COMPENDIUM ON BUSINESS VALUATION MANAGEMENT

FINAL
GROUP - IV
PAPER - 18

THE INSTITUTE OF
COST AND WORKS ACCOUNTANTS OF INDIA
12, SUDDER STREET, KOLKATA - 700016

First Edition : May 2011

Published :

Directorate of Studies

The Institute of Cost and Works Accountants of India

12, Sudder Street, Kolkata-700 016

Printed at :

Repro India Limited

50/2 T.T.C. MIDC Industrial Area, Mahape, Navi Mumbai - 400710.

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CHAPTER - 1

VALUATION BASICS

Q. 1. What is Value?

Ans : In order to understand valuation, first we need to understand value. It is often the most complicated and misunderstood. Value is a subjective term as what is value to one person may not be the same for other. It is easy to understand the concept of value with the help of value of a property because all of us are well known to it. But it is not easy to value this well known asset.

A property might be more valuable to one person in comparison to another, because that person values certain features of the property higher than the other person. Alternatively the property might have a higher utility to one person than to another. There may be many forces, which influences the value of a property e.g., environmental and physical characteristics of the property, social standards, economic trends like GDP, per capita income, inflation etc. and political or government regulations.

The US Appraisal Foundation defines market value as, "The most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus." However, the concepts of open market, fair sale, action with prodence & knowledge and non-happing of undue stimulus are all subjective and most often, unrealistic assumptions.

There may be substantial gap between subjective valuations and fluctuations of the free market. Thus, the value of a property does not always correspond to its price. As a result, despite rigrous efforts by time series econometricians the forces of supply and demand cannot be scientifically predicted.

In a nutshell, value is the "typical price a product fetches in an unregulated market". There are different types of values which are used in different ways of everyday business. These are original value, book value, depreciated value, sale value, purchase value, replacement value, market value, economic value, residual value, residual value, scrap value etc. What investors buy is the future benefits and not the past. The point to be carefully noted that there is nothing called the 'correct value' or the 'right value'. It all depends upon the type of value which is being measured, the purpose of valuation, the methods adopted and the assumptions made. The valuation which seems to be 'best' today, may be criticised and rejected tommorow based on variations in the subjective conditions, that we have discussed.

Q. 2. What is Valuation?

Ans : Knowing what an asset is worth and what determines that value is a pre-requisite for intelligent decision making. Valuation is an as essential prerequisites in choosing investments for a portfolio, in deciding on the appropriate price to pay or receive in a takeover and in making investment, financing and dividend choices while running a business. The premise of valuation is that we can make reasonable estimates of value for most assets. The same fundamental principles determine the values of all types of assets, real as well as financial. Some assets are easier to value than others as the details of valuation vary from asset to asset and the uncertainty associated with value estimates is different for different assets. However, the core principles remain the same.

Q. 3. What is Business Valuation?

Ans : The art of creating value is not just a discipline for accountants and investors. Used properly, it can be a powerful, perhaps *the* most powerful, way that managers can run their companies in an increasingly competitive world. By integrating accounting and performance measures with strategic thinking and day-to-day operations, managers can learn to take decisions that enhance their businesses and add real value. As knowledge capital becomes increasingly important, traditional financial measures such as earnings and book value are accounting for less and less of a company's actual market price. Investors are paying great attention to non-financial factors in their efforts to assess the value of corporations.

This should be welcome news to managers, who are well aware of the value of ''intangibles'' such as R&D, patents, trademarks, copyrights, brand names, employee talent, distribution channels, new ideas and processes.

A well-known example of a great value-creating idea is Wal-Mart's system that gives its suppliers direct access to its inventory. A customer buys an item at Wal-Mart and the barcode information goes directly to Procter & Gamble, who maintains the inventory.

Enhanced efficiency gives Wal-Mart the edge over its competitors. In the USA, the importance of ''shareholder value'' is almost universally accepted in business. The concept is here defined as being not only the ''market value added'' (MVA) – this is the difference between the stock market capitalization of a company and the capital that has been invested in it – but also growth in employment and high productivity. Although share prices fluctuate, over time they tend to reflect the underlying value of a company.

American CEOs and senior managers are expected to focus on creating shareholder value in their corporations. This is not true in case of Europe and Asia. In these regions, corporations are seen as having other obligations to their communities. Governments often define and regulate a company's duties towards it's ''stakeholders''. Stakeholders include employees, customers, suppliers, the state, lenders, investors and the general public. Critics condemn the shareholder value approach as harmful to society as a whole. Rights and obligations of stakeholders are given greater weight. Supporters of the stakeholder system have argued that focusing on shareholder value may hurt the interests of other stakeholders, in general and employees of the company in particular.

However, thier remains possibilities of counter argument that most successful companies in any given market would tend to enjoy better productivity, better Market Value Added (MVA) and employ more people than their competitors. MVA is the difference between market value of its equity and debt and its economics book value of capital. In other words, successful companies are maximizing shareholder value even if they do not explicitly say so. In doing so they are also benefiting, not damaging, the other stakeholders' interests. Shareholder value implies a stock market where company shares are widely held by the public. Company information is less easily available in countries such as Germany and Japan, where shareholdings are concentrated in the hands of institutions. Share prices may not reflect values as closely as they do in more efficient stock markets.

There is less incentive for managers to strive to create shareholder value. Furthermore, the spectre of a hostile takeover does not loom as powerfully as it does in the USA. The USA has a huge market for mergers and acquisitions (M&A) that is partly driven by perceived weaknesses in the current management. Elsewhere, managers may not be as concerned that inefficiency may lead to a takeover.

Q. 4. What is the foundation of business valuation?

Ans : A postulate of sound investing is that an investor does not pay more for an asset than it is worth. This statement may seem logical and obvious, but it is forgotten and rediscovered at some time in every generation and in every market. There are those who argue that value is in the eyes of the beholder. Any price can be justified if there are parties willing to pay that price. That is patently absurd. Perceptions may be all that matter when the asset is a painting or a sculpture. But one should not buy most assets simply for aesthetic or emotional reasons. People buy financial assets for the cash flows they expect to receive from them. Consequently, perceptions of value have to be backed up by reality, which implies that the price we pay for any asset should reflect the cash flows it is expected to generate. Valuation models attempt to relate value to the level of uncertainty and expected growth in these cash flows.

There are many aspects of valuation where we have difference for opinion including estimates of true value and how long it will take for prices to adjust to that true value. But there is one point on which there can be no disagreement. Asset prices cannot be justified by merely using the argument that there will be other investors around who will pay a higher price in the future.

Q. 5. What do you mean by valuation bias?

Ans : We start valuing a firm with certain assumptions and preconceived conditions. All too often, our views on a company are formed before we start inserting the numbers into the financial/econometric model models that we use and not surprisingly, our conclusions tend to reflect our biases. We will begin by considering the sources of bias in valuation and then move on to evaluate how bias manifests itself in most valuations.

Q. 6. What are the different Sources of valuation bias?

Ans : The bias in valuation starts with the companies we choose to value. These choices are almost never random, and how we make them can start laying the foundation for bias. It may be that we have read something in the press (good or bad) about the company or heard from an expert that it was under or overvalued. Thus,

we already begin with a perception about the company that we are about to value. We add to the bias when we collect the information we need to value the firm. The annual report and other financial statements include not only the accounting numbers but also management discussions of performance, often putting the best possible spin on the numbers. With many larger companies, it is easy to access what other analysts following the stock think about these companies.

In many valuations, there are institutional factors that add to this already substantial bias. For instance, it is an acknowledged fact that equity research analysts are more likely to issue buy rather than sell recommendations, i.e., that they are more likely to find firms to be undervalued than overvalued. This can be traced partly to the difficulties analysts face in obtaining access and collecting information on firms that they have issued sell recommendations on, and partly to pressure that they face from portfolio managers, some of whom might have large positions in the stock, and from their own firm investment banking arms which have other profitable relationships with the firms in question.

The reward and punishment structure associated with finding companies to be under and overvalued is also a contributor to bias. An analyst whose compensation is dependent upon whether she finds a firm is under or overvalued will be biased in her conclusions. This should explain why acquisition valuations are so often biased upwards. The analysis of the deal, which is usually done by the acquiring firm's investment banker, who also happens to be responsible for carrying the deal to its successful conclusion, can come to one of two conclusions. One is to find that the deal is seriously over priced and recommends rejection, in which case the analyst receives the eternal gratitude of the stockholders of the acquiring firm but little else. The other is to find that the deal makes sense (no matter what the price) and to reap the ample financial windfall from getting the deal done.

Q. 7. How perceptions (bias) about companies are manifested in business valuation?

Ans : There are three ways in which our views on a company (and the biases we have) can manifest themselves in value. The first is in the inputs that we use in the valuation. When we value companies, we constantly make assumptions to move on. These assumptions can be optimistic or pessimistic. For a company with high operating margins now, we can either assume that competition will drive the margins down to industry averages very quickly (pessimistic) or that the company will be able to maintain its margins for an extended period (optimistic). The path we choose will reflect our prior biases. It should come as no surprise that at the end of a day the value that we arrive at, is reflective of the optimistic or pessimistic choices we made along the way.

The second is in what we will call post-valuation tinkering, where analysts revisit assumptions after a valuation in an attempt to get a value closer to what they had expected to obtain starting off. Thus, an analyst who values a company at Rs. 150 per share, when the market price is Rs. 250, may revise his growth rates upwards and his risk downwards to come up a higher value, if she believed that the company was undervalued to begin with. The third is to leave the value as is but attribute the difference between the value we estimate and the value we think is the right one to a qualitative factor such as synergy or strategic considerations. This is a common device in acquisition valuation where analysts are often called upon to justify the unjustifiable. In fact, the use of premiums and discounts, where we augment or reduce estimated value, provides a window on the bias in the process. The use of premiums – control and synergy are good examples – is commonplace in acquisition valuations, where the bias is towards pushing value upwards (to justify high acquisition prices). The use of discounts – illiquidity and minority discounts.

Q. 8. How do you minimize valuation bias?

Ans : Bias cannot be regulated or legislated out of existence. Analysts are human and bring their biases to the table. However, there are ways in which we can mitigate the effects of bias on valuation :

Reduce institutional pressures : A significant portion of bias can be attributed to institutional factors. Equity research analysts in the 1990s, for instance, in addition to dealing with all of the standard sources of bias had to grapple with the demand from their employers that they bring in investment banking business. Institutions that want honest sell-side equity research should protect their equity research analysts who issue sell recommendations on companies, not only inept companies but also from their own sales people and portfolio managers.

De-link valuations from reward/punishment : Any valuation process where the reward or punishment is conditioned on the outcome of the valuation will result in biased valuations. In other words, if we want acquisition valuations to be unbiased, we have to separate the deal analysis from the deal making to reduce bias.

No pre-commitments : Decision makers should avoid taking strong public positions on the value of a firm before the valuation is complete. An acquiring firm that comes up with a price prior to the valuation of a target firm has put analysts in an untenable position, where they are called upon to justify this price. In far too many cases, the decision on whether a firm is under or overvalued precedes the actual valuation, leading to seriously biased analyses.

Self-Awareness : The best antidote to bias is awareness. An analyst who is aware of the biases he or she brings to the valuation process can either actively try to confront these biases when making input choices or open the process up to more objective points of view about a company's future.

Honest reporting : In Bayesian statistics, analysts are required to reveal their priors (biases) before they present their results from an analysis. Thus, an environmentalist will have to reveal that he or she strongly believes that there is a hole in the ozone layer before presenting empirical evidence to that effect. The person reviewing the study can then factor that bias in while looking at the conclusions. Valuations would be much more useful if analysts revealed their biases up front.

While we cannot eliminate bias in valuations, we can try to minimize its impact by designing valuation processes that are more protected from overt outside influences and by report our biases with our estimated values.

Q. 9. What are the uncertainties in business valuation?

Ans : Starting early in life, we are taught that if we do things right, we will get the right answers. In other words, the precision of the answer is used as a measure of the quality of the process that yielded the answer. While this may be appropriate in mathematics or physics, it is a poor measure of quality in valuation. Barring a very small subset of assets, there will always be uncertainty associated with valuations, and even the best valuations come with a substantial margin for error. We examine the sources of uncertainty and the consequences for valuation.

The value of a business is not a static figure. It depends on change in purpose or circumstances. There are number of uncertainties involved in the valuation process which if not handled appropriately, would lead to an absurd value. We may design complex financial models with several inputs to handle uncertainties but that does not mean that the value derived is reasonable or the process is sound. What we need to understand is the impact of each input on the value. Giving attention to following factors is crucial :

- The macro economic factors
- The business
- Its growth potential in the industry in which it operates
- How is the business positioned
- Who are competitors
- What is the quality and stability of the company's management

The principles and methods of valuation are well settled and they are same across the class of transactions. What changes in the course of deriving value is the selection of approaches and methods. Seller would like to get as much as possible and buyer would like to pay as little as possible. Somewhere between these two the deal takes place. Could it be mentioned that value is the price at which the deal takes place? What if there is no buyer or there is no intention to sell. Could it be concluded that the object or business is worth nothing? The answer is 'No'. There is a' bigger fool theory' which says' any price can be justified if a buyer is ready to pay the price. It might be you who is the last buyer ready to pay the available price! The theory makes us understand that every price cannot be value and vice versa. We need to differentiate between value and price.

Q. 10. What are the Sources of Uncertainties?

Ans : Uncertainty is part and parcel of the valuation process, both at the point in time that we value a business and in how that value evolves over time as we get new information that impacts the valuation. That information can be specific to the firm being valued, more generally about the sector in which the firm operates or even be general market information (about interest rates and the economy).

When valuing an asset at any point in time, we make forecasts for the future. Since none of us possess crystal balls, we have to make our best estimates, given the information that we have at the time of the valuation. Our estimates of value can be wrong for a number of reasons, and we can categorize these reasons into three groups.

Estimation Uncertainty : Even if our information sources are impeccable, we have to convert raw information into inputs and use these inputs in models. Any mistakes or mis-assessments that we make at either stage of this process will cause estimation error.

Firm-specific Uncertainty : The path that we envision for a firm can prove to be hopelessly wrong. The firm may do much better or much worse than we expected it to perform, and the resulting earnings and cash flows will be very different from our estimates.

Macroeconomic Uncertainty : Even if a firm evolves exactly the way we expected it to, the macroeconomic environment can change in unpredictable ways. Interest rates can go up or down and the economy can do much better or worse than expected. These macroeconomic changes will affect value.

The contribution of each type of uncertainty to the overall uncertainty associated with a valuation can vary across companies. When valuing a mature cyclical or commodity company, it may be macroeconomic uncertainty that is the biggest factor causing actual numbers to deviate from expectations. Valuing a young technology company can expose analysts to far more estimation and firm-specific uncertainty. Note that the only source of uncertainty that can be clearly laid at the feet of the analyst is estimation uncertainty. Even if we feel comfortable with our estimates of an asset's values at any point in time, that value itself will change over time, as a consequence of new information that comes out both about the firm and about the overall market. Given the constant flow of information into financial markets, a valuation done on a firm ages quickly, and has to be updated to reflect current information.

Q. 11. How do you react to various uncertainties during the process of business valuation?

Ans : The advantage of breaking uncertainty down into estimation uncertainty, firm-specific and macroeconomic uncertainty is that it gives us a window on what we can manage, what we can control and what we should just let pass through into the valuation.

Building better models and accessing superior information will reduce estimation uncertainty but will do little to reduce exposure to firm-specific or macro-economic risk. Even the best-constructed model will be susceptible to these uncertainties.

In general, analysts should try to focus on making their best estimates of firm-specific information – how long will the firm are able to maintain high growth? How fast will earnings grow during that period? What type of excess returns will the firm earn? – and steer away from bringing in their views on macro economic variables. To see why, assume that you believe that interest rates today are too low and that they will go up by about 1.5% over the next year. If you build in the expected rise in interest rates into your discounted cash flow valuations, they will all yield low values for the companies that you are analyzing. A person using these valuations will be faced with a conundrum because she will have no way of knowing how much of this over valuation is attributable to your macroeconomic views and how much to your views of the company.

In summary, analysts should concentrate on building the best models they can with as much information as they can legally access, trying to make their best estimates of firm-specific components and being as neutral as they can on macro economic variables. As new information comes in, they should update their valuations to reflect the new information. There is no place for false pride in this process. Valuations can change dramatically over time and they should if the information warrants such a change.

Q. 12. How a Valuer responds to various uncertainties during the process of business valuation?

Ans : Analysts who value companies confront uncertainty at every turn in a valuation and they respond to it in both healthy and unhealthy ways. Among the healthy responses are the following:

Better Valuation Models : Building better valuation models that use more of the information that is available at the time of the valuation is one way of attacking the uncertainty problem. It should be noted, though, that even the best-constructed models may reduce estimation uncertainty but they cannot reduce or eliminate the very real uncertainties associated with the future.

Valuation Ranges : A few analysts recognize that the value that they obtain for a business is an estimate and try to quantify a range on the estimate. Some use simulations and others derive expected, best-case and worst-case estimates of value. The output that they provide therefore yields both their estimates of value and their uncertainty about that value.

Probabilistic Statements : Some analysts couch their valuations in probabilistic terms to reflect the uncertainty that they feel. Thus, an analyst who estimates a value of Rs. 30 for a stock which is trading at Rs. 25 will state that there is a 60 or 70% probability that the stock is undervalued rather than make the categorical statement that it is undervalued. Here again, the probabilities that accompany the statements provide insight into the uncertainty that the analyst perceives in the valuation.

In general, healthy responses to uncertainty are open about its existence and provide information on its magnitude to those using the valuation. These users can then decide how much caution they should exhibit while acting on the valuation.

Unfortunately, not all analysts deal with uncertainty in ways that lead to better decisions. The unhealthy responses to uncertainty include :

Passing the buck: Because some analysts try to pass on the responsibility for the estimates by using other people's numbers in the valuation, which could have been done by them in a better way and as a matter of fact the result vary. For instance, analysts will often use the growth rate estimated by other analysts valuing a company, as their estimate of growth. If the valuation turns out to be right, they can claim credit for it, and if it turns out wrong, they can blame other analysts for leading them down the garden path.

Based on fundamentals, a significant number of analysts give up, especially on full-fledged valuation models, unable to confront uncertainty and deal with it. All too often, they fall back on more simplistic ways of valuing companies (multiples and comparables, for example) that do not

require explicit assumptions about the future. A few decide that valuation itself is pointless and resort to reading charts and gauging market perception.

In closing, it is natural to feel uncomfortable when valuing equity in a company. We are after all trying to make our best judgments about an uncertain future. The discomfort will increase as we move from valuing stable companies to growth companies, from valuing mature companies to young companies and from valuing developed market companies to emerging market companies.

Q13. What are the different approaches to business valuation?

Ans : Analysts use a wide spectrum of models, ranging from the simple to the sophisticated. These models often make very different assumptions about the fundamentals that determine value, but they do share some common characteristics and can be classified in broader terms. There are several advantages to such a classification makes it is easier to understand where individual models fit in to the big picture, why they provide different results and when they have fundamental errors in logic.

In general terms, there are three approaches to valuation. The first, **discounted cash flow valuation**, relates the value of an asset to the present value of expected future cash flows on that asset. **The second, relative valuation**, estimates the value of an asset by looking at the pricing of 'comparable' assets relative to a common variable like earnings, cash flows, book value or sales. The third, **contingent claim valuation uses** option pricing models to measure the value of assets that share option characteristics. While they can yield different estimates of value, one of the objectives of discussing valuation models is to explain the reasons for such differences, and to help in picking the right model to use for a specific task.

Q. 14. Distinguish between Price and Value.

Ans : The price may be understood as 'the amount of money or other consideration asked for or given in exchange for something else'. The price is therefore, an outcome of a transaction whereas the value may not necessarily require the arrival of a transaction. The value exists even if some assets become unable to generate cash flows today but can generate in future on the happening of some events.

An oil reserve of Petro net L&G may not have any value when the oil price is Rs. 70 and the extraction cost of that oil is Rs. 110. However, when the price reaches to Rs. 130 and is expected to prevail around this figure, it may have significant value.

Another example reaffirms that price and value is not same. A lawyer is having some question regarding a professional assignment having remuneration of Rs. 2, 50,000. He browses through some pages of a book at a bookshop and buys it for Rs. 40,000.He has an idea in his mind that the book is essential for earning professional remuneration of Rs.2,50,000 and expected contribution from the book would be around Rs.80,000.At this stage the value/worth of that book is Rs.80,000. However, after reading the book he feels that the book is not useful for his assignment. If the same book cannot be returned to the shop, its disposal value would be negligible.

The difference between price and value can be explained with the help of behaviour of the investors. In theory, *every decision maker believes rationally*. A decision is called 'rational' when the objective of the decision maker is clear and he is well informed. Homogeneous expectations are characteristics of efficient markets. But it is clear from the researches in the area of behavioural finance that homogeneous expectations are characteristics of efficient markets. Market participants do work with asymmetric information and the expectations are different. As a result price and value do not necessarily have to be equal.

Q. 15. Identify the purposes for which a valuation is used?

Ans : 'Quick' software, a Pvt. Ltd. offers to buy a majority stake in 'Slow' software which is a public limited company but closely held. Quick knows the industry well and wants to expand its portfolio of business and believes that it can apply its core competencies to improve the performance of 'Slow' if acquired.

The purpose of valuation is to determine the cash value of a majority shareholding of the equity shares of 'Slow'. The value derived will be used by the owners of the 'Slow' as a starting point of negotiation leading to the sale of the majority stake in 'Slow' to the 'Quick' through a private deal. Like the cases of Quick and Slow software there exist several other purposes of valuation than M&A. Purposes of valuation can be classified under four categories as stated by Statement for valuation Services issued by the AICPA, USA. They are given as below.

Purpose of Valuation	Examples
Valuation for transactions	Business purchase, business sale, M&A, reverse merger, recapitalization, restructuring, Leverage buy out, management by objective, management buy in, buy sell agreement, IPO, ESOPs, buy back of shares, project planning and others.
Valuation for court cases	Bankruptcy, contractual disputes, ownership disputes, dissenting and oppressive shareholder cases, divorce cases intellectual property disputes and other
Valuation for compliances	Fair value accounting, tax issues
Valuation for planning	Estate planning, personal financial planning, M&A planning, strategic planning

The list is inclusive and not exhaustive.

Q. 16. Who are the stake holders of valuation?

Ans : For whom do we value? The fundamental role of valuation is to offer a base for negotiation between buyer and seller. It has a great repercussion that can affect the whole economy. However, an inclusive list of entities that are presumed to be affected by wrong or improper valuation will help us to understand the role of valuation.

- **Shareholders**—who provide capital to the business
- **The company itself**—they may become a takeover target or a turnaround will not be possible
- **Financial experts**—who help in financial decision making
- **The buyers of property and business**—who help in creating orderly market
- **Banks and other**—who provide loan by taking property as collateral
- **Mutual funds and hedge funds** who heavily invest in listed and unlisted securities
- **Insurance companies** who provide risk mitigating products and invest insecurities

- **Governments**—who buy products and services and deposits money with banks mutual funds and others
- **Whole economy**—a robust banking systems is the necessary for the economy to move

Recently happened global financial crisis (GFC) has reminded us the crucial significance of the issue of valuation. Fair value accounting has been blamed as one of the main reasons behind GFC.

With the increase in cross border flow of capital, the subject of valuation has become a global issue.

Following entities may require valuation to be carried out; (i) buyer or seller (ii) lender (iii) intermediary like agent, broker etc.,(iv) regulatory authorities such as tax authorities,(v) revenue authorities and (vi) general public. Value can also be estimated, assessed or determined by professional valuer. Global /corporate investors have become highly demanding and are extremely focused on maximising corporate value. The list of investors includes high net worth individuals, pension and hedge funds and investment companies. They no longer remain passive investors but are keen followers of a company's strategies and actions aimed at maximising and protecting the value of their investments. Valuation should be done of all assets and liabilities to know 'what we own and "what we owe". Assets must include both tangibles as well as intangibles. Liabilities include both apparent and contingent.

Q. 17. Identify the key areas of valuation?

Ans : Globalization enhanced IT capabilities, all pervasive role of the media and growing awareness of investors have rendered the situation more complex. Mergers, acquisitions, disinvestments and corporate takeovers have become the order of the day across the globe and are a regular feature today.

Mentioned below are certain key areas where valuation plays a key role.

- Valuation of equity share in the primary, secondary as well as derivative market
- Private placement of equity shares
- Corporate restructuring and turnaround
- Secured lending including project finance
- Securitization and other debt instruments
- Implementation of Basel-II recommendation
- Portfolio management-Mutual fund, hedge fund and professional investors
- Long term and medium term investment decisions, M& A, takeovers, divestiture, disinvestment, capital budgeting, private equity investment, venture capital investment, stratetigic investors, financial investors and others
- Dividend decision and buy back of shares
- Borrowing decisions
- Financial risk management decisions
- Court case related decisions
- Tax related valuation including transfer pricing
- Development projects valuation
- Intangibles
- Financial reporting valuation
- Equity research
- Forensic accounting and financial fraud investigation
- Dissolution of firm, partner buyout and admission
- Insurance product valuation
- Estate planning and financial planning
- Corporate planning
- Property valuation
- Value based performance measurement

- Credit rating
- Fairness and solvency opinion and
- Charitable donation.

Apart from the reasons stated above, there lie reasons like 'divorce' etc. which could often be treated as reasons for valuation. However, we will consider it beyond the scope of our study.

Q. 18. Who is a valuer?

Ans : There are different types of providers of valuation services. Like IFRS there is no single consistent valuation standard applicable across the world. In USA, UK, Canada and other developed countries the valuation service providers there exist professional institute that provide necessary education training for valuation services and the profession is regulated to a large extent. In India valuation profession is yet to be regulated there is no specified qualification for performing valuation. As of today, the profession is fragmented. This probably could be reason, why there is lack of clarity, consistency, transparency and quality in valuation reports.

Several Cost & Management Accountant firms are providing valuation services. With the introduction of fair value accounting under IFRS, the field of valuation practice is bound to grow. Merchant bankers, venture capitalists and private equity investors perform valuation usually as a part of a transaction. Banks, financial institutions, also participates in valuations of their companies or segments of their companies or for their investment activities. Large brokerage houses have their own stock analysts' team who perform valuation on regular basis and use this information for advising clients. Services of valuation are really broad based and should not be confused with that of actuaries who render much specialised services.

Q. 19. What are the Principles of Valuation?

Ans : Like other areas of finance, valuation is also based on some basic foundations which we refer to as principles. We find six principles of valuation that provide basic ground work for different techniques of valuation we will refer to in the next part. Principles of valuation are,

- Principle of Substitution
- Principle of Alternative
- Principle of Time Value of Money
- Principle of Expectation
- Principle of Risk and Return &
- Principle o Reasonableness and Reconciliation of value

Q. 20. What is Principle of Substitution?

Ans : If business 'A' can be replicated at 'x 'amount then business is worth 'x' amount. If a similar business 'B' is available at a price less than 'x' amount then business 'A' has worth less than 'X' amount. This principle ensures that understanding of market is important and forced comparison would lead to flawed valuation. This simply indicates that risk-averse investor will not pay more for a business if another desirable substitute exists either by creating new or by buying.

Q. 21. What is Principle of Alternatives?

Ans : No single decision maker is confined to one transaction. Each party to the transaction has alternatives to fulfilling the transaction for a different price and with different party. Since no single transaction could be a perfect substitute to another transaction one may consider paying some premium if investment meets strategic interest.

When someone is buying business it should be kept in mind that the same should not be bought at any cost as if no alternative exists. In stock market and auction market in most of the cases bidders bid simply because of the fact that others are bidding and that simply raises the price. This Case is simply explained as 'near miss' situation where one realizes that price is far greater than value.

Q. 22. What is the Principle of Time Value of Money?

Ans: This is the most basic area corporate finance as well as valuation. It suggests that value can be measured by calculating present value of future cash flows discounted at the appropriate discount rate. Investment opportunities may offer differing cash flows, growth prospects and risk profile. Principle of time value of money helps us to discriminate those opportunities and to select the best subject to given parameter.

Q. 23. What is Principle of Expectation?

Ans : Cash flows are based on the expectations about the performance in future and not the past. In case of mature companies we may conservatively assume that growth from today or after some certain period would be constant. The difficult part is to determine the extent and direction of growth. These assumptions will have significant impact on the valuation.

Q. 24. What is Principle of Risk & Return?

Ans: Harry Markowitz, the father of modern finance was first to quantify risk and used the same in portfolio decision making. Based on risk- return criteria he suggested ways to identify optimal portfolio.

Markowitz has made two important assumptions. First, an investor is risk averse. Second, an investor would prefer higher amount of wealth than the lower one. The reason is higher wealth leads to possibility of higher consumption. Given two possible portfolios with similar risk profile, the one with higher expected return will be preferred. These two assumptions are most integral part of valuation exercise.

Q. 25. What is Principle of Reasonableness & Reconciliation?

Ans : In valuation exercise we need to deal with large number of uncertainties and we have to go for assumptions. This sixth principle suggests how far these assumptions are reasonable and it reconciles different values obtained under different approaches.

In valuation we should be careful about

- Inconsistency in judgement and assumptions
- Conceptual flaws
- Projection modelling and formula errors

A valuation without reasonableness check and reconciliation exercise is not complete and would be difficult to defend. It is pertinent to note Revenue Ruling 59-60 of USA that offers seven factors that must be considered in any valuation exercise.

- The nature of the business and the history of the enterprise from its inception
- Economic outlook in general and condition of the outlook of the specific industry in particular
- The book value of the stock and financial condition of the business
- The earnings and dividend paying capacity of the company
- Whether the business is having any intangible assets
- Sales of the stock and the size of the block of stock to be valued
- The market price of corporations engaged in similar l having their stocks actively traded in a free and open market or an exchange or over the counter.

Q. 26. What are the misconceptions about valuation?

Ans : There are many areas in valuation where reamains the scope for disagreement, including how to estimate true value and how long it will take prices to adjust to true value. But asset prices cannot be justified merely by using the argument that other investors are willing to pay higher price in future. Like all analytical disciplines, valuation has developed its own Myths.

Myth 1: A valuation is an objective search for true value.

However all valuation are biased. However, only questions are how much and in which direction. The direction in magnitude of the biased in your valuation is directly proportional to pas u and how much you are paid.

Myth 2: Since valuation models are quantitative, valuation is subjective.

However once understanding of a valuation model is inversely proportional to the number of inputs required for the model. Moreover simpler valuation model do much better than complex once.

Myth 3: A well researched and well done valuation is timeless.

The value obtain any valuation model is effected by firm-specific as well as market wide information. As a consequence, the value will change as new information is revealed. Given the constant flow of information into financial markets, a valuation done on a firm ages quickly and has to be updated to reflect correct information.

However, information about the state of the economy and the level of interested affects all valuation in an economy. When analysts change their valuation, they will undoubtedly be asked to justify them and in some cases the fact that valuation change over time is viewed as a problem. The best response may be the one that John Maynard Keynes gave when he was criticized for changing his position on a major economic issue: "When the facts change I change my mind and what do u do, sir?

Myth 4: A good valuation provides a precise estimate of value.

However the truth remains that there is no concept of precise valuation. The payoff to valuation is greatest when valuation is least precise.

Myth 5: The more quantitative a model the better is valuation.

It seems obvious that making a model more complete and complex should yield better valuation. But it is not necessarily so. As models become more complex the number of inputs needed to value a farm tends to increase. Problems are compounded when models becomes too complex to become "black boxes." When a valuation fails the blame gets attached to the model rather than the analyst. Value are often complains "It was not my fault. The model did it."

Three points are common and important in all valuation works. The first one is the principal of parsimony, which essentially states that you do not use more inputs than what is actually needed. The second one is, there should be trade-off between additional benefit arising from more inputs and cost arising from input errors and using more number of inputs. The third one is models do not value companies but valuer does. This is a time of excessive information. Identifying the minimum relevant information is almost as important as the valuation models and techniques that a valuer uses to value a firm.

Myth 6: To make money on valuation, you have to assume that markets are inefficient.

If a market is efficient then market price is the best estimate of value. However, it has been empirically tested that no single market is efficient in the strong from sense. It is recognised that market make mistakes but finding those mistakes requires a combinations of skill and luck. This view of markets leads to the following conclusions: first if something looks good to be true a stock looks obviously undervalued or overvalued it is properly not true. Second, when the value from an analysis is significantly difference from the market price, start off with the presumption that the market is correct; then you have to convince yourself that this is not the case before you to conclude that something is over or undervalued. The higher standard may lead you to be more cautions in following through on valuation but given the difficulty of beating the market this is not an undesirable out come.

Myth7: The product of valuation (i.e., value) matters and not the valuation.

Valuation models that are introduced in this compendium focus exclusively on the outcome. That is the value of the company and whether it is over or undervalued. In most of the cases valuable inside are missed out that can be obtain from the process of valuation can answer some of the most fundamental questions, e.g.,

- What is the appropriate prise to pay for high growth?
- What is a brand name worth?
- How important is to return and project?
- What is the effect of profit margin on value?

Myth 7: How much a business is worth depends on what the valuation is used for.

The value of a business is its fair market value that is what a willing buyer will pay a willing seller when each is fully informed and under no pressure to transact.

Q. 27. What is standard of value?

Ans : Standard of value is nothing but a definition of the type of value being sought. Important at the stage is to refer the definition of standard of value as per the International glossary of business valuation terms which is "The identification of the type of value being utilised in a specific engagement; e.g. for example, fare market value, fair value, investment value." This definition is inclusive but not exhaustive. Standard of venue can be taken depending upon the purpose of the valuation. The standard of value depends upon time of engagement which gives the purpose of valuation. Five most common 'standard of value' which are used practice are;

- Fair market value
- Investment value
- Intrinsic value
- Fair value
- Market value

Choice of appropriate standard of value may be dictated by circumstances, objective, contract and operation of law or other factors. Pertinent questions to be answered before choosing an appropriate standard of value are;

- What is being valued?
- What is the purpose of valuation?
- Does the property or business changes hands?
- Who are the buyer and seller?

We will describe each of those five standards of values. But to begin with we introduce book value.

Q. 28. What is book value?

Ans : Book value is an accounting concept and implies historical assets less outside liabilities. It is rarely used in valuation. The book value per share is simply the network of the company (which is equal to paid up equity capital plus reserves and surplus) divided by the number of outstanding equity shares. For example if the net worth of Zenith limited is Rs. 37 million and the number of outstanding equity shares of Zenith is 2 million, the book value per share works out to Rs. 18.50(Rs. 37 million divided by 2 million).

How relevant and useful is the book value per share as a measure of investment value? The book value per share is firmly rooted in financial accounting and hence can be established relatively easily. Due to this, its proponents argue that it represents an 'objective', measure of value. A closer examination, however, quickly revels that what is regarded as 'objective' is based on accounting conventions and policies which are characterised by a great deal of subjectively and arbitrariness. An allied and a more powerful criticism against the book value measure is that the historical balance sheet figure on which it is based are often very diverged for current economic value. Balance sheet figures really reflect earning power and hence the book value per share cannot be regarded as a proxy for true investment value.

Q. 29. What is liquidation value?

Ans : The liquidation value per share is equal to:

$$\frac{X - Y}{Z}$$

X : Value realized from liquidating all the assets of the firm.

Y : Amount to be paid to all the creditors and preference share holders.

Z : Number of outstanding equity shares.

To illustrate let's assume that M limited would realise Rs. 40 million from the liquidation of its assets and pay Rs. 20 million to its creditors and preference shareholders in full settlement of their claims. If the number of equity share of M limited is 2 million, the liquidation per share works out to (Rs. 40 million – Rs. 20 million) / 2 million = Rs. 10 per share.

When the liquidation value appears more realistic than the book value, there are two serious problems in applying it. 1) it is very difficult to estimate what amount should be realised from the liquidation of various assets. 2) the liquidation value does not reflect earning capacity.

IGBVT defines three types of liquidation value :

Liquidation value	The net amount that would be realized if the business is terminated and the assets are sole piecemeal. Liquidation can either be orderly or forced.
Force Liquidation value	Liquidation value at which the asset/assets are sold as quickly as possible such a at an auction.
Orderly Liquidation value	Liquidation value at which the asset/assets are sold over a reasonable period of time to maximize proceeds received.

Q. 30. What is Fair Market Value (FMV)?

Ans : FMV is the most widely used standard of value in business valuation. The AICPA of USA, while issuing Statement on Standards for Valuation Services, has adopted the International Glossary of Business Valuation Terms (IGBVT). It defines FMV as

"The price expressed in terms of cash equivalents, at which property would change hands between a hypothetical willing and able buyer and a hypothetical willing and able seller, acting at arm's length in an open and unrestricted market, when neither is under compulsion to buy or sell and when both have reasonable knowledge of the relevant facts."

Following example makes FMV simple.

Mr. 'A' owns 20% of a business and the balance 80% is owned by the other people. Here Mr. A has what is called a minority interest in the business. The question is whether worth of Mr. A will be taken as proportionate value of the business under FMV standard of value. Let's assume business is worth Rs. 200 million.

The 20% interest in the business would be worth less than Rs.40 million. In the open market willing and able buyers pay perhaps 15% of the total value for a 20% interest because they are subject to control of the 80% owners. That means there will be discount known as DLOC (discount for lack of control). If it is a case of closely held company then there would be further discount on account of what is called as DLOM (discount for lack of marketability). This discount is counted to cover the fact that it will be difficult to sell the minority shares of closely held companies.

If a business is marketable then FMV seems to be appropriate standard of value. If a closely held business cannot be compared with a listed company FMV may not be the appropriate standard. The issue is not whether it can be used or not. Rather the issue is whether it can be determined or not.

Q. 31. What is Investment value? Distinguish between investment value and FMV?

Ans : IGBVT defines 'Investment value' as "the value to a particular investor based on individual investment requirements and expectations". Simply stated, it gives the value of an asset or business to a specific unique investor and therefore considers the investor's specific knowledge about the business, own capabilities, expectation of risks and return and other factors. Synergies are considered to a specific purchaser. For these reasons investment value may result in higher value than FMV. Some of the factors which may cause difference between FMV and investment value are;

Estimates of future cash flows or earnings;

- Perception of risk
- Tax advantages
- Synergy to other products
- Other strategic advantages

An example makes the concept of investment value clear.

Mr. A owns 20% of a business and the balance 80% is owned by the other people. Whether, worth of Mr. 'A' will be taken as proportionate value of the business, if intrinsic value is used as standard of value. Even it can be more than the proportionate value if this 20% acquisition meets some strategic interest of the investor. The question of DOLM need not necessarily come as the investor is looking for long term strategic investment. In case of small business, the investment value should be the definition of value as only an investor with specific knowledge of the business would be interested in buying the business. Under this one values the business in the hands of specific investor.

Q. 32. What is Intrinsic Value or Fundamental Value?

Ans : Intrinsic or fundamental value is used when an investor wants 'true' or 'real' value on the basis of an analysis of fundamentals without considering the prevailing price in the market. It is true economic worth of a share, business or property.

IGBVT defines intrinsic value as "the value that an investor considers, on the basis of an evaluation or available facts to be the "true" or "real" value that will become the market value when other investors reach the same conclusion." Graham & Dodd has defined the intrinsic value as "the value which is justified by assets, earnings, dividends definite prospects and factor of management." There are four major components of intrinsic value of a going concern :

- Level of normal earning power and profitability in the employment of assets as distinguished from the reported earnings which may be and frequently are, distorted by transient influences.
- Dividends actually paid or the capacity to pay such dividends currently and in the future
- A realistic expectation about the trend line growth of earning power
- Stability and predictability of those quantitative and qualitative projections of the future economic value of the enterprise.

Intrinsic value and investment value may seem like similar concepts but they are different. The first represents an estimate of value based on the expected cash flow of the business and not of the investor. The second represents an estimate of value based on expected cash flow in the hands of a specific investor.

Q. 33. What is Fair Value?

Ans : The fair value as standard of value is understood differently in the two situations mentioned below:

(i) In legal matters

(ii) In financial reporting purpose

Financial accounting standard board is the accounting standards setting body for US-GAAP (Generally accepted accounting principle) reporting has issued SFAS (Statement of finical accounting standard) no 157, fair value measurements. This is also known as mark to market standard. These established a frame work for measurements of fair value and require discloser about measurement but it does not require fair value accounting for any position. Its guidance is relevant only when accounting standard require or permit position to be accounted for at fair value.

The standard provides the single authorities definition of fair value for the US-GAAP reporting. The definition of fair value reads as "The price that would be receive to be sell and asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date". International Financial Reporting Standard (IFRS) which for the timing does not have a single authority definition of fair value. The guidance on measuring fair value is scattered through out IFRSs and they are also not consistent. A general definition fair value under IFRS reads as the amount for which an asset could be exchange or a liability settled between knowledgeable, willing parties in an arm's length transitions.

IFRS is working on a standard similar to SFAS 157 we are starting our discussion with the latter .A simple comparison of the two definitions highlight three important differences.

Exit price Vs Exit or Entry Price :

SFAS 157 reflect an exit notion where an organisation can get out of the assets and the liability position through orderly transaction with market participants at the measurement date. Simply stated, this standard requires valuing assets on what they could fetch in the market or what is to be paid on transfer of liability that is the "exit price" (Sale price). This does not require the entity intention or its ability to sell assets or transfer liability at the measurement date. As far FASB price shall not be adjusted for transaction costs as they are not an attribute of the assets or liability. Farther a fair value measurement under SFAS 157 assumes the highest and best use of the asset from the perspective of market participant without considering how the company is going to uses it. This also requires considering that the use of the asset physically possible, financially feasible and legally permissible. The word "Exchanged" under IFRS definition can have both situations "Exit price as well as entry price" (Purchase price).

