz.,
 - (a) Fixed assets
 - (b) Pledged securities
 - (c) Member's card
 - (d) Non-allowable securities(unlisted securities)
 - (e) Bad deliveries
 - (f) Doubtful debts and advances
 - (g) Prepaid expenses
 - (h) Intangible assets
 - (i) 30% marketable securities
7. The minimum contract value shall not be less than Rs.2 Lakh. Exchanges have to submit details of the futures contract they propose to introduce.
8. The initial margin requirement, exposure limits linked to capital adequacy and margin demands related to the risk of loss on the position will be prescribed by SEBI/Exchange from time to time.
9. The L. C. Gupta committee report requires strict enforcement of "Know your customer" rule and requires that every client shall be registered with the derivatives broker. The members of the derivatives segment are also required to make their clients aware of the risks involved in derivatives trading by issuing to the client the Risk Disclosure Document and obtain a copy of the same duly signed by the client.
10. The trading members are required to have qualified approved user and sales person who have passed a certification programme approved by SEBI.

5.4 ACCOUNTING

5.4.1 Accounting for futures

The Institute of Chartered Accountants of India (ICAI) has issued guidance notes on accounting of index futures contracts from the view point of parties who enter into such futures contracts as buyers or sellers. For other parties involved in the trading process, like brokers, trading members, clearing members and clearing corporations, a trade in equity index futures is similar to a trade in, say shares, and does not pose any peculiar accounting

problems. Hence in this section we shall largely focus on the accounting treatment of equity index futures in the books of the client. But before we do so, a quick re-look at some of the terms used.

- Clearing corporation/house: Clearing corporation/house means the clearing corporation/house approved by SEBI for clearing and settlement of trades on the derivatives exchange/segment. All the clearing and settlement for trades that happen on the BSE's market is done through BOISL.
- Clearing member: Clearing member means a member of the clearing corporation and includes all categories of clearing members as may be admitted as such by the clearing corporation to the derivatives segment.
- Client: A client means a person, on whose instructions and, on whose account, the trading member enters into any contract for the purchase or sale of any contract or does any act in relation thereto.
- Contract month: Contract month means the month in which the exchange/clearing corporation rules require a contract to be finally settled.
- Daily settlement price: Daily settlement price is the closing price of the equity index futures contract for the day or such other price as may be decided by the clearing house from time to time.
- Derivative exchange/segment: Derivative exchange means an exchange approved by SEBI as a derivative exchange. Derivative segment means segment of an existing exchange approved by SEBI as derivatives segment.
- Final settlement price: The final settlement price is the closing price of the equity index futures contract on the last trading day of the contract or such other price as may be specified by the clearing corporation, from time to time.
- Long position: Long position in an equity index futures contract means outstanding purchase obligations in respect of the equity index futures contract at any point of time .
- Open position: Open position means the total number of equity index futures contracts that have not yet been offset and closed by an opposite position.
- Settlement date: Settlement date means the date on which the settlement of outstanding obligations in an equity index futures contract are required to be settled as provided in the Bye-Laws of the Derivatives exchange/segment.
- Short position: Short position in an equity index futures contract means outstanding sell obligations in respect of an equity index futures contract at any point of time.
- Trading member: Trading member means a Member of the Derivatives exchange/segment and registered with SEBI.

Accounting at the inception of a contract

Every client is required to pay to the trading member/clearing member, the initial margin determined by the clearing corporation as per the byelaws/ regulations of the exchange for entering into equity index futures contracts. Such initial margin paid/payable should be debited to “Initial margin - Equity index futures account”. Additional margins, if any, should also be accounted for in the same manner. It may be mentioned that at the time when the contract is entered into for purchase/sale of equity index futures, no entry is passed for recording the contract because no payment is made at that time except for the initial margin. At the balance sheet date, the balance in the ‘Initial margin - Equity index futures account’ should be shown separately under the head ‘current assets’. In those cases where any amount has been paid in excess of the initial/additional margin, the excess should be disclosed separately as a deposit under the head ‘current assets’. In cases where instead of paying initial margin in cash, the client provides bank guarantees or lodges securities with the member, a disclosure should be made in the notes to the financial statements of the client.

Accounting at the time of daily settlement

This involves the accounting of payment/receipt of mark-to-market margin money. Payments made or received on account of daily settlement by the client would be credited/debited to the bank account and the corresponding debit or credit for the same should be made to an account titled as “Mark-to-market margin - Equity index futures account”. Some times the client may deposit a lump sum amount with the broker/trading member in respect of mark-to-market margin money instead of receiving/paying mark-to-market margin money on daily basis. The amount so paid is in the nature of a deposit and should be debited to an appropriate account, say, “Deposit for mark-to-market margin account”. The amount of “mark-to-market margin” received/paid from such account should be credited/debited to “Mark-to-market margin - Equity index futures account” with a corresponding debit/credit to “Deposit for mark-to-market margin account”. At the year-end, any balance in the “Deposit for mark-to-market margin account” should be shown as a deposit under the head “current assets”.

Accounting for open positions

Position left open on the balance sheet date must be accounted for. Debit/credit balance in the “mark-to-market margin - Equity index futures account”, maintained on global basis, represents the net amount paid/received on the basis of movement in the prices of index futures till the balance sheet date. Keeping in view ‘prudence’ as a consideration for preparation of financial statements, provision for anticipated loss, which may be equivalent to the net payment made to the broker (represented by the debit balance in the “mark-to-market margin - Equity index futures account”) should be created by debiting the profit and loss account. Net amount received (represented by credit balance in the “mark-to-market margin - Equity index futures account”) being anticipated profit should be ignored and no credit for the same should be taken in the profit and loss account. The debit balance in the said “mark-to-market margin - Equity index futures account”, i.e., net payment made to the broker, may be shown under the head “current assets, loans and advances” in the balance sheet and the provision created there against should be shown as a deduction there from. On the other hand, the credit balance in the said account, i.e., the net amount received from the broker, should be shown as a current liability under the head “current liabilities and provisions in the balance sheet”.

Accounting at the time of final settlement

This involves accounting at the time of final settlement or squaring-up of the contract. At the expiry of a series of equity index futures, the profit/loss, on final settlement of the contracts in the series, should be calculated as the difference between final settlement price and contract prices of all the contracts in the series. The profit/loss, so computed, should be recognized in the profit and loss account by corresponding debit/credit to “mark-to-market margin - Equity index futures account”. However, where a balance exists in the provision account created for anticipated loss, any loss arising on such settlement should be first charged to such provision account, to the extent of the balance available in the provision account, and the balance of loss, if any, should be charged to the profit and loss account. Same accounting treatment should be made when a contract is squared-up by entering into a reverse contract. It appears that, at present, it is not feasible to identify the equity index futures contracts. Accordingly, if more than one contract in respect of the series of equity index futures contracts to which the squared-up contract pertains is outstanding at the time of the squaring of the contract, the contract price of the contract so squared-up should be determined using First In, First-Out (FIFO) method for calculating profit/loss on squaring-up. On the settlement of an equity index futures contract, the initial margin paid in respect of the contract is released which should be credited to “Initial margin - Equity index futures account”, and a corresponding debit should be given to the bank account or the deposit account (where the amount is not received).

Accounting in case of a default

When a client defaults in making payment in respect of a daily settlement, the contract is closed out. The amount not paid by the Client is adjusted against the initial margin. In the books of the Client, the amount so adjusted should be debited to “mark-to-market - Equity index futures account” with a corresponding credit to “Initial margin - Equity index futures account”. The amount of initial margin on the contract, in excess of the amount adjusted against the mark-to-market margin not paid, will be released. The accounting treatment in this regard will be the same as explained above. In case, the amount to be paid on daily settlement exceeds the initial margin the excess is a liability and should be shown as such under the head ‘current liabilities and provisions’, if it continues to exist on the balance sheet date. The amount of profit or loss on the contract so closed out should be calculated and recognized in the profit and loss account in the manner dealt with above.

Disclosure requirements

The amount of bank guarantee and book value as also the market value of securities lodged should be disclosed in respect of contracts having open positions at the year end, where initial margin money has been paid by way of bank guarantee and/or lodging of securities. Total number of contracts entered and gross number of units of equity index futures traded (separately for buy/sell) should be disclosed in respect of each series of equity index futures. The number of equity index futures contracts having open position, number of units of equity index futures pertaining to those contracts and the daily settlement price as of the balance sheet date should be disclosed separately for long and short positions, in respect of each series of equity index futures.

5.4.2 Accounting for options

The Institute of Chartered Accountants of India issued guidance note on accounting for index options and stock options from the view point of the parties who enter into such contracts as buyers/holder or sellers/writers. Following are the guidelines for accounting treatment in case of cash settled index options and stock options:

Accounting at the inception of a contract

The seller/writer of the option is required to pay initial margin for entering into the option contract. Such initial margin paid would be debited to 'Equity Index Option Margin Account' or to 'Equity Stock Option Margin Account', as the case may be. In the balance sheet, such account should be shown separately under the head 'Current Assets'. The buyer/holder of the option is not required to pay any margin. He is required to pay the premium. In his books, such premium would be debited to 'Equity Index Option Premium Account' or 'Equity Stock Option Premium Account', as the case may be. In the books of the seller/writer, such premium received should be credited to 'Equity Index Option Premium Account' or 'Equity Stock Option Premium Account' as the case may be.

Accounting at the time of payment/receipt of margin

Payments made or received by the seller/writer for the margin should be credited/debited to the bank account and the corresponding debit/credit for the same should also be made to 'Equity Index Option Margin Account' or to 'Equity Stock Option Margin Account', as the case may be. Sometimes, the client deposit a lump sum amount with the trading/clearing member in respect of the margin instead of paying/receiving margin on daily basis. In such case, the amount of margin paid/received from/into such accounts should be debited/credited to the 'Deposit for Margin Account'. At the end of the year the balance in this account would be shown as deposit under 'Current Assets'.

Accounting for open positions as on balance sheet dates

The 'Equity Index Option Premium Account' and the 'Equity Stock Option Premium Account' should be shown under the head 'Current Assets' or 'Current Liabilities', as the case may be. In the books of the buyer/holder, a provision should be made for the amount by which the premium paid for the option exceeds the premium prevailing on the balance sheet date. The provision so created should be credited to 'Provision for Loss on Equity Index Option Account' or to the 'Provision for Loss on Equity Stock Options Account', as the case may be. The provision made as above should be shown as deduction from 'Equity Index Option Premium' or 'Equity Stock Option Premium' which is shown under 'Current Assets'. In the books of the seller/writer, the provision should be made for the amount by which premium prevailing on the balance sheet date exceeds the premium received for that option. This provision should be credited to 'Provision for Loss on Equity Index Option Account' or to the 'Provision for Loss on Equity Stock Option Account', as the case may be, with a corresponding debit to profit and loss account. 'Equity Index Options Premium Account' or 'Equity Stock Options Premium Account' and 'Provision for Loss on Equity Index Options Account' or 'Provision for Loss on Equity Stock Options Account' should be shown under 'Current Liabilities and Provisions'. In case of any opening balance in the 'Provision for Loss on Equity Stock Options Account'

or the 'Provision for Loss on Equity Index Options Account', the same should be adjusted against the provision required in the current year and the profit and loss account be debited/credited with the balance provision required to be made/excess provision written back.

Accounting at the time of final settlement

On exercise of the option, the buyer/holder will recognize premium as an expense and debit the profit and loss account by crediting 'Equity Index Option Premium Account' or 'Equity Stock Option Premium Account'. Apart from the above, the buyer/holder will receive favourable difference, if any, between the final settlement price as on the exercise/expiry date and the strike price, which will be recognized as income. On exercise of the option, the seller/writer will recognize premium as an income and credit the profit and loss account by debiting 'Equity Index Option Premium Account' or 'Equity Stock Option Premium Account'. Apart from the above, the seller/writer will pay the adverse difference, if any, between the final settlement price as on the exercise/expiry date and the strike price. Such payment will be recognized as a loss. As soon as an option gets exercised, margin paid towards such option would be released by the exchange, which should be credited to 'Equity Index Option Margin Account' or to 'Equity Stock Option Margin Account', as the case may be, and the bank account will be debited.

Accounting at the time of squaring off an option contract

The difference between the premium paid and received on the squared off transactions should be transferred to the profit and loss account. Following are the guidelines for accounting treatment in case of delivery settled index options and stock options: The accounting entries at the time of inception, payment/receipt of margin and open options at the balance sheet date will be the same as those in case of cash settled options. At the time of final settlement, if an option expires un-exercised then the accounting entries will be the same as those in case of cash settled options. If the option is exercised then shares will be transferred in consideration for cash at the strike price. For a call option the buyer/holder will receive equity shares for which the call option was entered into. The buyer/holder should debit the relevant equity shares account and credit cash/bank. For a put option, the buyer/holder will deliver equity shares for which the put option was entered into. The buyer/holder should credit the relevant equity shares account and debit cash/bank. Similarly, for a call option the seller/writer will deliver equity shares for which the call option was entered into. The seller/writer should credit the relevant equity shares account and debit cash/bank. For a put option the seller/writer will receive equity shares for which the put option was entered into. The seller/writer should debit the relevant equity shares account and credit cash/bank. In addition to this entry, the premium paid/received will be transferred to the profit and loss account, the accounting entries for which should be the same as those in case of cash settled options.

5.5 TAXATION OF DERIVATIVE TRANSACTION IN SECURITIES

5.5.1 Taxation of Profit/Loss on derivative transaction in securities

Prior to Financial Year 2005–06, transaction in derivatives were considered as speculative transactions for the purpose of determination of tax liability under the Income -tax Act. This is in view of section 43(5) of the Income -tax Act which defined speculative transaction as a transaction in which a contract for purchase or sale of any commodity,

including stocks and shares, is periodically or ultimately settled otherwise than by the actual delivery or transfer of the commodity or scrips. However, such transactions entered into by hedgers and stock exchange members in course of jobbing or arbitrage activity were specifically excluded from the purview of definition of speculative transaction.

In view of the above provisions, most of the transactions entered into in derivatives by investors and speculators were considered as speculative transactions. The tax provisions provided for differential treatment with respect to set off and carry forward of loss on such transactions. Loss on derivative transactions could be set off only against other speculative income and the same could not be set off against any other income. This resulted in payment of higher taxes by an assessee. Finance Act, 2005 has amended section 43(5) so as to exclude transactions in derivatives carried out in a “recognized stock exchange” for this purpose. This implies that income or loss on derivative transactions which are carried out in a “recognized stock exchange” is not taxed as speculative income or loss. Thus, loss on derivative transactions can be set off against any other income during the year. In case the same cannot be set off, it can be carried forward to subsequent assessment year and set off against any other income of the subsequent year. Such losses can be carried forward for a period of 8 assessment years. It may also be noted that securities transaction tax paid on such transactions is eligible as deduction under Income-tax Act, 1961.