Q. 34. Who are market participants in an orderly transaction?

Ans : The focus in SFAS is on a market-based measurement. The standard refers to orderly transaction between market participants. In an orderly transaction market participants

- Are willing to transact
- Are independent.
- Are knowledgeable having understanding about the asset or liability.

The orderly transaction is unforced and unhurried. If the market is not active and prices are not reflective on orderly transaction then an adjustment may be required to arrive at fair value. The unique feature is that the standard creates a hierarchy of inputs for fair value measurement from most to least reliable.

Level 1 input is based on unadjusted quoted market price in active market for similar assets.

Level 2 inputs is base on observed market data and level 3 is based on unobservable input which could be internal models or an estimate of the management.

Level 3 is the subject intense debate. Don't forget that fair value measurement requires significant judgement. The standard has sufficient discloser requirements to counter any manipulation. The investor can always assess the assumptions and accordingly the modify decision.

Q. 35. What are the points of difference between fair value and fair market value?

Ans : There is no authoritative clarification either under US-GAAP or IFRS about the difference between fair value and FMV except that these terms are consistent in accounting. This seems to be the reality. However, we can locate few differences which are given below :

- Fair value has a hierarchy of inputs for valuation but FMV does not have it.
- Fair value uses highest and best use of an asset from perspective of market participants. This may result in maximizing the value as against consensus value under FMV.
- DOLM adjustments may require in certain cases under fair value but adjustment for DOLC is doubtful.
- Fair value disregard blockage discount (a decline in the value resulting from the size of position). The opinion of FASB is clear that when a quoted price is available in the active market it should not be further reduced for blockage discount. Because the quotes price is without any regard to the intent of the firm to transact at that price. Without the blockage discount comparability will improve.

Q. 36. What is market value?

Ans : Market value standard is generally used in realised valuation. Definition of the term 'market value' is taken from IVS1, propounded by IVS committee—the leading property valuation standard setting body.

"Market value is the estimated amount for which a property should exchange on the date of valuation between a willing buyer and a willing seller in an arm's length transaction after proper marketing wherein the parties had each acted knowledgeably, prudently and without compulsion."

Highlights of the definition include;

- Estimated amount: The determination of highest and best use or most probable use is the first step in estimating market value. This considers physical possibilities financial feasibility and highest possible value to the property.
- Exchange: Exchange means an estimated amount rather than a predetermined or actual sale price. It also assumes simultaneous exchange. It however, is not depended of actual price on the date of valuation infarct it is an estimate of the price.
- On the date: Price is time specific and excludes past or future date market circumstances.
- Willing buyer is motivated but not compelled to buy.
- Willing seller is motivated to sell at whatever price is available in the current market but not over eager.
- Proper marketing: Property should be exposed to market in most appropriate manner to effects its disposal at the best price reasonably obtainable.

- Acted knowledgeably and prudently buyer and seller should reasonably be informed about the nature and characteristic of the property, its actual and potential used and the state of the market.
- Without compulsion: The transaction should not be forced or coerced.

Another definition of market value can be taken from uniform standard of professional appraisal practice (USPAP) (2008-2009) which is the property valuation standard setting body in USA. The USPAP defines market value as "a type of value stated as an opinion, that presume the transfer of a property (that is a write of ownership or a bundle of such rights) as of a certain date under specific conditions set forth in the definition of the term identified by the appraiser as applicable in an appraiser."

Forming and opinion of market value is the purpose of many real property appraisal assignments. Particularly when clients intended used includes more than one intended users. The conditions included in the market value definitions established market perspective for development of the opinion. Conditions may vary from one definition to other but generally fall into three categories.

- The relationship, knowledge and motivation of the parties(i.e., seller and buyer);
- The terms of sell(e.g., cash, cash equivalent or other terms)
- The condition of sale (i.e.., expose in a comparative market for a reasonable time prior to sale.

The most important part in property valuation is to define the market value by quoting authority.

Q. 37. What is premise of value?

Ans : Premise of value represents the general concept under which standard of value falls. IGBVT defines standard of value as:

"An assumption regarding the most likely set of transaction of circumstances that may be applicable to the subject valuation for example going concern, liquidation etc."

There are two premise of value going concern and liquidation. Impact of premise can easily be observed in case of a loss making company or a company with a poor track record of profit. Going concern is generally taken as a premise of value. Liquidation is also considered to be another premise. If it offers are negative valuation then one may conclude that business has either no value or very little value.

IGBVT defines going concern as "an ongoing operating business enterprise." IGBVT further defines going concern value as "the value of a business enterprise that is expected to continue to operate into the future. The intangible elements of going concern value result from factors such as having a trained work force, an operational plan and the necessary licenses, system and procedures in place."

Going concern value should not be considered as standard of value. This should be referred as premise of value. In Re Marriage of Sharp (1983) 143 Cal, The court rejected standard of value described as going concern and ruled that the standard to be used in the valuation of a business was FMV. The going concern is an attribute of the standard of value like the liquidation.

Q. 38. What are general premises of value?

Ans : Apart from going concern and liquidation there are four general premises of value.

1. **Value in exchange :** This premise contemplates value assuming exchange of business, business interest or property. Some sort of hypothetical transaction is assumed in the valuation. The FMV or market value and the fair value standard to a very limited exchange can be categorised under value in exchange premise.
2. **Value in use :** This premise contemplates value assuming that assets are engaged in produce in income.
3. **Value in place :** This premise contemplates value assuming that assets are ready for use but not engaged for producing income.
4. **Value to the specific holder :** This premise contemplates the value in the hands of a particular of specific buyer or holder of the assets. Marketability is not the criteria in this place. The investment value falls under the premise of value and in certain cases even fair value.

Following example distinguishes between values in exchange and value to the specific holder.

Ms. Puja is an actress in Bollywood and runs a film production company along with his spouse who is not a film star. Puja's film has always been a success because of her style of storytelling and she has established a big

reputation in the film industry. The success of the company is largely depended on her reputation. Of late Puja has developed a close relationship with an actor of her company and once divorce from her spouse.

If the valuation is to be performed for divorce under value in exchange premise then personal goodwill need to be separated as only assets of the enterprise could be sold to a hypothetical buyer. Reputation and skills (Personal goodwill) of Puja can't be distinguished from the individual. However, if we change premise of value to value to specific holder then this goodwill of Puja should also be consider.

The selection of premise of value mainly depends upon court cases decided in the past and or circumstances of the case for divorce.

Q. 39. What is the role of valuation in Portfolio Management?

Ans : The role that valuation plays in portfolio management is determined in large part by the investment philosophy of the investor. Valuation plays a minimal role in portfolio management for a passive investor, whereas it plays a larger role for an active investor. Even among active investors, the nature and the role of valuation is different for different types of active investment. Market timers use valuation much less than investors who pick stocks, and the focus is on market valuation rather than on firm-specific valuation. Among security selectors, valuation plays a central role in portfolio management for fundamental analysts, and a peripheral role for technical analysts.

The following sub-section describes, in broad terms, different investment philosophies and the roles played by valuation in each one.

1. **Fundamental Analysts :** The underlying theme in fundamental analysis is that the true value of the firm can be related to its financial characteristics — its growth prospects, risk profile and cash flows. Any deviation from this true value is a sign that a stock is under or overvalued.

2. **Activist Investors :** Activist investors take positions in firms that have a reputation for poor management and then use their equity holdings to push for change in the way the company is run. Their focus is not so much on what the company is worth today but what its value would be if it were managed well. Investors like Carl Icahn, Michael Price and Kirk Kerkorian have prided themselves on their capacity to not only pinpoint badly managed firms but to also create enough pressure to get management to change its ways. How can valuation skills help in this pursuit? To begin with, these investors have to ensure that there is additional value that can be generated by changing management. In other words, they have to separate how much of a firm's poor stock price performance has to do with bad management and how much of it is a function of external factors; the former are fixable but the latter are not. They then have to consider the effects of changing management on value; this will require an understanding of how value will change as a firm changes its investment, financing and dividend policies. As a consequence, they have to not only know the businesses that the firm operates in but also have an understanding of the interplay between corporate finance decisions and value. Activist investors generally concentrate on a few businesses they understand well, and attempt to acquire undervalued firms. Often, they wield influence on the management of these firms and can change financial and investment policy.

3. **Chartists :** Chartists believe that prices are driven as much by investor psychology as by any underlying financial variables. The information available from trading measures — price movements, trading volume and short sales — gives an indication of investor psychology and future price movements. The assumptions here are that prices move in predictable patterns, that there are not enough marginal investors taking advantage of these patterns to eliminate them, and that the average investor in the market is driven more by emotion than by rational analysis. While valuation does not play much of a role in charting, there are ways in which an enterprising chartist can incorporate it into analysis. For instance, valuation can be used to determine support and resistance lines on price charts.

4. **Information Traders :** Prices move on information about the firm. Information traders attempt to trade in advance of new information or shortly after it is revealed to financial markets. The underlying assumption is that these traders can anticipate information announcements and gauge the market reaction to them better than the average investor in the market. For an information trader, the focus is on the relationship between information and changes in value, rather than on value, per se. Thus an information trader may buy an 'overvalued' firm if he believes that the next information announcement

is going to cause the price to go up, because it contains better than expected news. If there is a relationship between how undervalued or overvalued a company is, and how its stock price reacts to new information, then valuation could play a role in investing for an information trader.

5. **Market Timers :** Market timers note, with some legitimacy, that the payoff to calling turns in markets is much greater than the returns from stock picking. They argue that it is easier to predict market movements than to select stocks and that these predictions can be based upon factors that are observable.

6. **Efficient Marketers :** Efficient marketers believe that the market price at any point in time represents the best estimate of the true value of the firm, and that any attempt to exploit perceived market efficiencies will cost more than it will make in excess profits. They assume that markets aggregate information quickly and accurately, that marginal investors promptly exploit any inefficiencies and that any inefficiencies in the market are caused by friction, such as transactions costs, and cannot exploited. For efficient marketers, valuation is a useful exercise to determine why a stock sells for the price that it does. Since the underlying assumption is that the market price is the best estimate of the true value of the company, the objective becomes determining what assumptions about growth and risk are implied in this market price, rather than on finding under or overvalued firms.

Q. 40. What is the role of valuation in business acquisition?

Ans : Valuation should play a central part of acquisition analysis. The bidding firm or individual has to decide on a fair value for the target firm before making a bid, and the target firm has to determine a reasonable value for itself before deciding to accept or reject the offer.

There are special factors to consider in takeover valuation. First, there is synergy, the increase in value that many managers foresee as occurring after mergers because the combined firm is able to accomplish things that the individual firms could not. The effects of synergy on the combined value of the two firms (target plus bidding firm) have to be considered before a decision is made on the bid. Second, the value of control, which measures the effects on value of changing management and restructuring the target firm, will have to be taken into account in deciding on a fair price. This is of particular concern in hostile takeovers.

As we noted earlier, there is a significant problem with bias in takeover valuations. Target firms may be over-optimistic in estimating value, especially when the takeover is hostile, and they are trying to convince their stockholders that the offer price is too low. Similarly, if the bidding firm has decided, for strategic reasons, to do an acquisition, there may be strong pressure on the analyst to come up with an estimate of value that backs up the acquisition.

Q. 41. What is the role of valuation in corporate finance?

Ans : There is a role for valuation at every stage of a firm's life cycle. For small private businesses thinking about expanding, valuation plays a key role when they approach venture capital and private equity investors for more capital. The share of a firm that a venture capitalist will demand in exchange for a capital infusion will depend upon the value estimates for the firm. As the companies get larger and decide to go public, valuations determine the prices at which they are offered to the market in the public offering. Once established, decisions on where to invest, how much to borrow and how much to return to the owners will be all decisions that are affected by valuation. If the objective in corporate finance is to maximize firm value, the relationship between financial decisions, corporate strategy and firm value has to be delineated.

Q. 42. What is the role of valuation in legal and tax purposes?

Ans : Mundane though it may seem, most valuations, especially of private companies, are done for legal or tax reasons. A partnership has to be valued, whenever a new partner is taken on or an old one retires, and businesses that are jointly owned have to be valued when the owners decide to break up. Businesses have to be valued for estate tax purposes when the owner dies and for divorce proceedings when couples break up. While the principles of valuation may not be different when valuing a business for legal proceedings, the objective often becomes providing a valuation that the court will accept rather than the right valuation.

Q. 43. What is efficient market hypothesis?

Ans : The purpose of any stock market the world is to bring together those people who have funds to invest with those who need funds to undertake investments. Entities which seek to raise equity are asking investor for a

permanent investment. Investors may not be incorrect to invest unless they are convinced that they would be able to realize their investments at a fair price at any time in the future.

For these two happen stock market must price shares efficiently. Efficient pricing means incorporating into the share price that could possibly effect. In an efficient market investors can buy and sell share at a fair price and entities can raise funds at a cost that reflects the risk of the investment they are seeking to undertake.

A considerable body of financial theory has been developed on the basis of the hypothesis that in an efficient market, prices fully and instantaneously reflect all available information. The efficient market hypothesis is therefor concerned with information and pricing efficiency.

Three levels or forms of efficiency have been defined. These are depended on the amount of information available to the participants in the market.

1. **Weak form :** weak form efficiency implies that current share price reflect all the information which could be gleaned from a study of past share prices. If this holds then no investor can earn above average return by developing training rules based on historical process or return information. This form of the hypothesis can be related to the activities of chartists, analyses who belief share prices can be charted and a pattern identified that can be used to predict future prices.
2. **Semi-strong form :** Semi-strong form efficiency implies that the current share price reflect all other published information. If they sold, then no investors can be expected to earn above average return from training rules based on any publicly available information. This form of the hypothesis can be related to fundamental analysis, in which estimates future prices are based on the analysis all known information.
3. **Strong form :** Strong from efficiency implies that the current share prices in corporate all information, including unpublished information. This would include insider information and views held by the directors of the entity. If this holds then no investor can earn above average return using any information whether publicly available or not.

Q. 44. What are the common valuation errors (VE)?

Ans : VE 1 : When the valuation report does not expressly included valuation purpose.

VE 2 : When the valuation report does not define the standard of value.

VE 3 : When the valuation report does not consider the premise of value.

VE 4 : When the valuation report treats going concern as the standard of value.

Q. 45. What are the common sequential steps in business valuation?

Ans : Step 1 : Determine the purpose of valuation.

Step 2 : Define the standard of value.

Step 3 : Select premise of value.

Step 4 : Carry out historical analysis.

Step 5 : Carry out environment scan.

Step 6 : Select appropriate valuation approaches.

Step 7 : Select appropriate methods.

Step 8 : Calculate value.

Step 9 : Carry out reconciliation and reasonableness check.

Step 10 : Value conclusion.

Chapter 1 : Exercise

1. Confronted with a legal issue, you have purchased a set of law books for a cost of Rs. 50,000. You expect that the books will generate profession fees of Rs.2, 00,000 and contribution of the set of books will be around Rs.60, 000. What is the value of the books?

Ans : (i)Rs. 50,000; (ii) Rs. 60,000; (iii) Rs. 1,00,000; (iv) none of the above.

2. What is the full form of IGBVT?

3. What are the five most common standard of value?

4. While defining 'Fair Market Value' AICPA of USA has used this phrase ".....At arm's length in an open and unrestricted market". What do you mean by it?

5. How' investment value' differs from 'fair market value'? Identify and explain at least two factors that distinguish between these two.

6. What do you mean by premise of value?

7. (i) Distinguish between values in exchange and value to the specific holder.

(ii) Mr. K is a film star in Hollywood and runs a film production company along with his wife who is not a film star. The success of the company is largely dependent on his reputation. Of late Mr. K has developed a close relationship with the lady director of his company and wants divorce from his wife. On what premise/basis personal goodwill of Mr. K is to be valued?

8. Below is the myth and reality regarding business valuation. Fill in the blanks :

Myth	Reality
	Valuation is subjective
Valuation is science	
	Valuation only gives an estimate
A complex financial model gives better valuation	
	Value will change, if purpose changes

9. Write five sequential steps in valuation process

10. Write short notes on :

(i) Principle of Risk and Return

(ii) Principle of Reasonableness and Reconciliation of Value

(iii) SFAS 157

(iv) Willing buyer and willing seller

CHAPTER - 2

VALUATION MODELS

Q. 1. What are the different valuation models?

Ans : Wide ranges of models are used in valuation ranging from the simple to the sophisticated. In general terms, there are three approaches to valuation.

1. **Discounted cash flow valuation :** It relates to the value of an asset to the present value of expected future cash flows on that asset.
2. **Relative valuation :** It estimates the value of an asset by looking at the pricing of 'comparable' assets relative to a common variable such as earnings, cash flows, book value or sales.
3. **Contingent Claim valuation :** It uses option pricing models to measure the value of assets that have share option characteristics. Some of these assets are traded financial assets like warrants, and some of these options are not traded and are based on real assets. Projects, patents and oil reserves are examples. The latter are often called real options.

The outcomes form each of this approach may be different because these make different assumptions. In this module, we will discuss different valuation approaches and will also explore the reasons for differences in different models. We will also learn how to choose the right model to use for a specific task.

Q. 2. What are the factors that affect formation of valuation?

Ans : Internal Factors :

(i) Rate of dividend declared
(ii) Market / Current values of assets / liabilities
(iii) Goodwill
(iv) Market for the products
(v) Industrial relations with employees
(vi) Nature of plant / machinery
(vii) Expansion policies of the company
(viii) Reputation of Management

External Factors :

(i) Competition
(ii) Relations with Govt. Agencies
(iii) Technological development
(iv) Taxation parties
(v) Import / Export policy
(vi) Stability of economy
(vii) Stability of government in power

Q. 3. What are the three elements of business valuation?

Ans : Business valuation refers to the process and set of procedures used to determine the economic value of an owner's interest in a business.

The three elements of Business Valuation are:

1. **Economic Conditions :**

   As we see in Portfolio Management Theory, wherein we adopt the Economy-Industry-Company (E-I-C) approach. In Business Valuation too, a study and understanding of the national, regional and local economic conditions existing at the time of valuation, as well as the conditions of the industry in which the subject business operates, is important. For instance, while valuing a company involved in sugar manufacturing in India in January 2010, the present conditions and forecasts of Indian economy, industries and agriculture are required to be understood before the prospects of Indian sugar industry and that of a particular company are evaluated.

2. **Normalization of Financial Statements** :

   This is the second element that needs to be understood for the following purposes:

   (a) **Comparability adjustments:** to facilitate comparison with other organizations operating within the same industry.

   (b) **Non-operating adjustments:** Non-operating assets need to be excluded.

   (c) **Non-recurring adjustments:** Items of expenditure or income which are of the non-recurring type are to be excluded to provide comparison between various periods.

   (d) **Discretionary adjustments:** Wherever discretionary expenditure had been booked by a company, they are regined to be adjusted to arrive at a fair market value.

3. **Valuation Approach :**

   There are three common approaches to business valuation - Discounted Cash Flow Valuation, Relative Valuation, and Contingent Claim Valuation. Within each of these approaches; there are various techniques for determining the fair market value of a business. Valuation models fall broadly into four variance based respectively on assets, earning, dividend and discounted cash flows, typically using a Capital Asset Pricing Model to calculate a discount rate. Each method has its advantages and disadvantages and are not appropriate in all circumstances. It is often not wise to depend on a single method. Calculating a range of value using different appropriate types of valuation can provide valuable benchmarks for the project or entity valuation being considered.

Q. 4. Distinguish between equity value and enterprise value?

Ans : There is an important distinction between equity value and enterprise value.

The equity value of a company is the value of the shareholders' claims in the company. The value of a share is arrived at by dividing the value of the company's equity as accounted in the balance sheet by the total number of shares outstanding. When a company is publicly traded, the value of the equity equals the market capitalization of the company.

The enterprise value of a company denotes the value of the entire company to all its claimholders.

Enterprise value = Equity value + market value of debt + minority interest + pension and other similar provisions + other claims.

Q. 5. Distinguish between fundamental valuation and relative valuation?

Ans : Fundamental valuations are calculated based on a company's fundamental economic parameters relevant to the company and its future, are also referred to as 'standalone valuations'.

On the other hand, Relative valuations or relative multiples apply a relation of a specific financial or operational characteristic from a similar company or the industry to the company being valued. They express the value of a company as a multiple of a specific statistic.

Q. 6. Identify three fundamental basis for valuations?

Ans : The different basis that can be used in valuations are:

1. **Cash flows :** the cash flow to equity shareholders (dividends) or to both equity shareholders and debtors (free cash flow)

2. **Returns :** The difference between the company's capital and the cost of capital.
3. **Operational Variables :** Production capacity, subscriber base (as in telecom), etc.

Q. 7. Identity four different approaches to business valuation.

Ans :

Discounted Cash Flow Valuation : This approach is also known as the Income approach, where the value is determined by calculating the net present value of the stream of benefits generated by the business or the asset. Thus, the DCF approach equals the enterprise value to all future cash flows discounted to the present using the appropriate cost of capital.

Relative Valuation : This is also known as the market approach. In this approach, value is determined by comparing the subject company or asset with other companies or assets in the same industry, of the same size, and/or within the same region, based on common variables such as earnings, sales, cash flows, etc.

The Profit multiples often used are: (a) Earnings before interest, tax, depreciation and amortization (EBITDA), (b) Earnings before interest and tax (EBIT), (c) Profits before tax, and (d) Profits after tax.

Historic, current and forecast profits/earnings are used as multiples from the quoted sector and actual transactions in the sector.

Contingent Claim Valuation: This approach uses the option pricing models to estimate the value of assets.

Asset-based approach: A fourth approach is called asset-based approach.

The valuation here is simply the difference between the assets and liabilities taken from the balance sheet, adjusted for certain accounting principles.

Two methods are used here:

(a) The Liquidation Value, which is the sum as estimated sale values of the assets owned by a company.

(b) Replacement Cost: The current cost of replacing all the assets of a company.

However, the asset-based approach is not an alternative to the first three approaches, as this approach itself uses one of the three approaches to determine the values.

This approach is commonly used by property and investment companies, to cross check for asset based trading companies such as hotels and property developers, underperforming trading companies with strong asset base (market value vs. existing use), and to work out break – up valuations.

Q. 8. What is Discounted Cash flow (DCF) Valuation?

Ans : DCF method is an easy method of valuation. To understand and evaluate the other two methods of valuation it is important to understand the DCF method first. In this section, we will consider the basis of this approach.

Basis for Discounted Cash flow Valuation

This approach has its foundation in the present value rule, where the value of any asset is the present value of expected future cash flows that the asset generates. To use discounted cash flow valuation, you need

- to estimate the life of the asset
- to estimate the cash flows during the life of the asset
- to estimate the discount rate to apply to these cash flows to get present value

$$\text{Value} = \sum_{t=1}^{t=n} \frac{CFt}{(1+r)^t}$$

where,

n = Life of the asset

CF = Cash flow in period t

r = Discount rate reflecting the riskiness of the estimated cash flows

The cash flows will vary from asset to asset for example dividends for stocks, coupons (interest) and the face value for bonds and after-tax cash flows for a real project. The discount rate will be a function of the riskiness of the estimated cash flows. Discount rate will be high for riskier assets and low for safer assets. For example rate of discount on zero coupon bond is zero and for corporate bonds it is the interest rate that reflects the default risk.

In discounted cash flow valuation, the intrinsic value of an asset is calculated which is based on fundamentals. DCF technique perceives that markets are inefficient and make mistakes in assessing value. It also makes an assumption about how and when these inefficiencies will get corrected.

Q. 9. How do you classify Discounted Cash Flow Models? What are the underlying approaches?

Ans : There are three distinct ways in which we can categorize discounted cash flow models. First, we differentiate between valuing a business as a going concern as opposed to a collection of assets. In the second, we draw a distinction between valuing the equity in a business and valuing the business itself. In the third, we lay out three different and equivalent ways of doing discounted cash flow valuation – the expected cash flow approach, a value based upon excess returns and adjusted present value.

(a) Going Concern versus Asset Valuation

The value of an asset in the discounted cash flow framework is the present value of the expected cash flows on that asset. Extending this proposition to valuing a business, it can be argued that the value of a business is the sum of the values of the individual assets owned by the business. While this may be technically right, there is a key difference between valuing a collection of assets and a business. A business or a company is an on-going entity with assets that it already owns and assets it expects to invest in the future.

A financial balance sheet provides a good framework to draw out the differences between valuing a business as a going concern and valuing it as a collection of assets. In a going concern valuation, we have to make our best judgments not only on existing investments but also on expected future investments and their profitability. While this may seem to be foolhardy, a large proportion of the market value of growth companies comes from their growth assets. In an asset-based valuation, we focus primarily on the assets in place and estimate the value of each asset separately. Adding the asset values together yields the value of the business. For companies with lucrative growth opportunities, asset-based valuations will yield lower values than going concern valuations.

(b) Equity Valuation versus Firm Valuation

There are two ways in which we can approach discounted cash flow valuation. The first is to value the entire business, with both assets-in-place and growth assets. This is often termed firm or enterprise valuation.

The cash flows before debt payments and after reinvestment needs are called free cash flows to the firm, and the discount rate that reflects the composite cost of financing from all sources of capital is called the cost of capital.

The second way is to just value the equity stake in the business, and this is called equity valuation.

The cash flows after debt payments and reinvestment needs are called free cash flows to equity, and the discount rate that reflects just the cost of equity financing is the cost of equity.

(c) Variations on DCF Models

The model that we have presented in this section, where expected cash flows are discounted back at a risk-adjusted discount rate, is the most commonly used discounted cash flow approach but there are two widely used variants. In the first, we separate the cash flows into excess return cash flows and normal return cash flows. Earning the risk-adjusted required return (cost of capital or equity) is considered a normal return cash flow but any cash flows above or below this number are categorized as excess returns. Excess returns can therefore be either positive or negative. With the *excess return valuation* framework, the value of a business can be written as the sum of two components :

Value of business = Capital invested in firm today + Present value of excess return cash flows from both existing and future projects

If we make the assumption that the accounting measure of capital invested (book value of capital) is a good measure of capital invested in assets today, this approach implies that firms that earn positive excess return

cash flows will trade at market values higher than their book values and that the reverse will be true for firms that earn negative excess return cash flows.

In the second variation, called the adjusted present value *(APV)* approach, we separate the effects on value of debt financing from the value of the assets of a business. In general, using debt to fund a firm's operations creates tax benefits (because interest expenses are tax deductible) on the plus side and increases bankruptcy risk (and expected bankruptcy costs) on the minus side. In the APV approach, the value of a firm can be written as follows:

Value of business = Value of business with 100% equity financing + Present value of Expected Tax Benefits of Debt – Expected Bankruptcy Costs

In contrast to the conventional approach, where the effects of debt financing are captured in the discount rate, the APV approach attempts to estimate the expected dollar value of debt benefits and costs separately from the value of the operating assets.

While proponents of each approach like to claim that their approach is the best and most precise, we will argue that the three approaches yield the same estimates of value, if we make consistent assumptions.

Q. 10. Discuss various inputs to Discounted Cash Flow Models.

Ans : There are three inputs that are required to value any asset in this model - the *expected cash flow*, the *timing* of the cash flow and the *discount rate* that is appropriate given the riskiness of these cash flows.

(a) Discount Rates

In valuation, we begin with the fundamental notion that the discount rate used on a cash flow should reflect its riskiness. In case of higher risk, cash flows to be discounted with higher discount rates. There are two ways of viewing risk. The first is purely in terms of the likelihood that an entity will default on a commitment to make a payment, such as interest or principal due, and this is called default risk. When looking at debt, the cost of debt is the rate that reflects this default risk.

The second way of viewing risk is in terms of the variation of actual returns around expected returns. The actual returns on a risky investment can be very different from expected returns. The greater the variation, the greater the risk. When looking at equity, we tend to use measures of risk based upon return variance. While the discussion of risk and return models elsewhere in this site will look at the different models that attempt to do this in far more detail, there are some basic points on which these models agree. The first is that risk in an investment has to be perceived through the eyes of the marginal investor in that investment, and this marginal investor is assumed to be well diversified across multiple investments. Therefore, the risk in an investment that should determine discount rates is the non-diversifiable *or market risk* of that investment. The second is that the expected return on any investment can be obtained starting with the expected return on a riskless investment, and adding to it a premium to reflect the amount of market risk in that investment. This expected return yields the cost of equity.

The *cost of capital* can be obtained by taking an average of the cost of equity, estimated as above, and the after-tax cost of borrowing, based upon default risk, and weighting by the proportions used by each. We will argue that the weights used, when valuing an on-going business, should be based upon the market values of debt and equity. While there are some analysts who use book value weights. Doing so they violate a basic principle of valuation. The principle directs that, one should be indifferent between buying and selling an asset.

(b) Expected Cash Flows

In the strictest sense, the only cash flow an equity investor gets out of a publicly traded firm is the dividend; models that use the dividends as cash flows are called *dividend discount models*. A broader definition of cash flows to equity would be the cash flows left over after the cash flow claims of non-equity investors in the firm have been met (interest and principal payments to debt holders and preferred dividends) and after enough of these cash flows has been reinvested into the firm to sustain the projected growth in cash flows. This is the free cash flow to equity (FCFE), and models that use these cash flows are called *FCFE discount models*.

The cashflow to the firm is the cumulated cash flow to all claimholders in the firm. One way to obtain this cashflow is to add the free cash flows to equity to the cash flows to lenders (debt) and preferred stockholders. A far simpler way of obtaining the same number is to estimate the cash flows prior to debt and preferred

dividend payments, by subtracting from the after-tax operating income the net investment needs to sustain growth. This cash flow is called the free cash flow to the firm (FCFF) and the models that use these cash flows are called *FCFF models*.

(c) Expected Growth

While estimating the expected growth in cash flows in the future, analysts confront with uncertainty most directly. There are three generic ways of estimating growth. One is to look at a company's past and use the historical growth rate posted by that company. The peril is that past growth may provide little indication of future growth. The second is to obtain estimates of growth from more informed sources. For some analysts, this translates into using the estimates provided by a company's management whereas for others it takes the form of using consensus estimates of growth made by others who follow the firm. The bias associated with both these sources should raise questions about the resulting valuations.

Q. 11. What are the Advantages and Limitations of Discounted Cash flow Valuation

Ans : DCF Valuation :

Advantages : To true believers, discounted cash flow valuation is the only way to approach valuation, but the benefits may be more nuanced that they are willing to admit. On the plus side, discounted cash flow valuation, done right, requires analysts to understand the businesses that they are valuing and ask searching questions about the sustainability of cash flows and risk. Discounted cash flow valuation is tailor made for those who buy into the Warren Buffett adage that what we are buying are not stocks but the underlying businesses. In addition, discounted cash flow valuations is inherently contrarian in the sense that it forces analysts to look for the fundamentals that drive value rather than what market perceptions are. Consequently, if stock prices rise (fall) disproportionately relative to the underlying earnings and cash flows, discounted cash flows models are likely to find stocks to be over valued (under valued).

Limitation : There are, however, limitations with discounted cash flow valuation. In the hands of sloppy analysts, discounted cash flow valuations can be manipulated to generate estimates of value that have no relationship to intrinsic value. We also need substantially more information to value a company with discounted cash flow models, since we have to estimate cashflows, growth rates and discount rates. Finally, discounted cash flow models may very well find every stock in a sector or even a market to be over valued, if market perceptions have run ahead of fundamentals. For portfolio managers and equity research analysts, who are required to find equities to buy even in the most over valued markets, this creates a conundrum. They can go with their discounted cash flow valuations and conclude that everything is overvalued, which may put them out of business, or they can find an alternate approach that is more sensitive to market moods. It should come as no surprise that many choose the latter.

Q. 12. What are the key components of relative valuation?

Ans : In relative valuation, the value of an asset is derived from the pricing of 'comparable' assets, standardized using a common variable. Included in this description are two key components of relative valuation. The first is the notion of comparable or similar assets. From a valuation standpoint, this would imply assets with similar cash flows, risk and growth potential. In practice, it is usually taken to mean other companies that are in the same business as the company being valued. The other is a standardized price. After all, the price per share of a company is in some sense arbitrary since it is a function of the number of shares outstanding; a two for one stock split would halve the price. Dividing the price or market value by some measure that is related to that value will yield a standardized price. When valuing stocks, this essentially translates into using multiples where we divide the market value by earnings, book value or revenues to arrive at an estimate of standardized value. We can then compare these numbers across companies.

The simplest and most direct applications of relative valuations are with real assets where it is easy to find similar assets or even identical ones.

Harking back to our earlier discussion of discounted cash flow valuation, we argued that discounted cash flow valuation was a search (albeit unfulfilled) for intrinsic value. In relative valuation, we have given up on estimating intrinsic value and essentially put our trust in markets getting it right, at least on average.

Q. 13. What are the three Variations of Relative Valuation?

Ans : In relative valuation, the value of an asset is based upon how similar assets are priced. In practice, there are three variations of relative valuation, with the differences primarily in how we define comparable firms and control for differences across firms:

(a) **Direct comparison :** In this approach, analysts try to find one or two companies that look almost exactly like the company they are trying to value and estimate the value based upon how these similar companies are priced. The key part in this analysis is identifying these similar companies and getting their market values.

(b) **Peer Group Average :** In the second, analysts compare how their company is priced (using a multiple) with how the peer group is priced (using the average for that multiple). Thus, a stock is considered cheap if it trade at 12 times earnings and the average price earnings ratio for the sector is 15. Implicit in this approach is the assumption that while companies may vary widely across a sector, the average for the sector is representative for a typical company.

(c) **Peer group average adjusted for differences :** Recognizing that there can be wide differences between the company being valued and other companies in the comparable firm group, analysts sometimes try to control for differences between companies. In many cases, the control is subjective: a company with higher expected growth than the industry will trade at a higher multiple of earnings than the industry average but how much higher is left unspecified. In a few cases, analysts explicitly try to control for differences between companies by either adjusting the multiple being used or by using statistical techniques. As an example of the former, consider PEG ratios. These ratios are computed by dividing PE ratios by expected growth rates, thus controlling (at least in theory) for differences in growth and allowing analysts to compare companies with different growth rates.

Q. 14. What are the advantages and limitations of relative valuation?

Ans : The allure of multiples is that they are simple and easy to relate to. They can be used to obtain estimates of value quickly for firms and assets, and are particularly useful when there are a large number of comparable firms being traded on financial markets, and the market is, on average, pricing these firms correctly. In fact, relative valuation is tailor made for analysts and portfolio managers who not only have to find undervalued equities in any market, no matter how overvalued, but also get judged on a relative basis. An analyst who picks stocks based upon their PE ratios, relative to the sectors they operate in, will always find undervalued stocks in any market; if entire sectors are over valued and his stocks decline, he will still look good on a relative basis since his stocks will decline less than comparable stocks (assuming the relative valuation is right).

By the same token, they are also easy to misuse and manipulate, especially when comparable firms are used. Given that no two firms are exactly similar in terms of risk and growth, the definition of 'comparable' firms is a subjective one. Consequently, a biased analyst can choose a group of comparable firms to confirm his or her biases about a firm's value. While this potential for bias exists with discounted cash flow valuation as well, the analyst in DCF valuation is forced to be much more explicit about the assumptions which determine the final value. With multiples, these assumptions are often left unstated.

The other problem with using multiples based upon comparable firms is that it builds in errors (over valuation or under valuation) that the market might be making in valuing these firms. If, for instance, we find a company to be undervalued because it trades at 15 times earnings and comparable companies trade at 25 times earnings, we may still lose on the investment if the entire sector is overvalued. In relative valuation, all that we can claim is that a stock looks cheap or expensive relative to the group we compared it to, rather than make an absolute judgment about value. Ultimately, relative valuation judgments depend upon how well we have picked the comparable companies and how how good a job the market has done in pricing them.

Q. 15. Explain different steps of Relative Valuation.

Ans : Steps in Relative Valuation:

(1) *Search and select the comparable companies:* The first part of the process is the selection of a group of comparable companies, that is, companies whose business operations are as similar as possible to those of the subject company. This requires a thorough understanding of the subject: how does it create

value? What drives its financial performance? Who are its customers and suppliers? With whom and how does it compete? What risks does it face? and so forth. Comparability is established by matching key business attributes of the subject with those of another group of firms. The similar step in the used car analogy is to match attributes such as make, model, year, engine size, mileage, options, and so on. List of salient characteristics could be prepared and then companies can be inspected one by one. A systematic selection procedure should be designed prior to the inspection to guard against biases.

(2) *Selection of Multiples:* The next step is to select certain multiples to be calculated based on market participants' views of the relevant metrics. The most commonly used multiples of enterprise value are value/revenue, value/EBIT, and value/EBITDA. Different multiples are used for enterprise value or equity value. For instance, the market-multiple approach is sometimes used to estimate a subject company's equity value rather than its enterprise value. In such instances the multiples computed from comparable companies are derived from stock prices or market capitalization rather than enterprise values. Sometimes some industry specific multiples also can be used that relate value to, say, sales per square foot or to subscriber base or patents, and so on if data is available. Following table shows different types of multiples that can be used.

(3) *Selection of comparables and size of sample:* Next step is to form of sample of comparables. The question is How big should be the size of a sample? As with most statistical exercises, the easy answer is that more is better as the estimates are more reliable in larger samples. Unfortunately, in a desire to create a large sample we may have to reduce the degree of comparability. A pragmatic response to this difficulty is to examine more than one set of comparables, ranging from a small set of closely matched companies to larger sets of loosely matched companies, and see what the effect is on indicated value. Selection of samples should not be based on the multiples themselves or financial measures that directly affect the multiples. That is, we should not look at a set of comparables and decide to exclude companies with low EBIT multiples. This generates bias.

(4) *Computation of Multiples:* Computation of multiples requires a calculation of enterprise value on the one hand and one or more operating metrics (e.g EBIT, EBITDA etc.) on the other. Enterprise value is generally computed as the market value of sum of the market values of debt and equity securities outstanding, including hybrid securities (sometimes referred to as "MVIC"). In practice, we sometimes assume that the market value of debt equals its book value (this may not always be an acceptable approximation) therefore we may have to actually price the options or the conversion features of the securities to obtain reliable estimates of MVIC. For obtaining operating metrics it will often be necessary to adjust or normalize financial or other data to preserve and enhance comparability within the sample.

For example, the choice of LIFO (last in, first out) versus FIFO (first in, first out) accounting for inventory affects a company's cost of goods sold, which in turns affects EBIT . The extent they affect sales, operating profit, or cash flow, should be eliminated before multiples are computed. Nonrecurring items might include results from discontinued operations, extraordinary gains or losses, should also be adjusted.

Multiples themselves may be computed based on historic data or forecasts. Commonly last twelve months data is considered in case of historic method. Multiples can also be computed based on forecasts of operating metrics that may be generated using the analyst's best judgment or expert opinions in trade publications or equity analyst reports.

After computation, multiples have to be applied. The multiples will differ in the comparable companies within the sample. Therefore, simple means and medians of multiples can be used. Another alternative is to aggregate the MVICs and operating metrics for a sample of comparable companies and then compute a multiple based on the aggregates. This is in effect a value-weighted average of the sample. Whether this is appropriate depends on circumstances, but it is at least questionable in different sample size. Sometimes the minimum and maximum are used in conjunction with a mean or median to establish a range around a central point estimate.

(5) *Apply and conclude:* The concluded multiple is applied to the subject company by computing the product of the multiple and the indicated operating metric. The subject company's operating metric may have to be normalized for LIFO vs. FIFO; nonrecurring items etc to ensure consistency with the sample of firms that generated the multiple. Further adjustments may be required after the multiple is applied.

   (a) Adjustment for excess cash: If the subject has non operating assets such as excess cash, the amount of excess cash must be added to the value obtained from the multiple to arrive at enterprise value.

(b) Adjustment for operating control: The control premium should be included in the bidder's assessment of the subject enterprise value. However, if the multiples are derived from observed stock prices for comparable companies, they probably lack any control premium since the shares being traded represent minority interests rather than controlling interests; On the other hand, if the multiples are derived from a sample of M&A transactions, and if those deals were for controlling interests, then a premium is already built into the concluded multiples. In general, whether an adjustment for control is indicated depends on what type of purpose of analysis and type of sample. How the adjustment should be made depends on the availability of reliable data on the incremental value of control.

(c) Adjustment for illiquidity: In general, an asset that is readily saleable is worth more than an otherwise identical asset that is not saleable. In case of valuation of a minority interest in a private company, or restricted shares of stock that may not be sold during a stipulated period, the concluded values derived from standard market multiples will need to be further adjusted (discounted) for illiquidity, also known as "lack of marketability." The estimation of the size of discount is subjective depending on the source, degree, and duration of the illiquidity.

Examples of Adjustments to Cornparables Data

Inventory accounting (LIFO vs. FIFO)
Extraordinary items (e.g., litigation settlements)
Non-recurring items (e.g., discontinued operations, asset sales)
Owner's compensation
Capitalization of intangibles (from prior acquisitions)
Non-operating assets (e.g., excess cash, idle land)
Construction in progress

Q. 16. What do you mean by valuation multiplies?

Ans : A valuation multiple is the ratio of firm value or equity value to some aspect of the firm's economic activity, such as cash flow, sales, or EBITDA. The table below lists the most common multiples used to value firms, together with the terminology that is used to describe the multiple.