5.5.2 Securities transaction tax on derivative transactions

As per Chapter VII of the Finance (No. 2) Act, 2004, Securities Transaction Tax (STT) is levied on all transactions of sale and/or purchase of equity shares and units of equity oriented fund and sale of derivatives entered into in a recognized stock exchange. As per Finance Act 2008, the following STT rates are applicable w.e.f. 1st June, 2008 in relation to sale of a derivative, where the transaction of such sale is entered into in a recognized stock exchange. Sr. No. Taxable securities transaction Rate Payable by

- (a) Sale of an option in securities 0.017% - Seller
- (b) Sale of an option in securities, where option is exercised 0.125% - Purchaser
- (c) Sale of a futures in securities 0.017% - Seller

Consider an example. Mr. A. sells a futures contract of M/s. XYZ Ltd. (Lot Size: 1000) expiring on 29-Sep-2005 for Rs. 300. The spot price of the share is Rs. 290. The securities transaction tax thereon would be calculated as follows:

1. Total futures contract value = $1000 \times 300 = \text{Rs. } 3,00,000$
2. Securities transaction tax payable thereon $0.017\% = 3,00,000 \times 0.017\% = \text{Rs. } 51$

Note: No tax on such a transaction is payable by the buyer of the futures contract.

ANNEXURE I - SAMPLE QUESTIONS

1: Futures trading commenced first on _____.

- a).Chicago Board of Trade
- b) Chicago Board Options Exchange
- c) Chicago Mercantile Exchange
- d) London International Financial Futures and Options Exchange

2: Who are the participants in the derivatives market?

- a) Hedgers
- b) Arbitrageurs
- c) Speculators
- d) All of the above

3: OTC derivatives are considered risky because _____.

- a) There is no formal house margining system.
- b) They are not settled on a clearing basis.
- c) They do not follow any formal rules or mechanisms.
- d) All of the above

4. Some of the main variants of derivative markets are:

- a) Futures and Options
- b) Swaps
- c) Forwards
- d) All of the above

5. Types of options include:

- a) Call
- b) Put
- c) Both A and B
- d) None of the above

6. The commonly used swaps are:

- a) Interest Rate Swaps
- b) Currency Swaps
- c) Index Swaps
- d) Both A and B

7. Sensex includes the _____ most representative stocks that trade on BSE.

- a) 30
- b) 100
- c) 50
- d) 500

8. The Indian company which provides professional index management services is _____.

- a) IISL
- b) S&P
- c) BOISL
- d) CRISIL

9. Impact cost measures the _____.

- a) Volatility of the stock
- b) Return on a stock
- c) Liquidity of the stock
- d) None of above

10. Assume that the base value of a market capitalization weighted index were 1000 and the base market capitalization were Rs.35000 crore. If the current market capitalization is Rs.77,000 crore, the index is at _____.

- a) 2200
- b) 1200
- c) 2250
- d) 1350

11. The market impact cost on a trade of Rs.3 million of the full Nifty works out to be about 0.5%. This means that if Nifty is at 2000, a buy order will go through at roughly _____.

- a) 2010
- b) 2500
- c) 2050
- d) None of the above

12. Which of the following cannot be an underlying asset for a financial derivative contract?

- a) Equity index
- b) Interest rate
- c) Commodities
- d) Foreign exchange

13. In an options contract, the option lies with the _____.

- a) Buyer
- b) Exchange
- c) Both
- d) Seller

14. A call option at a strike of Rs.176 is selling at a premium of Rs.18. At what price will it break even for the buyer of the option?

- a) Rs.196
- b) Rs.187
- c) Rs.204
- d) Rs.194

15. Which of the following is NOT an example of a forward contract?

- a) An agreement to buy a car in the future at a specified price.
- b) An agreement to buy an airplane ticket at a future date for a certain price
- c) An agreement to buy a refrigerator today at the posted price.
- d) An agreement to subscribe to a newspaper at a specified price at a future date.

16. Futures on individual stocks are allowed

- a) on all stocks listed on the stock exchange
- b) on few selected stocks only
- c) on all stocks listed on all stock exchanges in India
- d) on all stocks where price is more than Rs 100 per share

17. The closing index value of the BSE Sensitive Index is calculated using

- a) last traded price of the index scrips
- b) weighted average of the last 120 minutes trades of the index scrips
- c) the algorithm used to calculate closing Sensex value
- d) None of the above

18. An exchange traded futures contract is similar to an OTC (over the counter) derivative. Some common features are :

- a) Both are tailored (e.g. non-standardised) instruments
- b) Both require margin collection by a clearing house
- c) Both are exposed to credit-risk i.e. risk of non-performance by counter party
- d) None of the above

19. Which is the oldest index in India?

- a) BSE 30 Sensex
- b) BSE 100
- c) S&P CNX Nifty
- d) BSE 200

20. Derivatives are highly leveraged, which implies that

- a) You can take a higher position with smaller investments using derivatives
- b) You can take a lower position with higher investments using derivatives
- c) You can take a higher position if you buy the underlying assets instead of buying derivatives
- d) You should buy the underlying assets as you might make more profit on them rather than derivatives

21. At the point of entering into the futures contract

- a) Both the buyer and the seller pay initial margin to the exchange
- b) The buyer alone pays initial margin to the exchange
- c) The seller alone pays initial margin to the exchange
- d) No margins are payable to the exchange by the buyer or the seller

22. Each forward contract

- a) can be structured as required by the buyer and seller
- b) will have the same specifications
- c) specifications are decided by the RBI
- d) None of the above

23. Tick size is

- a) the maximum daily movement permitted in the price of the contract
- b) the maximum permitted price movement during the entire life of the contract
- c) the minimum permitted price movement in a futures contract
- d) None of the above

24. If you wanted to create a perfect hedge for your portfolio, the value of index futures you would sell should equal:

- a) Value of your portfolio / Beta of your portfolio
- b) Value of your portfolio * Beta of your portfolio
- c) Value of your portfolio - Beta of your portfolio * 100
- d) Value of your portfolio + Beta of your portfolio * 100

25. When a deal is executed within the two investors of the same broker in his office and then reported on BOLT, it is called

- a) negotiated deal
- b) kerb deal
- c) cross deal
- d) all or none deal

26. The securities which are not delivered in the clearing house during pay-in, are purchased by the clearing house from the market. This process is known as

- a) close-out
- b) penalty
- c) auction
- d) upla badla

27. The selection criteria for a scrip to form part of the BSE Sensitive index is

- a) The scrips must have been traded every day in the last six months
- b) the company must be a dividend paying company

- c) number of trades in the last six months should be greater than a certain number specified by the Index Committee
- d) All of the above

28. In case of BSE Index futures, the monthly series matures on

- a) First Thursday of the month
- b) Last Thursday of the month
- c) First Wednesday of the month
- d) Last Wednesday of the month

29. Delta is a measure of:

- a) change in the premium with respect to the change in the price of underlying
- b) return on the instrument
- c) safety of an instrument
- d) change in an option value for a unit change in the volatility of the underlying