Multiples Used in Finance

Quantity	X	Multiple	Terminology = Value
Cash Flow	X	Firm Value / Cash Flow of Firm	"Cash flow multiple" = Value of Firm
EBITDA	X	Firm Value / EBITDA of Firm	"EBITDA multiple" = Value of Firm
Sales	X	Firm Value / Sales Value of Firm	"Sales multiple" = Value of Firm
Customers	X	Firm Value / Customers	"Customer multiple" = Value of Firm
Earnings	X	Price per Share / Earnings	"Price-earnings ratio" = Share Price

The technique for applying a valuation multiple is identical to that of applying a price-per-square- foot multiple to value real estate, or a price per pound to a purchase of fish. If you are studying a firm with a cash flow of Rs. 5 Crores and you believe it should be valued at a cash flow multiple of 10, you will determine that the firm is worth Rs. 50 Crores.

Sources of Multiples :

Multiples can be derived either by using fundamentals or by comparables. In discounted cash flow valuation, the value of a firm is determined by its expected cash flows. Other things remaining equal, higher cash flows, lower risk and higher growth should yield higher value. Thus, multiples can be derived from CF techniques and by comparing across firms or time, and make explicit or implicit assumptions about how firms are similar or vary on fundamentals. This approach requires the same information. Its primary advantage is to show the

relationship between multiples and firm characteristics. For instance, what will happen to price-earnings ratios as growth rates decrease? What is the relationship between price-book value ratios and return on equity?

Under comparable method, a firm is valued as how similar firms are priced by the market, or in some cases, with how the firm was valued in prior periods. Thus, comparison can be cross sectional or long term time series. While doing cross sectional comparisons, finding exactly similar firms is difficult some adjustments need to be made to control for differences across firms on growth, risk and cash flow measures. Controlling can be either done by using industry averages or by using multivariate models which allows for controlling of variables. In time series comparisons assumptions have to be made that fundamentals of the firm have not changed. Comparing multiples across time can also be complicated by changes in the interest rates over time and the behavior of the overall market. For instance, as interest rates fall below historical norms and the overall market increases, you would expect most companies to trade at much higher multiples of earnings and book value than they have historically.

Description of Multiples :

(1) Earnings Multiples: This is the most common method of valuing multiples.

(i) Price Earnings Ratio (PE): The price-earnings multiple (PE) is the most widely of all multiples. It is very simple to calculate. It is widely used in pricing of initial public offerings and making judgments on relative value. The price earnings ratio is the ratio of the market price per share to the earnings per share :

PE = Market Price per share / Earnings per share

To get to the heart of price earnings multiples, an equity DCF model can be used. Restated in terms of the PE ratio, we find that the PE ratio for a stable growth firm can be written in terms of three variables: (a) The expected growth rate in earnings per share (b) The riskiness of the equity, which determines the cost of equity and (c) The efficiency with which the firm generates growth, which is measured by how much the firm can pay out or afford to pay out after reinvested to create the growth.

(ii) Price to Earnings with no expected growth:

$$P_0 = \frac{E_1}{k}$$

$$\frac{P_0}{E_1} = \frac{1}{k}$$

Where:

E_1 – expected earnings for next year

E_1 is equal to D_1 under no growth

k – Required rate of return

Illustration:

E_0 = Rs. 2.50 g = 0 k = 12.5%

P_0 = D/k = Rs. 2.50/0.125 = Rs. 20.00

PE =l/k= 1/0.125 = 8

(iii) P/E Ratio with Constant Growth :

$$P_0 = \frac{D_1}{k-g} = \frac{E_1(1-b)}{k-(b\times ROE)}$$

$$\frac{P_0}{E_1} = \frac{1-b}{k-(b\times ROE)}$$

Where:

b = retention ratio

ROE = Return on Equity

b = 60%, ROE = 15%, (1 – b) = 40%

E_1 =Rs. 2.50 [1 + (0.6)(0.15)] - Rs. 2.73

D_1 = Rs. 2.73(l-.6) = Rs. 1.09

K = 12.5% g = 9%

P_0 = 1.09/ (0.125 – 0.09) = Rs. 31.14

PE = 31.14/2.73 = 11.4 or PE = (1 – 0.60)7(0.125 – 0.09) = 11.4

The PE ratio is an increasing function of the payout ratio and the growth rate, and a decreasing function of the riskiness of the firm. Other things held equal, higher growth firms will have higher PE ratios than lower growth firms. Higher risk firms will have lower PE ratios than lower risk firms. Firms with lower reinvestment needs will have higher PE ratios than firms with higher reinvestment rates.

(iv) PE for a High Growth Firm: The price-earnings ratio for a high growth firm can also be related to fundamentals. In the special case of the two-stage dividend discount model, this relationship can be made explicit fairly simply. When a firm is expected to be in high growth for the next n years and stable growth thereafter, the dividend discount model can be written as follows :

$$P_0 = \frac{EPS_0 \times \text{Payout ratio} \times (1+g) \times \left(1 - \frac{(1+g)^n}{(1+r)^n}\right)}{r-g} + \frac{EPS_0 \times \text{Payout ratio} \times (1+g) \times (1+g_{n)}}{(r-g_n)(1+r)^n}$$

Where

EPS = Earnings per share in year 0 (Current year)

g = Growth rate

Payout = Payout ratio

The value of a stock in a two-stage dividend discount model is the sum of two present values:

- The present value of dividends during the high growth phase - this is the first term in the equation
  - above. It is the present value of a growing annuity. (There is- no constraint on the growth rate. In fact, this equation will yield the present value of a growing annuity even if g > r... the
  - denominator will become negative but so will the numerator)
- The present value of the terminal price this is the second term in the equation. The PE ratio for
  - a high growth firm is a function of the same three variables that determine the PE ratio for a
  - stable growth firm, though you have to estimate the parameters twice, once for the high growth phase and once for the stable growth phase.

Illustration: Assume that you have been asked to estimate the PE ratio for a firm which has the following characteristics:

Expected Growth Rate	High Growth Phase	Stable Growth Phase
	25%	8%
Payout- Ratio	20%	50%
Beta	1.00	1.00
Number of years	5 yrs	forever

Riskfree rate = T. Bond Rate = 6%

Required rate of return = 6% + 1(5.5%) = 11.5%

$$PE = \frac{0.2 \times (1.25) \times \left(1 - \frac{(1.25)^5}{(1.115)^5}\right)}{(0.115 - 0.25} + \frac{0.5 \times (1.25)^5 \times (1.08)}{(0.115 - 0.08)(1.115)^5} = 28.75$$

For a firm with these characteristics, 28.75 times earnings is a fair price to pay. In fact, if you valued this firm using a dividend discount model, you would get the identical value per share.

Illustration: Estimating a Fundamental PE ratio for Infosys:

The following is an estimation of the appropriate PE ratio for Infosys in July 2000. The assumptions are summarized below:

	High Growth Period	Stable Growth
Length	5 years	forever after year 5
Cost of Equity	10.85%	10.00%
Expected Growth Rate	13.63%	66.67%
Payout Ratio	36.00%	66.67%

The current payout ratio of 36% is used for the entire high growth period. After year 5, the payout ratio is estimated based upon the expected growth rate of 5% and a return on equity of 15% (based upon industry averages):

Stable period payout ratio = 1- Growth rate/ Return on equity = 1 – 5% / 15% = 66.67%.

The price-earnings ratio can be estimated based upon these inputs:

$$PE = \frac{0.36 \times (1.1363) \times \left(1 - \frac{(1.1363)^5}{(1.1085)^5}\right)}{(0.1085 - 0.1363} + \frac{0.67 \times (1.1363)^5 \times (1.05)}{(0.10 - 0.05)(1.1085)^5} = 17.79$$

Based upon its fundamentals, you would expect Infosys to be trading at 17.79 times earnings.

Q. 17. What are the Variation on Relative Valuation?

Ans : Variations on Relative Valuation :

In relative valuation, the value of an asset is based upon how similar assets are priced. In practice, there are three variations on relative valuation, with the differences primarily in how we define comparable firms and control for differences across firms:

(a) *Direct comparison*: In this approach, analysts try to find one or two companies that look almost exactly like the company they are trying to value and estimate the value based upon how these similar companies are priced. The key part in this analysis is identifying these similar companies and getting their market values.

(b) *Peer Group Average*: In the second, analysts compare how their company is priced (using a multiple) with how the peer group is priced (using the average for that multiple). Thus, a stock is considered cheap if it trade at 12 times earnings and the average price earnings ratio for the sector is 15. Implicit in this approach is the assumption that while companies may vary widely across a sector, the average for the sector is representative for a typical company.

(c) *Peer group average adjusted for differences*: Recognizing that there can be wide differences between the company being valued and other companies in the comparable firm group, analysts sometimes try to control for differences between companies. In many cases, the control is subjective: a company with higher expected growth than the industry will trade at a higher multiple of earnings than the industry average but how much higher is left unspecified. In a few cases, analysts explicitly try to control for differences between companies by either adjusting the multiple being used or by using statistical techniques. As an example of the former, consider PEG ratios. These ratios are computed by dividing PE ratios by expected growth rates, thus controlling (at least in theory) for differences in growth and allowing analysts to compare companies with different growth rates.

Q. 18. What do you mean by Applicability of Multiples and what are its limitations?

Ans : The allure of multiples is that they are simple and easy to relate to. They can be used to obtain estimates of value quickly for firms and assets, and are particularly useful when there are a large number of comparable firms being traded on financial markets, and the market is, on average, pricing these firms correctly. In fact, relative valuation is tailor made for analysts and portfolio managers who not only have to find under valued equities in any market, no matter how overvalued, but also get judged on a relative basis. An analyst who picks stocks based upon their PE ratios, relative to the sectors they operate in, will always find under valued stocks in any market; if entire sectors are over valued and his stocks decline, he will still look good on a relative basis since his stocks will decline less than comparable stocks (assuming the relative valuation is right).

By the same token, they are also easy to misuse and manipulate, especially when comparable firms are used. Given that no two firms are exactly similar in terms of risk and growth, the definition of 'comparable' firms is a subjective one. Consequently, a biased analyst can choose a group of comparable firms to confirm his or her biases about a firm's value. While this potential for bias exists with discounted cashflow valuation as well, the analyst in DCF valuation is forced to be much more explicit about the assumptions which determine the final value. With multiples, these assumptions are often left unstated.

The other problem with using multiples based upon comparable firms is that it builds in errors (over valuation or under valuation) that the market might be making in valuing these firms. If, for instance, we find a company to be under valued because it trades at 15 times earnings and comparable companies trade at 25 times earnings, we may still lose on the investment if the entire sector is over valued. In relative valuation, all that we can claim is that a stock looks cheap or expensive relative to the group we compared it to, rather than make an absolute judgment about value. Ultimately, relative valuation judgments depend upon how well we have picked the comparable companies and how how good a job the market has done in pricing them.

Q.19. Explain sequential steps of DCF Equity Valuation.

Ans : Steps in DCF Equity Valuation:

(1) Estimate the Free cash flow to equity:

(a) Forecast earnings for the future.

(b) Adjust earnings (net income) to get free cash flow to equity:

Free Cash Flow to Equity = Net Income - (Capital Expenditure – Depreciation) – Working capital Accruals + (New debt issued - Debt Repayment)

Following table shows how to calculate free cashflows:

Working capital				
Year	**0**	**1**	**2**	
Revenue				
Costs				
Depreciation of equipment				Noncash item
Profit/Loss from asset sales				Noncash item
Taxable income				
Tax				
Net operating profit after tax (NOPAT)				Adjustment for
Depreciation				non-cash item
Profit/Loss from asset sales				
Operating cash flow				
Change in working capital				Capital items
Capital Expenditure				
Salvage of assets				
Free cash flow				

(2) Calculate the PV of equity cash flows by using cost of equity (Ke) as discounting rate. Cost of equity can be calculated using CAPM approach.

(3) CAPM Approach: $Ke = R_F + b(K_M - R_F)$

Ke = Required rate of return

R_F = Risk free rate

b = Beta coefficient

KM = Expected return for common stocks in the market

$(KM - R_F)$ = Equity risk premium (ERP)

Q. 20. What are the advantages of DCF?

Ans : Advantages of DCF :

Discounted cash flow valuation is based upon expected future cash flows and discount rates. Given these informational requirements, this approach is easiest to use for assets (firms)

- whose cash flows are currently positive and can be estimated with some reliability for future periods,
- and where a proxy for risk that can be used to obtain discount rates is available.

Applicability :

Since DCF valuation, done right, is based upon an asset's fundamentals, it is less exposed to market moods and perceptions. DCF valuation takes into account the underlying characteristics of the firm, and understands the business of firm. It clearly identifies the assumptions made by buyer while paying a given price for an asset. It works best for investors who either have a long time horizon or have are potential acquirer of the whole firm. In long term period there is correction in market for price to revert to "true" value and when he is a potential acquirer he is capable of providing the catalyst needed to move price to value.

Q. 21. What are the limitations of DCF Valuation?

Ans : Limitations of DCF Valuation

This technique requires lot of information. The inputs and information are difficult to estimate and also can be valuer. This technique cannot differentiate between over and undervalued stocks. It is difficult to apply this technique in the following scenarios:

- ***Negative earnings firms:*** For such firms, estimating future cash flows is difficult to do, since there is a strong probability of insolvency and failure. DCF does not work well since under this technique the firm is valued as a going concern which provides positive cash flows to its investors.
- ***Cyclical Firms:*** For such firms earnings follow cyclical trends. Discounting smoothes the cash flows. It is very difficult to predict the timing and duration of the economic situation. The effect of cyclical situation on these firms is neither avoidable nor separable. Therefore, there are economic biases in valuations of these firms.
- ***Firms with under utilized assets:*** DCF valuation reflects the value of all assets that produce cash flows. If a firm has assets that are un/under utilized that do not produce any cash flows, the values of these assets will not be reflected in the value obtained from discounting expected future cash flows. But, the values of these assets can always be obtained externally, and added on to the value obtained from discounted cash flow valuation.
- ***Firms with patents or product options:*** Firms often have unutilized patents or license that do not produce any current cash flows and are not expected to produce cash flows in the near future, but, nevertheless, these are valuable. If values of such patents are ignored then value obtained from discounting expected cash flows to the firm will understate the true value of the firm.
- ***Firms in the process of restructuring:*** Firms in the process of restructuring often sell, acquire other assets, and change their capital structure and sometimes dividend policy. Some of them also change their status from private to public. Each of these changes makes estimating of future cash flows more difficult and

affects the riskiness of the firm. Using historical data for such firms can give a misleading picture of the firm's value. In case of acquisitions if there is synergy then its value is to be estimated. This will require assumptions about the synergy and its effect on cash flows.

- ***Private Firms:*** The measurement of risk to be used in estimating discount rates is the problem since securities in private firms are not traded. One solution is to look at the riskiness of comparable firms, which are publicly traded. The other is to relate the measure of risk to accounting variables, which are available for the private firm.

Q. 22. Describe H model as modification to the exciting mode?

Ans : This model is based on the assumptions that:

(i) Equity growth rate starts at a high initial rate (g_a) declines linearly over extra-ordinary growth period (which is assumed to last 2 H periods) to a stable growth rate (gn).

(ii) Dividend payout ratio is constant over time and is not affected by the shifting growth rates.

$$P_0 = \frac{DPS_0 (1 + g_n)}{r - g_n} + \frac{DPS \times H (g_a - g_n)}{r - g_n}$$

Stable growth — Extra ordinary growth

Where P_0 = Value of firm now per share

DPS_t = Dividend per share in year t

r = Required return to equity investor

g_a = Growth rate initially

g_n = Growth rate at the end of 2H years applied for ever after that.

Limitations:

(i) Growth rate is assumed to follow a structure laid out in the model deviations from the structure can cause problem.

(ii) Assumption of payout ratio remaining constant in consistent.

Q. 23. What is three Stage Discount Model?

Ans : This model assumes on initial period of stable high growth, second period of declining growth and a third period of stable low growth that lasts forever.

$$P_0 = \sum_{t=1}^{t=n_1} EPS_0 (1+g_a)^t \times II_a \quad \sum_{t=n_1+1}^{t=n_2} \frac{DPS_t}{(1+r)^t} + \frac{EPS_{n_2}(1+g_n)\times II_n}{(r-g_n)(1+r)^n}$$

High growth — Transition — Stable growth

EPS_t : Earnings per share in year t

DPS_t : Dividends per share in year t

g_a : Growth rate in high-growth phase (lasts n1 years)

g_n : Growth rate in stable growth phase

II_a : Payout ratio in high growth phase

II_n : Payout ratio in stable growth phase.

Q. 24. What is Free Cash flows to equity (FCFE) model?

Ans : Free Cash flows to Equity:

The FCFE is the residual cash flows left after meeting interest and principal payments and providing for capital expenditures to both – maintain existing assets and create new assets for future growth.

FCFE = Net Income + Depreciation – Capital spending – D Working capital – Principal repayments + New Debt Issues.

In a special case where capital expenditures and working capital are expected to be financed at the target debt equity ratio d and principal repayments are made from new debt issues.

FCFE = Net Income + (1 - d) (Capital Exp. – Depreciation) + (1 - d) D Working capital.

Q. 25. Why are Dividends different from FCFE?

Ans : The FCFE is a measure of what a firm can afford to payout as dividends.

(a) Desire for stability

(b) Future investment needs

(c) Tax factors

(d) Signalling prerogatives: Increase in dividends is viewed as positive signals and decreases as negative signal.

FCFE Models :

The stable-growth FCFE Model:

The value of equity, under the stable-growth model, is a function of expected FCFE in the next period, the stable growth rate, and the required rate of return.

$$P_0 = \frac{FCFE_1}{r - g_n}$$

P_0 = Value of stock today

FCFE = Expected FCFE next year

r = Cost of equity of the firm

g_n = Growth rate in FCFE for the firm forever.

Problem :

Earnings per share	:	Rs. 3.15
Capital Exp. per share	:	Rs. 3.15
Depreciation per share	:	Rs. 2.78
Change in working capital per share	:	Rs. 0.50
Debt financing ratio	:	25%

Earnings, Capital expenditure, Depreciation, Working capital are all expected to grow at 6% per year.

The beta for stock is 0.90. Treasury bond rate is 7.5%.

Calculate value of stock.

Solution :

Estimating value

Long term bond rate 7.5%

Cost of equity = 7.5% + (0.90 × 5.50%) = 12.45%

Expected growth rate 6%

Base year FCFE = Earning per share – (Capital Exp. – Dep.)

(1 – D /E Ratio) – Change in working capital

= 3.15 – (3.15 – 2.78) (1 – 0.25) – 0.50 (1 – 0.25)

= 2.49

Value per share = 2.49 × 1.06 (0.1245 – 0.06) = Rs. 41.

Q. 26. How FCFE model can further be modified into two stage and three stage FCFE model?

Ans :

(a) Two stage FCFE model :

The value of any stock is the present value of the FCFE per year for the extra ordinary growth period plus the present value of the terminal price at the end of the period.

Value = PV of FCFE + PV of Terminal price

$$= \sum_{t=1}^{t=n} FCFE_t (1+r)^t + Pn (1+r)^n$$

Where FCFEt = FCFE in year t

P_n = Price at the end of extra ordinary growth period

r = Required rate of return to equity investors in high growth period.

The terminal price is generally calculated using the infinite growth rate model:

$P_n = FCFEn_{+1} (r_n - g_n)$

g_n = Growth rate after the terminal year forever

r_n = Required rate of return to equity investors in stable-growth period.

(b) Three stage FCFE model - E model

E-model is designed to value firms that are expected to go through three stages of growth: an initial phase of high growth rates, a transition period where growth rate declines and a steady state where growth is stable.

$$P_0 = \sum_{t=1}^{t=n_1} \frac{FCFE_t}{(1+r)^t} + \sum_{L=n_1+1}^{t=2} \frac{FCFE_1}{(1+r)^t} + \frac{P_{n_2}}{(1+r)^2}$$

Where P_0 = Value of stock today

$FCFE_t$ = FCFE in year t

t = Cost of equity

P_{n2} = Terminal price at the end of transition period

= $FCFEn_{2+1} / (r - g_n)$

n_1 = End of the initial high growth period

n_2 = End of transition period

Q. 27. Describe the situations when FCFE models and dividend discount valuation models provide similar as well as dissimilar results?

Ans : FCFE model is alternative to dividend discounting model. But at times both provide similar results.

When result obtained from FCFE and Dividend discount model may be same:

(i) Where dividends are equal to FCFE.

(ii) Where FCFE is greater than dividends but excess cash (FCFE- dividends) is invested in projects with NPV = 0 (Investments are fairly priced)

When results from FCFE and Dividend discounting models are different:

(i) When FCFE is greater than dividends and excess cash earns below market interest rates or is invested in negative NPV – value projects, the value from FCFE will be greater than the value from discount model.

(ii) When dividends are greater than FCFE, the firm will have to issue either new stock or new debt to pay their dividends- with attendant costs.

(iii) Paying too much of dividend can lead to capital rationing constraints when good projects are rejected, resulting in loss of wealth.

Conclusion:

The dividend model uses a strict definition of cash flows to equity, i.e. expected dividends on stock, while FCFE model uses an expensive definition of cash flows to equity as the residual cash flows after meeting all financial obligations and investment needs.

When the firms have dividends that are different from FCFE, the values from two models will be different.

In valuing firms for takeover or where there is reasonable chance of changing corporate control, the value from the FCFE provides the better value.

Q. 28. How do you value a firm?

Ans :

Valuation of the enterprise, which includes all equity, preference shareholders and debt holders. The value of the firm is obtained by discounting expected cash flows to the firm, i.e., the residual cash flows after meeting all operating expenses, reinvestment needs and taxes, but prior to any payments to either debt or equity holders, at the weighted average cost of capital, which is the cost of the different components of financing used by the firm, weighted by their market value proportions.

$$\textit{Value of Firm} = \sum_{t=1}^{t=n} \frac{\text{CF to Equity} - t}{(1+\text{WACC})^t}$$

Where,

CF to Firm = Expected Cash flows to Firm in period t

And WACC = Weighted average cost of capital

Q. 29. How do you value a firm in pieces?

Ans :

Valuation is done in pieces beginning with its operations and adding the effects on value of debt and other non-equity claims. The value of the firm can also be obtained by valuing each claim on the firm separately. In this approach, first equity is valued assuming that it was financed only with equity. Then the value taken away by debt is considered by considering the present value of the tax benefits that flow from debt and the expected bankruptcy costs.

Value of firm = Value of all-equity financed firm + PV of tax benefits + Expected Bankruptcy Costs

Piece or Adjusted PV approach allows different cash flows to the firm to be discounted at different rates, given their riskiness. Following example shows the equivalence of equity and firm valuation.

Illustration :

Effects of mismatching cash flows and discount rates

Year	Cash flow to Equity	Interest (1 – t)	Cash flow to Firm
1	50	40	90
2	60	40	100
3	68	40	108
4	76.2	40	116.2
5	83.49	40	123.49
Terminal Value	1603.008		2363.008

Assuming the cost of equity is 13.625% and the firm can borrow long term at 10%. (The tax rate for the firm is 50%.) The current market value of equity is 1,073 and the value of debt outstanding is 800.

The cost of equity is given as an input and is 13.625%, and the after-tax cost of debt is 5%.

Cost of Debt = Pre-tax rate (1 – tax rate) = 10% (1 – 0.5) = 5%

Given the market values of equity and debt, the cost of capital can be estimated.

WACC = Cost of Equity (Equity / (Debt + Equity)) + Cost of Debt (Debt / (Debt + Equity))

= 13.625% (1073/1873) + 5% (800/1873) = 9.94%

Method 1: ***Discount CF to Equity at Cost of Equity to get value of equity***

We discount cash flows to equity at the cost of equity:

PV of Equity = $50/1.13625 + 60/1.13625^2 + 68/1.13625^3 + 76.2/1.13625^4$

+ $(83.49+1603)/1.13625^5$= 1073

Method 2: Discount CF to Firm at Cost of Capital to get value affirm

PV of Finn $90/1.0994 + 100/1.0994^2 + 108/1.0994^3 + 116.2/1.0994^4$ +

$(123.49+2363)/1.0994^5$ = 1873

PV of Equity = PV of Firm - Market Value of Debt = 1873 - 800 = 1073

The value of equity is 1073 under both approaches.

Note: 1) The common mistake that is made is that the cash flows to equity are discounted at cost of capital (WACC) which gives very high value of equity and when cash flows to firm are discounted at cost of equity the firm is understated. In our example the value of equity increases by 175 over its true value (1073). When the cash flows to the firm are erroneously discounted at the cost of equity, the value of the firm is understated by 260.

2) Cash flows for equity are after interest and cash flows for the firm are before. If the cash flows that are discounted are before interest expenses and principal payments, they are usually cash flows to the firm.

Q. 30. What is Economic Value Added? How it helps to value a firm?

Ans : The value of a firm is the sum of the capital invested and the present value of the economic value added. The present value of the economic value added by an asset over its life is the net present value of that asset. The value of a firm can be written as the sum of three components, the capital invested in assets in place, the present value of the economic value added by these assets, and the expected present value of the economic value that will be added by future investments. It can be calculated as:

Firm Value = Capital Invested Assets in Place +

$$\frac{\text{EVA t, Assets in Place}}{(1+\text{WACC})t} + \frac{\text{EVA t, Future Projects}}{t=1\,(1+\text{WACC})t}$$

Where:

Economic Value Added for all years = (Return on Capital Invested – WACC) (Capital Invested)

Terminal EVA= EVA / (WACC – Net sales growth rate).

WACC = Cost of capital means the "fair rate of return to invested capital", which goes to all claimholders. It is computed by multiplying Capital invested with WACC.

Return on Capital = Operating Income (1 – tax rate) / Capital Invested

Capital Invested for all years= Total equity + Interest bearing liabilities + Convertibles - Total interest bearing financial assets.

Capital Invested for terminal year = (NOPLAT – Gross capital expenditure – Change in working capital + Increase in non-interest bearing liabilities – Total depreciation) / (Net sales growth × NOPLAT).

As a simple illustration, consider a firm that has assets in place in which it has capital invested of Rs. 100 crores. Assume the following further facts about the firm:

1. The after-tax operating income on assets in place is Rs. 15 crores. This return on capital of 15% is expected to be sustained in the future, and the company has a cost of capital of 10%.
2. At the beginning of each of the next 5 years, the firm is expected to make investments of Rs. 10 crores each. These investments are also expected to earn 15% as a return on capital, and the cost of capital is expected to remain 10%.
3. After year 5, the company will continue to make investments and earnings will grow 5% a year, but the new investments will have a return on capital of only 10%, which is also the cost of capital.
4. All assets and investments are expected to have infinite lives. Thus, the assets in place and the investments made in the first five years will make 15% a year in perpetuity, with no growth.

This firm can be valued using an economic value added approach as follows:

Capital Invested in Assets in Place Rs. 100 crores

+ EVA from Assets in Place = (0.15 - 0.10) (100)70.10 Rs. 50

+ PV of EVA from New Investments in Year 1 = [(0.15 – 0.10)(10) / 0.10] Rs. 5 crore

+ PV of EVA from New Investments in Year 2 = [(0.15 – 0.10)(10) / 0.10]/1.1 Rs. 4.55 crore

+ PV of EVA from New Investments in Year 3 = [(0.15 – .10)(10)/0.10]/1.12 Rs. 4.13 crore

+ PV of EVA from New Investments in Year 4 = [(0.15 – 0.10)(10)/0.10]/1.13 Rs. 3.76 crore

+ PV of EVA from New Investments in Year 5 = [(0.15 – 0.10)(10)/0.10]/1.14 Rs. 3.42 crore

Firm Value = Capital Invested Assets in Place +

$$\frac{\text{EVA t, Assets in Place}}{(1+\text{WACC})t} + \frac{\text{EVA t, Future Projects}}{t=1\,(1+\text{WACC})t}$$

Thus, Rs. 170.85 crores = - Rs. 100 crores + Rs. 50 corres + Rs. 20.85 crores

Q. 31. What are the Limitations of EVA Method of Firm Valuation?

Ans :

(1) Needs calculation of invested capital for every year which depends on valuation issues.

(2) Economic profits as excess returns are fairly subjective, depending on the valuation of invested capital.

(3) Economic profit framework may provide date inducing illusionary accuracy of the quantified business plan.

Income/ Earnings Capitalization Approach:

There are two main income approaches of valuation. The first, the discounted future income method, involves forecasting a company's "income" streams (e.g., earnings or cash flow) on a year-by-year basis, and then converting these results into their present worth today based on the investor's required annual rate of return for taking the associated risk. The second, the capitalization of earnings method, looks at the actual past results of the company as an indicator of its expected future results. There are a variety of potential "income streams" that might be used to determine value in the discounted future income method and capitalization method such

as a company's net profit (after- tax), pre-tax profit, cash flow, dividends and so forth. It then converts these earnings into an estimate of value using a capitalization rate.

(1) Discounted future income method: Value of a business is the present value of all of its anticipated future income streams. This method looks to the future by making annual forecasts of a company's earnings and cash flows and then uses present value techniques to convert these estimates into a value of the business today. In this method higher discount rate is used for higher uncertainty. It is assumed that growth rate will be constant after a period of 5-7 years since it is difficult to reliably predict beyond five or seven years in a forecast. The term "income" is used generically. It is calculated as :

$$\sum_{t=n}^{t=n} \frac{\text{Income}}{(1+\text{WACC})^t}$$

(2) Earnings Capitalization Method: The capitalization method simply says that value is a function of the elements of a company's income, the risk associated with that income (reflected in the discount rate), and the income's expected rate of future annual growth.

$$\textbf{Firm Value} = \frac{\text{Income Stream for the Coming Year}}{(D - g)}$$

Where, D is the discount rate which is WACC and g is the growth rate.

Q. 32. What is Real Options or Contingent Claim Valuation?

Ans : In valuation, the value of a firm is the present value of the expected cash flows from the assets of the firm. The net present value of a project does not capture the values of the *options to delay, expand or abandon a project.* When comparing across investments, the traditional approach of picking the investment with the highest return or net present value may short-change investments that offer a firm more flexibility in operations and investing. A financing model that focuses on minimizing the current cost of capital does not consider the value of financial flexibility that comes from having excess debt capacity. In a similar vein, firms that hold back on returning cash to their stockholders and accumulate large cash balances might also be guided by the desire for financing flexibility. The value of equity, obtained from a discounted cash flow valuation model, does not measure the option to control, and if necessary, liquidate the firm that equity investors possess, and it ignores other options that might be owned by the firm, including patents, licenses and rights to natural reserves. In light of these options that seem to be everywhere, these options should be considered when analyzing corporate decisions. We should try to quantitatively estimate the value of these options, and build them into the decision process.

The value of an asset may not be greater than the present value of expected cash flows if the cash flows are contingent on the occurrence or non-occurrence of an event. As a simple example, consider an undeveloped oil reserve belonging to Exxon. It can be valued based upon expectations of oil prices in the future, but this estimate would miss the non-exclusive facts that the oil company will develop this reserve if oil prices go up and will not if oil prices decline or the oil company will develop this reserve if development costs go down because of technological improvement and will not if development costs remain high. Such undeveloped reserves are real options and should be valued as such, rather than with traditional discounted cash flow models.

An option can be valued as a function of the following variables - the current value, the variance in value of the underlying asset, the strike price, the time to expiration of the option and the riskless interest rate. An asset can be valued as an option if the payoffs are a function of the value of an underlying asset. It can be valued as a call option if the payoff is contingent on the value of the asset exceeding a pre-specified level. It can be valued as a put option if the payoff increases as the value of the underlying asset drops below a pre-specified level.

Chapter 2 : Exercise

1. What is three common approaches to valuation?

2. [p7/CA Vol III]

(i)Effects of mismatching cash flows and discount rates

Year	Cash flow to equity	Interest(1-t)	Cash flow to Firm
1	50	40	90
2	60	40	100
3	68	40	108
4	76.2	40	116.2
5	83.49	40	123.49
Terminal Value	1603.008		2363.008

Assuming the cost of equity is 13,625% and the firm can borrow long term at 10%. The tax rate for the firm is 50%. The current market value of equity is 1073 and the value of debt outstanding is 800.

Compute the value of firm under discounted cash flow method of valuation.

(ii) What are the advantages and limitations of DCF valuation?

3. (i) What is Relative Valuation?

(ii) Write four sequential steps in relative valuation method.

(iii) What is valuation multiples?

4. What is Real Option Valuation or Contingent Claim Valuation?

5. Distinguish between Dividend Discount Models and Gordon Growth Model.

6. What is H Model for valuing growth? What are their advantages and limitations?

7. What is three-stage Dividend Discount Model? What are their advantages and limitations?

8. What are the points to be considered before arriving at a specific model of business valuation?

9. What is Economic Value Added (EVA)? How do you distinguish it with Market Value Added (MVA)?How EVA can be linked to MVA?

10. [p-886]Given Capital : Rs.10,000;Net Operating Profit After Tax :Rs.2,000;c*:15%;r:20%

How EVA would change if,

(i) NOPAT increases from Rs. 2000 to Rs.2250 and r increases from 20% to 22.5%due to greater operating efficiencies.

(ii) The firm runs a new project of Rs. 10,000 and is expected to earn a return of 18% thereby adding 1800 to NOPAT.

(iii) Rs.1,000 of working capital is liquidated & rate of return increases to 21.67%

(iv) Cost of capital reduces to 13%.

11. [CA/Vol III/Mod Ii P-22]

A firm has assets in place in which it has capital invested of Rs. 100 crores. Assume following further facts about the firm.

1. The after tax operating income on assets in place is Rs. 15 crores. This return on capital of 15% is expected to be sustained in the future and the company has a cost of capital of 10%.
2. At the beginning of each of next 5 years, the firm is expected to make investment of Rs. 10 crores each. These investments are also expected to earn 15% as return on capital and cost of capital is expected to remain 10%
3. After year 5, the company will continue to make investment and earning will grow 5% a year, but the new investment will have a return of only 10% which is also the cost of capital.
4. All assets and liabilities are expected to have infinite lives. Thus assets in place and the investment made in the first five years will make 15% a year in perpetuity, with no growth,

Compute value of the firm.

CHAPTER - 3

MERGERS AND ACQUISITIONS : BASICS

Q. 1. What do you mean by Corporate Restructuring?

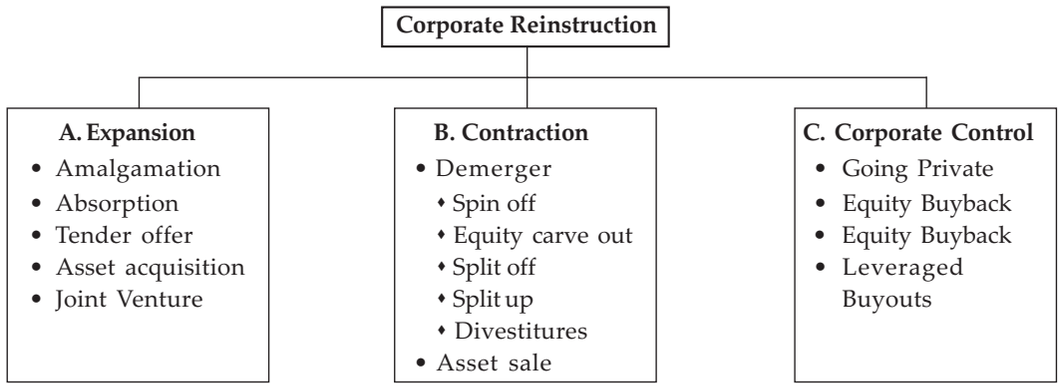
Ans : Restructuring of business is an integral part of the new economic paradigm. As controls and restrictions give way to competition and free trade, restructuring and reorganization become essential. Restructuring usually involves major organizational change such as shift in corporate strategies to meet increased competition or changed market conditions.

This activity can take place internally in the form of new investments in plant and machinery, research and development at product and process levels. It can also take place externally through mergers and acquisitions (M&A) by which a firm may acquire another firm or by which joint venture with other firms.

This restructuring process has been mergers, acquisitions, takeovers, collaborations, consolidation, diversification etc. Domestic firms have taken steps to consolidate their position to face increasing competitive pressures and MNC's have taken this opportunity to enter Indian corporate sector.

Q. 2. Discuss in brief the different forms of Corporate Restructuring?

Ans : The different forms of corporate restructuring are summarized as follows :



A. Expansion :

- **Amalgamation** : This involves fusion of one or more companies where the companies lose their individual identity and a new company comes into existence to take over the business of companies being liquidated. The merger of Brooke Bond India Ltd. and Lipton India Ltd. resulted in formation of a new company Brooke Bond Lipton India Ltd.
- **Absorption :** This involves fusion of a small company with a large company where the smaller company ceases to exist after the merger. The merger of Tata Oil Mills Ltd. (TOMCO) with Hindustan Lever Ltd. (HLL) is an example of absorption.
- **Tender offer :** This involves making a public offer for acquiring the shares of a target company with a view to acquire management control in that company. Takeover by Tata Tea of consolidated coffee Ltd. (CCL) is an example of tender offer where more than 50% of shareholders of CCL sold their holding to Tata Tea at the offered price which was more than the investment price.
- **Asset acquisition :** This involves buying assets of another company. The assets may be tangible assets like manufacturing units or intangible like brands. Hindustan lever limited buying brands of Lakme is an example of asset acquisition.
- **Joint venture :** This involves two companies coming whose ownership is changed. DCM group and DAEWOO MOTORS entered into a joint venture to form DAEWOO Ltd. to manufacturing automobiles in India.

B. Contraction :

There are generally the following types of DEMERGER :

- **Spinoff :** This type of demerger involves division of company into wholly owned subsidiary of parent company by distribution of all its shares of subsidiary company on Pro-rata basis. By this way, both the companies i.e. holding as well as subsidiary company exist and carry on business. For example Kotak, Mahindra finance Ltd. formed a subsidiary called Kotak Mahindra Capital Corporation, by spinning off its investment banking division.
- **Split ups :** This type of demerger involves the division of parent company into two or more separate companies where parent company ceases to exist after the demerger.
- **Equity carve out :** This is similar to spin offs, except that same part of shareholding of this subsidiary company is offered to public through a public issue and the parent company continues to enjoy control over the subsidiary company by holding controlling interest in it.
- **Divestitures :** These are sale of segment of a company for cash or for securities to an outside party. Divestitures, involve some kind of contraction.
- **Asset sale :** This involves sale of tangible or intangible assets of a company to generate cash. A partial sell off, also called slump sale, involves the sale of a business unit or plant of one firm to another. It is the mirror image of a purchase of a business unit or plant. From the seller's perspective, it is a form of contraction and from the buyer's point of view it is a form of expansion. For example, When Coromandal Fertilizers Limited sold its cement division to India Cement limited, the size of Coromandal Fertilizers contracted whereas the size of India Cements Limited expanded.

C. Corporate controls :

- **Going private :** This involves converting a listed company into a private company by buying back all the outstanding shares from the markets. Several companies like Castrol India and Phillips India have done this in recent years**.** A well known example from the U.S. is that of Levi Strauss & company.
- **Equity buyback :** This involves the company buying its own shares back from the market. This results in reduction in the equity capital of the company. This strengthens the promoter's position by increasing his stake in the equity of the company.
- **Anti takeover defences :** With a high value of hostile takeover activity in recent years, takeover defences both premature and reactive have been restored to by the companies.
- **Leveraged buyouts :** This involves rising of capital from the market or institutions by the management to acquire a company on the strength of its assets.

Q. 3. What do you mean by Merger?

Ans : Merger refers to a situation when two or more existing firms combine together and form a new entity. Either a new company may be incorporated for this purpose or one existing company (generally a bigger one) survives and another existing company (which is smaller) is merged into it. Laws in India use the term ***amalgamation*** for merger.

- Merger through absorption
- Merger through consolidation

Q. 4. What is Absorption?

Ans : Absorption is a combination of two or more companies into an existing company. All companies except one lose their identity in a merger through absorption. An example of this type of merger is the absorption of Tata Fertilizers Ltd.(TFL) TCL, an acquiring company (a buyer), survived after merger while TFL, an acquired company (a seller), ceased to exist. TFL transferred its assets, liabilities and shares to TCL.

Q. 5. What do you mean by Consolidation?

Ans : A consolidation is a combination of two or more companies into a new company . In this type of merger, all companies are legally dissolved and a new entity is created. In a consolidation, the acquired company transfers its assets, liabilities and shares to the acquiring company for cash or exchange of shares. An example

of consolidation is the merger of Hindustan Computers Ltd., Hindustan Instruments Ltd., and Indian Reprographics Ltd., to an entirely new company called HCL Ltd.

Q. 6. What are the different types of Mergers?

Ans : We have identified 5 different types of mergers, e.g.

(a) Horizontal merger : The two companies which have merged are in the same industry, normally the market share of the new consolidated company would be larger and it is possible that it may move closer to being a monopoly or a near monopoly.

(b) Vertical merger : It means the merger of two companies which are in different field altogether, the coming together of two concerns may give rise to a situation similar to a monopoly.

(c) Reverse merger : Where, in order to avail benefit to carry forward of losses which are available according to tax law only to the company which had incurred them, the profit making company is merged with companies having accumulated losses.

(d) Conglomerate merger : Such mergers involved firms engaged in unrelated type of business operations. In other words, the business activities of acquirer and the target are not related to each other horizontally (i.e. producing the same or competitive products) nor vertically (having relationship of buyer and supplier).