30. The Black-Scholes model is used for the pricing of:

- a) Index futures
- b) Options
- c) Equity shares
- d) Corporate debt

31. Which is the ratio of change in delta for a unit change in the price of the underlying?

- a) Vega
- b) Rho
- c) Theta
- d) Gamma

32. An European Option

- a) can be exercised anytime during the life of the Option
- b) can be exercised only at maturity
- c) is traded only on the European Exchange
- d) is a floating rate option

33. An Over the Counter option

- a) is a standardised contract traded on an Exchange
- b) is a contract tailored to suit individual requirements
- c) is an option on stocks of pharmaceutical companies
- d) can be bought from any option writer

34. Which of the following options will yield a profit to the purchaser?

- a) An expired option that is “at the money”

- b) A call option when the price of the underlying share increases above the option's strike price by an amount greater than the premium paid for the option
- c) A put option when the price of the underlying increases above the option's strike price by an amount greater than the premium paid for the options
- d) An out-of-the-money option

35. The strategy of buying a put option on a stock that you possess is called

- a) writing a naked option
- b) writing a covered call
- c) protective put strategy
- d) None of the above

36. A bull spread can be created by

- a) buying one call and selling another call
- b) buying one put and buying one call
- c) selling one call and buying two puts
- d) None of the above

37. Mr. X purchases 100 Infosys put option @ 200 per option with a strike price of Rs.3600. If on exercise date Infosys stock price is 3700 , ignoring transaction cost Mr. X will choose

- a) to exercise the option.
- b) not to exercise the option.
- c) may or may not exercise the option depending on whether he is in Mumbai or not at that time
- d) None of the above

38. Market makers add

- a) Speculation to the market.
- b) Liquidity to the market.
- c) Fluctuation to the market.
- d) nothing to the market.

39. Buyer of OTM put option is

- a) bullish - payer of premium
- b) bullish - receiver of premium
- c) bearish - payer of premium
- d) bearish - receiver of premium

40. ACC and L&T are both quoted at Rs 300 per share. ACC is more volatile than L&T. Which Put will be priced higher?

- a) ACC
- b) L&T
- c) Both will be equally priced
- d) Both will be priced at Rs 10

41. Three Call series of Satyam - March, April and May are quoted. Which will have the lowest Option Premium?

- a) April
- b) May
- c) March
- d) All will be equal

42. Options are

- a) contracts that can be settled in cash or settled by delivery depending on the choice of the seller of the options
- b) contracts that can be settled in cash or settled by delivery depending on the choice of the buyer of the options
- c) contracts that can be settled in cash or settled by delivery depending on the terms of the contract as decided by the exchange
- d) None of the above

43. Time value and intrinsic value together comprise option premium.

- a) True
- b) False
- c) True only in USA
- d) True only in Japan

44. A covered call is one where

- a) the writer does not own the underlying asset
- b) the writer owns the underlying asset
- c) the buyer does not have to pay a premium for buying the option
- d) None of the above

45. Holders of Over the counter Option (I.e. those options not traded on any stock exchange)

- a) have to pay mark-to-market margins daily
- b) have to pay mark-to-market margins once a week
- c) do not have to pay mark-to-market margins
- d) have to pay margins only for out-of-the-money options

46. The risk profile for an options contract is

- a) symmetric
- b) asymmetric

- c) similar to that of a futures contract
- d) None of the above

47. An option series consist of

- a) all options of different class with same expiration date & strike price.
- b) all options of a given class with different expiration date & strike price.
- c) Options of same type
- d) all options of a given class with same expiration date & strike price.

48. Exercise prices of options are specified by

- a) Government
- b) Company
- c) Market makers
- d) Exchange

49. Higher the volatility of the stock, lower the premium the call option would fetch.

- a) True
- b) False
- c) True only in USA
- d) True only in Japan

50. If Reliance weekly volatility is known then Reliance Annual Volatility is equal to

- a) Weekly Volatility x 52
- b) Weekly Volatility x Sqrt of 52
- c) Weekly Volatility x 12
- d) Weekly Volatility x Sqrt of 12

ANNEXURE II – OPTIONS – ARITHMETICAL PROBLEMS

1) You have bought Satyam Call strike price Rs. 240 at a premium of Rs.25. Lot size is 1,200. What is your profit (+) or loss(-) if you sell the Call at Rs 40?

- a) Rs.19,000
- b) Rs.17,000
- c) Rs.18,000
- d) None of these

2) You have sold Satyam Call strike price Rs. 250 at a premium of Rs.50. Lot size is 1,200. What is your profit (+) or loss(-) if you purchase the Call at Rs 23?

- a) Rs 32,400
- b) Rs 33,400
- c) Rs 31,400
- d) None of these

3) You have sold Satyam Call strike price Rs. 240 at a premium of Rs.25. Lot size is 1,200. What is your profit (+) or loss(-) if you purchase the Call at Rs 30?

- a) Rs -5,000
- b) Rs -7,000
- c) Rs -6,000
- d) None of these

4) You have bought Satyam Put strike price Rs. 260 at a premium of Rs.45. Lot size is 1,200. What is your profit (+) or loss(-) if you sell the Put at Rs 18?

- a) Rs -32,400
- b) Rs -31,400
- c) Rs -33,400
- d) None of these

5) You have sold Satyam Put strike price Rs. 220 at a premium of Rs.48 Lot size is 1,200. What is your profit (+) or loss(-) if you buy the Put at Rs 22?

- a) Rs 32,200
- b) Rs 31,200
- c) Rs 30,200
- d) None of these

6) You bought a Satyam Call at Rs 240 strike price for Rs 25 each. The lot size is 1,200. On the expiry day, Satyam closed at Rs 300 and the option expired worthless. What is your net profit (+) or loss (-)?

- a) Rs 43,000
- b) Rs 41,000
- c) Rs 42,000
- d) None of these

7) You bought a Satyam Call at Rs 280 strike price for Rs 23 each. The lot size is 1,200. On the expiry day, Satyam closed at Rs 221 and the option expired worthless. What is your net profit (+) or loss (-)?

- a) Rs -27,600
- b) Rs -26,600
- c) Rs -28,600
- d) None of these

8) You sold a Satyam Call at Rs 230 strike price for Rs 28 each. The lot size is 1,200. On the expiry day, Satyam closed at Rs 260. What is your net profit (+) or loss (-)?

- a) Rs -1,400
- b) Rs -2,400
- c) Rs -3,400
- d) None of these

9) You bought a Satyam Put at Rs 240 strike price for Rs 25 each. The lot size is 1,200. On the expiry day, Satyam closed at Rs 300. What is your net profit (+) or loss (-)?

- a) Rs -30,000

b) Rs -29,000

c) Rs -31,000

d) None of these

10) You sold a Satyam Put at Rs 230 strike price for Rs 28 each. The lot size is 1,200. On the expiry day, Satyam closed at Rs 261. What is your net profit (+) or loss (-)?

a) Rs 34,600

b) Rs 32,600

c) Rs 33,600

d) None of these

11) You sold a Satyam Put at Rs 280 strike price for Rs 28 each. The lot size is 1,200. On the expiry day, Satyam closed at Rs 221. What is your net profit (+) or loss (-)?

a) Rs -36,200

b) Rs -37,200

c) Rs -38,200

d) None of these

12) Current Price of Reliance is Rs. 272. If Rs. 260 strike call is quoted at Rs. 45. What is the Intrinsic Value?

a) Rs.12

b) Rs. 33

c) Rs.45

d) None of these

13) Current Price of Reliance is Rs. 272. If Rs. 260 strike call is quoted at Rs. 45. What is the Time Value?

a) Rs. 12

b) Rs. 45

c) Rs. 33

d) None of these

14) Current Price of Reliance is Rs. 272. If Rs. 300 strike call is quoted at Rs. 7. What is the Time Value?