(e) Co generic merger : In these mergers, the acquirer and the target companies are related through basic technologies, production processes or market. The acquired company represents an extension of product line, market participants or technologies of the acquirer.

Q. 7. What is Amalgamation?

Ans : Amalgamation is an arrangement or reconstruction. It is a legal process by which two or more companies are to be absorbed or blended with another. As a result, the amalgamating company loses its existence and its shareholders become shareholders of new company or the amalgamated company. In case of amalgamation a new company may came into existence or an old company may survive while amalgamating company may lose its existence. There may be amalgamation by transfer of one or more undertaking to a new company or transfer of one or more undertaking to an existing company. Amalgamation signifies the transfers of all or some part of assets and liabilities of one or more than one existing company or two or more companies to a new company.

Q. 8. How do you classify different types of Amalgamation?

Ans : The Accounting Standard, AS-14, issued by the Institute of Chartered Accountants of India has defined the term amalgamation by classifying (i) Amalgamation in the nature of merger, and (ii) Amalgamation in the nature of purchase.

(a) Amalgamation in the nature of merger : As per AS-14, an amalgamation is called in the nature of merger if it satisfies all the following condition :

- All the assets and liabilities of the transferor company should become, after amalgamation; the assets and liabilities of the other company.
- Shareholders holding not less than 90% of the face value of the equity shares of the transferor company (other than the equity shares already held therein, immediately before the amalgamation, by the transferee company or its subsidiaries or their nominees) become equity shareholders of the transferee company by virtue of the amalgamation.
- The consideration for the amalgamation receivable by those equity shareholders of the transferor company who agree to become equity shareholders of the transferee company is discharged by the transferee company wholly by the issue of equity share in the transferee company, except that cash may be paid in respect of any fractional shares.
- The business of the transferor company is intended to be carried on, after the amalgamation, by the transferee company.
- No adjustment is intended to be made in the book values of the assets and liabilities of the transferor company when they are incorporated in the financial statements of the transferee company except to ensure uniformity of accounting policies.

Amalgamation in the nature of merger is an organic unification of two or more entities or undertaking or fusion of one with another. It is defined as an amalgamation which satisfies the above conditions. As per Income Tax Act 1961, merger is defined as amalgamation under Sec. 2(1B) with the following three conditions to be satisfied.

I. All the properties of amalgamating company(s) should vest with the amalgamated company after amalgamation.

II. All the liabilities of the amalgamating company(s) should vest with the amalgamated company after amalgamation.

III. Shareholders holding not less than 75% in value or voting power in amalgamating company(s) should become shareholders of amalgamated companies after amalgamation. Amalgamation does not mean acquisition of a company by purchasing its property and resulting in its winding up. According to Income tax Act, exchange of shares with 90%of shareholders of amalgamating company is required

(b) Amalgamation in the nature of purchase : Amalgamation in the nature of purchase is where one company's assets and liabilities are taken over by another and lump sum is paid by the latter to the former. It is defined as the one which does not satisfy any one or more of the conditions satisfied above.

Q. 9. What do you mean by Acquisition?

Ans : Acquisition refers to the acquiring of ownership right in the property and asset without any combination of companies. Thus in acquisition two or more companies may remain independent, separate legal entity, but there may be change in control of companies. Acquisition results when one company purchase the controlling interest in the share capital of another existing company in any of the following ways :

(a) By controlling interest in the other company. By entering into an agreement with a person or persons holding
(b) By subscribing new shares being issued by the other company.
(c) By purchasing shares of the other company at a stock exchange, and
(d) By making an offer to buy the shares of other company, to the existing shareholders of that company.

Q. 10. Explain the term 'Demerger'?

Ans : It has been defined as a split or division. As the same suggests, it denotes a situation opposite to that of merger. Demerger or spin-off, as called in US involves splitting up of conglomerate (multi-division) of company into separate companies.

This occurs in cases where dissimilar business are carried on within the same company, thus becoming unwieldy and cyclical almost resulting in a loss situation. Corporate restructuring in such situation in the form of demerger becomes inevitable. Merger of SG chemical and Dyes Ltd. with Ambalal Sarabhai enterprises Ltd. (ASE) has made ASE big conglomerate which had become unwieldy and cyclic, so demerger of ASE was done.

A part from core competencies being main reason for demerging companies according to their nature of business, in some cases, restructuring in the form of demerger was undertaken for splitting up the family owned large business empires into smaller companies.

The historical demerger of DCM group where it split into four companies (DCM Ltd., DCM Shriram industries Ltd., Shriram Industrial Enterprise Ltd. and DCM Shriram consolidated Ltd.) is one example of family units splitting through demergers. Such demergers are accordingly, more in the nature of family settlements and are affected through the courts order.

Thus, demerger also occur due to reasons almost the same as mergers i.e. the desire to perform better and strengthen efficiency, business interest and longevity and to curb losses, wastage and competition. Undertakings demerge to delineate businesses and fix responsibility, liability and management so as to ensure improved results from each of the demerged unit.

Demerged Company, according to Section (19AA) of Income Tax Act, 1961 means the company whose undertaking is transferred, pursuant to a demerger to a resulting company.

Resulting company, according to Section2(47A) of Income Tax Act,1961 means one or more company, (including a wholly owned subsidiary thereof) to which the undertaking of the demerged company is transferred in a demerger, and the resulting company in consideration of such transfer of undertaking issues shares to the shareholders of the demerged company and include any authority or body or local authority or public sector company or a company established, constituted or formed as a result of demerger.

Q. 11. Identify the forces that drive M&A Activities.

Ans : The major forces which drive M&A activities since the early 1990's have been identified as the following:

(i) Rapid pace of technological change;

(ii) Low costs of communication and transportation;

(iii) Globalization and global markets;

(iv) Nature of competition in terms of forms, sources and intensity;

(v) Emergence of new types of industries;

(vi) Regulation in some industries and sectors;

(vii) Liberalization in some industries and sectors;

(vii) Growing inequalities in incomes and wealth.

Merger activity generally comes in waves, and is most common when shares are overvalued. The late 1990's saw fevered activity. Then the pace slowed in most industries, particularly after September 11, 2001. It picked up again in mid-2003 as companies that weathered the global recession sought bargains among their battered brethren. By the start of 2006, a mergers and acquisitions boom was in full swing, provoking a nationalist backlash in some European countries. The future of the merger wave now depends on how deep the downturn in private equity proves to be.

Q. 12. What is the possible causes of different types of Merger?

Ans : An extensive appraisal of each merger scheme is done to patterns the causes of mergers. These hypothesized causes (motives) as defined in the mergers schemes and explanatory statement framed by the companies at the time of mergers can be conveniently categorized based on the type of merger. The possible causes of different type of merger schemes are as follows :

(i) Horizontal merger : These involve mergers of two business companies operating and competing in the same kind of activity. They seek to consolidate operations of both companies. These are generally undertaken to :

(a) Achieve optimum size

(b) Improve profitability

(c) Carve out greater market share

(d) Reduce its administrative and overhead costs.

(ii) Vertical merger : These are mergers between firms in different stages of industrial production in which a buyer and seller relationship exists. Vertical merger are an integration undertaken either forward to come close to customers or backwards to come close to raw materials suppliers. These mergers are generally endeavoured to :

(a) Increased profitability

(b) Economic cost (by eliminating avoidable sales tax and excise duty payments)

(c) Increased market power

(d) Increased size

(iii) Conglomerate merger : These are mergers between two or more companies having unrelated business. These transactions are not aimed at explicitly sharing resources, technologies, synergies or product. They do not have an impact on the acquisition of monopoly power and hence are favoured throughout the world. They are undertaken for diversification of business in other products, trade and for advantages in bringing separate enterprise under single control namely :

(a) Synergy arising in the form of economies of scale.

(b) Cost reduction as a result of integrated operation.

(c) Risk reduction by avoiding sales and profit instability.

(d) Achieve optimum size and carve out optimum share in the market.

(iv) Reverse mergers : Reverse mergers involve mergers of profit making companies with companies having accumulated losses in order to:

(a) Claim tax savings on account of accumulated losses that increase profits.

(b) Set up merged asset base and shift to accelerate depreciation.

(v) Group company mergers : These mergers are aimed at restructuring the diverse units of group companies to create a viable unit. Such mergers are initiated with a view to affect consolidation in order to:

(a) Cut costs and achieve focus.

(b) Eliminate intra-group competition

(c) Correct leverage imbalances and improve borrowing capacity.

Q. 13. What do mean by 'Diversification'?

Ans : A commonly stated motive for mergers is to achieve risk reduction through diversification. The extent, to which risk is reduced, depends upon the correlation between the earnings of the merging entities. While negative correlation brings greater reduction in risk, positive correlation brings lesser reduction in risk. If investors can diversify on their own by buying stocks of companies which propose to merge, they do not derive any benefits from the proposed merger. Any investor who wants to reduce risk by diversifying between two companies, say, ABC Company and PQR Company, may simply buy the stocks of these two companies and merge them into a portfolio. The merger of these companies is not necessary for him to enjoy the benefits of diversification. As a matter of fact, his 'home-made diversification give him far greater flexibility. He can contribute the stocks of ABC Company and PQR Company in any proportion he likes as he is not confronted with a 'fixed' proportion that result from the merger.

Thus, Diversification into new areas and new products can also be a motive for a firm to merge another with it. A firm operating in North India, if merges with another firm operating primarily in South India, can definitely cover broader economic areas. Individually these firms could serve only a limited area. Moreover, products diversification resulting from merger can also help the new firm fighting the cyclical/seasonal fluctuations. For example, firm A has a product line with a particular cyclical variations and firm B deals in product line with counter cyclical variations. Individually, the earnings of the two firms may fluctuate in line with the cyclical variations. However, if they merge, the cyclically prone earnings of firm A would be set off by the counter cyclically prone earnings of firm B. Smoothing out the earnings of a firm over the different phases of a cycle tends to reduce the risk associated with the firm.

Through the diversification effects, merger can produce benefits to all firms by reducing the variability of firm's earnings. If firm A's income generally rises when B's income generally falls, and *vice-a versa*, the fluctuation of one will tend to set off the fluctuations of the other, thus producing a relatively level pattern of combined earnings. Indeed, there will be some diversification effect as long as the two firm's earnings are not perfectly correlated (both rising and falling together). This reduction in overall risk is particularly likely if the merged firms are in different lines of business.

Q. 14. Discuss in brief the major theories of Mergers & Acquisitions.

Ans : The following theories of mergers and acquisitions are discussed below:

(i) Synergy or Efficiency : In this theory, the total value from the combination is greater than the sum of the values of the component companies operating independently.

(ii) Hubris : The result of the winner's curse, causing bidders to overpay. It is possible that value is unchanged.

(iii) Agency : The total value here is decreased as a result of mistakes or managers who put their own preferences above the well-being of the company.

While the target company always gains, the acquirer gains when synergy accrues from combined operations, and loses under the other two theories. The total value becomes positive under synergy, becomes zero under the second, and becomes negative under the third.

Q. 15. Identify the reasons for Mergers and Acquisitions.

Ans : Mergers and acquisitions are strategic decisions leading to the maximization of a company's growth by

enhancing its production and marketing operations. They have become popular in the recent times because of the enhanced competition, breaking of trade barriers, free flow of capital across countries and globalization of business as a number of economies are being deregulated and integrated with other economies. A number of motives are attributed for the occurrence of mergers and acquisitions.

i) Synergies through Consolidation : Synergy implies a situation where the combined firm is more valuable than the sum of the individual combining firms. It is defined as 'two plus two equal to five' (2 + 2 = 5) phenomenon. Synergy refers to benefits other than those related to economies of scale. Operating economies are one form of synergy benefits. But apart from operating economies, synergy may also arise from enhanced managerial capabilities, creativity, innovativeness, R&D and market coverage capacity due to the complementarily of resources and skills and a widened horizon of opportunities.

An undervalued firm will be a target for acquisition by other firms. However, the fundamental motive for the acquiring firm to takeover a target firm may be the desire to increase the wealth of the shareholders of the acquiring firm. This is possible only if the value of the new firm is expected to be more than the sum of individual value of the target firm and the acquiring firm. For example, if A Ltd. and B Ltd. decide to merge into AB Ltd. then the merger is beneficial if

$$V(AB) > V(A) + V(B)$$

Where

V (AB) = Value of the merged entity
V (A) = Independent value of company A
V (B) = Independent value of company B

Igor Ansoff (1998) classified four different types of synergies. These are :

(a) Operating synergy : The key to the existence of synergy is that the target firm controls a specialized resource that becomes more valuable when combined with the bidding firm's resources. The sources of synergy of specialized resources will vary depending upon the merger. In case of horizontal merger, the synergy comes from some form of economies of scale which reduce the cost or from increase market power which increases profit margins and sales. There are several ways in which the merger may generate operating economies. The firm might be able to reduce the cost of production by eliminating some fixed costs. The research and development expenditures will also be substantially reduced in the new set up by eliminating similar research efforts and repetition of work already done by the target firm. The management expenses may also come down substantially as a result of corporate reconstruction.

The selling, marketing and advertisement department can be streamlined. The marketing economies may be produced through savings in advertising (by reducing the need to attract each other's customers), and also from the advantage of offering a more complete product line (if the merged firms produce different but complementary goods), since a wider product line may provide larger sales per unit of sales efforts and per sales person. When a firm having strength in one functional area acquires another firm with strength in a different functional area, synergy may be gained by exploiting the strength in these areas. A firm with a good distribution network may acquire a firm with a promising product line, and thereby can gain by combining these two strength. The argument is that both firms will be better off after the merger. A major saving may arise from the consolidation of departments involved with financial activities e.g., accounting, credit monitoring, billing, purchasing etc.

Thus, when two firms combine their resources and efforts, they will be able to produce better results than they were producing as separate entities because of savings various types of operating costs. These resultant economies are known as synergistic operating economies.

In a *vertical merger,* a firm may either combine with its supplier of input (backward integration) and/or with its customers (forward integration). Such merger facilitates better coordination and administration of the different stages of business stages of business operations-purchasing, manufacturing and marketing –eliminates the need for bargaining (with suppliers and/or customers), and minimizes uncertainty of supply of inputs and demand for product and saves costs of communication.

An example of a merger resulting in operating economies is the merger of Sundaram Clayton Ltd. (SCL) with TVS-Suzuki Ltd. (TSL).By this merger, TSL became the second largest producer of two –wheelers after Bajaj. The main objective motivation for the takeover was TSL's need to tide over its different

market situation through increased volume of production. It needed a large manufacturing base to reduce its production costs. Large amount of funds would have been required for creating additional production capacity. SCL also needed to upgrade its technology and increase its production. SCL's and TCL's plants were closely located which added to their advantages. The combined company has also been enabled to share the common R&D facilities.

(b) Financial synergy : Financial synergy refers to increase in the value of the firm that accrues to the combined firm from financial factors. There are many ways in which a merger can result into financial synergy and benefit. A merger may help in:

- Eliminating financial constraint
- Deployment surplus cash
- Enhancing debt capacity
- Lowering the financial costs
- Better credit worthiness

Financial Constraint **:** A company may be constrained to grow through internal development due to shortage of funds. The company can grow externally by acquiring another company by the exchange of shares and thus, release the financing constraint.

Deployment of Surplus Cash **:** A different situation may be faced by a cash rich company. It may not have enough internal opportunities to invest its surplus cash. It may either distribute its surplus cash to its shareholders or use it to acquire some other company. The shareholders may not really benefit much if surplus cash is returned to them since they would have to pay tax at ordinary income tax rate. Their wealth may increase through an increase in the market value of their shares if surplus cash is used to acquire another company. If they sell their shares, they would pay tax at a lower, capital gains tax rate. The company would also be enabled to keep surplus funds and grow through acquisition.

Debt Capacity **:** A merger of two companies, with fluctuating, but negatively correlated, cash flows, can bring stability of cash flows of the combined company. The stability of cash flows reduces the risk of insolvency and enhances the capacity of the new entity to service a larger amount of debt. The increased borrowing allows a higher interest tax shield which adds to the shareholders wealth.

Financing Cost **:** The enhanced debt capacity of the merged firm reduces its cost of capital. Since the probability of insolvency is reduced due to financial stability and increased protection to lenders, the merged firm should be able to borrow at a lower rate of interest. This advantage may, however, be taken off partially or completely by increase in the shareholders risk on account of providing better protection to lenders.

Another aspect of the financing costs is issue costs. A merged firm is able to realize economies of scale in flotation and transaction costs related to an issue of capital. Issue costs are saved when the merged firm makes a larger security issue.

Better credit worthiness **:** This helps the company to purchase the goods on credit, obtain bank loan and raise capital in the market easily.

RP Goenka's Ceat Tyres sold off its type cord division to Shriram Fibers Ltd. in 1996 and also transfer's its fiber glass division to FGL Ltd., another group company to achieve financial synergies.

(c) Managerial synergy :

One of the potential gains of merger is an increase in managerial effectiveness. This may occur if the existing management team, which is performing poorly, is replaced by a more effective management team. Often a firm, plagued with managerial inadequacies, can gain immensely from the superior management that is likely to emerge as a sequel to the merger. Another allied benefit of a merger may be in the form of greater congruence between the interests of the managers and the shareholders.

A common argument for creating a favorable environment for mergers is that it imposes a certain discipline on the management. If lackluster performance renders a firm more vulnerable to potential acquisition, existing managers will strive continually to improve their performance.

(d) Sales synergy :

These synergies occurs when merged organization can benefit from common distribution channels, sales administration, advertising, sales promotion and warehousing.

The Industrial Credit and Investment Corporation of India Ltd. (ICICI) acquired Tobaco Company, ITC Classic and Anagram Finance to obtain quick access to a well dispersed distribution network.

Q. 16. Who are the participants in the Merger and Acquisition Process?

Ans : There are many professionals who play an essential role in the successful completion of a deal.

(a) Investment Bankers : Investment bankers are always at the forefront of the acquisition process. They offer strategic and tactical advice, screen potential buyers and sellers, make initial contact with a seller and buyer and provide negotiation support, valuation and deal structuring.

(b) Lawyers : The legal framework surrounding a typical transaction has become so complicated that no one individual can have sufficient expertise to address all the issues. So, legal teams consist of more than a dozen lawyers each of whom represents a specialised aspect of the law.

(c) Accountants : Accountants perform the role of auditors by reviewing the target's financial statements and operations through a series of interviews with senior and middle level managers.

(d) Valuation Experts : They build models that incorporate various assumptions such as costs or revenues growth rate.

(e) Institutional Investors : Institutional investors can announce how they intend to vote on a matter and advertise their position in order to seek support and have more influence.

(f) Arbitrageurs : Arbitrageurs provide market liquidity during transactions. With the number of merger arbitrageurs increasing, they are becoming more proactive in trying to anticipate takeover situations. Their objective is to identify the target before the potential acquirer is required by law to announce its intentions.

Q. 17. Why a firm diversify?

Ans : A firm wants to diversify to achieve :

- Sales and growth stability
- Favourable growth developments
- Favourable competition shifts
- Technological changes

(a) External and Internal Growth : A company may expand and/or diversify its markets internally or externally. If the company cannot grow internally due to lack of physical and managerial resources, it can grow externally by combining its operations with other companies through mergers and acquisitions. Mergers and acquisitions may help to accelerate the pace of a company's growth in a convenient and inexpensive manner.

For example, RPG Group had a turnover of only Rs. 80 crores in 1979. This has increased to about Rs. 5600 crores in 1996. This phenomenal growth was due to the acquisitions of a several companies by the RPG Group. Some of the companies acquired are Asian cables, Ceat, Calcutta Electricity Supply etc.

(b) Market Share : A merger can increase the market share of the merged firm. The increased concentration or market share improves the profitability of the firm due to economies of scale.

The acquisition of Universal Luggage by Blow Plast is an example of limiting competition to increase market power. Before the merger, the two companies were competing fiercely with each other leading to a severe price war and increased marketing costs. As a result of the merger, Blow Plast has obtained a strong hold on the market and now operates under near monopoly situation. Yet another example is the acquisition of Tomco by Hindustan Lever. Hindustan Lever at the time of merger was expected to control one-third of three million ton soaps and detergents markets and thus, substantially reduce the threat of competition.

(c) Purchase of assets at bargain price : Mergers may be explained by the opportunity to acquire assets, particularly land, mined rights, plant and equipment at lower cost than would be incurred if they were purchased or constructed at current market prices. If market prices of many stocks have been considerably below the replacement cost of the assets they represent, expanding firm considering constructing plants developing mines, or buying equipment.

(d) Increased external financial capability : Many mergers, particularly those of relatively small firms into large ones, occur when the acquired firm simply cannot finance its operations. This situation is typical in a small growing firm with expanding financial requirements. The firm has exhausted its bank credit and has virtually no access to long term debt or equity markets. Sometimes the small firms have encountered operating difficulty and the bank has served notice that its loans will not be renewed. In this type of situation, a large firm with sufficient cash and credit to finance the requirements of the smaller one probably can obtain a good situation by making a merger proposal to the small firm. The only alternative the small firm may have is to try to interest two or more larger firms in proposing merger to introduce completion into their bidding for the acquisition.

(e) Increased managerial skills : Occasionally, a firm will have good potential that it finds itself unable to develop fully because of deficiencies in certain areas of management or an absence of needed product or production technology. If the firm cannot hire the management or develop the technology it needs, it might combine with a compatible firm that has the needed managerial personnel or technical expertise. Any merger, regardless of the specific motive for it, should contribute to the maximization of owner's wealth.

(f) Reduction in tax liability : Under Income Tax Act, there is a provision for set-off and carry forward of losses against its future earnings for calculating its tax liability. A loss making or sick company may not be in a position to earn sufficient profits in future to take advantage of the carry forward provision. If it combines with a profitable company, the combined company can utilize the carry forward loss and save taxes with the approval of government. In India, a profitable company is allowed to merge with a sick company to set-off against its profits the accumulated loss and unutilized depreciation of that company. A number of companies in India have merged to take advantage of this provision.

The following is the list of some companies along with the amount of tax benefits enjoyed:

- Orrisa synthesis merged with Straw product Ltd. (Rs. 16 crores)
- Ahmadabad cotton Mills merged with Arvind Mils (Rs. 3.34 crores)
- Sidhpur Mills merged with Reliance Industries Ltd. (Rs. 3.34 crores)
- Alwyn Missan merged with Mahinder and Mahindra Ltd. (Rs. 2.47 crores)
- Hyderabad Alwyn merged with Voltas Ltd. (Rs. 1600 crores)

(g) Economies of Scale : Economies of scale arise when increase in the volume of production leads to a reduction in the cost of production per unit. Merger may help to expand volume of production without a corresponding increase in fixed costs. Thus, fixed costs are distributed over a large volume of production causing the unit cost of production to decline. Economies of scale may also arise from other indivisibilities such as production facilities, management functions and management resources and systems. This happens because a given function, facility or resource is utilized for a large scale of operation. For example, a given mix of plant and machinery can produce scale economies when its capacity utilization is increased. Economies will be maximized when it is optimally utilized. Similarly, economies in the use of the marketing function can be achieved by covering wider markets and customers using a given sales force and promotion and advertising efforts. Economies of scale may also be obtained from the optimum utilization of management resource and systems of planning, budgeting, reporting and control. A company establishes management systems by employing enough qualified professionals irrespective of its size. A combined firm with a large size can make the optimum use of the management resource and systems resulting in economies of scale.

(g) Vertical Integration: Vertical integration is a combination of companies of companies business with the business of a supplier or customer generally motivated by a pure desire :

(a) To secure a source of supply for key materials or sources

(b) To secure a distribution outlet or a major customer for the company's products.

(c) To improve profitability by expanding into high margin activities of suppliers and customers.

Thus, vertical merger may take place to integrate forward or backward. Forward integration is where company merges to come close to its customers. A holiday tour operator might acquire chain of travel agents and use them to promote his own holiday rather than those of rival tour operators. So forward or downstream vertical integration involves takeover of customer business.

Tata Tea's acquisition of consolidated coffee which produces coffee beans and Asian Coffee, which possesses coffee beans, was also backward integration which helped reduce exchange inefficiencies by eliminating market transactions. The recent merger of Samtel Electron services (SED) with Samtel Color Ltd. (SCL) entailed backward integration of SED which manufactures electronic components required to make picture tubes with SCL, a leading maker of color picture tube.

Q. 18. Why Mergers & Acquisitions have gained importance in recent time?

Ans : Merger - It's the most talked about term today creating lot of excitement and speculative activity in the markets. But before Mergers & Acquisitions (M&A) activity speeds up, it has to actually pass through a long chain of procedures (both legal and financial), which at times delays the deal.

With the liberalization of the Indian economy in 1991, restrictions on Mergers and Acquisitions have been lowered. The numbers of Mergers and Acquisitions have increased many times in the last decade compared to the slack period of 1970-80s when legal hurdles trimmed the M&A growth. To put things in perspective, from 15 mergers in 1998, the number crossed to over 280 in FY01. With a downturn in the capital markets, valuations have come down to historic lows. It's high time that the consolidation game speeds up. In simple terms, a merger means blending of two or more existing undertakings into one, consequent to which each undertaking would lose their separate identity. The most common reasons for mergers are, operating synergies, market expansion, diversification, growth, consolidation of production capacities and tax savings. However, these are just some of the illustrations and not the exhaustive benefits.

However, before the idea of Merger and Acquisition crystallizes, the firm needs to understand its own capabilities and industry position. It also needs to know the same about the other firms it seeks to tie up with, to get a real benefit from a merger.

Globalization has increased the competitive pressure in the markets. In a highly challenging environment a strong reason for merger and acquisition is a desire to survive. Thus apart from growth, the survival factor has off late, spurred the merger and acquisition activity worldwide.

The present study gives some insight as to why the companies are going for merger and acquisition and what are the legal, tax and financial aspects governing them. The study also deals with other aspects such as types of merger, motives, reasons, and successful consolidation in merger, recent trend in merger and acquisition activity. Lastly few case studies involving the merger and acquisition has been taken.

Mergers, acquisitions and restructuring have become a major force in the financial and economic environment all over the world. Essentially an American phenomenon till the middle of 1970s, they have become a dominant global business theme at present. On Indian scene too corporate are seriously making at mergers, acquisitions which has become order of the day.

Mergers and acquisitions (M&A) and corporate restructuring are a big part of the corporate finance world. Every day, Wall Street investment bankers arrange M&A transactions, which bring separate companies together to form larger ones. When they're not creating big companies from smaller ones, corporate finance deals do the reverse and break up companies through spin-offs, carve-outs or tracking stocks.

Not surprisingly, these actions often make the news. Deals can be worth hundreds of millions, or even billions, of dollars. They can dictate the fortunes of the companies involved for years to come. For a CEO, leading an M&A can represent the highlight of a whole career. And it is no wonder we hear about so many of these transactions; they happen all the time. Next time you flip open the newspaper's business section, odds are good that at least one headline will announce some kind of M&A transaction.

Sure, M&A deals grab headlines, but what does this all mean to investors, it discusses the forces that drive companies to buy or merge with others, or to split-off or sell parts of their own businesses. Once you know the different ways in which these deals are executed, you'll have a better idea of whether you should cheer or weep when a company you own buys another company - or is bought by one. You will also be aware of the tax consequences for companies and for investors.

Q. 19. Identify the Factors that favour external growth and diversification through Mergers and Acquisitions?

Ans :

(i) Some goals and objectives may be achieved more speedily through an external acquisition.

(ii) The cost of Building an organization internally may exceed cost of an acquisition.

(iii) There may be fewer risks, lower costs, or shorter time requirements involved in achieving an economically feasible market share by the external route.

(iv) The firm may not be utilizing their assets or arrangement as effectively as they could be utilized by the acquiring firm.

(v) The firm may be able to use securities in obtaining other companies, where as it might not be able to finance the acquisition of equivalent assets and capabilities internally.

(vi) There may be tax advantages.

(vii) There may be opportunities to complement capabilities of other firms.

Q. 20. What are the merits and demerits of Merger and Acquisitions?

Ans :

Gains	Pains
(i) Financial Returns/Profitability	(i) Expenses / Drain on Profitability
(ii) Aligned Org Structure.	(ii) Time and resource required to manager / transition.
(iii) New approaches to conducting work.	(iii) Reduced work productivity and quality.
(iv) Motivated and capable talent.	(iv) Unintended consequences for employee's attitudes and behaviour.
(v) Desired culture.	(v) Culture clash.
(vi) Cost Savings.	(vi) Customer concerns.

Q. 21. How to search a target company for Merger & Acquisition?

Ans : Search for acquisition of Target Company based on objectives of the acquirer company.

(i) Services of Intermediaries

(a) Consultants
(b) Merchant bankers →
(c) Financial Institutions

(a) Finding a Target company
(b) Negotiation
(c) Compliance of legal formalities
(d) Completion of Financial arrangement
(e) Closing the deals.

(ii) Primary investigation about Target Company.

(a) Industry Analysis :
- Competition
- Growth Rate / Future projections
- Barriers to entry / Exit
- Mergers and acquisitions in industry and results

(b) Financial Analysis :
- Balance sheet and Profit and loss for past years
- Budgets and forecasts
- Financial ratios - Return on Assets
  - Return on Net worth
  - GP / NP
  - D/ E Ratio
  - Expense Ratio
- Replacement cost data
- Valuation of Assets / Liabilities

(c) Management Analysis :	Assessment of Senior Management Business Experience Union Contract / Strike History Labour Relations / Agreements Personnel Schemes Profile of permanent employees
(d) Marketing Analysis :	Data on Past Sales Customer profile Major sales agreements Trends Distribution channels Product Profile Development / Disclosure
(e) Manufacturing :	Location Technology Manufacturing process Quality R & D

(iii) Other Information
- Inventory valuation, obsolescence, over valuation.
- Litigation
- Doubtful debts
- Unrealized / Unrealizable Assets / Investments
- Tax status / Assessments / Outstanding dues

(iv) Economic Analysis
- Business Cycles
- Public Interest
- Government Prices / Incentives
- Condition of securities market

(v) Comparison of Alternative Target companies and Arrival of decision as regards target company.

(vi) Strategy for takeover - method to be employed.
- Friendly takeover through negotiations
- Hostile

(vii) Valuation of Assets and arriving at Purchase consideration.

(viii) Mode of Payment
- Cash
- Share Exchange Ratio

(ix) Legal formalities
- Takeover code
- Company law
- Income tax / SICA / IDR / MRTP

(x) Post Merger Integration.

Q. 22. How a merger can revive a sick company?

Ans : An important motive for merger is to turn around a financially sick company through the process of merger. Amalgamation taking place under the aegis of Board for Industrial and Financial Reconstruction (BIFR) fall under this category.

BIFR found revival of ailing companies through the means of their with healthy company as the most successful route for revival of their financial wealth. Firstly, the purpose is to revive a group of sick companies by merging it with groups of healthy company by obtaining concessions from financial institution and government agencies and obtaining benefits of tax concessions u/s 72A of Income Tax Act, 1961. Secondly, it also helps to preserve group reputation. Some of the group companies which have amalgamated through the BIFR include Mahindra Missan Allwyn with Mahindra and Mahindra, Hyderabad, Allwyn with Voltas etc.

Q. 23. Discuss SEBI regulation in relation to mergers & acquisitions?

Ans :

1. Clauses 40A and 40B of the listing Agreement the company has entered into with stock exchange.
2. SEBI's (Substantial Acquisition of shares and Takeover's) Regulations, 1997.

1. Takeover and Listing agreement exemption Clauses 40A and 40B of Listing Agreement.

Clause 40A deals with substantial acquisition of shares and requires the offeror and the offeree to inform the stock exchange when such acquisition results in an increase in the shareholding of the acquirer to more than 10%.

Clause 40B deals with takeover efforts. A takeover offer refers to change in management where there is no change in management, Clause 40B of listing agreement will not apply. However, sub clause 13 of amendment of Clause 40B also provides an exemption to the scheme approved by BIFR. There is no provision under clause 40B for exemption of non BIFR companies.

2. SEBI (Substantial Acquisition of shares and takeover) Regulations Act, 1997

On the basis of recommendations of the Committee, the SEBI announced on Febuary20, 1997, the revised take over code as Securities and Exchange Board of India (Substantial Acquisitions of shares and Takeovers) Regulations, 1997. The objective of these regulations has been to provide an orderly framework within which substantial acquisitions and takeovers can take place. The salient features of this new takeover code (Regulations, 1997) may be enumerated as follows :

(i) Any person, who holds more than 5% shares or voting rights in any company, shall within two months of notification of these Regulation disclose his aggregate shareholding in that company, to the company which in turn, shall disclose to all the stock exchanges on which the shares of the company are listed, the aggregate number of shares held by each such person.

(ii) Any acquirer, who acquires shares or voting rights which (taken together with shares or voting rights, if any, held by him) would entitle him to more than 5% shares or voting rights in a company- (a) in pursuance of a public issue, or (b) by one or more transactions, or (c) in any other manner not covered by (a) and (b) above, shall disclose the aggregate of his shareholding or voting rights in that company, to the company within four working days of the acquisition of shares or voting rights, as the case may be.

(iii) Every person, who holds more than 10% shares or voting rights in any company, shall, within 21 days from the end of the financial yea, make yearly disclosures to the company, in respect of his holdings as on 31st March each year.

(iv) No acquirer shall agree to acquire, of acquire shares or voting rights which (taken together with shares or voting rights, if any, held by him or by persons acting in concert with him), entitle such acquirer to exercise 10% or more of the voting rights in a company, unless such acquirer makes a public announcement to acquire shares of such company in accordance with the Regulations.

(v) No acquirer holding, not less than 10% but not more than 25% of the shares or voting rights in a company, shall acquire, additional shares or voting rights entitling him to exercise more than 2% of the voting rights, in any period of 12 months, unless such acquirer makes a public announcement to acquire shares in accordance with the Regulations.

(vi) The minimum offer price shall be the highest of- (a) the negotiated price under the agreement ; (b) average price paid by the acquirer for acquisitions including by way of allotment in a public or rights

issue, if any, during the twelve-month period prior to the date of public announcement; (c) the price paid by the acquirer under a preferential allotment made to him, at any time during the twelve month period up to the date of closure of the offer; (d) the average of the weekly high and low of the closing prices of the shares of the target company during the 26 weeks preceding the date of public announcement.

(vii) The public offer shall be made to the shareholders of the target company to acquire from them an aggregate minimum of 20% of the voting capital of the company provided that acquisition of shares from each of the shareholders shall not be less than the minimum marketable lot or the entire holding if it is less than the marketable lot.

(viii) Within 14 days of the public announcement of the offer, the acquire must send a copy of the draft letter to the target company at its registered office address, for being placed before the Board of Directors and to all the stock exchanges where the shares of the company are listed.

(ix) Any person other than the acquirer who had made the first public announcement, who is desirous of making any offer, shall, within 21 days of the public announcement of the first offer, make a public announcement of his offer for acquisition of some or all of the shares of the same target company. Such offer shall be deemed to be a competitive bid. No public announcement for an offer or competitive bid shall be made during the offer period except during 21-day period from the public announcement of the first offer.

(x) Upon the public announcement of a competitive bid or bids, the acquirer(s) who had made the public announcement (s) of the earlier offer(s), shall have the option to make an announcement revising the offer or withdrawing the offer with the approval of the SEBI.

(xi) Irrespective of whether or not there is competitive bid, the acquirer who has made the public announcement of offer, any make upward revisions in his offer in respect of the price and the number of shares to be acquired, at any time up to 3 working days prior to the date of the closure of the offer.

(xii) No public offer, once made, shall be withdrawn except under the circumstances mentioned in this regulation, namely-(a) the withdrawals is consequent upon any competitive bid; (b) the offer did not receive the minimum level of acceptances, to which it was subject to; (c) the statutory approvals(s) required have been refused; (d) the sole acquirer, being a natural person has died, and (e) such circumstances as in the opinion of SEBI merits withdrawal.

(xiii) The acquirer shall deposit in an Escrow Account a sum equivalent to at least 25% of the total consideration payable under the offer up to Rs, 100 crores and 10% of the consideration thereafter. Where the acquirer specifies a minimum level of acceptance and does not want to acquire a minimum 20%, the 50% of the consideration payable is to be deposited in Escrow Account.

(xiv) In case, there is any upward revision of offer, consequent upon a competitive bid or otherwise, the value of the Escrow Account shall be increased to equal to at least 25% of the consideration payable upon such revision.

(xv) In case of a substantial acquisition of shares in financially weak company not being a sick industrial company, the scheme prepared by a financial institutions may provide for acquisition of shares in the financially weak company in any of the following manner (a) outright purchase of shares, or (b) exchange of shares, or (c) a combination of both; provided that the scheme as far as possible may ensure that after the proposed acquisition, the erstwhile promoters do not own any shares in case such acquisition is made by the new promoters pursuant to such scheme.

(xvi) The person acquiring shares from the promoters of the persons in- charge of the management of the affairs of the financially weak company or the financial institutions shall make a public announcement of his intention for acquisition of shares from the shareholders of the company. Such public announcement shall contain relevant details about the offer including the information about the identity and background of the person acquiring shares, number and percentages of shares proposed to be acquired, offer price, the specified date, the date of opening of the offer and the period for which the offer shall be kept open.

(xvii) No person shall make a competitive bid for acquisition of shares of the financially weak company once the lead institution has evaluated the bid and accepted the bid of the acquirer who has made the public announcement of offer acquisition of shares from the shareholders other than the promoters.

An amendment to the Regulations, 1997 on substantial acquisition of shares and takeovers has been notified on 28, 1998. SEBI had decided to increase the creeping acquisition limited to 5% from the 25 and the thresh hold limit to 215% from 10%. The rationale for SEBI's decision to increase the creeping limit and the threshold limit is difficult to understand. The decision to increase the creeping to 5% and thresh hold limit to 15% appears to be

working against the basic spirit of the takeover code. The increase in creeping acquisition will bring in quiet acquisition without the trigger of making a minimum offer of 20%. In fact the 20% offer was to facilitate the market movements and competitive process and also to keep the management on their toes. The decision to increase the creeping acquisition from 2%to 5% disregards the objective of protection of small shareholders. The decision to increase the threshold limit from 10% to 15% is also difficult to be justified.

Q. 24. Discuss the provision of the Indian company act in relation to mergers & acquisitions?

Ans : Various Laws governing merger in India are as follows :

(1) Indian Companies Act, 1956

This has provisions specifically dealing with the amalgamation of a company or certain other entities with similar status. The most common form of merger involves as elaborate but time-bound procedure under sections 391 to 396 of the Act.

Powers in respect of these matters were with High Court (usually called Company Court). These powers are being transferred to National Company Law Tribunal (NCLT) by companies (second Amendment) Act, 2002.

The Compromise, arrangement and Amalgamation/reconstruction require approval of NCLT while the sale of shares to Transferee Company does not require approval of NCLT.

Sec. 390 This section provides that "The expression 'arrangement' includes a reorganization of the share capital of the company by the consolidation of shares of different classes, or by the division of shares into shares of different classes, or by both these methods".

Sec. 390(a) As per this section , for the purpose of sections 391 to 393,'Company' means any company liable to be wound up under the Act.

Sec. 390(b) As per this section, Arrangement can include reorganization of share capital of company by consolidation of shares of different classes or by division of shares of different classes.

Sec. 390(c) As per this section, unsecured creditors who have filed suits or obtained decrees shall be deemed to be of the same class as other unsecured creditors. Thus, their separate meeting is not necessary.

Sec. 391 This section deals with the meeting of creditors/members and NCLT's sanction to Scheme.

If majority in number representing at least three-fourths in value of creditors or members of that class present and voting agree to compromise or arrangement, the NCLT may sanction the scheme. NCLT will make order of sanctioning the scheme only if it is satisfied that company or any other person who has made application has disclosed all material facts relating to the company, e.g. latest financial position, auditor's report on accounts of the company, pendency of investigation of company etc. NCLT should also be satisfied that the meeting was fairly represented by members/creditors.

Sec. 391(1) As per this sub-section, the company or any creditor or member of a company can make application to NCLT. If the company is already under liquidation, application will be made by liquidator. On such application, NCLT may order that a meeting of creditors or members or a class of them be called and held as per directions of NCLT.

Sec. 391 (2) As per this sub-section, if NCLT sanction, it will be binding on all creditors or members of that class and also on the company, its liquidator and contributories.

Sec. 391(3) As per this sub-section, Copy of NCLT order will have to be filled with Registrar of Companies.

Sec. 391(4) As per this sub-section, A copy of every order of NCLT will be annexed to every copy of memorandum and articles of the company issued after receiving certified copy of the NCLT order.

Sec. 391(5) In case of default in compliance with provisions of section 391(4), company as well as every officer who is in default is punishable with fine upto Rs 100 for every copy in respect of which default is made.

Sec. 391(6) After an application for compromise or arrangement has been made under the section, NCLT can stay commencement of any suit or proceedings against the company till application for sanction of scheme is finally disposed of.

Sec. 391(7) As per this sub-section, Appeal against NCLT order can be made to National Company Law Appellate Tribunal (NCLAT) where appeals against original order the NCLT lies.

Sec. 392 This section contains the powers of NCLT to enforce compromise and arrangement.

Sec. 392 (1) As per this section, where NCLT sanctions a compromise or arrangement, it will have powers to

supervise the carrying out of the scheme. It can give suitable directions or make modifications in the scheme of compromise or arrangement for its proper working.