- a) Rs. 7
- b) Rs. 21
- c) Rs. 28
- d) None of these

15) Current Price of Reliance is Rs. 248. If Rs. 260 strike put is quoted at Rs. 45. What is the Intrinsic Value?

- a) Rs. 12
- b) Rs. 21
- c) Rs. 33
- d) None of these

16) Current Price of Reliance is Rs. 248. If Rs. 260 strike put is quoted at Rs. 45. What is the Time Value?

- a) Rs. 12
- b) Rs. 33
- c) Rs. 57
- d) None of these

17) Current Price of Reliance is Rs. 248. If Rs. 220 strike put is quoted at Rs. 7. What is the Intrinsic Value?

- a) Rs. 7
- b) Rs. 28
- c) Nil
- d) None of these

18) If you buy a call option on a share with a strike price of Rs. 130, market price of Rs. 136, and a premium of Rs. 20, how much is the maximum that you may gain on expiry on this position?

- a) Rs. 20

b) unlimited

c) Rs. 6

d) None of these

19) If you sell a call option on a share with a strike price of Rs. 375, market price of Rs. 360, and a premium of Rs. 21, how much is the maximum gain that you may have on expiry of this position?

a) Rs. 21

b) Rs. 20

c) Rs. 6

d) None of these

20) If you buy a put option on a share with a strike price of Rs. 260, market price of Rs. 245, and a premium of Rs. 24, how much is the maximum gain that you may have on expiry of this position?

a) Rs. 236

b) Rs. 221

c) Rs. 24

d) None of these

21) If you sell a put option on a share with a strike price of Rs. 245, market price of Rs. 260, and a premium of Rs. 18, how much is the maximum gain that you may have on expiry of this position?

a) Rs. 263

b) Rs. 18

c) Rs. 242

d) None of these

22) If you buy a call option on a share with a strike price of Rs. 230, market price of Rs. 236, and a premium of Rs. 21. What is the maximum loss on expiry of this position?

a) Rs. 21

b) Rs. 215

c) Rs. 251

d) None of these

23) If you sell a call option on a share with a strike price of Rs. 375, market price of Rs. 360, and a premium of Rs. 21. What is the maximum loss on expiry of this position?

a) Rs. 354

b). Unlimited

c) Rs. 396

d) None of these

24) If you buy a put option on a share with a strike price of Rs. 260, market price of Rs. 245, and a premium of Rs. 24. What is the maximum loss on expiry of this position?

a) Rs. 236

b) Rs. 284

c) Rs. 24

d) None of these

25) If you sell a put option on a share with a strike price of Rs. 245, market price of Rs. 260, and a premium of Rs. 18. What is the maximum loss on expiry of this position?

a) Rs. 18

b) Rs. 227

c) Rs. 209

d) None of these

ANNEXURE III – MARGINS – ARITHMETICAL PROBLEMS

1) What should be the minimum percentage of cash and cash equivalents in liquid assets deposited by clearing members with the Clearing Corporation?

- a) 50 %
- b) 25 %
- c) 60 %
- d) 100 %

2) What are the eligible Liquid Assets, if a clearing member has deposited total assets of Rs. 200 Lakhs of which Rs. 50 Lakhs is in cash equivalents viz. Cash, bank guarantee, fixed deposits, T-bills and dated government securities?

- a) Rs.200 lakhs
- b) Rs.100 lakhs
- c) Rs.50 lakhs
- d) None of these

3) What are the eligible Liquid Assets, if a clearing member has deposited total assets of Rs. 100 Lakhs of which Rs. 30 Lakhs is by way of acceptable equity securities after considering the applicable hair-cuts in valuation of equity securities?

- a) Rs.100 lakhs
- b) Rs.60 lakhs
- c) Rs.70 lakhs
- d) None of these

4) A clearing member has deposited eligible liquid assets of Rs. 55 Lakhs. What is his Liquid Net Worth if the Initial Margin applicable on his position is Rs. 20,000 ?

- a) Rs.54.80 lakhs
- b) Rs.54.89 lakhs
- c) Rs.54.98 lakhs
- d) None of these

5) A clearing member has deposited eligible liquid assets of Rs. 54 Lakhs. The exchange has minimum liquid net worth requirement of Rs. 50 Lakhs . He has not entered into any transactions so far. What is the margin available for trading?

- a) Rs.50 lakhs
- b) Rs.4.00 lakhs
- c) Rs.54.00 lakhs
- d) None of these

6) A clearing member has deposited eligible liquid assets of Rs. 55 Lakhs. The exchange has minimum liquid net worth requirement of Rs. 50 Lakhs and initial margin rate of 6% (computed based on Price Scan Range). He has bought 2 futures contracts each of Rs 1,50,000. What is the further maximum exposure (in Rs Lakhs) the Member can take in Sensex futures?

- a) 80.33
- b) 83.33
- c) 77.33
- d) None of these

7) A clearing member has deposited eligible liquid assets of Rs. 51 Lakhs. The exchange has minimum liquid net worth requirement of Rs. 50 Lakhs and initial margin rate of 6% (computed based on Price Scan Range). He has not transacted so far. What is the maximum exposure (in Rs. Lakhs) the Member can take in futures market?

- a) 13.67
- b) 16.67
- c) 19.67
- d) None of these

8) A member has deposited liquid assets worth INR 55 Lakhs, minimum liquid net worth requirement is INR 50 Lakhs. If the member has open position of 9 contracts in a Sensex Future series at current mark to market price of 3550, what will be the initial margin still available for further utilisation (in INR), if the rate of initial margin is 6% (computed based on Price Scan Range)?

- a) 4,24,150
- b) 4,14,150
- c) 4,04,150

d) None of these

9) An investor wants to purchase 10 contracts at 4,550. Initial margin is 6% (computed based on Price Scan Range). How much will be the initial margin to be paid?

a) Rs.2,730

b) Rs.27,300

c) Rs. 1,36,500

d) None of these

10) An investor wants to sell 11 contracts at 4,550. Initial margin is 6% (computed based on Price Scan Range). How much will be the initial margin to be paid?

a) Rs.30,030

b) Rs.1,50,150

c) Rs.3,003

d) None of these

11) An investor wants to buy 7 contracts of August series and 4 contracts of September series at 4,500 and 4,550 respectively. The Initial Margin is fixed at 6% (computed based on Price Scan Range) by the Clearing Corporation. How much Initial Margin is required to be brought in by the investor?

a) Rs.94,500

b) Rs.54,600

c) Rs.1,49,100

d) None of these

12) An investor has an open long position of 8 contracts in August series. The Initial Margin was 6% (computed based on Price Scan Range) till yesterday, but has been revised to 7% today. The closing price both yesterday and today is 4,500. How much additional Initial Margin will the investor be required to bring in?

a) Rs.1,08,000

b) Rs.18,000

c) Rs.1,26,000

d) None of these

13 A member and his client have open position of 26 and 81 contracts in Sensex Futures January Series. If the rate of initial margin is 6% (computed based on Price Scan Range) and the price of the January Series is 3,500, what is the initial margin requirement for the member?

- a) Rs.11,23,500
- b) Rs.1,87,25,000
- c) Rs.22,470
- d) None of these

14) An investor had a long open position of 8 contracts a Sensex Futures February series that was marked to market at previous day's closing price at Rs 16, 00, 000. Today, the closing price of the series is 4,050. How much mark to market margin will the investor have to pay or receive?

- a) Rs.20,000
- b) Rs. 1,60,000
- c) Rs. 3,200
- d) None of these

15) A broker has two clients C1 and C2. Client C1 had open position of 112 contracts long and client C2 had open position of 62 contracts long in a sensex futures series which were marked to market at previous days closing at rupees Rs 2,24,00,000 and Rs 1,24,00,000 respectively. Today the closing price is 4,050. What is the mark to market margin (in rupees) for the member broker?

- a) 2,80,000
- b) 4,35,000
- c) 8,700
- d) None of these

16) An investor has open position of 12 contract long and 22 contract short in sensex future March and April series respectively. The rate of initial margin is 6% (computed based on Price Scan Range) and prices of March and April series are 3,700 and 3,730 respectively. Take initial margin for one month spread contract as 1%. It is beginning of the March series, what is her initial margin obligation (in rupees) towards the clearing corporation?

- a) 22,380
- b) 1,11,900

c) 1,34,280

d) None of these

17) A member has two clients C1 and C2. C1 has purchased and sold 250 and 350 contracts respectively and C2 has purchased and sold 550 and 350 contracts respectively in a Sensex Future series. What is the outstanding liability (open position) of the member?

a) 300

b) 250

c) 350

d) None of these

18. Steep margins would ensure the development of a successful market. (152)

a) True

b) False

c) True only in USA

d) True only in Japan

19) SPAN is _____ based margining system.

a) portfolio

b) futures

c) options

d) derivatives

20) The SPAN _____ represents how a specific derivatives instrument will gain or lose value, from the current point in time to the specific point in time in the near future, for a specific set of market conditions which may occur over this time durations.

a) standard deviation

b) price scan range

c) risk array

d) volatility scan range

21) A clearing member has deposited eligible liquid assets of Rs. 60 Lakhs. What is his Liquid Net Worth if the Initial Margin applicable on his position is Rs. 50,000?

- a) Rs.59.50 lakhs
- b) Rs.59.60 lakhs
- c) Rs.59.55 lakhs
- d) None of these

22) A clearing member has deposited eligible liquid assets of Rs. 55 Lakhs. The exchange has minimum liquid net worth requirement of Rs. 50 Lakhs. He has not entered into any transactions so far. What is the margin available for trading?

- a) Rs.50 lakhs
- b) Rs.5.00 lakhs
- c) Rs.55.00 lakhs
- d) None of these

23) An investor wants to buy 6 contracts of August series and 3 contracts of September series at 4,500 and 4,550 respectively. The Initial Margin is fixed at 6% (computed based on Price Scan Range) by the Clearing Corporation. How much Initial Margin is required to be brought in by the investor?

- a) Rs.81, 000
- b) Rs.40, 950
- c) Rs.1, 21,950
- d) None of these

24) An investor has an open long position of 6 contracts in August series. The Initial Margin was 5% (computed based on Price Scan Range) till yesterday, but has been revised to 7% today. The closing price both yesterday and today is 4,500. How much additional Initial Margin will the investor be required to bring in?

- a) Rs.20, 000
- b) Rs.27, 000
- c) Rs.1, 26,000
- d) None of these

25) A member and his client have open position of 20 and 60 contracts in Sensex Futures January Series. If the rate of initial margin is 6% (computed based on Price Scan Range) and the price of the January Series is 3,500, what is the initial margin requirement for the member?

- a) Rs. 9,97,500
- b) Rs.8,72,500
- c) Rs.9,22,470
- d) None of these

ANNEXURE IV – FUTURES – ARITHMETICAL PROBLEMS

1) An investor has done the following two spread trades in sensex futures contracts. What is her profit (+) or loss(-)? Bought 10 contracts Jan-Feb @ 2, Sold 10 contracts Jan-Feb @ 17.

- a) Rs.150
- b) Rs.7500
- c) Rs.375000
- d) None of the above

2) An investor has done the following two spread trades in sensex futures contracts. What is her profit (+) or loss(-)? Bought 10 Jan-Feb Spread [Sold Jan @ 3660 ;Bought Feb @ 3662], Sold 10 Jan-Feb Spread [Bought Jan @ 3700 ; Sold Feb @ 3717]

- a) Rs.375000
- b) Rs.150
- c) Rs.7500
- d) None of these

3) An investor has open position of 10 contract long and 20 contract short in sensex future March and April series respectively. What are her open positions in March series after considering the spread position.

- a) 0
- b) 10
- c) 20
- d) None of these

4) An investor has open position of 10 contract long, 10 contract long and 10 contract short in sensex future March, April and May series respectively. What are her spreads across March-April?

- a) 0
- b) 10
- c) 20

d) None of these

5) An investor has an open position of 10 contracts short and 23 contracts long in March and April Series respectively. How many contracts are covered under calendar spread?

a) 23

b) 13

c) 10

d) None of these

6) You have taken a short position of one contract on the June Sensex futures at a price of 3,000. You desire to make a profit of Rs 10,000. Which of the following actions will enable to generate your profit? You may ignore brokerage costs.

a) Buying 2 June Sensex futures contracts at 2900

b) Buying 1 September Sensex futures contract at 2700.

c) Buying 1 June Sensex futures contract at 2800.

d) Selling 1 June Sensex futures contract at 3200.

7) At a sensex futures price level of 3000, what will be the value of one sensex futures contract?

a) Rs.3000

b) Rs.300000

c) Rs.150000

d) None of these

8) If you have bought a Sensex future at 3200 and sold at 3600 what is your profit/loss?

a) loss Rs.18,000

b) gain Rs.20,000

c) gain Rs.18,000

d) loss Rs.20,000

9) If you have short sold a Sensex future at 3000 and bought it at 3100, what is your gain / loss?

a) A loss of Rs. 5000

b) A gain of Rs. 500

c) A gain of Rs. 5000

d) A loss of Rs. 500

10) The shares of XYZ Ltd are currently quoted at Rs 100. Futures on this share are quoted at Rs 110. In what situation would you buy these futures?

a) You expect the price of the share to move up by 5%

b) You expect the price of the share to move up by 7%

c) You expect the price of the share to move up by 25%

d) You expect the price of the share to move up by 8%

11) You own 10,000 shares of ABC at a share price of Rs. 100. The stock has a beta of 1. You wish to create a perfect hedge by selling stock index futures. What should be the value of stock index futures that you should sell?

a) Rs.10,000

b) Rs.10,00,000

c) Rs.100

d) None of these

12) Which of the following is closest to the forward price of a share price if Cash Price = Rs.750, Forward Contract Maturity = 6 months from date, Market Interest rate = 12%?

a) Rs.845

b) Rs.795

c) Rs.745

d) None of these

13) On BSE, for its index futures what would be the opening day of its January series?

a) 1st trading day after last Thursday in December

b) 1st trading day after last Thursday in October

c) 1st trading day after last Thursday in January

d) 1st trading day after last Friday in February

14) In an Index Futures Contract, if the tick size is 0.1 of an index point and the index multiple is at Rs.50, a tick is valued at:

- a) Rs 5.00
- b) Rs.12.50
- c) Re.0.25
- d) Re.0.50

15) A stock Index is currently at 3000. The risk-free rate of return is 12% and the dividend yield on the Index is 2% per annum. Which of the following comes closest to the futures price for a contract with 3 months to expiration

- a) 3040
- b) 3075
- c) 3090
- d) 3095

16) A trader bought 10 Jan Sensex contracts at the BSE. How will the trader close out this position in the market?