Sec. 392 (2) As per this section, if NCLT finds that the scheme cannot work, it can order winding up.

Sec. 393 This section contains the rules regarding notice and conduct of meeting.

Sec. 393 (1) Where a meeting of creditors or any class of creditors, or of numbers or any class of members, is called under section 391:-

(a) With every notice calling the meeting which is sent to a creditor or member, there shall be sent also a statement setting forth the terms of the compromise or arrangement and explaining its effect, and in particular stating any material interests of the directors, managing directors, or manager of the company, whether in their capacity as such or as members or creditors of the company or otherwise and the effect on those interests of the compromise or arrangement if, and in so far as, it is different from the effect on the like interests of other person, and

(b) In every notice calling the meeting which is given by advertisement, there shall be included either such a statement as aforesaid or a notification of the place at which creditors or members entitled to attend the meeting may obtain copies of such a statement as aforesaid.

Sec. 393 (2) As per this sub-section, if the scheme affects rights of debenture holders, statement should give details of interests of trustees of any deed for securing the issue of debentures as it is required to give as respects the companies directors.

Sec. 393 (3) As per this sub-section, the copy of scheme of compromise or arrangement should be furnished to creditor/member free of cost.

Sec. 393 (4) Where default is made in complying with any of the requirements of this section, the company and every officer of the company who is in default, shall be punishable with fine which may extend to Rs. 50,000 and for the purpose of this sub-section any liquidator of the company and any trustee of a deed for securing the issue of debentures of the company shall be deemed to be an officer of the company.

Provided that a person shall not be punishable under this sub-section, if he shows that the default was due to the refusal of any other person, being a director, managing director, manager or trustee for debenture holders, to supply the necessary particulars as to his material interests.

Sec. 393 (5) As per this section, any director, managing director, manager or trustee of debenture holders shall give notice to the company of matters relating to himself which the company has to disclose in the statement, if he unable to do so, he is punishable with fine upto Rs. 5,000.

Sec. 394 This section contains the powers while sanctioning scheme of reconstruction or amalgamation.

Sec. 394(1) NCLT can sanction amalgamation of a company which is being wound up with other company, only if Registrar of Companies (ROC) has made a report that affairs of the company have not been conducted in a manner prejudicial to the interests of its members or to public interest.

Sec. 394 (2) As per this sub-section, if NCLT issues such an order, NCLT can direct that the property will be vest in the transferee company and that the transfer of property will be freed from any charge.

Sec. 394 (3) As per this sub-section, Copy of NCLT order shall be filed with Registrar within 30 days. In case of default, company as well as every officer who is in default is punishable with fine upto Rs. 500.

Sec. 394A As per this section, if any application is made to NCLT for sanction of arrangement, compromise, reconstruction or amalgamation, notice of such application must be made to Central Government. NCLT shall take into consideration any representation made by Central Government before passing any order.

Sec. 395 This section provides that reconstruction or amalgamation without following NCLT procedure is possible by takeover by sale of shares. Selling shareholders get either compensation or shares of the acquiring company. This procedure is rarely followed, as sanction of shareholders of at least 90% of value of shares is required, and not only of those attending the meeting. This procedure can be followed only when creditors are not involved in reconstruction and their interests are not affected.

Sec. 395(1) As per this sub-section, the transferee company has to be give notice in prescribed manner to dissenting shareholder that it desires to acquire his shares. The transferee company is entitled and bound to acquire those shares on the same terms on which shares of approving share holders are to be transferred to the transferee company. The dissenting shareholder can make application within one month of the notice to

NCLT. The NCLT can order compulsory acquisition or other order may be issued.

Sec. 395(2) As per this sub-section, if the transferee company or its nominee holds 90% or more shares in the transferor company, it is entitled to and is also under obligation to acquire remaining shares. The transferee company should give notice within one month to dissenting shareholders. Their shares must be acquired within three months of such notice.

Sec. 395 (3) As per this section, if shareholders do not submit the transfer deeds, the transferee company will pay the amount payable to transferor company along with the transfer deed duly signed. The transferor company will then record name of the transferee company as holder of shares, even if transfer deed is not signed by dissenting shareholders.

Sec. 395 (4) As per this section, The sum received by transferor company shall be kept in a separate account in trust for the dissenting shareholders.

Sec. 395 (4A) When the transferee company makes offer to shareholders of transferor company, the circular of offer shall be accomplished by prescribed information in form 35A. Offer should contain statement by Transferee Company for registration before it is sent to shareholders of Transferor Company.

Sec. 396 This section contains the power to Central Government to order amalgamation.

Sec. 396 (1) As per this sub-section, if central government is satisfied that two or more companies should amalgamate in public interest, it can order their amalgamation, by issuing notification in Official Gazette. Government can provide the constitution of the single company, with such property, powers, rights, interest, authorities and privileges and such liabilities, duties and obligations as may be specified in the order.

Sec. 396 (2) The order may provide for continuation by or against the transferee company of any legal proceedings pending by or against Transferor Company. The order can also contain consequential, incidental and supplemental provisions necessary to give effect to amalgamation.

Sec. 396 (3) As per this sub-section, every member, creditor and debenture holder of all the companies will have same interest or rights after amalgamation, to the extent possible. If the rights and interests are reduced after amalgamation, he will get compensation assessed by prescribed authority. The compensation so assessed shall be paid to the member or creditor by the company resulting from amalgamation.

Sec. 396A This section deals with the preservation of books and papers of amalgamated company. Books and papers of the company which has amalgamated or whose shares are acquired by another company shall be preserved. These will not be disposed of without prior permission of Central Government. Before granting such permission, Government may appoint a person to examine the books and papers to ascertain whether they contain any evidence of commission of an offence in connection with formation or management of affairs of the company, or its amalgamation or acquisition of its shares.

Q. 25. What is Takeover?

Ans : Acquisition can be undertaken through merger or takeover route. Takeover is a general term used to define acquisitions only and both terms are used interchangeably. A Takeover may be defined as series of transacting whereby a person, individual, group of individuals or a company acquires control over the assets of a company, either directly by becoming owner of those assets or indirectly by obtaining control of management of the company.

Takeover is acquisition, by one company of controlling interest of the other, usually by buying all or majority of shares. Takeover may be of different types depending upon the purpose of acquiring a company.

(a) A takeover may be straight takeover which is accomplished by the management of the taking over company by acquiring shares of another company with the intention of operating taken over as an independent legal entity.

(b) The second type of takeover is where ownership of company is captured to merge both companies into one and operate as single legal entity.

(c) A third type of takeover is takeover of a sick company for its revival. This is accomplished by an order of Board for Industrial and financial Reconstruction (BIFR) under the provision of Sick Industrial companies Act, 1985. In India, Board for Industrial and Financial reconstruction (BIFR) has also been active for arranging mergers of financially sick companies with other companies under the package of rehabilitation.

These merger schemes are framed in consultation with the lead bank, the target firm and the acquiring firm. These mergers are motivated and the lead bank takes the initiated and decides terms and conditions of merger. The recent takeover of Modi Cements Ltd. By Gujarat Ambuja Cement Ltd. was an arranged takeover after the financial reconstruction Modi Cement Ltd.

(d) The fourth kind is the bail-out takeover, which is substantial acquisition of shares in a financial weak company not being a sick industrial company in pursuance to a scheme of rehabilitation approved by public financial institution which is responsible for ensuring compliance with provision of substantial acquisition of shares and takeover Regulations, 1997 issued by SEBI which regulate the bailout takeover.

Q. 26. What is a Takeover Bid?

Ans : This is a technique for affecting either a takeover or an amalgamation. It may be defined as an offer to acquire shares of a company, whose shares are not closely held, addressed to the general body of shareholders with a view to obtaining at least sufficient shares to give the offer or, voting control of the company. Takeover Bid is thus adopted by company for taking over the control and management affairs of listed company by acquiring its controlling interest.

While a takeover bid is used for affecting a takeover, it is frequently against the wishes of the management of Offeree Company. It may take the form of an offer to purchase shares for cash or for share for share exchange or a combination of these two firms. Where a takeover bid is used for effecting merger or amalgamation it is generally by consent of management of both companies. It always takes place in the form of share for share exchange offer, so that accepting shareholders of Offree Company become shareholders of Offeror Company.

Q. 27. What are different types of Takeover Bid?

Ans : There are three types of takeover bid;

(a) Negotiated bid

(b) Tender offer

(c) Hostile takeover bid

(a) Negotiated bid : It is also called friendly merger. In this case, the management /owners of both the firms sit together and negotiate for the takeover. The acquiring firm negotiates directly with the management of the target company. So the two firms reach an agreement, the proposal for merger may be placed before the shareholders of the two companies. However, if the parties do not reach at an agreement, the merger proposal stands terminated and dropped out. The merger of ITC Classic Ltd. with ICICI Ltd.; and merger of Tata oil mills Ltd. With Hindustan Lever Ltd. were negotiated mergers. However, if the management of the target firm is not agreeable to the merger proposal, then the acquiring firm may go for other procedures i.e. tender offer or hostile takeover.

(b) Tender offer : A tender offer is a bid to acquire controlling interest in a target company by the acquiring firm by purchasing shares of the target firm at a fixed price. The acquiring firm approaches the shareholders of the target firm directly firm to sell their shareholding to the acquiring firm at a fixed price. This offered price is generally, kept at a level higher than the current market price in order to induce the shareholders to disinvest their holding in favour of the acquiring firm. The acquiring firm may also stipulate in the tender offer as to how many shares it is willing to buy or may purchase all the shares that are offered for sale.

In case of tender offer, the acquiring firm does not need the prior approval of the management of the target firm. The offer is kept open for a specific period within which the shares must be tendered for sale by the shareholders of the target firm. Consolidated Coffee Ltd. was takeover by Tata Tea Ltd. by making a tender offer to the shareholders of the former at a price which was higher than the prevailing market price. In India, in recent times, particularly after the announcement of new takeover code by SEBI, several companies have made tender offers to acquire the target firm. A popular case is the tender offer made by Sterlite Ltd. and then counter offer by Alean to acquire the control of Indian Aluminium Ltd.

(c) Hostile Takeover Bid : The acquiring firm, without the knowledge and consent of the management of the target firm, may unilaterally pursue the efforts to gain a controlling interest in the target firm, by purchasing shares of the later firm at the stock exchanges. Such case of merger/acquisition is popularity known as 'raid'. The Caparo group of the U.K. made a hostile takeover bid to takeover DCM Ltd. and

Escorts Ltd. Similarly, some other NRI's have also made hostile bid to takeover some other Indian companies. The new takeover code, as announced by SEBI deals with the hostile bids.

Q. 28. Distinguish between Mergers, Acquisitions & Takeover?

Ans : The term 'mergers', 'acquisition', and 'takeovers' are often used interchangeably. However there are differences. While merger means unification of two entities into one, acquisition involves one entity buying out another and absorbing the same. In India, in legal sense merger is known as 'Amalgamation'. In an amalgamation, two or more companies are fused into one by merger or by one taking over the other. Amalgamation is a blending of two or more existing undertakings into one undertaking, the shareholders of each blending company become substantially the shareholders of the company which is to carry on the blended undertaking.

While takeovers i.e., acquisitions are regulated by SEBI, M & A deals fall under the Companies Act.

Q. 29. Distinguish between Takeover and Merger?

Ans : The distinction between a takeover and merger is that in a takeover the direct or indirect control over the assets of the acquired company passes to the acquirer in a merger the shareholding in the combined enterprises will be spread between the shareholders of the two companies.

However in both cases of takeover and merger the interests of the shareholders of the company are as follows :

(a) Company should takeover or merge with another company only if in doing so, it improves its profit earning potential measured by earning per share and

(b) The company should agree to be taken if, and only if, shareholders are likely to be better off with the consideration offered, whether cash or securities of the company than by retaining their shares in the original company.

Q. 30. Discuss the provision of the Income Tax Act, in relation to Mergers & Acquisitions?

Ans : Income Tax Act, 1961 is vital among all tax laws which affect the merger of firms from the point view of tax savings/liabilities. However, the benefits under this act are available only if the following conditions mentioned in Section 2 (1B) of the Act are fulfilled :

(a) All the amalgamating companies should be companies within the meaning of the section 2 (17) of the Income Tax Act, 1961.

(b) All the properties of the amalgamating company (i.e., the target firm) should be transferred to the amalgamated company (i.e., the acquiring firm).

(c) All the liabilities of the amalgamating company should become the liabilities of the amalgamated company, and

(d) The shareholders of not less than 90% of the share of the amalgamating company should become the shareholders of amalgamated company.

In case of mergers and amalgamations, a number of issues may arise with respect to tax implications. Some of the relevant provisions may be summarized as follows:

Depreciation: The amalgamated company continues to claim depreciation on the basis of written down value of fixed assets transferred to it by the amalgamating company. The depreciation charge may be based on the consideration paid and without any re-valuation. However, unabsorbed depreciation, if any, cannot be assigned to the amalgamated company and hence no tax benefit is available in this respect.

Capital Expenditures: If the amalgamating company transfers to the amalgamated company any asset representing capital expenditure on scientific research, then it is deductible in the hands of the amalgamated company under section 35 of Income Tax Act, 1961.

Exemption from Capital Gains Tax: The transfer of assets by amalgamating company to the amalgamated company, under the scheme of amalgamation is exempted for capital gains tax subject to conditions namely (i) that the amalgamated company should be an Indian Company, and (ii) that the shares are issued in consideration of the shares, to any shareholder, in the amalgamated company. The exchange of old share in the amalgamated company by the new shares in the amalgamating company is not considered as sale by the shareholders and hence no profit or loss on such exchange is taxable in the hands of the shareholders of the amalgamated company.

Carry Forward Losses of Sick Companies: Section 72A(1) of the Income Tax Act, 1961 deals with the mergers of the sick companies with healthy companies and to take advantage of the carry forward losses of the amalgamating company. But the benefits under this section with respect to unabsorbed depreciation and carry forward losses are available only if the followings conditions are fulfilled:

I. The amalgamating company is an Indian company.
II. The amalgamating company should not be financially viable.
III. The amalgamation should be in public interest.
IV. The amalgamation should facilitate the revival of the business of the amalgamating company.
V. The scheme of amalgamation is approved by a specified authority, and
VI. The amalgamated company should continue to carry on the business of the amalgamating company without any modification.

Amalgamation Expenses: In case an expenditure is incurred towards professional charges of Solicitors for the services rendered in connection with the scheme of amalgamation, then such expenses are deductible in the hands of the amalgamated firm.

Q. 31. Why mergers and acquisitions fail?

Ans : Around the world thousands of mergers and acquisition are taking place every day. Unfortunately only a few becomes successful. Following are the reasons why mergers and acquisition fail.

(a) Lack of fit: There may be a good fit of product or services but e serious lack of fit in terms of management styles or corporate structure.

(b) Lack of industrial or commercial fit: In case of horizontal or vertical take over where the acquired entity turns out not to have the product range or industrial position in tune with acquirer's anticipation. Where a customer suppler is acquired the acquirer knows a lot about the acquired entity. Even then there might be some unexpected problem for the acquirer which might be avoided through long term careful planning. That should be severed from experience gained from a direct relationship with the acquired entity.

(c) Lack of goal congruence: The problem arises not only to the acquired entity but also to the acquirer. Dispute may arise particularly from the treatment of acquired entity which might take away the benefits of an otherwise excellent acquisition.

(d) Cheap purchases: Management of an acquiring company should be aware of so called "cheap purchases". Amount of resources in terms of cash and management time could also damage acquirer's core business.

(e) Paying too much: Payment of high premium for an acquisition does not necessarily lead to a failure. It fails only it fails to create long term share holder value creation.

(f) Failure to integrate effectively: An acquirer needs to have a workable and clear plan of the extent to which (i) the acquired company is to be integrated and (ii) the amount of autonomy to be granted. The plan must address (i) differences in management styles, (ii) incompatibilities in data information system and (iii) continued opposition to the acquisition by some of the acquired to entity staff. Failure to plan lids to drift and demotivation not only within the acquired company but also with in the acquirer itself.

(g) Inability to manage change: In order avoid failure it is imperative for the acquirer to plan effectively before an acquisition takes place. But the ultimate need is to aspect change. Many acquisitions fail because acquirer is unable or unwilling reasonably to adjust its own activity to ensure a smooth takeover. This might happened typical situation where acquired company has a better date information acquirer.

Q. 32. What are the defence mechanisms to prevent mergers and acquisitions?

Ans : Defence mechanisms are the tools used by a company to prevent its takeover. In order to ward off takeover bid, the companies may adopt:

I. Preventive Measures
II. Defence strategies in the wake of takeover bid.

These defensive measures are elaborated below:

1. Advance / Preventive Measures:

(a) Joint holding / Agreements between major shareholders
(b) Interlocking / Cross holding of shares.
(c) Issue of block of shares to friends and Associates.
(d) Defensive merger with own group company.
(e) Non-voting shares / Preference shares
(f) Convertible debentures
(g) Maintaining part of capital uncalled for making emergency requirements.
(h) Long term service agreements

2. Defence in the wake of takeover bid:
   (a) Commercial Strategies
      (i) Dissemination of favourable information to keep shareholders abreast of latest developments.
         - Market coverage
         - Product demand
         - Industries outlook and resultant profit.
      (ii) Step up dividend and update share price
      (iii) Revaluation of Assets
      (iv) Capital structure Re-organization
      (v) Unsuitability of offertory to be highlighted while communicating with shareholders.
   (b) Tactical, defence strategies
      (i) Friendly purchase of shares
      (ii) Emotional attachment loyalty / participation
      (iii) Recourse to legal action
      (iv) Operation white Knight.
         White Knight enters the fray when the target company is raided by hostile suitor. White Knight offers bid to target company – higher than the offer of the predator that may not remain interested in the bid.
      (v) Disposing of Golden jewels : Precious assets of the company are called cream jewels which attract the raider. Hence as a defence strategy, company sells these assets at its own initiative leaving rest of the company intact. Raider may not remain interested thereafter.
      (vi) Pac-Man Strategy : In this strategy, the target company attempts to take over the raider. This happens when Target Company is higher than the predator.
      (vii) Compensation Packages: Golden parachutes or First class passenger strategy termination package for senior executives is used as protection for Directors.
      (viii) Shark Repellants: Companies change and amend their bye laws to make it less attractive for corporate raider.
      (ix) Ancillary Poison Pills: Issue of convertible debentures - which when converted dilutes holding percentage of raider and makes it less attractive.

Q. 33. What is Slump Sale?

Ans : Slum Sale means transfer of undertaking or unit or division or business activity as a whole for lump sum consideration without values being assigned to individual assets and liabilities. Profits or gains arising from slump sale shall be chargeable as long term capital gain.

Examples:

(1) **Sterlite Industries and Sterlite Optical :**

Sterlite which was a diversified company with presence both in non-ferrous metal as well as Telecom

cables decided to de-merge both the business into separate companies. The spin off was done in the ratio of 1:1.

(2) Raymonds Ltd :

Raymonds sold of Cement and Steel business to become one again, a purely fabric and garment company. The whole exercise fetched Raymonds Rs. 1140 crores. This enabled it to reduce high cost debts as well as buyback its own shares. Thus financially as well as in terms of shareholder value it was a correct step.

(3) GE Shipping :

The company has interests in shipping, property development, trading and finance. It was decided to de-merge property development business strategically with effect from 1st April, 1999.

(4) ABB and ABB Alstom Power India Ltd.

As a result of the global de-merger of ABB group and its hiring off power generation business with Alstom of France, ABB India was also de-merged in 1999. The objective was to remain in areas of power distribution and transmission services. The independent profitability of both the companies increased due to greater focus.

Q. 34. What is Reverse Merger?

Ans : Reverse merger takes place when a healthy company merges into a financially weak company. Under the Companies Act there is no difference between regular merger and reverse merger. It is like any other amalgamation.

Reverse merger can be carried out through the High Court mode, but where one of the merging company is a sick industrial company under SICA, such merger must take place through BIFR.

On Amalgamation merger automatically makes the transferee company entitled to the benefits of carry forward and set off of loss and unabsorbed depreciation of the transferor company. There is no need to comply with Section 72 of Income Tax Act.

On amalgamation being effective, the weak company's name may be changed into that of a healthy company.

Examples :

(i) Maneklal Harilal Mills Ltd. merging into Sick company Bihari Mills Ltd.

(ii) Kirloskar Oil Engines Ltd. merged into Prashant Khosla Pneumatics Ltd. a sick unit.

Q. 35. Mention some examples of Short lived Mergers?

Ans :

(a) Merger of ICICI and Anagram :

When employees of Anagram Finance heard that ailing firm was to be merged with ICICI there was a sigh of relief.

But two months later, reality was bitter. Out of 450 staff only 140 were repaired and all others were given pink slips with 3 months severance pay.

(b) Merger of Burroughs Welcome with Glaxo :

After world wide merger of Burroughs Welcome with Glaxo in 1996, 150 top managers left Burroughs Welcome.

(c) Takeover of Merind by Wockhardt :

There was exodus of top management team of Merind.

(d) CIBA and Sandoz merged to form Novartis :

115 out of 120 managers of new corporate office were Sandoz people with Sandoz India's erstwhile MD John Simon ailing the shareholders.

(e) ITC Classic with ICICI

Only 47 of 120 ITC classic executives were asked to remain. Its investment arm Classic credit was shut down.

Q. 36. Offer a brief profile of Mergers and Acquisition in the Indian context?

Ans : In India, the concept of mergers, acquisitions and takeovers has not been popular and kept a low profile, and the reason for this is quite obvious. The regulatory and prohibitory provisions of MRTP Act, 1969 provided for a cumbersome procedure to get approval for mergers and acquisitions under the Act. Most of the provisions of the MRTP Act, 1969, have been repealed as a part of economic liberalization drive of the Government of India. Still, in most of the cases, merger in India used to be friendly amalgamation resulting as a consequence of a negotiated deal, unless 1988 when there was the well-known unsuccessful hostile takeover bid by Swaraj Paul (of Caparo Group of the U.K.) to get control over DCM Ltd. and Escorts Ltd. Many other Nonresident Indians, such as Chabrias, Hindujas etc. also attempted to take over many Indian companies by buying shares of these companies at stock exchanges.

During recent years, there has been a spate of merger moves by various industrial groups. Volrho Ltd., a loss making company was amalgamated with Voltas Ltd. Hindustan Lever Ltd., First, acquired Tata Oil Mills from the Tata Group and then merged other group companies i.e., Brook Bond Lipton (India) Ltd. and Ponds (India Ltd.) with it. The SCICI Ltd. which was initially promoted by ICICI Ltd. has been merged with the latter. Jindal Ferroy Alloys Ltd. has been merged with Jindal Strips Ltd. ITC Classic Ltd. has been merged with ICICI Ltd. British Gas Company has taken over Gujarat Gas Company. Company like Nicholas Piramal has been built only by mergers and acquisitions. India Cement Ltd.'s offer for Raasi cement Ltd. and the offer of Sterlite Ltd. for taking over Indian Aluminum Company have heralded a new era of hostile takeovers in India.

Q.37. Common factors that spurred the mergers and acquisition activity worldwide?

Ans : Merger and acquisition the most talked about term today creating lot of excitement and speculative activity in the markets. However, before the idea of M&A crystallizes, the firm needs to understand its own capabilities and industry position. It also needs to know the same about the other firms it seeks to tie up with, to get a real benefit from a merger. A mergers and Acquisitions activity is that the divesting firm moves from diversifying strategy to concentrate on core activities in order to improve and increase competitiveness. Globalization has increased the competitive pressure in the markets. In a highly challenging environment a strong reason for M&A is a desire to survive. Thus apart from growth, the survival factor has off late, spurred the M&A activity worldwide.

Some such factors are listed below:

- The company's business prospects and nature of its business
- The prospects for industry in which the company operates
- Management reputation
- Goodwill and brand value
- Marketing network
- Technology level
- Efficiency level in terms of employees
- Financial performance
- Future earnings
- The legal implications
- Government policy in general and in particular for that industry
- Current valuations of shares in stock markets

Q.38. What is Strategy?

Ans : The term 'strategy' is derived from the Greek word *strategeos* which means generalship- the actual

direction of military force, as distinct from the policy governing its deployment. Therefore, the word strategy literally means the art of the general. Johnson and Scholes (Exploring Corporate Strategy) define strategy as follows: "Strategy is the ***direction*** and ***scope*** of an organisation over the ***long-term:*** which achieves ***advantage*** for the organisation through its configuration of ***resources*** within a challenging ***environment***, to meet the needs of ***markets*** and to fulfil ***stakeholder*** expectations".

Q.39. What do you mean by Business Strategy?

Ans : A business strategy typically is a document that clearly articulates the direction that a business will pursue and the steps it will take to achieve its goals. In a standard business plan, the business strategy results from goals established to support the stated mission of the business. A typical business strategy is developed in three steps: analysis, integration and implementation.

Q.40. What are the different strategies for entering to a new business?

Ans : An organization can enter into a new or unrelated business in any of the following three forms:

(a) Acquisition

(b) Internal start-up

(c) Joint Ventures or strategic partnerships

Q.41. How would explain 'Strategic Vision'?

Ans : A 'strategic vision' is a broad term used to describe one of the essential elements of an overall strategic planning endeavour. Essentially, a vision is the identification of the ultimate aim or purpose for a business. Within this context, the strategic vision helps to set the parameters for the development of planning specific steps to go about making that vision come true, since it establishes the general direction that the business will pursue. A workable vision clearly looks beyond where the company is today and determines where the owners want the company to be at some point in the future.

In order to properly craft a strategic vision, several key elements must be considered. One of those elements is that the vision must be realistic. This means that vision must be somewhat specific rather than a vague idea about the future. For example, setting a vision to become the largest pencil manufacturer in the world may be a bit broad, whereas a vision to capture five percent of the pencil market within a given country within the next ten years does have focus and has the potential to be workable.

Q.42. What are the steps of formulating a strategy?

Ans : Strategic formation is a combination of three main processes which are as follows:

(a) Performing a situation analysis, self-evaluation and competitor analysis: both internal and external; both micro-environmental and macro-environmental.

(b) Concurrent with this assessment, objectives are set. These objectives should be parallel to a time-line; some are in the short-term and others on the long-term. This involves crafting vision statements (long term view of a possible future), mission statements (the role that the organization gives itself in society), overall corporate objectives (both financial and strategic), strategic business unit objectives (both financial and strategic), and tactical objectives.

(c) These objectives should, in the light of the situation analysis, suggest a strategic plan. The plan provides the details of how to achieve these objectives.

Q.43. What are the different levels of strategy?

Ans : Strategy at Different Levels of a Business

Strategies exist at several levels in any organisation - ranging from the overall business (or group of businesses) through to individuals working in it.

(a) Corporate Strategy - is concerned with the overall purpose and scope of the business to meet stakeholder expectations. This is a crucial level since it is heavily influenced by investors in the business and acts to guide strategic decision-making throughout the business. Corporate strategy is often stated explicitly in a "mission statement".

(b) ***Business Unit Strategy*** - is concerned more with how a business competes successfully in a particular market. It concerns strategic decisions about choice of products, meeting needs of customers, gaining advantage over competitors, exploiting or creating new opportunities etc.

(c) ***Operational Strategy*** - is concerned with how each part of the business is organised to deliver the corporate and business-unit level strategic direction. Operational strategy therefore focuses on issues of resources, processes, people etc.

Q.44. What is an early entry and market penetration strategy?

Ans : An early mover strategy can reduce the lead time taken in establishing the facilities and distribution channels. So, acquiring companies with good manufacturing and distribution network or few brands of a company gives the advantage of rapid market share.

The ICICI, a leading financial institution secured a foot hold in retail network through acquisition of Anagram Finance Company and ITC classic. Anagram had a strong retail franchise, distribution network of over fifty branches in Gujarat, Rajasthan and Maharastra and a depositor base of over two lakhs depositors. ICICI was therefore attracted by the retail portfolio of Anagram which was active in lease and hire purchase, car purchase, truck finance, and customer finance. These acquisitions thus helped ICICI to obtain quick access to well dispersed distribution network.

Further, market penetration means developing new and large markets for a company existing products. Market penetration strategy is generally pursued within markets that are becoming more global. Cross border merger are a means of becoming or remaining major players in such markets. Hence, this strategy is mainly adopted by MNC's to gain to new markets. They prefer to merge with a local established company which knows behaviour of market and has established customer base. One such example is Indian market. Few instances of MNC's related mergers are:

(a) Whirlpool Corporation's entry into India by acquiring Kelvinator India.

(b) Coca Cola while re-entering India market in 1993 acquired Parle, the largest player in market with several established brands and nationwide bottling and marketing network.

(c) H.J. Heinz entered into India through acquisition of Glaxo Industries.

(d) HLL acquired Dollops, Kwality, Milk food to gain an entry into ice cream market with the help of their marketing networks, production facilities, brands etc.

Q.45. Explain the Cost of Entry of Mergers and Acquisitions.

Ans : A challenge in executing the strategy is finding the right kind of target company. A dilemma facing an acquirer is whether to pay a premium price and acquire a successful company or to buy a poorly performing company at a bargain price and transform it into a good performer. If the buying company is not constrained by funds and wants to enter a business it has little knowledge of, then the best thing to do would be to buy a strongly-positioned company, unless of course the cost of acquisition is high and it fails the cost-of-entry test. On the other hand, when the acquiring company has the resources, knowledge and patience, it would do well to acquire a struggling company as a better long-term investment.

The cost-of-entry test requires that the expected profit stream of an acquired business provide an attractive return on the total acquisition cost and on any new capital investment needed to sustain or expand its operations. A high acquisition price can render the meeting the test improbable or difficult.

Consider an acquirer paying a price of Rs. 30 crores for a business, which is earning a post-tax return of Rs.2 crores on an equity investment of Rs. 10 crores, i.e., 20% annual return. A simple calculation will show that the acquired company's profits will have to be triples for the acquirer to earn the same 20% return on their investment of Rs. 30 crores, that the previous owners were getting on their Rs. 10 crores investment. Achieving the target earnings of Rs. 6 crores will take some time and may require additional investment, on which too the acquirer has to earn 20% return.

Normally, since the owners of a successful and growing company usually demand a price that reflects their business' future profit prospects, it is easy for such an acquisition to fail the cost-of entry test. A would-be diversifier cannot count on being able to acquire a desirable company in an appealing industry at a price that still offers attractive returns on investment.

Q.46. What is the process of strategic planning?

Ans : The process of strategic planning is discussed below :

(1) Monitoring environments :

A key to all approaches to strategic planning is continuous monitoring of the external environments. The environments should encompass both domestic and international dimensions and include analysis of economic, technological, political, social and legal factors. Different organization may give different emphasis and weights to each of the categories.

(2) Stakeholders :

Strategic planning process to take into account the diverse stakeholders of organization, which have interest in the organization i.e., customers, stockholders, creditors, employees, government, communities, media, political group, educational institutions, financial community and international entity.

(3) Essential elements in strategic planning processes:

(i) Assessment of changes in the environment.
(ii) Evaluation of company capabilities and limitations.
(iii) Assessment of expectations of stakeholders.
(iv) Analysis of company, competitors, industry, domestic economy, and international economies.
(v) Formulation of missions, goals and policies for master strategy.
(vi) Development of sensitivity to critical external environmental changes.
(vii) Formulation of Long-range strategy programmes.
(viii) Formulation of internal organization performance measurements.
(ix) Formulation of mid-range and short run plans.
(x) Organization, Funding and other method to implement all preceding elements.
(xi) Information flow and feedback system
(xii) Review and evaluation process.

(4) Organization cultures:

How organization carries out the strategic thinking and planning processes will vary with its cultures.

(i) Strong top leadership vs. Team appraisals.
(ii) Management by formal paperwork vs. Management by wandering around.
(iii) Individual decisions vs. Group decisions.
(iv) Rapid evaluation based on performance vs. Long term relationship based on loyalty.
(v) Rapid feedback for change vs. Formal bureaucratic rules and procedures.
(vi) Risk taking encouraged vs. one mistake and you are out.
(vii) Narrow responsibility vs. everyone in this is salesmen cost controller, product quality manpower or so on.
(viii) Learn from customer's vs. we know what is best for customers.

(5) Alternative strategy methodologies:

(i) SWOT or WOTS Up: Inventory and analysis of organization strength, weaknesses, environmental opportunities, and threats.
(ii) Gap Analysis: Assessment of goals vs. forecasts or projections.
(iii) Top down / Bottom up: Company forecasts v/s aggregation of segments.
(iv) Computer models: Opportunity for detail and complexity.
(v) Competitive Analysis: Assess customers, suppliers, new entrants, products and product substitutability.
(vi) Synergy : Look for complementarily
(vii) Logical incremental: Well supported moves from current bases.

(viii) Muddling through: Incremental changes selected from small no. of policy alternatives.
(ix) Comparative histories: Learn from experience of others.
(x) Delphi Technique: Iterated opinion reactions.
(xi) Discussion group technique: Simulating ideas by unstructured discussions aimed at consensus.
(xii) Adaptive Processes: Periodic reassessment of environmental opportunity and organization capability adjustment required.
(xiii) Environmental scanning: Continuous analysis of relevant environments.
(xiv) Intuition: Insights of brilliant managers.
(xv) Entrepreneurship: Creative leadership.
(xvi) Discontinuities: Crafting strategy from recognition of trend shifts.
(xvii) Brain storming: Free form repeated exchange of ideas.
(xviii) Game theory: Logical assessment of competitor's actions and reactions.
(xix) Game playing: Assign roles and simulate scenarios.

(6) Alternative Analytical framework:

(i) Product Life cycles: Introduction, Growth, maturity, and decline stages with changing opportunities and threats.
(ii) Learning curve: Costs decline with cumulative volume experience resulting in first mover competitive advantages.
(iii) Competitive Analysis: Industry structure, rivals reactions, supplies and customer relations, product positioning.
(iv) Cost leadership : Low cost advantages
(v) Product differentiation: Develop product configuration that achieve customer preference.
(vi) Value chain Analysis: Controlled cost outlays to add product characteristics valued by customers.
(vii) Niche opportunities: Specialize to needs or interest of customer groups.
(viii) Product breadth: Carryover of organizational capabilities.
(ix) Correlation's with profitability: Statistical studies of factors associated with high profitability measures.
(x) Market share: High market share associated with competitive superiority.
(xi) Product quality: Customer allegiance and price differentials for higher quality.
(xii) Technological leadership: Keep at frontiers of knowledge.
(xiii) Relatedness matrix: Unfamiliar markets and products involve greatest risk.
(xiv) Focus matrix : Narrow vs. Broad
(xv) Growth / share matrix: Aim for high market share in high growth markets.
(xvi) Attractiveness matrix : aim to be strong in attractive industries
(xvii) Global matrix: Aim for competitive strength in attractive countries.

(7) Approaches to formulating Mergers and Acquisitions strategy:

(i) Boston Consulting Group
(ii) The Porter Approach
(iii) Adaptive Processes

(i) Boston Consulting Group:

The three important concepts of BCG are as follows:

- Experience curve
- Product life cycle
- Portfolio balance

Experience curve: It represents a volume-cost relationship. It is argued that as the cumulative

historical volume of output increases, unit cost will fall at a geometric rate. This will result from specialization, standardization, learning and scale effects. The firm with target cumulative output will have lower costs, suggesting a strategy of early entry and price policy to develop volume.

***Product life cycle**:* Every product or a line of business proceeds through four phases:

a. Development

b. Growth

c. Maturity

d. And decline

During first two stages, sales and growth is rapid and entry is easy. As individual firms gain experience and as growth slows in last 2 stages, entry becomes difficult, because of cost advantages of incumbents.

In declining stage of product line, (as other substitutes emerge) sales and prices decline, firms which have not achieved a favourable position on the experience curve become unprofitable and either merge or exit from the Industry.

Portfolio Approach: Rapid growth may require substantial investments. As requirements for growth diminish, profits may generate more funds than required for investments.

Portfolio balances seeks to combine

- Attractive investment segments (stars)
- Cash generating segments (cash cows)
- Eliminating segments with unattractive prospects (Dogs)

Overall, total cash inflows will balance and corporate investments.

(ii) The Porter Approach:

Michael Porter suggests the following:

- Select an attractive industry.
- Develop competitive advantage through cost leadership and product differentiation.
- Develop attractive value chain.

o ***Attractive Industry in which:***

- Entry barriers are high.
- Suppliers and buyers have only modest bargaining power.
- Substitute products or services are few.
- Rivalry among 'competitors' is stable.

o ***Unattractive Industry will have:***

- Structural flows
- Including plethora of substitute materials
- Powerful and price sensitive buyers.
- Excessive rivalry caused by high fixed costs and large group of competitors, many of whom are state supported, e.g. Steel Industry.

o ***Competitive Advantage:***

It may be based on cost leadership, product differentiation. Cost advantage is achieved by consideration of wide range of checklist factors including BCG's learning curve theory.

o ***Value chain:***

A matrix that relates the support activities of:

- Infrastructure
- Human Resource Management
- Technology development

- Procurement
- Operations
- Marketing / Sales / Service

Aim is to minimize outlays in adding characteristics valued by customers.

(iii) Adaptive Processes :

Adaptive processes orientation involves marketing resources to investment opportunities under environmental uncertainty compounded with uncertain competitor's actions and reactions. It involves ways of thinking which assess competitor's actions and reactions in relation to changing environments.

Q. 47. What are the Strategic Imperatives behind successful mergers acquisitions?

Ans : The first priority for successful acquisition implementation is to know precisely what you are buying and what are you going to do if and when the deal is completed.

- **Valid strategy for successful acquisition policy:**
  - (i) To obtain presence for core business.
  - (ii) To leverage marketing: Applying a massive marketing capability to a good product line is an excellent base for an acquisition strategy.
  - (iii) To build an enlarged base
  - (iv) To reposition the business
- **Drucker's five commandments for successful acquisitions**
  - (i) The acquirer must contribute something to the acquired company
  - (ii) Common ore of unity is required.
  - (iii) Acquirer must respect the business of acquired company
  - (iv) Within a year or so, acquiring company must be able to provide top management to the acquired company.
  - (v) Within the first year of merger, management's in both companies should receive promotions across the entities.
- **Weston's Commentary on Drucker's Pentalegue**
  - (i) Relatedness is a necessary requirement, but complimentary is an even greater virtue.

    e.g., Combining a company, strong in research but weak in marketing with a company strong in marketing but weak in research may bring blessings to both.
  - (ii) Relatedness or complementarities apply to general management functions such as research, plants control and financial manager as well as firm specific operations of production and marketing.
  - (iii) Thus companies with cash flows or managerial capabilities in excess of investment opportunities could effectively combine with companies lacking in financial or managerial resources to make the most of the prospects for growth and profits in their industries.
  - (iv) An acquiring firm will experience negative results if it pays too much. It is difficult to accurately evaluate another organization. There can be great surprises on both sides after marriage. Expectation that a firm can improve average risk return relationship in an unfamiliar market or industries is likely to be disappointed.
- **Golden Rules of Integration**
  - (i) Plan First: If you don't know what you are going to do, don't do it.
  - (ii) Implement quickly: If you are going to do it, do it immediately.
  - (iii) Communicate frankly: Cost of error is always on the side of inadequate communication. A change of plan can always be explained or admitted, with less adverse effect on morale and hence productivity, than a policy of silence.

(iv) Sensitivity in the treatment of people, recognition of long service and proper and generous separation arrangements all count here.

Q.48. What are the Reasons for Strategic Success and Failure?

Ans : Common Strategic traps :

Strategy	**Ground Result**
(a) Desire to move an acquisition policy or "aggressive acquisition policy".	(a) A policy of this kind begets unrelated and messy situation that lead to "Conglomerates" at best and at worst a de stabilizing complexity that can be lethal.
(b) Desire to acquire new technology hitches, more regulatory approvals all combined to keep prize out of reach. In many cases the previous owners sold out as a means to resolving this problem.	(b) More investment, more details to be resolved, unforeseen technical
(c) Attractive past experience	(c) Purchase of obsolete concept- particularly past performance of aging firms.
(d) Quest for complementarities	(d) Synergy may be illusory and may drive away the company from their core business to related but highly dangerous area.
(e) Inability to walk away	(e) Once negotiations start, desire increases. Nothing seems to deter buyer. Price increases absorbed.

CHAPTER - 4

MERGERS AND ACQUISITIONS : VALUATION

Q. 1. Assume the current market value of the bidding company is Rs.40 crores, and that of the target company is also Rs.40 crores. Then, the sum of the values as independent companies is Rs. 80 crores. Suppose, as a combined entity, due to synergistic effects, the value increases to Rs. 100 crores. The amount of value created is Rs. 20 crores. How will the increase in value be shared or divided between the bidder and the target company?

Solution :

Targets usually receive a premium. If the bidder pays the target a premium of less than Rs.20 crores, it will share in the value increases. If the bidder pays Rs.60 crores to the target, all gains will go the target company. The bidder achieves no value increase for itself. On the other hand, if the bidder pays Rs.70 crores to the target, the value of bidder will down to Rs.30 crores.

Q. 2. X Ltd. is intending to acquire B Ltd. (by merger) and the following information is available in respect of the companies.

Particulars	A Ltd.	B Ltd.
No. of Equity Shares	5,00,000	3,00,000
Earnings after tax (Rs.)	20,00,000	6,00,000
Market value per share (Rs.)	18	12

(i) What is the present EPS of both the companies?

(ii) If the proposed merger takes place, what would be the new earnings per share for X Ltd. (assuming that the merger takes place by exchange of equity shares and the exchange ratio is based on the current market prices).