- a) Sell 10 Jan sensex contracts
- b) Sell 15 Feb. nifty contracts
- c) Buy 15 March sensex contracts
- d) Buy 15 March nifty contracts

17) If you are holding a stock with a beta of 1.2 for value of Rs.30, 00,000 how many BSE Index futures contracts would you sell for the best hedge, if the Index futures are quoted at 4,200? You may choose the nearest round figure for your purposes.

- a) 22
- b) 17
- c) 12
- d) None of these

18) You bought January Satyam Futures @ Rs 268 and the lot size is 1,200. What is your profit (+) or loss(-) if you sell at Rs 270 ?

- a) Rs.3400

b) Rs.2400

c) Rs.1400

d) None of these

19) You sold January Satyam Futures @ Rs 278 and the lot size is 1,200. What is your profit (+) or loss(-) if you purchase at Rs 250 ?

a) Rs.34,600

b) Rs.33,600

c) Rs.32,600

d) None of these

20) You sold January Satyam Futures @ Rs 248 and the lot size is 1,200. What is your profit (+) or loss (-) if you purchase at Rs 274?

a) Rs.-30,200

b) Rs.-31,200

c) Rs.-32,200

d) None of these

21) You bought January Satyam Futures @ Rs 268 and the lot size is 1,200. What is your profit (+) or loss (-) if you sell at Rs 225?

a) -50,600

b) -51,600

c) -52,600

d) None of these

22) At a sensx futures price level of 4000, what will be the value of one sensx futures contract?

a) Rs.3000

b) Rs.300000

c) Rs.150000

d) None of these

23) If you have bought a Sensex future at 5000 and sold at 5500 what is your profit/loss?

a) loss Rs.25,000

b) gain Rs.20,000

c) gain Rs.25,000

d) loss Rs.20,000

24) Which of the following is closest to the forward price of a share price if Cash Price = Rs.500, Forward Contract Maturity = 6 months from date, Market Interest rate = 12%?

a) Rs.545

b) Rs.530

c) Rs.535

d) None of these

25) You bought January Satyam Futures @ Rs 300 and the lot size is 1,500. What is your profit (+) or loss (-) if you sell at Rs 305?

a) Rs.5700

b) Rs.7500

c) Rs.5200

d) None of these

ANNEXURE V – ANSWERS TO SAMPLE QUESTIONS

1. Chicago Board of Trade
2. All of the above
3. All of the above
4. All of the above
5. Both A and B
6. Both A and B
7. 30
8. IISL
9. Liquidity of the stock
10. 2200
11. 2010
12. Commodities
13. Buyer
14. 194
15. An agreement to buy a refrigerator today at the posted price.
16. On few selected stocks only
17. Algorithm used to calculate closing Sensex value
18. None of the above
19. BSE 30 Sensex
20. You can take a higher position with smaller investments using derivatives
21. Both the buyer and the seller pay initial margin to the exchange
22. can be structured as required by the buyer and seller
23. the minimum permitted price movement in a futures contract

24. Value of your portfolio * Beta of your Portfolio
25. cross deal
26. auction
27. All of the above
28. Last Thursday of the month
29. change in the premium with respect to the change in the price of underlying
30. Options
31. Gamma
32. can be exercised only at maturity
33. is a contract tailored to suit individual requirements
34. A call option when the price of the underlying share increases above the option's strike price by an amount greater than the premium paid for the option
35. protective put strategy
36. buying one call and selling another call
37. not to exercise the option.
38. Liquidity to the market.
39. bearish - payer of premium
40. ACC
41. March
42. contracts that can be settled in cash or settled by delivery depending on the terms of the contract as decided by the exchange
43. True
44. the writer owns the underlying asset
45. do not have to pay mark-to-market margins
46. asymmetric
47. all options of a given class with same expiration date & strike price.

48. Exchange

49. False

50. Weekly Volatility x Sqrt of 52

ANNEXURE VI - ANSWERS TO OPTIONS – ARITHMETICAL PROBLEMS

1) Rs.18,000

Purchase Price : Rs. 25

Sales price : Rs. 40

Profit per unit : Rs. 15

Lot size : 1,200

Profit = $(40 - 25) \times 1,200 = \text{Rs. } 18,000$

2) Rs.32,400

Purchase Price : Rs. 50

Sales price : Rs. 23

Profit per unit : Rs. 27

Lot size : 1,200

Profit = $(23 - 50) \times 1,200 = \text{Rs. } 32,400$

3) Rs.-6,000

Purchase Price : Rs. 30

Sales price : Rs. 25

Loss per unit : Rs. 5

Lot size : 1,200

Loss = $(30 - 25) \times 1,200 = \text{Rs. } 6,000$

4) Rs.-32,400

Purchase Price : Rs. 45

Sales price : Rs. 18

Loss per unit : Rs. 27

Lot size : 1,200

Loss = $(18 - 45) \times 1,200 = \text{Rs. } 32,400$

5) Rs.31200

Purchase Price : Rs. 22

Sales price : Rs. 48

Profit per unit : Rs. 26

Lot size : 1,200

Profit = $(48 - 22) \times 1,200 = \text{Rs. } 31,200$

6) Rs.42,000

Strike Price of Call : Rs.240

Premium Paid : Rs. 25

Closing Price : Rs. 300

Profit Per Unit : 35

Lot Size : 1,200

Profit = $[300 - (240 + 25)] \times 1,200 = \text{Rs. } 42,000$

7) Rs.-27,600

Strike Price of Call : Rs.280

Premium paid : Rs. 23
Closing Price : Rs. 221
Loss Per Unit : Rs. 23
Lot Size : 1,200
Loss = $23 \times 1,200 = \text{Rs.}27,600$

8) Rs.-2400
Strike Price of Call : Rs.230
Premium Received : Rs.28
Closing Price : Rs.260
Loss Per Unit : $260 - (230 + 28) = 2$
Lot Size : 1,200
Loss = $2 \times 1200 = \text{Rs.} 2,400$

9) Rs.-30,000
Strike Price of Put : Rs.240
Premium Paid : Rs.25
Closing Price : Rs.300
Loss Per Unit : Rs.25
Lot Size : 1,200
Loss = $25 \times 1,200 = \text{Rs.}30,000$

10) The entire premium collected ($1,200 * 28$) i.e. Rs 33,600 is Income. Reliance has closed above the strike price and hence the Put Option has expired worthless.

11) Strike Price of Put : Rs.280
Closing Price : Rs.221
Loss on Exercise : Rs 59
Premium Earned : Rs 28
Net Loss per Unit : Rs 31
Lot Size : 1,200
Loss = : Rs 37,200

12) Rs. 12

13) Rs. 33

14) Rs. 7

15) Rs. 12

16) Rs. 33

17) Nil

18) unlimited

19) Rs. 21

20) Rs. 236

21) Rs. 18

22) Rs. 21

23) Unlimited

24) Rs. 24

25) Rs. 227

ANNEXURE VII – ANSWERS TO MARGINS – ARITHMETICAL PROBLEMS

1) 50%

2) Cash and Cash Equivalents should be minimum 50% of Liquid Assets. These are Rs 50 lakhs. Hence Liquid Assets will be Rs 100 lakhs.

3) Equity Securities are allowed upto a maximum of 50% of eligible Liquid Assets. These are only Rs 30 lakhs here, which implies that Cash and Cash Equivalents are Rs 70 lakhs. Hence, the entire Rs 100 lakhs are eligible.

4) Liquid Net Worth = Liquid Assets minus Initial Margin

i.e.. $55 - 0.20 = \text{Rs.}54.80$ lakhs

5) $54 - 50 = \text{Rs.}4.00$ lakhs

6) Margin available = $55 - 50 = \text{Rs } 5$ lakhs. Margin rate is 6%. Accordingly total exposure of $5,00,000/6\% = 83.33$ lakhs is available. Exposure currently is Rs 3 lakhs. Balance exposure possible is Rs 80.33 lakhs.

7) Margin available = $51 - 50 = \text{Rs } 1$ lakh. Margin rate is 6%. Accordingly total exposure of $1,00,000/6\% = \text{Rs } 16.67$ lakhs is available.

8) Total Margin available = Rs 5 lakhs. Margin applicable on Open Positions = $3,550 \times 50 \times 9 \times 6\% = \text{Rs } 95,850$. Balance Margin available = Rs 4,04,150

9) $4,550 \times 10 \times 50 \times 6\% = \text{Rs.}1,36,500$

10) $4,550 \times 11 \times 50 \times 6\% = \text{Rs.}1,50,150$

11) $4,500 \times 7 \times 50 \times 6\% = \text{Rs.}94,500$ $4,550 \times 4 \times 50 \times 6\% = \text{Rs.}54,600$ Total = Rs.1,49,100

12) Rs.18,000 (1% of $4,500 \times 8 \times 50$)

13) Rs.11,23,500 ($26 + 81 = 107$ contracts at 6% on 3,500 at lot size of 50)

14) Rs.20000 (yesterday's closing price must have been 4,000 i.e. $16,00,000/8 = 2,00,000/50 = 4,000$, today's price is 4,050, hence difference of 50 on 8 contracts of 50 units each)

15) The mark to market price yesterday must have been 4,000. (You can check by dividing Rs

2,24,00,000 by 112 and by 50). Hence there is a profit of Rs 50 per Sensex Unit. Mark to Market

Margin will be:

Client C1 : $50 \times 112 \times 50 = 2,80,000$

Client C2 : $50 \times 62 \times 50 = 1,55,000$

Total : Rs.4,35,000

16) 12 contracts will be covered under Calendar Spread. This will attract margin at 1% on April price. The balance 10 contracts will attract margin at 6% on April price.

Spread : $12 \times 50 \times 3,730 \times 1\% = 22,380$

Open : $10 \times 50 \times 3,730 \times 6\% = 1,11,900$

Total : Rs.1,34,280

17) Client C1 : Net 100

Client C2 : Net 200

Total : Net 30

18) False

19) Portfolio

20) Price scan range

21) Liquid Net Worth = Liquid Assets minus Initial Margin

i.e... $60 - 0.50 = \text{Rs.}59.50$ lakhs

22) $55 - 50 = \text{Rs.}5.00$ lakhs

23) $4,500 \times 6 \times 50 \times 6\% = \text{Rs.}81,000$ $4,550 \times 3 \times 50 \times 6\% = \text{Rs.}40,950$ Total =
Rs.1,21,950

24) Rs.27,000 (2% of $4,500 \times 6 \times 50$)

25) Rs.9,97,500 ($20 + 75 = 95$ contracts at 6% on 3,500 at lot size of 50)

ANNEXURE VIII – ANSWERS TO FUTURES – ARITHMETICAL PROBLEMS

1) 7500

Logic:

Purchase Price Rs. 2

Sale Price Rs. 17

Number of contracts 10

Lot Size 50

Profit $= (17 - 2) \times 10 \times 50 = 7500$

2) Rs.7500

Profit $= [(3717-3700)-(3660-3662)] \times 10 \times 50 = \text{Rs.}7500$

3) 0

4) 0

5) 10

6) Buying 1 June Sensex futures contract at 2800.

7) Rs.1,50,000

Sensex Price : Rs. 3,000

Lot Size : 50

Value $= 3,000 \times 50 = \text{Rs.}1,50,000$

8) gain 20,000

Purchase Price : Rs. 3,200

Sales Price : Rs. 3,600

Profit per unit : Rs. 400

Lot Size : 50

$$\text{Profit} = (3,600 - 3,200) \times 50 = 20,000$$

9) A loss of Rs. 5000

Purchase Price : Rs. 3,100

Sale Price : Rs. 3,000

Loss per unit : Rs. 100

Lot Size : 50

$$\text{Loss} = (3,100 - 3,000) \times 50 = 5,000$$

10) You expect the price of the share to move up by 25%

11) 10,00,000

Shares Owned : 10,000

Share price : Rs. 100

Beta : 1

Value of Index Future : 10,00,000

12) Futures price is Cash Price plus Interest i.e. 750 + 6% interest for 6 months approximately = 795

13) 1st trading day after last Thursday in October

14) Rs 5.00

Tick Size : 0.1

Index Multiple : 50

$$\text{Tick Value} = 50 \times 0.1 = 5$$

15) Futures Price = Spot + Interest – Dividends i.e. 3,000 + 12% (for 3 months) – 2%

$$\text{(for 3 months)} = 3,000 + 90 - 15 = 3,075$$

16) Sell 10 Jan sensex contracts

17) Value of Futures contracts required for a perfect hedge

$$= 30,00,000 \times 1.2 = 36,00,000$$

$$\text{Value of One Futures contract} = 4,200 \times 50 = 2,10,000$$

No of contracts to be sold = $36,00,000 / 2,10,00 =$

18) 2400

Purchase Price : Rs. 268

Sales price : Rs. 270

Profit per unit : Rs. 2

Lot size : 1,200

Profit = $(270 - 268) \times 1,200 = \text{Rs. } 2,400$

19) 33600

Purchase Price : Rs. 278

Sales price : Rs. 250

Profit per unit : Rs. 28

Lot size : 1,200

Profit = $(278 - 250) \times 1,200 = \text{Rs. } 33,600$

20) -31200

Purchase Price : Rs. 274

Sales price : Rs. 248

Loss per unit : Rs. 26

Lot size : 1,200

Loss = $(274 - 248) \times 1,200 = \text{Rs. } 31,200$

21) -51600

Purchase Price : Rs. 268

Sales price : Rs. 225

Loss per unit : Rs. 43

Lot size : 1,200

Loss = $(268 - 225) \times 1,200 = \text{Rs. } 51,600$

22) Rs.2, 00,000

Sensex Price : Rs. 4,000

Lot Size : 50

Value = 4,000 x 50 = Rs. 2,00,000

23) gain 25,000

Purchase Price : Rs. 5,000

Sales Price : Rs. 5,500

Profit per unit : Rs. 500

Lot Size : 50

24) Futures price is Cash Price plus Interest i.e. 500 + 6% interest for 6 months approximately = 530

25) 7500

Purchase Price: Rs. 300

Sales price: Rs. 305

Profit per unit : Rs. 5

Lot size: 1,500

Profit = (305 – 300) x 1,500 = Rs. 7,500