(iii) What should be exchange ratio, if B Ltd. wants to ensure the same earnings to members as before the merger takes place?

Solution :

(i) **Earnings per share** $= \frac{\text{Earnings after tax}}{\text{No. of Equity shares}}$

A Ltd. $= \frac{\text{Rs. } 20,00,000}{5,00,000} = \text{Rs. } 4$

B Ltd. $= \frac{\text{Rs. } 6,00,000}{3,00,000} = \text{Rs. } 2$

(ii) **Calculation of new EPS of X Ltd. after merger (Exchange ratio based on market prices)**

Particulars	A Ltd.	B Ltd.
Earning after tax (Rs.)	20,00,000	6,00,000
No. of equity shares	5,00,000	3,00,000
Market value per share (Rs.)	18	12

No. of shares B Ltd. Shareholders will get in A Ltd. based on market price of shares is as follows:

$= \frac{\text{Rs. } 12}{\text{Rs. } 18} \times 3,00,000$ shares = 2,00,000 shares

For every three shares held in B Ltd., two shares of A Ltd. are given.

Then, the total number of equity shares of X Ltd. after merger is as follows :

= 5,00,000 + 2,00,000 = 7,00,000 shares

Total Earnings of A Ltd. after merger = 20,00,000 + 6,00,000 = Rs. 26,00,000

The new EPS of A Ltd. after merger $= \frac{\text{Rs. } 26,00,000}{7,00,000 \text{ Shares}} = \text{Rs. } 3.71$

(iii) **Calculation of exchange ratio to ensure B Ltd. to earn the same before the merger takes place :**

Original EPS : A Ltd. = Rs. 4; B Ltd. = Rs. 2

The number of shares to be exchanged by A Ltd. with B Ltd. based on the EPS of the respective companies is as follows :

$= \frac{\text{Rs. } 2}{\text{Rs. } 4} \times 3,00,000 = 1,50,000$ shares

Total number of shares of A Ltd. after merger = 5,00,000 + 1,50,000 = 6,50,000 shares

EPS after merger $= \frac{\text{Rs. } 20,00,000 + \text{Rs. } 6,00,000}{6,50,000 \text{ shares}} = \text{Rs. } 4$

The total earnings available to new shareholder of B Ltd.:

= 1,50,000 shares × Rs. 4 = Rs. 6,00,000

Recommendation : The exchange ratio based on market shares is beneficial to the shareholders of B Ltd.

Q. 3. X Ltd. is considering the proposal to acquire Y Ltd. and their financial information is given below :

Particulars	X Ltd.	Y Ltd.
No. of Equity shares	10,00,000	6,00,000
Market price per share (Rs.)	30	18
Market Capitalization (Rs.)	3,00,00,000	1,08,00,000

X Ltd. intend to pay Rs. 1,40,00,000 in cash for Y Ltd., if Y Ltd.'s market price reflects only its value as a separate entity. Calculate the cost of merger: (i) When merger is financed by cash (ii) When merger is financed by stock.

Solution :

(i) **Cost of Merger, when Merger is Financed by Cash = (Cash - MVY) + (MVY - PVY)**

Where,

MVY = Market value of Y Ltd.

PVY = True/intrinsic value of Y Ltd.

Then, = (1,40,00,000 – 1,08,00,000) + (1,08,00,000 – 1,08,00,000) = Rs. 32,00,000

If cost of merger becomes negative then shareholders of X Ltd. will get benefited by acquiring Y Ltd. in terms of market value.

(ii) **Cost of Merger when Merger is Financed by Exchange of Shares in X Ltd. to the shareholders of Y Ltd.**

Cost of merger = PVXY - PVY

Where,

PVXY = Value in X Ltd. that Y Ltd.'s shareholders get.

Suppose X Ltd. agrees to exchange 5,00,000 shares in exchange of shares in Y Ltd., instead of payment in cash of Rs. 1,40,00,000. Then the cost of merger is calculated as below :

= (5,00,000 × Rs. 30) – Rs. 1,08,00,000 = Rs. 42,00,000

PVXY = PVX + PVY = 3,00,00,000 + 1,08,00,000 = Rs. 4,08,00,000

Proportion that Y Ltd.'s shareholders get in X Ltd.'s Capital structure will be :

$$= \frac{5,00,000}{10,00,000 + 5,00,000} = 0.333$$

True Cost of Merger = PVXY - PVY

= (0.333 × 4,08,00,000) - 1,08,00,000 = Rs. 27,86,400

The cost of merger i.e., Rs. 42,00,000 as calculated above is much higher than the true cost of merger Rs. 27,86,400. With this proposal, the shareholders of Y Ltd. will get benefited.

Note :

(1) When the cost of merger is calculated on the cash consideration and when cost of merger is unaffected by the merger gains.

(2) But when merger is based on the exchange of shares then the cost of merger depends on the gains which has to be shared with the shareholder of Y Ltd.

Q. 4. A Ltd. is considering takeover of B Ltd. and C Ltd. The financial data for the three companies are as follows :

Particulars	A Ltd.	B Ltd.	C Ltd.
Equity Share Capital of Rs. 10 each (Rs. crores)	450	180	90
Earnings (Rs. crores)	90	18	18
Market price of each share (Rs.)	60	37	46

Calculate :

(i) Price earnings ratios

(ii) Earnings per share of A Ltd. after the acquisition of B Ltd. and C Ltd. separately. Will you recommend the merger of either/both of the companies? Justify your answer.

Solution :

Calculation of Price Earnings ratios

Particulars	A Ltd.	B Ltd.	C Ltd.
Earnings (Rs. crores)	90	18	18
No. of shares (crores)	45	18	9
EPS (Rs.)	2	1	2
Market price per share (Rs.)	60	37	46
PE Ratio	40	37	23

Calculation of EPS of A Ltd. after acquisition of B Ltd. and C Ltd.

$$\text{Exchange ratio or rate} = \frac{\text{Buyer's P/E Ratio}}{\text{Seller's P/E Ratio}}$$

Particulars	A Ltd.	B Ltd.	C Ltd.
Exchange ratio in A Ltd.	–	81	1.30
Value of shares (Rs. crores)	2700	666	414
No. of A Ltd.'s share to be given (crores)	–	666/60	414/60
EPS (Rs.)	–	11.11	6.9
Total earings after acquisition (Rs. crores)	–	108	108
Total number of shares (crores)	–	56.1	51.9
EPS after acquisition (Rs.)	–	1.93	2.08

Analysis: After merger of C Ltd. with A Ltd's. EPS is higher than A Ltd. (Rs. 2.08). Hence merger with only C Ltd. is suggested to increase the value to the shareholders of A Ltd.

Q. 5. XYZ Ltd. is considering merger with ABC Ltd. XYZ Ltd.'s shares are currently traded at Rs. 25. It has 2,00,000 shares outstanding and its profits after taxes (PAT) amount to Rs. Rs. 4,00,000. ABC Ltd. has 1,00,000 shares outstanding. Its current market price is Rs. 12.50 and its PAT are Rs. 1,00,000. The merger will be effected by means of a stock swap (exchange). ABC Ltd. has agreed to a plan under which XYZ Ltd. will offer the current market value of ABC Ltd.'s shares:

(i) What is the pre-merger earnings per share (EPS) and P/E ratios of both the companies?

(ii) If ABC Ltd.'s P/E ratio is 8, what is its current market price? What is the exchange ratio? What will XYZ Ltd.'s post-merger EPS be?

(iii) What must the exchange ratio be for XYZ Ltd.'s that pre and post-merger EPS to be the same?

Solution :

(i) Pre-merger EPS and P/E ratios of XYZ Ltd. and ABC Ltd.

Particulars	XYZ Ltd.	ABC Ltd.
Profits after taxes	4,00,000	1,00,000
Number of shares outstanding	2,00,000	1,00,000
EPS (Earnings after tax/No. of shares)	2	1
Market price per share	23.00	12.50
P/E Ratio (times)	12.50	12.50

(ii) **Current market price of ABC Ltd., if P/E ratio is 8** = Rs. 1 × 8 = Rs. 8

Exchange ratio = Rs. 25/8 = 3.125

$$\text{Post merger EPS of XYZ Ltd.} = \frac{\text{Rs. } 4,00,000 + \text{Rs. } 1,00,000}{2,00,000 + (1,00,000 / 3.125)} = \frac{\text{Rs. } 5,00,000}{2,32,000} = 216$$

(iii) **Desired exchange ratio**

Total number of shares in post-merged company

$$= \frac{\text{Post - merged earnings}}{\text{Pre - merger EPS of XYZ Ltd.}} = 5,00,000/2 = 2,50,000$$

Number of shares required to be issued = 2,50,000 – 200,000 = 50,000

Therefore, the exchange ratio is = 50,000/ 1,00,000 = 0.50

Q. 6. Company X is contemplating the purchase of Company Y. Company X has 3,00,000 shares having a market price of Rs. 30 per share, while Company Y has 2,00,000 shares selling at Rs. 20 per share. The EPS are Rs. 4.00 and Rs. 2.25 for Company X and Y respectively. Managements of both companies are discussing two alternative proposals for exchange of shares as indicated below :

(i) in proportion to the relative earnings per share of two Companies.

(ii) 0.5 share of Company X for one share of company Y (5 : 1).

You are required :

(i) to calculate the EPS after merger under two alternatives; and

(ii) to show the impact on EPS for the shareholders of two companies under both alternatives.

Solution :

Working Notes :

Computation of total earnings after merger

Particulars	Company X	Company Y	Total
Outstanding shares	3,00,000	2,00,000	
EPS (Rs.)	4	2.25	
Total earnings (Rs.)	12,00,000	4,50,000	16,50.000

***(i)(a)* Calculation of EPS when exchange ratio is in proportion to relative EPS of two companies**

(Marks)

Company X		3,00,000
Company Y	2,00,000 × 2.25/4	1,12,500
Total number of shares after merger		4,12,500

Company X

EPS before merger = Rs. 4

EPS after merger = Rs 16,50,000/4,12,500 shares = Rs. 4

Company Y

EPS before merger = Rs 2.25

EPS after merger

= EPS before merger / Share Exchange ratio on EPS basis

$$= \frac{2.25}{2.25/4} = \frac{2.25}{0.565} = \text{Rs. } 4$$

(i) (b) **Computation of EPS when share exchange ratio is 0.5:1**

Total earnings after merger = Rs. 16,50,000

Total number of shares after merger = 3,00,000 + (2,00,000 × 0.5) = 4,00,000 shares

EPS after merger = Rs. 16,50,000 / 4,00,000 = Rs. 4.125

***(ii)* Impact of merger on EPS for shareholders of Company X and Company Y**

(a) **Impact on Shareholders of Company X** (Rs.)

EPS before merger	4.000
EPS after merger	4.125
Increase in EPS	0.125

***(b)* Impact on shareholders of Company Y** **(**Rs.)

Equivalent EPS before merger (2.25/0.5)	4.500
EPS after merger	4.125
Decrease in EPS	0.375

Q. 7. ABC Ltd. is run and managed by an efficient team that insists on reinvesting 60% of its earnings in projects that provide an ROE (Return of Equity) of 10% despite the fact that the firm's capitalization rate is 15%. The firm's currently year's earnings is Rs. 10 per share.

At what price will the stock of ABC Ltd. sell? What is the present value of growth opportunities? Why would such a firm be a takeover target?

Solution :

Dividend growth rate (G)

G = ROE × b

Where,

b = 1 - Pay out ratio

G = 10% × 0.60 = 6%

Stock price of ABC Ltd.

$$= \frac{10 \times 0.4}{0.15 \times 0.06} = \frac{4}{0.009} = \text{Rs. } 44.44$$

Present Value of Growth Opportunities (PVGO)

= Market price per share - No growth value per share

= Rs. 44.44 - (Rs. 10/0.15)

= Rs. 44.44 - Rs. 66.66 = Rs. 22.22 (negative PVGO)

Reasons for takeover target

Negative PVGO implies that the net present value of the firm's projects is negative. The rate of return on this asset is less than the opportunity cost of capital. Such a firm would be subject to takeover target because another firm could buy the firm for the market price of Rs. 44.44 per share and increase the value of the firm by changing its investment policy. For example, if the new management simply paid out all earning as dividend, the value of the firm would increase up to its no growth value of Rs. 66.66.

Q. 8. Following are the financial statement for A Ltd. for the current financial year. Both the firm operate in the same industry :

Balance Sheet **(Rs.)**

Particulars	A Ltd.	B. Ltd.
Total Current assets	14,00,000	10,00,000
Total Fixed assets (net)	10,00,000	5,00,000
	24,00,000	15,00,000
Equity capital (of Rs. 10 each)	10,00,000	8,00,000
Retained earnings	2,00,000	
14% Long-term debt	5,00,000	3,00,000
Total Current liabilities	7,00,000	4,00,000
	24,00,000	15,00,000

Income-Statements **(Rs.)**

Particulars	A Ltd.	B. Ltd.
Net sales	34,50,000	17,00,000
Cost of goods sold	27,60,000	13,60,000
Gross profit	6,90,000	3,40,000
Operating expenses	2,00,000	1,00,000
Interest	70,000	42,000
Earnings before taxes	4,20,000	1,98,000
Taxes (50%)	2,10,000	99,000
Earnings after taxes (EAT)	2,10,000	99,000

Additional Information		
Number of equity shares	10,000	8,000
Dividend payment ratio (D/P)	40%	60%
Market price per share (MPS)	Rs. 400	Rs. 150

Assume that the two firms are in the process of negotiating a merger through an exchange of equity shares. You have been asked to assist in establishing equitable exchange terms, and are required to –

(i) Decompose the share prices of both the companies into EPS and P/E components, and also segregate their EPS figures into return on equity (ROE) and book/intrinsic value per share (BVPS) components.

(ii) Estimate future EPS growth rates for each firm.

(iii) Based on expected operating synergies, A Ltd. estimates that the intrinsic value of B's equity share would be Rs. 200 per share on its acquisition. You are required to develope a range of justifiable equity share exchange ratios that can be offered by A Ltd. to B Ltd. 's shareholders. Based on your analysis in parts (i) and (ii) would you expect the negotiated terms to be closer to the upper, or the lower exchange ratio limits? Why?

(iv) Calculate the post-merger EPS based on an exchange ratio of 0.4:1 being offered by A Ltd. Indicate the immediate EPS accretion or dilution, if any, that will occur for each group of shareholders.

(v) Based on a 0.4:1 exchange ratio and assuming that A's pre-merger P/E ratio will continue after the merger, estimate the post-merger market price. Show the resulting accretion or dilution in pre-merger market prices.

Market price per share (MPS) = EPS × P/E ratio or P/E Ratio = MPS / EPS.

Solution :

(i) Determination of EPS, P/E ratio, ROE and BVPC of A Ltd. and B Ltd.

		A Ltd.	B Ltd.
Profits After Tax	(PAT)	Rs. 2,10,000	99,000
No. of Shares		10,000	8,000
EPS	(PAT/N)	Rs. 21.00	Rs. 12.375
Market price share	(MPS)	Rs. 400	Rs. 150
P/E ratio		19.05	12.12
(MPS/EPS)		12,00,000	8,00,000
Equity funds	(EF)	Rs. 120	Rs. 100
BVPC	(EF/N)	17.5%	12.37%
ROE			
(PAT/EF) × 100			

(ii) Estimates of Growth rates in EPS for each Firm

Retention ratio	(1-D/P ratio)	0.6	0.4
Growth rate	(ROE × Retention ratio)	10.5%	4.95%

(iii) Justifiable equity share exchange ratio

(a) Market price based $= \frac{MPSB}{MPSA} = \frac{Rs.15}{Rs.40} = 0.375:1$ (lower limit)

(b) Intrinsic value based $= \frac{Rs.20}{Rs.40} = 0.5:1$ (upper limit)

Since A Ltd. has a higher EPS, ROE, P/E ratio, and even higher EPS growth expectations, the negotiated terms would be expected to be closer to the lower limit, based on the existing share prices.

(iv) Calculation of Post-merger EPS and other effects

Particulars		A Ltd.	B Ltd.	Combined
PAT	(Rs.)	2,10,000	99,000	3,09,000
(i)		10,000	8,000	13,200*
Shares outstanding		21.00	12.375	23.41
(ii)		2.41	3.015	—
EPS	(Rs.)			
(i)/(ii)				
EPS Accretion (Dilution)	(Rs.)			

(v) Estimate of Post-merger Market Price and other effects

Particulars		A Ltd.	B Ltd.	Combined
EPS	(Rs.)	Rs. 21.00	Rs. 12.375	23.41
(i)		19.05	12.12	19.05
P/E Ratio		400	150	446.00
MPS	(Rs.)	46	28.40***	
(ii)				
MPS Accretion (Dilution)	(Rs.)			
(i) × (ii)				

* Shares outstanding (combined) = 10,000 shares + (0.40 × 8,000) = 13,200 Shares

** EPS claim per old share = Rs. 23.41 × 0.40 = Rs. 9.36

EPS dilution = Rs. 12.375 – Re. 9.36 = Rs. 3.015

		Rs.
MPS claim per old share	(Rs. 446 × 0.4)	178.40
Less : MPS per old share		150.00
		28.40

Q. 9. The following information is provided related to the acquiring firm Mark Limited and the target firm Mask Limited :

	Mark Limited	*Mask Limited*
Profits after tax (PAT)	Rs. 2,000 lakhs	Rs. 400 lakhs
Number of shares	200 lakhs	100 lakhs
Outstanding	10	5
P/E ratio (times)		

Required :

(i) What is the swap ratio based on current market price?

(ii) What is the EPS of Mark Limited after acquisition?

(iii) What is the expected market price per share of Mark Limited after acquisition, assuming P/E ratio of Mark Limited remains unchanged?

(iv) Determine the market value of the merged firm.

(v) Calculate gain/loss for shareholders of the two independent companies after acquisition.

Solution :

EPS before acquisition

Mark Ltd. = Rs. 2,000 lakhs/200 lakhs	= Rs.10
Mark Ltd. = Rs. 400 lakhs/100 lakhs	= Rs. 4
Market price of share before an acquisition	= EPS × P.E. ratio
Mark Ltd. = Rs. 10 × 10	= Rs. 100
Mask Ltd. = Rs. 4 × 5	= Rs. 20

(i) Swap Ratio based on Current Market Prices

= Rs. 20/Rs. 100 = 0.2 *i.e.* 1 share of Mark Ltd. for 5 shares of Mask Ltd.

Number of shares to be issued = 100 lakhs × 0.20 = 20 lakhs

(ii) EPS after Acquisition $= \frac{\text{Rs. 2,000 Lakhs} + \text{Rs. 400 Lakhs}}{\text{200 lakhs} + \text{20 lakhs}} = \text{Rs. 10.91}$

(iii) Expected market price per share of Mark Ltd. after an acquisition subject to an assumption that P/E ratio of Mark Ltd. remains unchanged = Rs. 10.91 × 10 = Rs. 109.10

(iv) Market Value of Merged Firm = Rs. 109.10 × 220 lakh shares = Rs. 240.02 crores

(v) Gain from the Merger

(*Rs. Crores*)

Post-merger market value of merged firm	240.02
Less : Pre-merger market value	
Mark Ltd. 200 lakhs × Rs. 100 = 200 crores	
Mask Ltd. 100 lakhs × Rs. 20 = 20 crores	220.00
Gain from merger	20.02

Gain to shareholders of Mark Ltd. and Mask Ltd. (*Rs. Crores*)

Particulars	**Mark Ltd.**	**Mask Ltd.**
Post-merger value	218.20	21.82
Less: Pre-merger value	200.00	20.00
Gain to shareholders	18.20	1.82

Q. 10. Illustrate two main methods of financing an acquisition referred to in Accounting Standard - 14 (AS-14)

Ans :

The provisions of Accounting Standard (AS-14) on Accounting for Amalgamations issued by the Institute of Chartered accountants of India need to be referred to in this context.

The two main methods of financing an acquisition are cash and share exchange:

Method I : This method is generally considered suitable for relatively small acquisitions. It has two advantages: (i) the buyer retains total control as the shareholders in the selling company are completely bought out, and (ii) the value of the bid is known and the process is simple.

Let us consider 2 Companies A & B whose figures are stated below :

	Company A	**Company B**
Market price per share	Rs. 75/-	Rs. 15/-
No. of shares	100,000	60,000
Market Value of the company	75,00,000	900,000

Assume Company A intends to pay Rs.12,00,000/- cash for Company B.

If the share price does not anticipate a merger:

The share price in the market is expected to accurately reflect the true value of the company.

The cost to the bidder Company A = Payment - The market value of Company B

= Rs.12 lakhs – Rs.9 lakhs

= Rs.3 lakhs.

Company A is paying Rs.3 lakhs for the identified benefits of the merger.

If the share price includes a speculation element of Rs.2/- per share:

The cost to Company A = Rs.3,00,000 + (60,000 x Rs.2)

= Rs. 3,00,000 + Rs. 1,20,000

= Rs. 4,20,000/-

Worth of Company B = (Rs. 15 – Rs. 2) × 60,000

= Rs. 13 × 60,000

= Rs. 7,80,000/-

This can also be expressed as: Rs. 12,00,000 – Rs. 4,20,000 = Rs. 7,80,000/-

Method II - Share Exchange : The method of payment in large transactions is predominantly stock for stock.

The advantage of this method is that the acquirer does not part with cash and does not increase the financial risk by raising new debt. The disadvantage is that the acquirer's shareholders will have to share future prosperity with those of the acquired company.

Suppose Company A wished to offer shares in Company A to the shareholders of Company B instead of cash :

Amount to be paid to shareholders of Company B = Rs. 12,00,000

Market price of shares of Company A = Rs. 75/-

No. of shares to be offered = Rs. 12,00,000 / Rs. 75 = 16,000

Now, shareholders of Company B will own part of Company A, and will benefit from any future

gains of the merged enterprise.

Their share in the merged enterprise = 16,000 / (1,00,000 + 16,000) = 13.8%

Now suppose that the benefits of the merger has been identified by Company A to have a present value of Rs. 4,00,000/-,

The value of the merged entity = Rs. 75,00,000 + (Rs. 9,00,000 + Rs. 4,00,000) = Rs. 88,00,000/-

True cost of merger to the shareholders of Company A:

	Company A	**Company B**
Proportion of ownership in merged enterprise	86.2%	13.8%
Market Value: Total = Rs. 88,00,000	75,85,600	12,14,400
No. of shares currently in issue	100,000	60,000
Market price per share	Rs. 75.86	Rs. 20.24

The above gives the value of shares in the company *before* the merger is completed, based on estimates of what the company will be worth *after* the merger.

The valuation of each company also recognizes the split of the expected benefits which will accrue to the combined entity once the merger has taken place.

The true cost can be calculated as given below :

60,000 shares in Company B @ Rs. 20.24	Rs. 12,14,400
Less : Current market value	Rs. 9,00,000
Benefits being paid to shareholders of Company B	Rs. 3,14,400

Q. 11. A Ltd. is intending to acquire X Ltd. by merger and the following information is available in respect of the companies :

	A Ltd.	X Ltd.
Number of equity shares	10,00,000	6,00,000
Earnings after tax (Rs.)	50,00,000	18,00,000
Market value per share (Rs.)	42	28

Require:

(i) What is the present EPS of both the companies?

(ii) If the proposed merger takes place, what would be the new earning per share of A Ltd. ? Assume that the merger takes place by exchange of equity shares and the exchange ratio is based on the current market price.

(iii) What should be the exchange ratio, if X Ltd. wants to ensure the earnings to members are as before the merger takes place?

Solution :

(i) Earnings per share $= \frac{\text{EAT}}{\text{No. of equity share}}$

$$\text{A Ltd.} = \frac{50,00,000}{10,00,000} = \text{Rs. } 5$$

$$\text{B Ltd.} = \frac{18,00,000}{6,00,000} = \text{Rs. } 3$$

(ii) No. of shares X Ltd's shareholders will get in A Ltd. is based on market value per share $= \frac{28}{42} \times 6,00,000 =$ 4,00,000 shares.

Total number of equity shares of A Ltd. after merger

= 10,00,000 + 4,00,000 = 14,00,000 shares.

Total EAT = Rs. (50,00,000 + 18,00,000) = Rs. 68,00,000

$$\text{EPS after merger} = \frac{68,00,000}{14,00,000} = \text{Rs. } 4.86$$

(iii) Calculation of exchange ratio to ensure shareholders of X Ltd. to earn the same as was before merger :

$$\text{Shares to be exchanged based on EPS} = \frac{\text{Rs. } 3}{\text{Rs. } 5} \times 6,00,000 = 3,60,000 \text{ shares}$$

$$\text{EPS after merger} = \frac{\text{Rs. } (50,00,000 + 18,00,000)}{13,60,000} = \text{Rs. } 5$$

Total earnings in A Ltd. available to shareholders of X Ltd.

= 3,60,000 × 5 = Rs. 18,00,000

Exchange ratio based on market price is beneficial to shareholders of X Ltd. because of higher Earnings available to them i.e.,

4,00,000 shares × 4.86 = Rs. 19,44,000

Q. 12. X Ltd. is considering merger with A Ltd. X Ltd's shares are currently traded at Rs. 20. It has 2,50,000 shares outstanding and its earnings after taxes (EAT) amount Rs. 5,00,000. A Ltd. has 1,25,000 shares outstanding. Its current market price is Rs. 10 and its EAT is Rs. 1,25,000. The merger will be effected by means of a stock swap (exchange). A Ltd. has argued to plan under which X Ltd. will offer the current market value of A Ltd's shares.

(i) What is the pre merger EPS and P/E ratio of both the companies.

(ii) If ABC Ltd's P/E ratio is 6.4, what is the current market price? What is the exchange ratio? What will X Ltd's post merger EPS be?

(iii) What should be the exchange ratio, if X Ltd's pre merger and post merger EPS are required to be the same?

Solution :

(i) Pre merger EPS and P/E ratio of X Ltd and A Ltd.

Particulars	X Ltd.	A Ltd.
(a) Earning after taxes	5,00,000	1,25,000
(b) Number of shares outstanding	2,50,000	1,25,000
(c) EPS (a ÷ b)	2	1
(d) Market price per share	20	10
(e) P/E ratio (times (d ÷ c)	10	10

(ii) Current market price of A Ltd. if P/E ratio is 6.4 = 1 × 6.4 = Rs. 6.40

$$\text{Exchange ratio} = \frac{\text{Rs. } 20}{6.40} = 3.125$$

Post merger EPS of X Ltd.

$$\text{No. of shares after merger} = 2{,}50{,}000 + \left(\frac{1{,}25{,}000 \times 6.9}{20}\right) = 2{,}93{,}125 \text{ shares}$$

$$\therefore \text{ Post merger EPS} = \frac{6{,}25{,}000}{2{,}93{,}125} = \text{Rs. } 2.13$$

(iii) **Desired exchange ratio**

$$\text{Total number of shares in post merger company} = \frac{6{,}25{,}000}{2} = 3{,}12{,}500$$

Number of shares required to be issued = 3,12,500 – 2,50,000 = 62,500

$$\text{Therefore, the exchange ratio is } 62{,}500 : 1{,}25{,}000 = \frac{62{,}500}{1{,}25{,}000} = 0.50.$$

Q. 13. M. Co. Ltd. is studying the possible acquisition of N Company Ltd, by way of merger. The following data are available in respect of the companies.

	M Co. Ltd.	N Co. Ltd.
EAT (Rs.)	80,00,000	24,00,000
No. of equity shares	16,00,000	4,00,000
Market value per share (Rs.)	20	160

(i) If the merger goes through by exchange of equity and the exchange ratio is based on the current market price, what is the new earning per share for M Co. Ltd.?

(ii) N Co. Ltd wants to be sure that the earnings equitable to its shareholders will not be diminished by the merger. What should be the exchange ratio in that case?

Solution :

(i) **Calculation of new EPS of M Co. Ltd.**

No. of equity shares to be issued by M Co. to N Co. Ltd.

$= 4,00,000 \times \frac{160}{200} = 3,20,000$ shares

∴ Total number of shares = 16,00,000 + 3,20,000 = 19,20,000 shares

Total EAT (after acquisition) = Rs. (80,00,000 + 24,00,000)

= Rs. 1,04,00,000

∴ $\text{EPS} = \frac{\text{Rs. } 1,04,000}{19,20,000 \text{ shares}} = \text{Rs. } 5.42$

(ii) **Calculations of exchange ratio which would not diminish the EPS of N Co. Ltd. after its merger with M Co. Ltd.**

Current EPS of M Co. Ltd. $= \frac{\text{Rs. } 80,00,000}{16,00,000 \text{ shares}} = \text{Rs. } 5$

N Co. Ltd. $= \frac{\text{Rs. } 24,00,000}{4,00,000 \text{ shares}} = \text{Rs. } 6$

∴ Exchange ratio $= \frac{6}{5} = 1.20$

No. of shares to be issued by M Co. Ltd. to N Co. Ltd.

$= 4,00,000 \times \frac{6}{5} = 4,80,000$ shares

Total number of shares of M Co. Ltd. after acquisition

= 16,00,000 + 4,80,000 = 20,80,000 shares

EPS (after merger) $= \frac{\text{Rs. } 1,04,00,000}{20,80,000 \text{ shares}} = \text{Rs. } 5$

Total earnings in M Co. Ltd. available to new shareholders of N Co. Ltd. = 4,80,000 × Rs. 5 = Rs. 24,00,000

Recommendation : The exchange ratio (6 for 5) based on market shares is beneficial to shareholders of N Co. Ltd.

Q. 14. The board of Directors of X Ltd. are considering the possible acquisition (by way of merger) of firm Y. The following data are available in respect of both the companies.

Company	EAT (Rs.)	No. of Eq. sh.	Market value per share (Rs.)
X	4,00,000	80,000	15
Y	1,20,000	20,000	12

(a) What shall be the earning per share for company X, if the proposed merger takes place by exchange of equity share and the exchange ratio is based on the current market price?

(b) Company Y wants to be sure that earnings available to its shareholders will not be diminished by the Merger, what should be the exchange ratio in that case?

Solution :

(a) No. of shares to be issued to Y Ltd. $= 20,000 \times \frac{12}{15} = 16,000$ shares

Total number of share = 80,000 + 16,000 = 96,000 shares

Total earnings after tax = Rs. (4,00,000 + 1,20,000) = Rs. 5,20,000

∴ $\text{EPS} = \frac{5,20,000}{96,000} = \text{Rs. } 5.42$ per shares

(b) Present EPS of

$$\text{X Ltd.} = \frac{4,00,000}{80,000} = \text{Rs. } 5$$

$$\text{Y Ltd.} = \frac{1,20,000}{20,000} = \text{Rs. } 6$$

Exchange ratio should be 6 shares of X Ltd. for every 5 shares of Y Ltd.

$\therefore$ Number of shares to be issued to Y Ltd. $= 20,000 \times \frac{6}{5} = 24,000$ shares

Total number of shares of X Ltd. after merger

= 80,000 + 24,000 = 1,04,000 shares

$$\text{EPS (after merger)} = \frac{5,20,000}{1,04,000} = \text{Rs. } 5$$

Total earnings available to shareholders of Y Ltd. after merger will be

24,000 × Rs. 5 = Rs. 1,20,000

Therefore, exchange ratio based on EPS is recommended.

Q. 15. Fat Ltd. wants to acquire Lean Ltd., the Balance Sheet of Lean Ltd. as on 31.03.2009 is as follows :

Liabilities	Rs.	Assets	Rs.
Equity sh. capital	6,00,000	Cash	20,000
(60,000 shares)		Debtors	30,000
Retained Earnings	2,00,000	Inventories	1,70,000
12% Debenture	2,00,000	Plant & Equipment	11,00,000
Creditors	3,20,000		
	13,20,000		13,20,000

Additional information :

(i) Shareholders of Lean Ltd. will get one share in Fat Ltd. for every two shares. External liabilities are expected to be settled at Rs. 3,00,000. Shares of Fat Ltd. would be issued at its current price of Rs. 15 per share. Debenture holders will get 13% convertible debentures in the purchasing companies for the same amount. Debtors and inventories are expected to release Rs. 1,80,000.

(ii) Fat Ltd. has decided to operate the business of Lean Ltd. as a separate division. The division is likely to give cash flow (after tax) to the extent of Rs. 3,00,000 per year for 6 years. Fat Ltd. has planned that after 6 year this division would be damaged and disposed off for Rs. 1,00,000.

(iii) Company's cost of capital is 14%

Make a report to the managing director advising him about the financial feasibility of the acquisition.

Note : Present value of Re. 1 for six years @ 14% interest : 0.8772, 0.7695, 0.6750, 0.5921, 0.5194 and 0.4556.

Solution :

Cost of Acquisition	Rs.
Equity share capital $\left(\frac{60,000}{2} \times \text{Rs. } 15\right)$	4,50,00
13% convertible debenture	2,00,000
Cash (Payment for external liabilities – Realisation of Cash from Debtors and inventories – Cash of Lean Ltd.) i.e., (Rs. 3,00,000 – 1,80,000 – 20,000)	1,00,000
Total Consideration	7,50,000

Calculation of NPV

Year	Cost inflow	PV factor @ 14%	Prevent value
1	3,00,000	0.8772	2,63,160
2	3,00,000	0.7695	2,30,850
3	3,00,000	0.6750	2,02,500
4	3,00,000	0.5921	1,77,630
5	3,00,000	0.5194	1,55,820
6	3,00,000 + 1,00,000	0.4556	1,82,240
	Total PV of cash inflow		12,12,200
	Less : Cost of acquisition		7,50,000
	NPV		4,62,000

Since the NPV is positive it is suggested to acquire Lean Ltd. to maximize the value of shareholders of both the companies.

Q. 16. Firm A is studying the possible acquisition of firm B by way of merger. The following data are available :

Firm	After tax earnings	No. of Eq. sh.	Market price per share
A	Rs. 10,00,000	2,00,000	Rs. 75
B	Rs. 3,00,000	50,000	Rs. 60

(i) If the merger goes through by exchange of equity shares and the exchange ratio is set according to the current market price, what is the new earnings per share of firm A.

(ii) Firm B wants to be sure that their earnings per share is not diminished by the merger. What exchange ratio is relevant to achieve the objective?

Solution :

(i) Exchange ratio = 75 : 60

$$\text{No. of shares to be issued by A Ltd.} = \frac{60 \times 50,000}{75} = 40,000 \text{ shares.}$$

$\therefore$ Total number of shares = 2,00,000 + 40,000 = 2,40,000 shares

$\therefore$ Total after tax earnings = Rs. (10,00,000 + 3,00,000) = Rs. 13,00,000

$$\therefore \text{Earnings per share} = \frac{\text{Rs. } 13,00,000}{2,40,000} = \text{Rs. } 5.42$$

(ii) **Calculations of exchange ratio which would not diminish the EPS of B Ltd. :**

Current EPS of

$$\text{A Ltd.} = \frac{10,00,000}{2,00,000} = \text{Rs. } 5$$

$$\text{B Ltd.} = \frac{\text{Rs. } 3,00,000}{50,000} = \text{Rs. } 6$$

$$\text{Exchange ratio} = \frac{6}{5} = 1.20 : 1$$

No. of shares to be issued by A Ltd. to B Ltd.

$$= 50,000 \times \frac{6}{5} = 60,000 \text{ shares}$$

Total number of shares of A Ltd. after acquisition

= 2,00,000 + 60,000 = 2,60,000 shares

EPS (after merger) $= \frac{\text{Rs.}(10,00,000 + 3,00,000)}{2,60,000 \text{ shares}} = \text{Rs. } 5$

Total earnings in A Ltd. available to new shareholders of B Ltd.

$= 60,000 \times 5 = \text{Rs. } 3,00,000$

Q. 17. X Ltd. is considering merger with A Ltd. X Ltd's shares are currently traded at Rs. 25. It has 2,00,000 shares outstanding and its profits after taxes (PAT) is amounted to Rs. 4,00,000. A Ltd. has 1,00,000 shares outstanding its current market price is Rs. 12.50 and its PAT is Rs. 1,00,000. The merger will be effected by means of exchange (stock swap). A Ltd. has agreed to a plan under which X Ltd. will offer the current market value of A Ltd's shares :

(i) What is the pre merger EPS and P/E ratio of both the companies?

(ii) If A Ltd's P/E ratio is 8, what is its current market price? What is its current market price? What is the exchange ratio? What will X Ltd's post merger EPS be?

(iii) What must the exchange ratio be for X Ltd's that pre and post merger EPS be the same?

Solution :

(i) Pre-merger EPS and P/E ratio of X Ltd. and A Ltd.

Particulars	X Ltd.	A Ltd.
(a) Profit after tax	4,00,000	1,00,000
(b) No. of shares outstanding	2,00,000	1,00,000
(c) EPS (a ÷ b)	2	1
(d) Market price per share	25	12.50
(e) P/E ratio (d ÷ c)	12.5	12.50

(ii) Current market price of A Ltd. if P/E ratio is 8

P/E ratio $= \frac{\text{MPS}}{\text{EPS}}$ i.e., $8 = \frac{\text{MPS}}{1}$

$\therefore$ MPS = 8 × 1 = Rs. 8.

Exchange ratio $= \frac{25}{8} = 3.125$

Post merger EPS of X Ltd.

No. of shares X Ltd. has to issue for A Ltd's shareholders

$= \frac{1,00,000 \times 8}{25} = 32,000 \text{ shares}$

Total no. of shares after merger = 2,00,000 + 32,000 = 2,32,000 shares

Post merger EPS $= \frac{\text{Rs.}(4,00,000 + 1,00,000)}{2,32,000 \text{ shares}} = \text{Rs. } 2.16$

(iii) Desired Exchange ratio

Total number of shares in post merged company

$= \frac{\text{Post merged earnings}}{\text{Pre merger EPS of X Ltd.}} = \frac{\text{Rs.}500,000}{2} = 2,50,000$

No. of shares required to be issued

= 2,50,000 – 2,00,000 = 50,000 shares

Therefore, the exchange ratio is $\frac{50,000}{1,00,000} = 0.50$

Q. 18. A Ltd. wants to purchase B Ltd. A Ltd. has 3,00,000 shares having a market price of Rs. 30 per share, while B Ltd. has 2,00,000 shares selling at Rs. 20 per share. The EPS of A Ltd. is Rs. 4.00 and Rs. 2.25 for B Ltd. Management of both companies are discussing two alternative proposals for exchange of shares as indicated below :

(i) In proportion to the relative earnings per share of two companies.

(ii) 0.5 share of A Ltd. for one share of B Ltd. (0.5 : 1)

You are required :

(a) To calculate the Earning per share (EPS) after merger under two alternatives; and

(b) To show the impact on EPS for the shareholders of two companies under both the alternatives.

Solution :

(i) Mergers effect on EPS

Company	Existing No. of shares	EPS (Rs.)	Total Earnings (Rs.)
A	3,00,000	4.00	12,00,000
B	2,00,000	2.25	4,50,000
			16,50,000

No. of shares after merger $= 3,00,000 + \frac{4,50,000}{4} = 4,12,500$ shares

$\therefore$ EPS of A Ltd. after merger $= \frac{16,50,000}{4,12,500} = \text{Rs. } 4.00$

Merger effect on EPS with share exchange ratio of 0.5 : 1

Total earnings after merger — Rs. 16,50,000

No. of shares post merger 3,00,000 + (2,00,000 × 0.5) — 4,00,000 shares

$\text{EPS} = \frac{\text{Rs. } 16,50,000}{4,00,000} = \text{Rs. } 4.125$

(ii) **Impact on EPS**

Co. A's shareholders	**Rs.**
EPS before merger	4.00
EPS after merger	4.125
Increase in EPS	0.125

Co. B's shareholders	**Rs.**
EPS before merger $\left(\frac{2.25}{0.5}\right)$	4.50
EPS after merger	4.125
Decrease in EPS	0.375

Q. 19. X Ltd. is intending to acquire B Ltd. by way of merger and the following information is available in respect of the companies.

Particulars	X Ltd.	B Ltd.
No. of Equity shares	5,00,000	3,00,000
Earning after tax (Rs.)	25,00,000	9,00,000
Market Value per share (Rs.)	21	14

(i) What is the present EPS of both the companies?

(ii) If the proposed merger takes place, what would be the new earning per share for X Ltd. (assuming that the merger takes place by exchange of equity shares and the exchange ratio is based on the current market price).

(iii) What should be the exchange ratio, if B Ltd. wants to ensure the same earnings to members as before the merger takes place?

Solution :

(i) Earnings per share $= \frac{\text{Earnings after tax}}{\text{No. of equity shares}}$

X Ltd. $= \frac{\text{Rs. } 25,00,000}{5,00,000} = \text{Rs. } 5$ and B Ltd. $= \frac{\text{Rs. } 9,00,000}{3,00,000} = \text{Rs. } 3$

(ii) **Calculation of new EPS of X Ltd. after merger (Exchange ratio based on market price)**

No. of shares which B Ltd.'s shareholders will get in X Ltd. is based on market price of shares; i.e.

$$= \frac{\text{Rs. } 14 \times 3,00,000 \text{ shares}}{\text{Rs. } 21} = 2,00,000 \text{ shares}$$

∴ Total number of equity shares = (5,00,000 + 2,00,000) shares = 7,00,000 shares

Total earnings of X Ltd. after merger = Rs. (25,00,000 + 9,00,000) = Rs. 34,00,000

∴ New EPS of X Ltd. after merger $= \frac{\text{Rs. } 34,00,000}{7,00,000 \text{ shares}} = \text{Rs. } 4.86$

(iii) **Calculation of exchange ratio to ensure B Ltd. to earn the same before the merger takes place**

Original EPS

X Ltd. = Rs. 5 Y Ltd. = Rs. 3

The number of shares to be exchanged by X Ltd. with B Ltd. is based on the EPS of the respective companies is as follows :

$$\frac{\text{Rs. } 3 \times 3,00,000}{\text{Rs. } 5} = 1,80,000 \text{ shares}$$

Total number of shares of X Ltd. after merger

= (5,00,000 + 1,80,000) shares = 6,80,000 shares

EPS after merger $= \frac{\text{Rs. } 34,00,000}{6,80,000 \text{ shares}} = \text{Rs. } 5$

Total earnings of X Ltd. available to new shareholder of B Ltd.

= Rs. 1,80,000 shares × Rs. 5 = Rs. 9,00,000

Thus the exchange ratio based on market shares is beneficial to the shareholders of B Ltd.

Q. 20. A Ltd. is considering takeover of B Ltd. and C Ltd. The financial data for the three companies are as follows :

Particulars	A Ltd.	B Ltd.	C Ltd.
Equity share capital of Rs. 10 each (Rs. in Crores)	450	180	90
Earnings (Rs. in Crores)	90	18	18
Market price of each shares (Rs.)	60	37	46

Calculate :

(i) Price earnings ratio.

(ii) Earnings per share of A Ltd. after the acquisition of B Ltd. and C Ltd. separately. Will you recommend the merger of either / both companies? Justify your answer.

Solution :

(i) **Calculation of Price Earning Ratios**

Particulars	A Ltd.	B Ltd.	C Ltd.
(a) Earnings (Rs. Crores)	90	18	18
(b) No. of shares (Crores)	45	18	9
(c) EPS (Rs.) (a ÷ b)	2	1	2
(d) Market price per share (Rs.)	60	37	46
(e) P/E ratio (d ÷ e)	30	37	23

(ii) **Calculation of EPS of A Ltd. after acquisition of B Ltd. and C Ltd.**

Merger of A Ltd. will B Ltd.

No. of shares B Ltd. shareholders will get in A Ltd. based on market price of shares $= \frac{\text{Rs. } 37 \times 18}{\text{Rs. } 60} = 11.1$ crore shares.

Total no. of equity shares = 45 + 11.1 = 56.1 crore shares

Total earnings = Rs. (90 + 18) crore = Rs. 108 crores

EPS after merging B Ltd. $= \frac{\text{Rs. } 108}{56.1 \text{ crore shares}} = \text{Rs. } 1.925$

Merger of A Ltd. with C Ltd.

No. of shares C Ltd's shareholders will get in A Ltd. is based on market price of shares $= \frac{\text{Rs. } 46 \times 9}{\text{Rs. } 60} = 6.9$ crore shares.

Total no. of equity shares = 45 + 6.9 = 51.9 crore shares

Total earnings = Rs. (90 + 18) crore = Rs. 108 crores

EPS after merging C Ltd. $= \frac{\text{Rs. } 108}{51.9 \text{ crore shares}} = \text{Rs. } 2.081$

Analysis :

After merger of C Ltd. with A Ltd., EPS is higher than A Ltd., Hence merger with only C Ltd. is suggested to increase the value to the shareholders of A Ltd.

Q. 21. The following information is provided relating to the acquiring company X Ltd. and the target company Y Ltd.

	X Ltd.	Y Ltd.
No. of shares (F.V. Rs. 10 each)	10.00 lakhs	7.5 lakhs
Market capitalization	500.00 lakh	750.00 lakhs
P/E ratio (times)	10	5
Reserve and surplus	300.00 lakhs	165.00 lakhs
Promoter's holding (No. of shares)	4.75 lakhs	5.00 lakhs

Board of directors of both the companies have decided to give a fair deal to the shareholders and accordingly for swap ratio the weights are decided as 40%, 25% and 35% respectively for Earnings, Book value and Market price of share of each company.

(i) Calculate the swap ratio and also calculate Promoters holding percentage after acquisition.

(ii) What is the EPS of X Ltd. after acquisition of Y Ltd.

(iii) What is the expected market price per share and market capitalization of X Ltd. after acquisition, if we assume P/E ratio of firm X Ltd. remains unchanged.

(iv) Calculate free float market capitalization of the merged company.

Solution :

Calculation of swap ratio :

Swap ratio	X Ltd.	Y Ltd.
Market capitalization	500 lakh	750 lakhs
No. of shares	10 lakhs	7.5 lakhs
Market price per share	Rs. 50	Rs. 100
P/E ratio	10	5
EPS	Rs. 5	Rs. 20
Profit (No. of shares x EPS)	Rs. 50 lakhs	Rs. 150 lakhs
Share Capital	Rs. 100 lakhs	Rs. 75 lakhs
Reserve and surplus	Rs. 300 lakhs	Rs. 165 lakhs
Total	Rs. 400 lakhs	Rs. 240 lakhs
Book value per share (Total ÷ No. of shares)	Rs. 40	Rs. 32

(i) **Calculation of swap ratio**

EPS	5 : 20 i.e., 1 : 4 i.e., 4 × 40%	= 1.6
Book value	40 : 30 i.e., 1 : 0.8 i.e., 0.5 × 25%	= 0.2
Market price	50 : 100 i.e., 1 : 2 i.e., 2 × 35%	= 0.7
	Total	= 2.5

Swap ratio is for every one share of Y Ltd. to issue 2.5 shares of X Ltd. Hence total no. of shares to be issued = 7.5 lakhs × 2.5 = 18.75 lakh shares.

Promoters holding = 4.75 lakh shares + (5 × 2.5) lakh shares
= 17.25 lakh shares

So parameters holding percentage $= \frac{17.25}{28.75} \times 100 = 60\%$

Total no. of shares = 10 lakhs + 18.75 lakhs = 28.75 lakhs

(ii) $\text{EPS} = \frac{\text{Total profit}}{\text{No. of shares}} = \frac{50 \text{ lakh} + 150 \text{ lakh}}{28.75 \text{ lakh}} = \text{Rs. } 6.956$

(iii) Expected market price = EPS × P/E = 6.956 × 10 = Rs. 69.56

Market capitalization = Rs. 69.56 × 28.75 lakh shares = Rs. 1999.85 lakh

(iv) Free float market capitalization = Rs. 69.56 × (28.75 × 40%)
= 799.94 lakh

Q. 22. The following information is relating to Fortune India Ltd. having two division Pharma division and FMCG division. Paid up share capital of Fortune India Ltd. is consisting of 3,000 lakhs equity shares of Re. 1 each. Fortune India Ltd. decided to de-merge Pharma Division as Fortune Pharma Ltd. w.e.f. 1.4.2010. Details of Fortune India Ltd. as on 31.3.2010 and of Fortune Pharma Ltd. as on 1.4.2010 are given below :

Particulars	Fortune Pharma Ltd. (Rs.) in lakh	Fortune India Ltd. (Rs.) in lakh
Outside Liabilities		
Secured Loans	400	3,000
Unsecured Loan	2,400	800
Current Liabilities & Provision	1,300	21,200
Assets		
Fixed Assets	7,740	20,400
Investments	7,600	12,300
Current Assets	8,800	30,200
Loan & Abuances	900	7,300
Deferred tax / Misc. exp.	60	(200)

Board of directors of the company have decided to issue necessary equity shares of Fortune Pharma Ltd. of Re. 1 each, without any consideration to the shareholders of Fortune India Ltd. For that purpose following points are to be considered :

(i) Transfer of Liabilities and Assets at Book value.

(ii) Estimated profit for the year 2010-11 is Rs. 11,400 lakh for Fortune India Ltd. and Rs. 1,470 lakh for Fortune Pharma Ltd.

(iii) Estimated Market price of Fortune Pharma Ltd. is Rs. 24.50 per share.

(iv) Average P/E ratio of FMCG sector is 42 and Pharma sector is 25, which is to be expected for both the companies.

Calculate :

(1) The Ratio in which shares of Fortune Pharma are to be issued to the shareholders of Fortune India Ltd.

(2) Expected Market price of Fortune India Ltd.

(3) Book value per share of both the Co's after demerger.

Solution :

Shareholder's fund

	Fortune India Ltd.	Fortune Pharma Ltd.	Fortune India Ltd. (FMCG)
Assets	70,000	25,100	44,900
Outside Liabilities	25,000	4,100	20,900
Net worth	45,000	21,000	24,000

(1) **Number of shares of Fortune Pharma Ltd. that are required to be issued to shareholders of Fortune India Ltd. :**

	Fortune Pharma Ltd.
Estimated Profit (Rs. in lakhs)	1470
Estimated market price (Rs)	24.50
Estimated P/E	25
Estimated EPS (Rs.) (24.50 ÷ 25)	0.98
No. of shares (lakhs) (1470 ÷ 98)	1500

Hence, Ratio is 1 shares of Fortune Pharma Ltd. for 2 shares of Fortune India Ltd.

(2) **Expected market price of Fortune India Ltd.**

	Fortune India (FMCG) Ltd.
Estimated Profit (Rs. in lakhs)	11,400
No. of eq. sh. (Rs. in lakhs)	3,000
Estimated EPS (Rs.)	3.8
Estimated P/E	42
Estimated market price (Rs)	159.6

(3) **Book value per share**

	Fortune Pharma Ltd.	Fortune India (FMCG) Ltd.
Net worth (Rs. in lakhs)	21,000	24,000
No. of shares (Rs. in lakhs)	1,500	3,000
Book value of shares (Rs.)	14	8

Q. 23. Reliable Industries Ltd. (RIL) is considering a takeover of Sunflower Industries Ltd. (SIL). The particulars of 2 companies are given below :

Particular	RIL	SIL
Earnings After Tax (Rs.)	20,00,000	10,00,000
Equity shares (No.)	10,00,000	10,00,000
EPS	2	1
P/E ratio (times)	10	5

Required :

(i) What is the market value of each Company before merger?

(ii) Assuming that the management of RIL estimates that the shareholders of SIL will accept an offer of one share of RIL for four shares of SIL. If there are no synergic effects, what is the market value of the post-merger RIL? What is the new price for share ? Are the shareholders of RIL better or worse off than they were before the merger.

(iii) Due to synergic effects, the management of RIL estimates that the earnings will increase by 20%. What is the new post-merger EPS and price per share? Will the shareholders be better off or worse off?

Solution :

(i) Market value of companies before merger

	RIL	SIL
EPS (Rs.)	2	1
P/E ratio	10	5
Market price per share (Rs.)	20	5
Equity shares	10,00,000	10,00,000
Total market value	2,00,00,000	50,00,000

(ii) Post merger effect on RIL

	Rs.
Post merger earnings Rs. (20,00,000 + 10,00,000)	30,00,000
Equity shares $\left(10,00,000+10,00,000\times\frac{1}{4}\right)$	12,50,000
As exchange ratio is 1 : 4	
EPS : $\frac{30,00,000}{12,50,000}$	2.4
P/E ratio	10.00
Market value : 10 × 2.4	24
Total value (12,50,000 × 24)	3,00,00,000

Gains from Merger

Post Merger Market value of the firm		= Rs. 3,00,00,000
Less : Pro-Merger market value		
RIL	2,00,00,000	
SIl	50,00,000	= Rs. 2,50,00,000
		Rs. 50,00,000

Apportionment of Gains between shareholders

	RIL	SIL
Post merger market value		
10,00,000 × 24	2,40,00,000	
2,50,000 × 24		60,00,000
Less : Pre merged market value	2,00,00,000	50,00,000
	40,00,000	10,00,000

Thus the shareholders of both the Co. have gained from merger

(iii) **Post Merger Earnings**

Increase in earning by 20%

New earnings : Rs. 30,00,000 × 120%	=	36,00,000
No. of equity share	=	12,50,000
EPS = Rs. 36,00,000 ÷ 12,50,000	=	Rs. 2.88
P/E ratio	=	10

Market price per share = Rs. 2.88 × 10 = Rs. 28.80

∴ Hence, shareholders will be better off.

Q. 24. The following information is provided in relation to the acquiring firm Mark Ltd. and the target firm Mask Ltd.

Particulars	Mark Ltd.	Mask Ltd.
Profits after tax	Rs. 2,000 lakhs	Rs. 400 lakhs
Number of shares outstanding	200 lakhs	100 lakhs
P/E ratio (Times)	10	5

Required :

(i) What is the swap ratio based on current market price?

(ii) What is the EPS of Mark Ltd. after acquisition?

(iii) What is the expected market price per share of Mark Ltd. after acquisition, assuming P/E ratio of Mark Ltd. remains unchanged?

(iv) Determine the market value of the merged firm.

(v) Calculate gain/loss for shareholders of the two independent companies after acquisition.

Solution :

EPS before acquisition

Mark Ltd. = Rs. 200 lakhs / 200 lakh = Rs. 10

Mask Ltd. = Rs. 400 lakhs / 100 lakh = Rs. 4

Market price of shares before acquisition

Mark Ltd. = Rs. 10 × 10 = Rs. 100

Mask Ltd. = Rs. 4 × 5 = Rs. 20

(i) Swap ratio based on current market price

$$= \frac{\text{Rs. } 20}{\text{Rs. } 100} = 0.2 \text{ i.e., 1 share of Mark Ltd. for 5 shares of Mask Ltd.}$$

Number of shares to be issued = 100 lakhs × 0.20 lakh = 20 lakhs

(ii) EPS after acquisitions

$$= \frac{\text{Rs. } 2000 \text{ lakhs} + \text{Rs. } 400 \text{ lakhs}}{\text{Rs. } 200 \text{ lakhs} + 20 \text{ lakhs}} = \text{Rs. } 10.91$$

(iii) Expected market price per shares of Mark Ltd. after an acquisition assuming P/E ratio of Mark Ltd. remains unchanged.

= Rs. 10.91 × 10 = Rs. 109.10

(iv) Market value of merged firm

= Rs. 109.10 × 220 lakhs shares = Rs. 240.02 crores

(v) Gain from the Merger

Post merger market value of merged firm	= Rs. 240.02 crores
Less : Pre merger market value	
Mark Ltd. 200 lakhs × Rs. 100 = 200 crores	
Mask Ltd. 100 lakhs × Rs. 20 = 20 crores	= Rs. 220.00 crores
Gain from merger	= Rs. 20.20 crores

Gain to shareholders of Mark Ltd. and Mask Ltd.

Particulars	Mark Ltd.	Mask Ltd.
Post merger value (109.1 × 200)	218.20	
(109.1 × 20)		21.82
Less : Pre merger value	200.00	20.00
Gain to shareholders	18.20	1.82

Q. 25. AB Ltd. is planning to acquire and absorb the running business of XY Ltd. The valuation is to be based on the recommendation of merchant bankers and the consideration is to be discharged in the form of equity shares to be issued by AB Ltd. As on 31.3.2010, the paid up capital of AB Ltd. consists of 80 lakhs shares of Rs. 10 each. The highest and the lowest market quotation during the last 6 months were Rs. 570 and Rs. 430. For the purpose of the exchange, the price per share is to be reckoned as the average of the highest and lowest market price during the last 6 months ended on 31.3.2010. XY Ltd's Balance Sheet as at 31.3.2010 is summarized below :

	Rs. lakhs
Sources :	
Share capital	
20 lakhs equity shares of Rs. 10 each fully paid	200
10 lakhs equity shares of Rs. 10 each, Rs. 5 paid	50
Loans	100
Total	350
Uses :	
Fixed Assets (Net)	150
Net Current Assets	200
Total	350

An independent firm of merchant bankers engaged for the negotiation have produced the following estimates of cash flows from the business of XY Ltd. :

Year ended	By way of	Rs. Lakhs
31.3.11	After tax earnings for equity	105
31.3.12	Do	120
31.3.13	Do	125
31.3.14	Do	120
31.3.15	Do	100
	Terminal value estimate	200

It is the recommendation of the merchant banker that the business of XY Ltd. may be valued on the basis of the average of (i) Aggregate of discounted cash flows at 8% and (ii) Net assets value.

Present value factors @ 8% for years

1 – 5 : 0.93 0.86 0.79 0.74 0.68

You are required to :

(i) Calculate the total value of the business of XY Ltd.

(ii) The number of shares to be issued by AB Ltd. and

(iii) The basis of allocation of the shares among the shareholders of XY Ltd.

Solution :

Price per share of AB Ltd. for determination of number of shares to be issued:

$\frac{\text{Rs.}(570+430)}{2}$ Rs. 500

Value of XY Ltd. based on future cash flow capitalization

$(105 \times 0.93) + (120 \times 0.86) + (125 \times 0.79) + (120 \times 0.74) + (300 \times 0.68)$ Rs. 592.40 lakhs

Value of XY Ltd. based on net assets Rs. 250 lakhs

Average value $\frac{592.40+250}{2}$ Rs. 421.20 lakhs

No. of shares in AB Ltd. to be issued $\frac{421.2 \text{ lakhs}}{500}$	84240
Basis of allocation of shares	
Fully paid equivalent shares in XY Ltd.	250 lakhs
Distribution to fully paid shareholders $84240 \times \frac{20}{25}$	67392
Distribution to partly paid shareholders $84240 \times \frac{5}{25}$	16848

Q. 26. A Ltd. and B Ltd. both the companies operate in the same industry. The financial statement of both the companies for the current financial year are as follows :

Particulars	**A. Ltd. (Rs.)**	**B. Ltd. (Rs.)**
Current Assets	14,00,000	10,00,000
Fixed Assets (Net)	10,00,000	5,00,000
Total	24,00,000	15,00,000
Equity Capital (Rs. 10 each)	10,00,000	8,00,000
Retained earnings	2,00,000	–
14% long term debt	5,00,000	3,00,000
Current liabilities	7,00,000	4,00,000
Total	24,00,000	15,00,000

Income Statement

Particulars	**A. Ltd. (Rs.)**	**B. Ltd. (Rs.)**
Net Sales	34,50,000	17,00,000
Cost of goods sold	27,60,000	13,60,000
Gross profit	6,90,000	3,40,000
Operating expenses	2,00,000	1,00,000
Interest	70,000	42,000
Earnings before tax	4,20,000	1,98,000
Tax @ 50%	2,10,000	99,000
Earnings after taxes (EAT)	2,10,000	99,000

Additional information :

No. of equity shares	1,00,000	80,000
Dividend payment ratio (D/P ratio)	40%	60%
Market price per share	Rs. 40	Rs. 15

Assume that both companies are in the process of negotiating a merger through an exchange of equity shares. You have been asked to assist in establishing equitable exchange terms and are required to :

(i) Decompose the share price of both the companies into EPS and P/E components; and also segregate their EPS figures into Return on Equity (ROE) and book value per share components.

(ii) Estimate future EPS growth rates for each company.

(iii) Based on expected operating synergies A Ltd. estimates that the intrinsic value of B's equity share would be Rs. 20 per share on its acquisition. You are required to develop a range of justifiable equity share exchange ratios that can be offered by A Ltd. to the shareholders of B Ltd. Based on your analysis in part (i) and (ii), would you expect the negotiated terms to be closer to the upper, or the lower exchange ratio limits and why?

(iv) Calculate the post merger EPS based on an exchange ratio of 0.4 : 1 being offered by A Ltd. Indicate the immediate EPS accretion or dilution, if any, that will occur for each group of shareholders.

(v) Based on a 0.4 : 1 exchange ratio and assuming that A Ltd's pre merger P/E ratio will continue after the merger, estimate the post merger market price. Also show the resulting accretion or dilution in pre merger market price.

Solution

(i) **Determination of EPS, P/E ratio, ROE and book value per share of A Ltd. and B. Ltd. :**

	A Ltd.	B Ltd.
Earning after tax (EAT)	2,10,000	99,000
No. of shares (N)	1,00,000	80,000
Earning per share (EPS) $= \frac{EAT}{N}$	2.1	1.2375
Market price per share (MPS)	40	15
P/E ratio $= \frac{MPS}{EPS}$	19.05	12.12
Equity fund (EF)	12,00,000	8,00,000
Book value per share $= \frac{EF}{N}$	12	10
Return on equity (ROE) $= \frac{EAT}{EF} \times 100$	17.50%	12.37%

(ii) **Estimation of growth rates in EPS for A Ltd. and B Ltd. :**

	A Ltd.	B Ltd.
Rétention ratio (1 – D/P ratio)	0.60	0.40
Growth rate (ROE × Retention ratio)	10.50%	4.95%

(iii) **Justifiable equity shares exchange ratio :**

(a) Intrinsic value based $= \frac{Rs.\ 20}{Rs.\ 40} = 0.5 : 1$ (upper limit)

(b) Market price based $= \frac{15}{40} = 0.375 : 1$ (lower limit)

Since A Ltd. has a higher EPS, ROE, P/E ratio and higher EPS growth expectations, the negotiation terms would be expected to be closer to the lower limit based on the existing share prices.

(iv) **Calculation of post merger EPS and its effect :**

	A Ltd.	B Ltd.	Combined
EAT	2,10,000	99,000	3,09,000
Share outstanding	1,00,000	80,000	1,32,000
EPS	2.1	1.2375	2.341
EPS dccretion (Dilution)	0.241	(0.3015)	

Combined outstanding shares = (1,00,000 + 0.4 × 80,000)
= 1,32,000 (shares)

EPS Accretion for A Ltd. = 2.341 – 2.1 = 0.241

EPS Dilution for B Ltd. = 1.2375 – (2.341 × 0.40) = 0.3011

(v) **Estimation of post merger Market price and other effects :**

	A Ltd.	B Ltd.	Combined
EPS	2.1	1.2375	2.341
P/E ratio	19.05	12.12	19.05
MPS (EPS × P/E ratio)	40	15	44.6
MPS Accretion (Dilution)	4.6	2.84	

MPS Accretion of B Ltd. = (44.60 × 0.40) – 15 = 2.84

Q. 27. X Ltd. is considering the proposal to acquire Y Ltd. and their financial information is given below :

Particulars	X Ltd.	Y Ltd.
No. of equity shares	10,00,000	6,00,000
Market price per share (Rs.)	30	18
Market capitalisation (Rs.)	3,00,00,000	1,08,00,000

X Ltd. intends to pay Rs. 1,40,00,000 in cash for Y Ltd., if Y Ltd's market price reflects only its value as a separate entity. Calculate the cost of merger :

(i) When merger is financed by cash.

(ii) When merger is financed by stock and X Ltd. agrees to exchange 5,00,000 shares in exchange of shares in Y Ltd.

Solution :

(i) Cost of merger (when merger is financed by cash)

= Cash – True / Intrinsic value of Y Ltd.

∴ Rs. (1,40,00,000 – 1,08,00,000) = Rs. 32,00,000

If cost of merger becomes negative then shareholders of X Ltd. will be benefited by acquiring Y Ltd. in terms of market value.

(ii) Cost of merger (when merger is financed by exchange of shares in X Ltd. to the shareholders of Y Ltd.)

Cost of merger = $PV_{xy} - PV_y$

PV_{xy} = Value of X Ltd. that Y Ltd's shareholders get.

PV_y = True / Intrinsic value of Y Ltd.

$PV_{xy} = PV_x + PV_y$

= Rs. (3,00,00,000 + 1,08,00,000)

= Rs. 4,08,00,000

Proportion that Y Ltd's shareholders get in X Ltd's capital structure :

$$= \frac{5,00,000 \text{ shares}}{(10,00,000 + 5,00,000) \text{ shares}} = 0.33 \text{ i.e. } \frac{1}{3}$$

True cost of merger = $PV_x + PV_y$

$$= (4,08,00,000 \times \frac{1}{3}) - 1,08,00,000 = \text{Rs. } 28,00,000$$

The cost of merger i.e., (5,00,000 × 30) – Rs. 1,08,00,000 Rs. 42,00,000 is much higher than the true cost of merger i.e., Rs. 28,00,000. So with this proposal the shareholders of Y Ltd. will be benefited.

Notes :

(1) When the cost of merger is calculated on the cash consideration, then cost of merger is unaffected by the merger gains.

(2) When merger is based on the exchange of shares, then the cost of merger depends on the gains, which has to be shared with the shareholder of Y Ltd.

Q. 28. A Ltd. is run and managed by an efficient team that insists on reinvesting 60% of its earnings in projects that provide Return on Equity of 10% despite the fact that the firms capitalisation rate is 15%. The firm's currently year's earnings is Rs. 10 per share.

At what price will the stock of A Ltd. sell? What is the present value of growth opportunities? Why would such a firm be a takeover target?

Solution :

Dividend growth rate

$$G = ROE \times b$$

where G = dividend growth rate

ROE = Return on equity

b = retention ratio

retention ratio + Payout ratio = 1

$G = ROE \times b = 10\% \times 0.60 = 6\%$

$$\text{Stock price of A Ltd.} = \frac{EPS \times \text{Payout ratio}}{K \times b}$$

where K = Capitalization ratio $= \frac{10 \times 0.4}{0.15 \times 0.6} = \text{Rs. } 44.44$

Present value of growth of opportunities :

= Market price per share – No growth value per share

$$= \text{Rs. } 44.44 - \text{Rs.}\left(\frac{10}{0.15}\right) = \text{Rs. } 22.22 \text{ (negative)}$$

Reasons for takeover target

Negative present value of growth opportunities implies that the net present value of the firm's projects is negative; i.e. the rate of return on this assets is less than the opportunity cost of capital. Such a firm would be subject to takeover target because another firm could buy the firm.

Q. 29. Assume the current market value of the bidding company is Rs. 40 crores and that of the target company is also Rs. 40 crores. Suppose, as a combined entity, due to synergistic effects, the value increases to Rs. 100 crores. How will the increase in value be shared or divided between the bidder and the target company?

Solution :

Targets usually receive a premium. If the bidder pays the target a premium of less than Rs. 20 crores, it will share in the value increases. If the bidder pays Rs. 60 crores to the target, all gains will go the target company. The bidder achieves no value increase for itself. On the other hand, if the bidder pays Rs. 70 crores to the target, the value of bidder will down to Rs. 30 crores.

Q. 30. X Ltd. is intending to acquire B Ltd. (by merger) and the following information is available in respect of the companies.

Particulars	A Ltd.	B Ltd.
No. of Equity Shares	5,00,000	3,00,000
Earnings after tax (Rs.)	20,00,000	6,00,000
Market value per share (Rs.)	18	12

(i) What is the present EPS of both the companies?

(ii) If the proposed merger takes place, what would be the new earning per share for X Ltd. (assuming that the merger takes place by exchange of equity shares and the exchange ratio is based on the current market prices).

(iii) What should be exchange ratio, if B Ltd. want to ensure the same earnings to members as before the merger takes place?

Solution :

(i) **Earnings per share** $= \frac{\text{Earnings after tax}}{\text{No. of Equity shares}}$

A Ltd. $= \frac{\text{Rs. } 20,00,000}{5,00,000} = \text{Rs. } 4$ B Ltd. $= \frac{\text{Rs. } 6,00,000}{3,00,000} = \text{Rs. } 2$

(ii) **Calculation of new EPS of X Ltd. after merger (Exchange ratio based on market prices)**

Particulars	A Ltd.	B Ltd.
Earning after tax (Rs.)	20,00,000	6,00,000
No. of equity shares	5,00,000	3,00,000
Market value per share (Rs.)	18	12

No. of shares B Ltd. Shareholders will get in A Ltd. based on market price of shares is as follows:

$= \frac{\text{Rs. } 12}{\text{Rs. } 18} \times 3,00,000 \text{ shares} = 2,00,000 \text{ shares}$

For every three shares held in B Ltd., two shares of A Ltd. are given.

Then, the total number of equity shares of X Ltd. after merger is as follows:

= 5,00,000 + 2,00,000 = 7,00,000 shares

Total Earnings of A Ltd. after merger = 20,00,000 + 6,00,000 = Rs. 26,00,000

The new EPS of A Ltd. after merger $= \frac{\text{Rs. } 26,00,000}{7,00,000 \text{ Shares}} = \text{Rs. } 3.71$

(iii) **Calculation of exchange ratio to ensure B Ltd. to earn the same before the merger takes place:**

Original EPS : A Ltd. = Rs. 4; B Ltd. = Rs. 2

The number of shares to be exchanged by A Ltd. with B Ltd. based on the EPS of the respective companies is as follows:

$= \frac{\text{Rs. } 2}{\text{Rs. } 4} \times 3,00,000$ = 1,50,000 shares

Total number of shares of A Ltd. after merger = 5,00,000 + 1,50,000 = 6,50,000 shares

EPS after merger $= \frac{\text{Rs. } 20,00,000 + \text{Rs. } 6,00,000}{6,50,000 \text{ shares}} = \text{Rs. } 4$

The total earnings available to new shareholder of B Ltd.

= 1,50,000 shares × Rs. 4 = Rs. 6,00,000

Recommendation : The exchange ratio based on market shares is beneficial to the shareholders of B Ltd.

Q. 31. A Ltd. is considering takeover of B Ltd. and C Ltd. The financial data for the three companies are as follows :

Particulars	A Ltd.	B Ltd.	C Ltd.
Equity Share Capital of Rs. 10 each (Rs. crores)	450	180	90
Earnings (Rs. crores)	90	18	18
Market price of each share (Rs.)	60	37	46

Calculate :

(i) Price earnings ratios

(ii) Earning per share of A Ltd. after the acquisition of B Ltd. and C Ltd. separately. Will you recommend the merger of either/both of the companies? Justify your answer.

Solution :

Calculation of Price Earnings ratios

Particulars	A Ltd.	B Ltd.	C Ltd.
Earnings (Rs. crores)	90	18	18
No. of shares (crores)	45	18	9
EPS (Rs.)	2	1	2
Market price per share (Rs.)	60	37	46
PE Ratio	40	37	23

Calculation of EPS of A Ltd. after acquisition of B Ltd. and C Ltd.

$$\text{Exchange ratio or rate} = \frac{\text{Buyer's P/E Ratio}}{\text{Seller's P/E Ratio}}$$

Particulars	A Ltd.	B Ltd.	C Ltd.
Exchange ratio in A Ltd.	–	81	1.30
Value of shares (Rs. crores)	2700	666	414
No. of A Ltd.'s share to be given (crores)	–	666/60	414/60
EPS (Rs.)	–	11.11	6.9
Total earings after acquisition (Rs. crores)	–	108	108
Total number of shares (crores)	–	56.1	51.9
EPS after acquisition (Rs.)	–	1.93	2.08

Analysis: After merger of C Ltd. with A Ltd's. EPS is higher than A Ltd. (Rs. 2.08). Hence merger with only C Ltd. is suggested to increase the value to the shareholders of A Ltd.

Q. 32. XYZ Ltd. is considering merger with ABC Ltd. XYZ Ltd.'s shares are currently traded at Rs. 25. It has 2,00,000 shares outstanding and its profits after taxes (PAT) amount to Rs. Rs. 4,00,000. ABC Ltd. has 1,00,000 shares outstanding. Its current market price is Rs. 12.50 and its PAT are Rs. 1,00,000. The merger will be effected by means of a stock swap (exchange). ABC Ltd. has agreed to a plan under which XYZ Ltd. will offer the current market value of ABC Ltd.'s shares:

(i) What is the pre-merger earnings per share (EPS) and P/E ratios of both the companies?

(ii) If ABC Ltd.'s P/E ratio is 8, what is its current market price? What is the exchange ratio? What will XYZ Ltd.'s post-merger EPS be?

(iii) What must the exchange ratio be for XYZ Ltd.'s that pre and post-merger EPS to be the same?

Solution :

(i) **Pre-merger EPS and P/E ratios of XYZ Ltd. and ABC Ltd.**

Particulars	A Ltd.	B Ltd.
Profits after taxes	4,00,000	1,00,000
Number of shares outstanding	2,00,000	1,00,000
EPS (Earnings after tax/No. of shares)	2	1
Market price per share	23.00	12.50
P/E Ratio (times)	12.50	12.50

(ii) **Current market price of ABC Ltd., if P/E ratio is 8** = Rs. 1 × 8 = Rs. 8

Exchange ratio = Rs. 25/8 = 3.125

$$\text{Post merger EPS of XYZ Ltd.} = \frac{\text{Rs. } 4,00,000 + \text{Rs.}1,00,000}{2,00,000 + (1,00,000/3.125)} = \frac{\text{Rs. } 5,00,000}{2,32,000} = \text{Rs. } 2.16$$

(iii) **Desired exchange ratio**

Total number of shares in post-merged company

$$= \frac{\text{Post - mergd earnings}}{\text{Pre - merger EPS of XYZ Ltd.}} = 5,00,000/2 = 2,50,000$$

Number of shares required to be issued = 2,50,000 - 200,000 = 50,000

Therefore, the exchange ratio is = 50,000/ 1,00,000 = 0.50

CHAPTER - 5

VALUATION OF ASSETS AND LIABILITIES

5.1: Forms of Intellectual Property and Methods of Valuation

Q.1 Why is it important to value intellectual property?

Ans.

As intellectual property grows in its importance, managers must understand not only the methods of valuing these assets, but also the unique risk factors associated with intellectual assets. Each valuation technique outlined has its strengths and weaknesses, but as is true with enterprise valuation there is no definitive right or wrong valuation approach. However, it is wise to use several of these methods when valuing a specific IP asset. This provides differing viewpoints on the underlying asset value and is a useful check for consistency in assumptions and human errors that may occur in relying on only one method.

When we value business, fixed asset valuation becomes an important part of it. The value of fixed asset changes over time so it is important to value it properly. After the useful life a fixed asset becomes scrap. So we need to replace it by a new one. Timely valuation gives us the benefit of understanding the life of the asset.

The growing awareness on IP's importance has become a major issue especially for SME. Due to the increasing replacement of classical assets by IP-assets, investors and banks will have to take a closer look at the intangibles. Valuation of patents has become a central issue in strategic decision-making. Proper valuation could contribute to increasing the value of the business for shareholders. Beyond providing adequate financial inputs, using the patent system after understanding the true monetary and business value of patents, will make a big contribution in realizing the fruits of implementation of the Lisbon Strategy of the European Union, which aims to make the European Union "the most dynamic and competitive knowledge-based economy in the world" by boosting investment in research and innovation

Q.2 How do you value intangible assets like goodwill?

Ans.

Goodwill, in general, is recorded in the books only when some consideration in money or money's worth has been paid for it. Whenever a business is acquired for a price (payable either in cash or in shares or otherwise) which is in excess of the value of the net assets of the business taken over, the excess is termed as 'goodwill'. Goodwill arises from business connections, trade name or reputation of an enterprise or from other intangible benefits enjoyed by an enterprise.

As a matter of financial prudence, goodwill is written off over a period. However, many enterprises do not write off goodwill and retain it as an asset.

Q.3 ABC Ltd. had started negotiation with a supplier to purchase a heavy machinery costing Rs. 20 crores on 1st January 2008. The machinery was delivered at buyer's cost at the factory of ABC Ltd. on 1st May 2008. ABC Ltd. Secured term loan from a commercial bank to finance 75% of the cost of the asset at an interest of 16% p.a. The loan was disbursed on delivery of the machinery at buyer's factory.

ABC Ltd. Incurred the following expenses with respect to the machinery:

Transportation charge	Rs. 2, 50,000
Handling and installation charges	Rs. 1, 65,000
Trial and expenses	Rs.80,000

The machinery was certified as ready for commercial use on 1st August, 2008.

But on 1st August, 2008 the machinery was not used for commercial production due to decision of the top management to cut down production temporarily. The machinery was actually put to use only from 1st

January, 2009. During the period (Aug-Dec, 2008) ABC Ltd. incurred additional trial run expenses of Rs. 140000.

Compute the cost of heavy machinery for ABC Ltd.

Ans.

Computation of cost	Rs.
Purchase price	20,00,00,000
Transportation charges	2,50,000
Handling and installation charges	1,65,000
Trial run expenses	80,000
Interest cost @ 16% p.a.	60,49,315*
(from 1-5-08 to 31-7-08)	
	20,65,44,315

* (20,00,00,000)*0.75)*0.16*(92/365)

Expenditure incurred during the interval between the date the asset is ready for use and the date of actual use:

Trial run expense	1,40,000
Interest cost	100,60,274
(1-8-08 to 31-12-08)	
	102,90,274

The expenditure incurred during the interval period cannot be capitalized. It should normally be charged to profit and loss account in full. However, considering the prolong interval period (5 months), the expenditure of Rs. 102,00,274 incurred can be considered as deferred revenue expenditure and amortized over a period of 5 years.

Q.4 Surya Ltd. exchanged one of its old machinery to acquire a new one from its supplier. The book value of the old machinery exchanged was Rs. 20,65,000. The supplier agreed to consider 80% of the book value as the worth of the old asset and asked for an additional payment of Rs. 15,40,000 for the new machinery.

What will be the cost of new machinery? Will the cost change if the market value of the asset acquired is Rs. 35,00,000. Show the accounting treatment in both the cases.

Solution

Situation 1:

Cost of new machinery

Agreed value of old asset	16,52,000
(80% of the Rs. 20,65,000)	
Add: Additional payment in cash	15,40,000
	31,92,000

Accounting treatment:

Machinery (new) A/C	Dr. 31,92,000	
Profit & Loss A/C	Dr. 4,13,000*	
To Machinery (old) A/C		20,65,000
To Cash A/C		15,40,000

* loss on exchange of asset

Situation 2:

Cost of new machinery (fair value of the asset acquired) 35,00,000

Accounting treatment

Machinery (new) A/C	Dr. 35,00,000	
Profit & Loss A/C	Dr. 1,05,000*	
To Machinery (old) A/C		20,65,000
To Cash A/C		15,40,000

* Loss on exchange of asset

Q.5 The original cost of the machine shown in the books of Dutta Ltd. as on 1st jan, 2007 Rs. 200 lakhs which they revalued upword by 10% in the year 2007, it appers that a 5% downword revaluation should be made to arrive at the true value of the asset in the changed economic and industry condition. They charged 15% depreciation on the W.D.V of the asset.

Show the value of the asset at which it should appear in the balance sheet dated 31st December 2009.

Solution

Determination of cost	Rs. In lakhs
W.D.V as on 1-1-2007	200.00
Add: revaluation profit	20.00
	220.00
Less: depreciation for 2007	33.00
W.DV on 1-1-2008	187.00
Less: Depreciation for_2008	28.05
W.DV on 1-1-2009	158.95
Less revaluation loss	7.95
	151.00
Less: depreciation for 2009	22.65
W.DV on 31-12-2009	128.35

So the value of the machine as on 31-12-2009 is Rs. 128.35 lakhs.

Q. What is goodwill? How a firm has goodwill?

Ans.

When a business is able to earn profits at a rate higher than that at which a similar business earns, the former business is said to possess goodwill. Goodwill is, therefore, an invisible asset by the possession of which a business can enjoy super earning. Since it is invisible the goodwill is called an in tangible asset. But since its existence can only be felt through superior earning power it is a real asset.

There are several causes for which a business may have goodwill and some of them are:

- Possession of a large number of profitable contracts ;
- Suitable nature of the business ;
- Exclusive franchise ;
- Protected valuable patents and trademarks ;
- Suitable location of the business ;
- Ideal window dressing ;
- Government patronage ;
- Reputability, respectability and reliability of the proprietor, partners or trustees ;
- Special ability and skill of the persons in management, etc.

In case of transfer of business, separation of the partners from the business due to retirement, death, etc, assessment of the value of the business for any reason, goodwill may have to be valued.

Q. 7 What are the different methods of valuation of Goodwill?

Ans.

There are various methods for valuation of goodwill of a business of which the following are of common use:

Few years' Purchase of Average Profits Method: Under this method goodwill is valued on the basis of an agreed number of years' purchase of the average maintainable profit. The word maintainable indicates several adjustments in respect of the factors which might have influenced abnormally the profits of the years over which the average is taken. If in any year there is an exceptional opportunity or an exceptional expense or absence of expense, the profit for the year has to be so adjusted as to get it free from such exceptional influences.

Sometimes instead of the simple average of the adjusted profits as discussed above, weighted average is taken into consideration. Weights are given to each years' profit on the consideration how each years' profit is likely to influence the future profit trend.

Super Profits Method: Under this method average super profit is ascertained. Goodwill is calculated at a few years' purchase of the super profit of the concern. The number of years to be taken for consideration depends upon the nature of the business, the steady or fluctuating nature of the profit and also the nature of goodwill.

First, ascertain the average capital employed during the year. For this purpose take the total of the closing real assets of the concern as revalued (excluding the non-trading assets and goodwill already appearing in the balance sheet unless such goodwill represented the payment to the vendor).

In order to find out the average capital employed it is necessary to deduct from the above the current liabilities and 50% of the profits for the year after tax. The profit should also be excluding non-trading income, if any. The average capital employed in this way excludes the long term loans, debentures and preference shares.

The idea of capital employed is not suitable for the purpose of valuation of goodwill of an individual company where valuation is to be done to the advantage of the equity shareholders. In this case, from the above total assets we deduct the current liabilities, long term loans, preference capital, etc, we also deduct 50% of the profit for the year after excluding non-trading income and after charging interest on long term loans and debentures, preference dividend, etc.

The average capital employed is the mean of the opening and closing capitals. As we have taken the closing net assets which include the profits for the year it is necessary to deduct 50%of the profit in order to get the capital at the middle of the year. If, however, the closing net assets are after the payment of dividend or after setting aside a portion of the profit to proposed dividend account, necessary adjustments must be done so that the average capital ascertained includes only 50%of the profit after tax.

Now we calculate the normal average annual trading profit after tax, but before charging interest on debentures and long term loans and also preference dividend. From this average profit reasonable managerial remuneration should also be deducted. The profit as obtained after the above adjustments is to be compared with the reasonable return on the average capital employed, calculated at the rate of return earned by similar businesses. If the former exceeds the latter the balance represents the super profit.

A few years' purchase of the super profit is taken as the value of goodwill.

Annuity Method: Under this method the basis is super profit. Let us take an example:-

Suppose the super profit of a concern has been calculated at Rs.50000 and it has been considered reasonable that 5 years' purchase of the super profit approximates the value of goodwill. The contention behind this is that, the purchaser of the business can expect to enjoy super profit of Rs.50000 per year for the next 5 years. If this is the contention it is not reasonable that he should pay Rs. (50000*5) or Rs.250000. He should pay an amount which will give him an annuity of Rs.50000 over the next 5 years at the current rate of interest. This is what is known as the annuity method of valuation of goodwill. Once the super profit is ascertained, the present value and hence the value of goodwill can be ascertained by the following formula:-

V = a/i[1-(1+i)^-n)] ,or,

V = a/i[1-1/(1+i)^n]

Where,

V = the present value of the annuity or the value of goodwill in this case

a = the annuity or the annual super profit in this case

n = the number of years the annuity would be enjoyed

i = the rate of interest per rupee per year

Capitalization Method:-

Capitalization of Average Profit: Under this method the average annual profit is to be ascertained after providing for reasonable management remuneration. This profit should be capitalized at the rate of reasonable return to find out the total value of business. Now the value of goodwill will be the total value of business minus its net assets. If, however, the net asset is greater there will be no goodwill, rather there is badwill.

Capitalization of Super Profit: Under this method the average super profit is capitalised at a certain rate of interest and this capitalized amount becomes the value of goodwill.

Q.8 Negotiation is going on for transfer of A Ltd. on the basis of Balance Sheet and the additional information as given below:

Balance Sheet of A Ltd.

As on 31st march 2010

Share capital		Goodwill	1,00,000
(Rs. 10 fully paid up	10,00,000	Land & Building	3,00,000
share)		Plant & Machinery	8,00,000
Reserve & Surplus	4,00,000	Investment	1,00,000
Sundry creditors	3,00,000	Stock	2,00,000
		Debtors	1,50,000
		Cash & Bank	50,000
	17,00,000		17,00,000

Profit before tax for 2009-10 amounted to Rs 6, 00,000 including Rs. 10,000 as interest on investment. However, an additional amount of Rs. 50,000 p.a. shall be required to be spent for smooth running of the business.

Market value of land & building and plant & machinery are estimated at Rs.9,00,000 and Rs. 10,00,000 respectively. In order to match the above figures further depreciation to the extent of Rs. 40,000 should be taken into consideration. Income tax rate may be taken at 30%. Return on capital at the rate of 20% before tax may be considered as normal for this business for the present stage.

For the purpose of determining the rate of return, profit for this year after the aforesaid adjustments may be taken as expected average profit. Similarly, average trading capital employed is also to be considered on the basis of position in this year.

It has been agreed that a three years' purchase of supper profit shall be taken as the value of goodwill for the purpose of the deal.

You are requested to calculate the value of the goodwill for the company.

Ans.

Valuation of goodwill

Capital employed on 31st march, 2010		(amount in Rs)
Land & Building		9,00,000
Plant & machinery		10,00,000
Stock		2,00,000
Debtors		1,50,000
Cash & bank		50,000
Less: Sundry creditors		3,00,000
		20,00,000
Average maintainable trading profit for the year ending 31st March, 2010		
Net profit before tax		6,00,000
Less: Additional depreciation	40,000	
Less: additional recurring expenses	50,000	
Less: Non-operating income (interest on investment)	10,000	1,00,000
		5,00,000
Less: Provision for taxation @30% of Rs. 540000		1,62,000
Average trading capital employed		3,38,000
Closing capital employed		20,00,000
Less: 50% of average maintainable trading profit after tax		1,69,000
Super profit		18,31,000
Average maintainable operating profit		3,38,000
Less: Normal profit 14% of capital employed Rs. 1831000		2,56,000
Valuation of Goodwill		81,660
Super profits		81,660
Goodwill at 3 years purchase of super profits		2,44,980

Note

1. It has been assumed that additional depreciation arising out of revaluation of assets is not deductible for calculating provision for taxation.
2. Since tax rate is 30% and normal pre-tax rate being 20% the after tax normal rate of return will be 14%

Q.9 Marico Ltd. acquired 100% of Sun Ltd. for Rs. 20000 (lacs). As on the date of acquisition, the net assets of Marico Ltd. were: (Rs. in lacs)

Tangible fixed assets	500
Brand (valued by management)	120
Net current assets	380

Compute goodwill on acquisition under the following situation:

a) Ignore brand value.

b) Consider brand value.

Ans.

Alt I: If brand value is ignored

Purchase consideration	2000
Less: net assets acquired	(500+380) 880
Goodwill	1120

Alt:II If brand value is considered

Purchase consideration	2000
Less: Net assets acquired	1000
Goodwill	1000

In first case above goodwill includes brand, in second case brand has been recognized separately.

In India no company has so far attempted to recognize brand separately from goodwill on acquisition. This is because of two reasons:

1) Difficulty in measuring brand ; and
2) Absence of statutory or regulatory requirement to recognize brand separately from goodwill.

But with the growing importance of brand both nationally and internationally, many multinational companies started recognizing brand separately.

Q.10 Capital employed by A Ltd. Rs. 1800000, future maintainable profit Rs. 350000, normal rate of return 10%, super profit can be maintained 5 years.Compute goodwill.

Ans.

Solution

Future maintenable profit	Rs. 350000
Less: Maintainable normal profit (1800000*10/100)	180000
Super profit	170000

Goodwill = super profit * number of years for which super profit can be maintained = Rs. 170000* 5 = Rs.85000

Q.11 What is intellectual property?

Ans.

Intellectual property (IP) shares many of the characteristics associated with real and personal property. For example, intellectual property is an asset, and as such it can be bought, sold, licensed, exchanged, or gratuitously given away like any other form of property. Further, the intellectual property owner has the right to prevent the unauthorized use or sale of the property. The most noticeable difference between intellectual property and other forms of property, however, is that intellectual property is intangible. That is, it cannot be defined or identified by its own physical parameters. Consequently, IP must be expressed in some discernible way to be protectable.

To be patentable, an invention must be novel, unique, useful, and nonobvious. A prerequisite to patentability is that the invention must be capable of some practical application. This emphasizes the importance the patent system puts on usefulness. One might say that a patent is a contract between society as a whole and an individual inventor. Under the terms of this social contract, the inventor is given the exclusive right to prevent others from making, using, and selling a patented invention for a fixed period of time in return for the inventor's disclosing the details of the invention to the public. Thus, patent systems encourage the disclosure of information to the public by rewarding an inventor for his or her endeavours.

Under all patent systems, once this period has expired, people are free to use the invention as they wish. The benefits of an effective patent system can be partially illustrated as follows:

- A patent rewards the investment of time, money, and effort associated with research. It stimulates further research as competitors invent alternatives to patented inventions, and it encourages innovation and investment in patented inventions by permitting companies to recover their research and development costs during the period of exclusive rights.
- The limited term of a patent also furthers the public interest by encouraging quick commercialization of inventions, thereby making them available to the public sooner rather than later. Patents also allow for more latitude in the exchange of information between research groups, help avoid duplicative research, and, most importantly, increase the general pool of public knowledge.

Q.12 Identify different Methods of Valuation of intellectual properties.

Ans.

Income Approach

Income approaches focus on the future cash flow derived from a particular piece of IP. As with all income valuations the need to accurately forecast future cash flow is of paramount importance. The following variables are needed when using an income approach:

- An income stream either from product sales or licensure of the patent
- An estimate of the duration of the patent's useful life
- An understanding of patent specific risk factors and incorporating those into the valuation
- A discount rate

Q.13 Identify the risk involved in valuation of intellectual properties.

Ans.

Unlike most enterprise or fixed asset valuations, intellectual property assets have their own set of unique risk factors. Some of these risks are:

- New Patent Issuance: New patents can either make existing technology obsolete or, more likely, allow for another competitor in the same space. If a similar patent is issued the value of the underlying technology will decrease. One key difficulty of the patent process is that it is nearly impossible to know what has been filed with the U.S. Patentand Trademark Office (USPTO). Only issued patents are publicly available information and therefore the risk posed by pending patent claims cannot be easily foreseen.
- Patent Challenges/Declared Invalid: An issued patent remains open to attack for invalidity, and it is a common defence for an alleged infringer to assert that the patent is invalid. Typically, patents are challenged

on the grounds that someone other than the named inventor invented the claimed property, that the invention is "obvious" to persons skilled in the relevant technology, or that the patent is not unique and too similar to existing methods. Successful challenges can immediately invalidate the patent and corresponding licenses. In principle, proper due diligence should turn up these potential problems.

- Patent Infringement Suits: Licensees could be held liable and ultimately pay three times damages. Again, due diligence should reveal any potential problems of overlapping, uncited prior or concurrent claims.
- Trade Secrets*:* Some patents are virtually worthless without the necessary trade secrets. An example of a "worthless" patent is a pharmaceutical patent for a specific drug that did not reveal the exact "recipe" for formulating the drug. The inventor(s) of the patent need to cooperate and share those trade secrets to maximize the value of the patent.
- Foreign Governments fail to comply with Patent Cooperation Treaties*:* This is a major issue for software patents, many of which are pirated in foreign countries and sold into the world market.

Q.14 How Discounted Cash Flow (DCF) Method of valuation is used to value Intellectual Property?

Ans.

The discounted cash flow approach attempts to determine the value of the IP by computing the present value of cash flows, attributable to that piece of IP, over the useful life of the asset. Unlike an enterprise DCF valuation, terminal values are rarely used, as the useful life of a patent is typically a finite period of time. Since 1995, patents expire 17 years after issuance or 20 years after filing. While this does not imply that patents cannot have value after 17 years, it usually implies some diminution of the patent's value beyond this point. At expiration, competing identical technologies can enter the marketplace. A good example of this is generic pharmaceuticals, there is still value in the "name brand" product after a patent has expired, but numerous generics typically enter the market. Valuations of patents will vary based on the degree of post expiration cash flows assumed. For this reason, most analysts usually begin by assuming no value is expected after expiration of the patent and then consider other assumptions. The same methodology used to forecast free cash flows and an appropriate discount rate in an enterprise valuation apply to an IP specific valuation. Free cash flows are forecasted for the useful life of the patent and the discount rate is the company's market based rate of return, assuming that the company's business risk is equivalent to the patent under consideration. The forecasted free cash flows should also be adjusted for the probability of a patent's success. The risk factors outlined above affect the likelihood of a patent's success

The benefits of the DCF method are its ability to compare values among different patents, likely availability of many of the required inputs from the firm's financial statements and market information. A drawback of DCF is that it does not capture the unique independent risks associated with patents. All risks are lumped together and are assumed to be appropriately adjusted for in the discount rate and the probability of success, rather than being broken out and dealt with individually (i.e., such as legal risk, technological risk, piracy, etc.) Further, often DCF fails to consider dependencies on properties held by others. In roughly 40 percent of cases, patents depend on other patents or property held in the public domain.

Q.15 What is (i) venture capital method and (ii) relief from royal method of valuation of intellectual properties?

Ans.

(i) Venture Capital Method

The Venture Capital valuation technique also derives a value for a patent from the cash flows that arise over the asset's life. It differs from the DCF method in that a fixed non-market based discount rate is used, usually 50 percent (40-60 percent range), and there is no explicit adjustment for the probability of success. This method does not account well for the patent specific risk factors outlined above. Like the DCF, cash flows are assumed to be static and independent risk factors are lumped together. In valuing intellectual property, this simplicity is the method's greatest drawback.

(ii) Relief from Royalty Method

Relief from royalty is based on deprival value theory and looks at the amount of income that a company would be "deprived" of, if it did not own the intellectual property in question but was required to rent it from a third-

party instead. The royalty represents the rental charge, which would be paid to the licensor if this hypothetical arrangement were in place. The ability to determine an appropriate royalty rate depends upon the specific and requires the identification of suitable comparable transactions and prices involving third parties. Obtaining a royalty rate is only a first step and a reliable sales forecast is also required in order to estimate the income that flows directly from the intellectual property. As with other income approaches, an appropriate cost of capital has to be determined.

This method is useful because the market size and expected market share are generally accessible information. In addition, the method is also intuitive in that the value of a property is defined as a rental charge other companies would pay to use it. One significant drawback of the relief from royalty method is that a rental charge can always be assumed, when in reality one may never materialize. The plain fact is that some patents may be of little value and thus are not worthy of a rental charge.

Q.16 What is real option method of valuation of intellectual property?

Ans.

The Real Options Method (ROM) recognizes that a patent has intrinsic value based on its projected cash flows discounted at the opportunity cost of capital for the owner of the patent. Additionally, the ROM incorporates the value associated with the uncertainty inherent in a business and the active decision making required for a patent-based business strategy to succeed. The ROM values these items using the Black-Scholes option-pricing model.

The inputs for the Black Scholes pricing model are as follows:

- **Underlying Asset Value** The present value of the property's future cash flows over the life of the asset
- **Exercise Price** The present value of the fixed costs that must be invested to commercialize the product or to maintain the patent's strength
- **Time** The time until the patent expires
- **Volatility** The standard deviation of the growth rate of the patent's cash flows
- **Risk-free rate** The risk-free Treasury rate over the remaining life of the patent
- **Dividends** Reduction of the option's duration due to competitive action, unforeseen delays, or other risk factors

The primary advantage of the ROM is that it accounts for the value associated with the uncertainty of cash flows and the ability to manage the patent investment. Like the DCF or Venture Capital methods, the ROM values the stream of cash flows but it also accounts for acquired knowledge. This method provides a more complete evaluation than either the DCF or the Venture Capital method, which only capture cash flows and static fixed costs.

The primary disadvantage of the ROM is that there is often an inexact mapping of the assumptions underlying option pricing theory and the real option application. For example, is the standard deviation of the growth rate of patent cash flows log-normally distributed?

Q.17 What are other valuation approaches to intellectual property?

Ans.

As with many types of valuation, other methods exist to value IP, which we touch on only briefly here.

(i) Market Comparables

Conceptually, a market comparables approach should offer a good indication of a patent's value, as it reflects the exchange of value between two parties. However, in valuing patents it is difficult to find a suitable comparable transaction. The two primary reasons for this are the lack of disclosed sale or licensure activity and by its definition, a patent must be unique.

(ii) Historic Cost

This valuation methodology measures the amount of money spent in the development of the intellectual property at the time it was developed. But unless the intellectual property was developed in the recent past, an historic cost measure tends to be unreliable due to the impact of inflation and the changes that occur in technology over time. In addition, it is not always possible to provide accurate information on the resources spent for such quantification.

(iii) Replication Cost

This measures the amount of money that would need to be spent in current cost terms in order to develop the intellectual property in exactly the same way and to achieve the same final state as it currently exists. This includes costs incurred on any unsuccessful or inefficient prototypes.

(iv) Replacement Cost

This measures the amount of money that would need to be spent in current cost terms in order to develop the intellectual property as it currently exists, but *excludes* the costs relating to unsuccessful or inefficient prototypes.

5.2 Valuation of Fixed Assets

Q.18 Why asset valuation is important?

Ans.

Every asset, financial as well as real, has a value. The key to successfully investing in and managing these assets lies in understanding not only what the value is but also the sources of the value. Any asset can be valued, but some assets are easier to value than others and the details of valuation will vary from case to case. Thus, the valuation of a share of a real estate property will require different information and follow a different format than the valuation of a publicly traded stock. What is surprising; however, is not the difference in valuation techniques across assets, but the degree of similarity in basic principles. There is undeniably uncertainty associated with valuation. Often that uncertainty comes from the asset being valued, though the valuation model may add to that uncertainty.

Fixed asset is an asset held with the intention of being used for the purpose of producing or providing goods or services and is not held for sale in the normal course of business.

Fair market value is the price that would be agreed to in an open and unrestricted market between knowledgeable and willing parties dealing at arm's length who are fully informed and are not under any compulsion to transact.

Gross book value of a fixed asset is its historical cost or other amount substituted for historical cost in the books of account or financial statements. When this amount is shown net of accumulated depreciation, it is termed as net book value.

Q.19 How to identify fixed assets?

Ans.

The definition in the previous paragraph gives criteria for determining whether items are to be classified as fixed assets. Judgement is required in applying the criteria to specific circumstances or specific types of enterprises. It may be appropriate to aggregate indivi dually insignificant items, and to apply the criteria to the aggregate value. An enterprise may decide to expense an item which could otherwise have been included as fixed asset, because the amount of the expenditure is not material.

Stand-by equipment and servicing equipment are normally capitalised. Machinery spares are usually charged to the profit and loss statement as and when consumed. However, if such spares can be used only in connection with an item of fixed asset and their use is expected to be irregular, it may be appropriate to allocate the total cost on a systematic basis over a period not exceeding the useful life of the principal item.

In certain circumstances, the accounting for an item of fixed asset may be improved if the total expenditure thereon is allocated to its component parts, provided they are in practice separable, and estimates are made of the useful lives of these components. For example, rather than treat an aircraft and its engines as one unit,

it may be better to treat the engines as a separate unit if it is likely that their useful life is shorter than that of the aircraft as a whole.

Q.20 What are the related costs in relation to a fixed asset valuation?

Ans.

The cost of an item of fixed asset comprises its purchase price, including import duties and other non-refundable taxes or levies and any directly attributable cost of bringing the asset to its working condition for its intended use; any trade discounts and rebates are deducted in arriving at the purchase price. Examples of directly attributable costs are:

- site preparation;
- initial delivery and handling costs;
- installation cost, such as special foundations for plant; and
- professional fees, e.g., fees of architects and engineers.

Administration and other general overhead expenses are usually excluded from the cost of fixed assets because they do not relate to a specific fixed asset. However, in some circumstances, such expenses as are specifically attributable to construction of a project or to the acquisition of a fixed asset or bringing it to its working condition, may be included as part of the cost of the construction project or as a part of the cost of the fixed asset.

The expenditure incurred on start-up and commissioning of the project, including the expenditure incurred on test runs and experimental production, is usually capitalised as an indirect element of the construction cost. However, the expenditure incurred after the plant has begun commercial production, i.e., production intended for sale or captive consumption, is not capitalized and is treated as revenue expenditure even though the contract may stipulate that the plant will not be finally taken over until after the satisfactory completion.

If the interval between the date a project is ready to commence commercial production and the date at which commercial production actually begins is prolonged, all expenses incurred during this period are charged to the profit and loss statement. However, the expenditure incurred during this period is also sometimes treated as deferred revenue expenditure to be amortised over a period not exceeding 3 to 5 years after the commencement.

Q.21 How do you value self-constructed fixed assets?

Ans.

In arriving at the gross book value of self-constructed fixed assets, the same principles apply as those described previously. Included in the gross book value are a cost of construction that relate directly to the specific asset and costs that are attributable to the construction activity in general and can be allocated to the specific asset. Any internal profits are eliminated in arriving at such costs.

Q.22 How do you value a fixed asset when it is acquired in an exchange?

Ans.

When a fixed asset is acquired in exchange for another asset, its cost is usually determined by reference to the fair market value of the consideration given. It may be appropriate to consider also the fair market value of the asset acquired if this is more clearly evident.

When a fixed asset is acquired in exchange for shares or other securities in the enterprise, it is usually recorded at its fair market value, or the fair market value of the securities issued, whichever is more.

Q.23 How do you treat improvements and repairs in relation to valuation of a fixed asset?

Ans.

Frequently, it is difficult to determine whether subsequent expenditure related to fixed asset represents improvements that ought to be added to the gross book value or repairs that ought to be charged to the profit

and loss statement. Only expenditure that increases the future benefits from the existing asset beyond its previously assessed standard of performance is included in the gross book value, e.g., an increase in productivity.

The cost of an addition or extension to an existing asset which is of a capital nature and which becomes an integral part of the existing asset is usually added to its gross book value. Any addition or extension, which has a separate identity and is capable of being used after the existing asset is disposed of, is accounted for separately.

Q.24 How do you value a fixed assets when financial statements are not prepared on a historical cost basis?

Ans.

Sometimes financial statements that are otherwise prepared on a historical cost basis include part or all of fixed assets at a valuation in substitution for historical costs and depreciation is calculated accordingly. Such financial statements are to be distinguished from financial statements prepared on a basis intended to reflect comprehensively the effects of a commonly accepted and preferred method of restating fixed assets. This is usually done by appraisal, normally undertaken by competent valuer. Other methods sometimes used are indexation and reference to current prices which when applied is cross checked periodically by appraisal method.

The revalued amounts of fixed assets are presented in financial statements either by restating both the gross book value and accumulated depreciation so as to give a net book value equal to the net revalued amount or by restating the net book value by adding therein the net increase on account of revaluation Different bases of valuation are sometimes used in the same financial statements to determine the book value of the separate items within each of the categories of fixed assets or for the different categories of fixed assets. In such cases, it is necessary to disclose the gross book value included on each basis.

Selective revaluation of assets can lead to unrepresentative amounts being reported in financial statements. Accordingly, when revaluations do not cover all the assets of a given class, it is appropriate that the selection of assets to be revalued be made on a systematic basis. For example, an enterprise may revalue a whole class of assets within a unit.

It is not appropriate for the revaluation of a class of assets to result in the net book value of that class being greater than the recoverable amount of the assets of that class.

An increase in net book value arising on revaluation of fixed assets is normally credited directly to owner's interests under the heading of revaluation reserves and is regarded as not available for distribution. A decrease in net book value arising on revaluation of fixed assets is charged to profit and loss statement except that, to the extent that such a decrease is considered to be related to a previous increase on revaluation that is included in revaluation reserve, it is sometimes charged against that earlier increase. It sometimes happens that an increase to be recorded is a reversal of a previous decrease arising on revaluation which has been charged to profit and loss statement in which case the increase is credited to profit and loss statement to the extent that it offsets the previously recorded decrease.

Q.25 How do you value fixed asset which is held for disposal?

Ans.

An item of fixed asset is eliminated from the financial statements on disposal.

Items of fixed assets that have been retired from active use and are held for disposal are stated at the lower of their net book value and net realisable value and are shown separately in the financial statements. Any expected loss is recognised immediately in the profit and loss statement.

In historical cost financial statements, gains or losses arising on disposal are generally recognised in the profit and loss statement.

On disposal of a previously revalued item of fixed asset, the difference between net disposal proceeds and the net book value is normally charged or credited to the profit and loss statement except that, to the extent such a loss is related to an increase which was previously recorded as a credit to revaluation reserve and which has not been subsequently reversed or utilised, it is charged directly to that account. The amount standing in revaluation reserve following the retirement or disposal of an asset which relates to that asset may be transferred to general reserve.

Q.26 How do you value fixed assets when it is acquired on hire purchase system?

Ans.

In the case of fixed assets acquired on hire purchase terms, although legal ownership does not vest in the enterprise, such assets are recorded at their cash value, which, if not readily available, is calculated by assuming an appropriate rate of interest. They are shown in the balance sheet with an appropriate narration to indicate that the enterprise does not have full ownership thereof.

Where an enterprise owns fixed assets jointly with others (otherwise than as a partner in a firm), the extent of its share in such assets, and the proportion in the original cost, accumulated depreciation and written down value are stated in the balance sheet. Alternatively, the *pro rata* cost of such jointly owned assets is grouped together with similar fully owned assets. Details of such jointly owned assets are indicated separately in the fixed assets register.

Where several assets are purchased for a consolidated price, the consideration is apportioned to the various assets on a fair basis as determined by competent valuers.

5.3 Valuation of Inventories

Q.27 What do you mean by valuation of Inventory? Why is it important for different types of merchandising and manufacturing companies?

Ans.

An inventory valuation allows a company to provide a monetary value for items that make up their inventory. Inventories are usually the largest current asset of a business and proper measurement of them is necessary to assure accurate financial statements. If inventory is not properly measured, expenses and revenues cannot be properly matched and a company could make poor business decisions.

The inventory valuation involves two major aspects:

- The cost of the purchased or manufactured inventory has to be determined and
- Such cost is retained in the inventory accounts of the company until the product is sold.

A single company may conduct merchandising, service, and/or manufacturing activities. For convenience, we shall assume that each company described here conducts only one type. If a company does conduct more than one type of activity, it will use the accounting method appropriate for each type.

Retail stores, wholesalers, distributors, and similar companies that sell tangible goods are merchandising companies. A merchandising company sells goods in substantially the same physical form in which it acquires them. Its cost of sales is therefore the acquisition cost of the goods that are sold. On the balance sheet, a current asset, Marketable inventory, shows the cost of goods that have been acquired but not yet sold as of the balance sheet date.

A manufacturing company converts raw materials and purchased parts into finished goods. Its cost of sales includes the conversion costs as well as the raw material and parts costs of the goods that it sells. A manufacturing company has three types of inventory accounts: Materials, Work in Process, and Finished Goods.

Because both merchandising and manufacturing companies sell tangible goods, their income state-ments sometimes use the term cost of goods sold rather than cost of sales. We shall use the two terms interchangeably for merchandising and manufacturing companies, but use only cost of sales for service organizations.

Service organizations furnish intangible services rather than tangible goods. They include hotels, beauty parlors and other personal services organizations, hospitals and other health care organizations, educational organizations, banks and other financial institutions, and governmental units. Service orga-nizations may have materials inventories-for example, the pipes and fittings of a plumbing company. Professional service firms, such as law, consulting, accounting, and architectural firms, may have intangible inventories consisting of costs that have been incurred on behalf of clients but that have not yet been billed to clients. These inventories, often called jobs in progress or unbilled costs, correspond to work in process inventories in a manufacturing company. Service organizations do not have finished goods inventories.

(i) Merchandising Companies

Acquisition Cost: Merchandise is added to inventory at its cost, in accordance with the basic cost concept. Cost includes both the cost of acquiring the merchandise and also the purchase expenditures made to make the goods ready for sale. Thus, merchandise cost includes not only the invoice cost of the goods purchased, but also freight and other shipping costs of bringing the goods to the point of sale and the cost of unpacking the goods and marking prices on them. Since the recordkeeping task of attaching these latter elements of cost to individual units of merchandise may be Considerable, some or all of them may be excluded from merchandise product costs and reported as gen-eral operating expenses of the period in which they are incurred. The purchase cost also is adjusted for returns and allowances and for cash discounts given by the suppliers of the merchandise. As was the case with sales discounts, purchase discounts can be accounted for either by recording the purchase amount as net of the discount or by recording the pur-chase amount at the invoice price and recording the discount when it is taken.

In accounting, the word purchase refers not to the placing of a purchase order but rather to the receipt of the merchandise that was ordered. No accounting entry is made when merchandise is ordered. The entry is made only when the merchandise becomes the property of the buyer.

(ii) Manufacturing Companies

A manufacturing company has as a major function of the conversion of raw materials and purchased parts into finished goods. In any company, cost of sales is the total of the acquisition cost plus conversion costs of the products that are sold. The difference between accounting for the cost of sales in a mer-chandising company and in a manufacturing company arises because the merchandising company usu-ally has no conversion costs.

The measurement of cost of goods sold is therefore more complicated in a manufacturing company than in a merchandising company. In a manufacturing company, this cost must be obtained by collecting and aggregating the several elements of manufacturing cost.

Q.28 What are the three types of inventory accounts a manufacturing company is required to maintain?

Ans

A manufacturing company has three types of inventory accounts. Their names and the nature of their content are as follows:

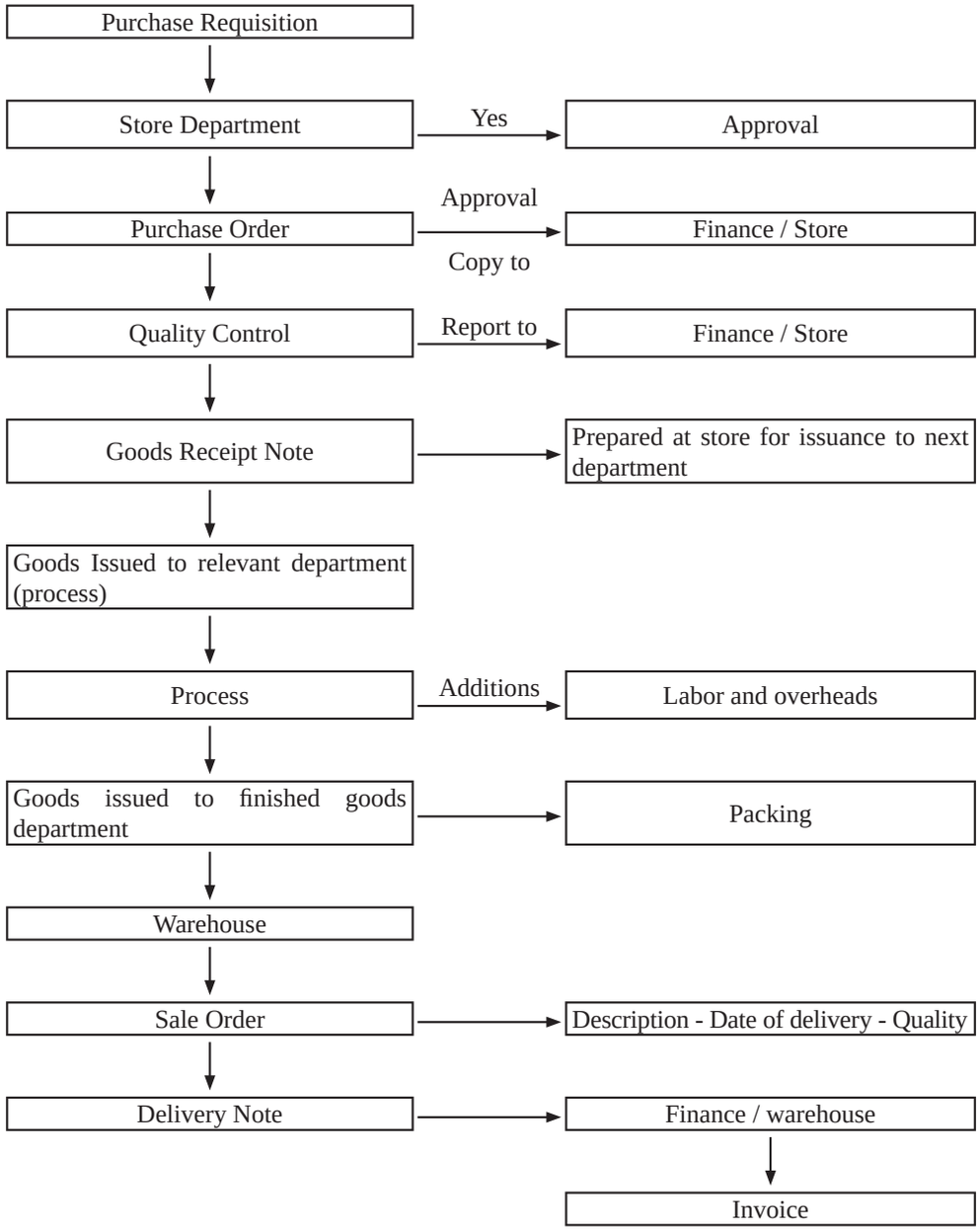
- Materials Inventory: Items of material that are to become a part of the ultimately salable goods that result from the manufacturing process. They are costed at acquisition cost, with the same types of adjustments for freight-in and returns as those made in calculating the net purchase cost of merchandise inventory.
- Work in Process Inventory: Goods that have started through the manufacturing process but have not yet been finished. They are costed as the sum of (1) the materials thus far issued for them plus (2) the conversion costs incurred on these items up to the end of the accounting period.
- Finished Goods Inventory: Goods that have been manufactured but have not yet been shipped to customers. They are costed at the total cost incurred in manufacturing them. This account is essentially the same as Merchandise Inventory in a merchandising company, except that the items are recorded at the cost of manufacturing them rather than at their acquisition cost.

Q.29 What is the product costing system for a service company?

Ans.

In principle, product costing in service firms is the same as in manufacturing firms. Application of these principles is described below for three types of service organizations. Personal services organizations such as barber shops, beauty parlors, and medical and dental practices have no inventories other than supplies inventory. Although these organizations may estimate the average cost of a haircut, a wash and set, or a routine office visit to aid them in pricing these services, these costs do not flow through inventory accounts as do product costs in a merchandising or manufacturing firm. A personal services organization may identify the labor costs of the people directly providing the service (e.g., a dental hygienist) and supplies costs (X-ray film) as elements of cost of sales, to distinguish them from "office overhead" costs (receptionist, rent, utilities, and so on).

Q.30 Show an inventory control system of a Company



Q.31 Identify different costs of inventories

Ans.

Cost of inventory can be classified as

(a) Costs of purchase

(b) Costs of conversion

(c) "Other costs" incurred in bringing the inventories to their present location and condition.

(a) Costs of Purchase

The costs of purchase constitute all of

- The purchase price
- Import duties
- Transportation costs
- Handling costs directly pertaining to the acquisition of the goods

(b) Costs of Conversion of Inventory

Cost of conversion of inventory includes costs directly attributable to the units of production, for example, direct labor. The conversion costs could also include variable and fixed manufacturing overhead incurred in converting raw material into finished goods. Fixed overhead costs remain constant irrespective of the units of production. Variable costs are those costs that vary directly with the volume of production. The allocation of overhead to the cost of conversion is based on the "normal capacity" of the facility. Normal capacity is the production that is normally achieved on average over a number of periods.

(c) Other Costs in Valuing Inventories

Valuing inventories include those costs that are incurred in bringing the inventories to their present location and condition in other cost. For example cost for designing product on the basis of customer needs.

Q.32 Identify costs that are excluded from inventory valuation.

Ans.

Certain costs are not included in valuing inventory

Examples of such costs are;

(a) Abnormal amounts of wasted materials, labor, or other production costs

(b) Storage costs unless they are essential to the production process

(c) Administrative overheads that do not contribute to bringing inventories to their present Location and condition

(d) Selling costs.

Q.33 What are the list of disclosure requirements in the Balance Sheet (BS)/Statement of Financial Position (SOFP)?

Ans.

The financial statements should disclose

- Accounting policies adopted for measuring inventories and the cost flow assumption (i.e., cost formula) used
- Total carrying amount as well as amounts classified as appropriate to the entity
- Carrying amount of any inventories carried at fair value less costs to sell
- Amount of inventory recognized as expense during the period
- Any amount of inventories which is written off and
- Amount of any reversal of a write-down to net realizable value and the circumstances that led to such reversal
- Circumstances requiring a reversal of the write-down
- Carrying amount of inventories pledged as security for liabilities

Q. 34 What are acceptable methods of valuation of inventories?

Ans.

Several acceptable methods of handling those are

1. Specific identification.
2. Average cost.
3. First-in, first-out (FIFO).
4. Last-in, first-out (LIFO).

We shall illustrate these methods with an example from a merchandising company, but the same prin-ciples apply to a manufacturing company. In our illustration, we assume the following for a year:

	Units	Unit Cost Rs.	Total Cost Rs.
Inventory, January 1	100	8	800
Purchased June 1	60	9	540
Purchased October 1	80	10	800
Goods available for sale	240	8.917	2140
Goods sold during the year	150	?	?
Closing inventory	?	?	?

Specific Identification

Specific identification method is common practice with certain big-ticket items such as automobiles and with unique items such as paintings, expensive jewelry, custom-made furniture; and bar codes and scanners are making it feasible with lower cost items. In many cases, however, when a substantial number of physically similar items are sold, this method can be unsatisfactory because the cost of goods sold depends on what specific items happen to be sold.

Example

In the above problem, 150 units were sold. If the merchant selected the 100 units with a unit cost of Rs.8 and 50 of the units having a unit cost of Rs.9, the cost of goods sold would be

(100 * Rs.8) + (50 * Rs.9) = Rs.1, 250. If the 150 units with the highest cost were selected, the cost of goods sold would be (80 * Rs.10) + (60 * Rs.9) + (10* Rs.8) = Rs.1, 420.

Average cost

The average cost method, the average cost of the goods available for sale is calculated, and the units in both cost of goods sold and ending inventory are costed at this average cost. In the periodic inventory method, this average is computed for the whole period. It is a weighted average: Each unit cost is weighted by the number of units with that cost. In the perpetual inventory method, a new average unit cost is sometimes calculated after each purchase. In either case, the average cost is representative of the cost of all of the items that were available for sale during the period.

Example

Assuming the periodic inventory method, the 240 units available for sale have a total cost of Rs.2, 140; hence, the average cost is Rs.2,140 / 240 = Rs. 8.917... The calculations cost of goods sold and ending inventory are as follows:

	Units	Unit Rs.	Cost Total Rs.
Cost of Goods sold	150	8.917	1338
Closing Inventory	90	8.917	802
	240		2140

First-in, First-Out (FIFO)

The FIFO method assumes that the oldest goods are sold first and that the most recently purchased goods are in the ending inventory. In the illustration, for the 150 units sold, it is assumed that the 100 units in beginning inventory were sold first and that the other 50 units sold were from the purchase made on June 1.

	Units	Unit Cost Rs.	Total Cost
Cost of Goods Sold:			
From beginning inventory	100	8	800
From purchase of June 1	50	9	450
Cost of Goods Sold	150		1250
Closing Inventory:			
From Purchase of June 1	10	9	90
From purchase of October 1	80	10	800
Closing Inventory	90		890

For the moment, it is sufficient to note that with FIFO (1) cost of goods sold is likely to approximate the physical flow of the goods because most com-panies sell their oldest merchandise first and (2) the ending inventory approximates the current cost of e goods, since it is costed at the amounts of most recent purchases.

Last-In, First Out

The LIFO method is the reverse of FIFO. Cost of goods sold is based on the cost of the most recent purchases, and ending inventory is costed at the cost of the oldest units available.

	Units	Unit Cost	Total Cost
Cost of Goods Sold:			
From purchase of October 1	80		800
From Purchase of June 1	60		540
From beginning inventory	10		80
Cost of Goods Sold	150		1420
Closing Inventory:			
From beginning inventory	90	8	720

LIFO (1) cost of goods sold does not reflect the usual physical flow of merchandise and (2) the ending inventory may be costed at amounts prevailing several years ago, which in an era of repaid inflation are for below current costs.

(Note that LIFO is not permitted under international accounting standards. LIFO is sometime used where permitted by local GAAP)

Q.35 What is LIFO Rupee Value Method of valuation of inventory? How it is effected with the changse in inventory?

Ans.

Originally LIFO was used only by companies whose inventory consisted of fungible products, such as wheat, each unit of which is physically like every other unit. Other companies, however, successfully argued that this was unfair to them. Thus, LIFO may now be used for almost any kind of inventory. It is applied to an inventory of unlike items by the so-called LIFO rupee value method. In this method, items whose prices tend to move together are grouped into an inventory pool. For example, a pool may consist of all the items in the inventory of the house wares department in a store. The calculations required to determine cost of goods sold and inventory amounts with this method are beyond the scope of this book. Compared with the unit-by-unit LIFO method, dollar value LIFO saves a considerable amount of recordkeeping effort.

Changes in Inventory

In a year when the physical size of the inventory increases above the amount on hand at the beginning of the year, with LIFO the inventory account is increased by the additional quantity valued at the costs existing during that year. During a period of growth, the inventory account will therefore consist of a number of layers, a new layer being added each year. If subsequently the physical inventory should decrease in size, these layers are, in effect, stripped off, taking the most recently added layer first in accordance with the basic LIFO rule. This process can have a peculiar effect on the income statement. If inventory is decreased to the extent that several LIFO layers are stripped off, then inventory items will be moving into cost of goods sold at costs established several years previously. If there has been constant inflation during the interim, such a decrease in inventory can result in a significant increase in reported income. Some people assert that in a recession, some companies deliberately eat into their LIFO inventories in order to increase reported income in a lean year. Careful readers of financial statements are not fooled by this practice, since the profit effect of reducing LIFO inventories must be disclosed in the notes to the financial statements.

Q.36 What is LIFO Reserve?

Ans.

Companies that use LIFO for determining their balance sheet valuation of inventory nevertheless keep their detailed inventory records on a FIFO or average cost basis. The inventory amounts on these other bases usually will be higher than the LIFO valuation shown on the balance sheet. At the end of each accounting period, the difference between the LIFO valuation and the FIFO or average cost valuation is determined. (This is a complex calculation that is covered in advanced accounting texts.) This differ-ence is sometimes called the LIFO reserve. The terminology is unfortunate because "reserve" suggests something set aside or saved for some special future purpose. The LIFO reserve is nothing more than the mathematical difference between two inventory amounts, one based on LIFO and the other one based on a different method of valuing inventory. LIFO companies disclose their LIFO reserve in the notes for their financial statement.

Q.37 What is the Income Tax implications of LIFO method of inventory valuation?

Ans.

FIFO, average cost, and LIFO are all permitted for inventory, valuation an well as income the computation. Once a method is chosen, a company cannot change it without seeking permission from the internal Revenue Service (IRS). If a company chooses the LIFO method for tax purposes, it must also use LIFO in its pub-lished financial statements. This LIFO conformity rule is the only significant instance in which the IRS requires use of the same accounting method for income tax and "book" (financial reporting) purposes.

In periods of inflation, LIFO results in lower income than FIFO or average costs, and thus results in lower income taxes. If the physical size of inventory remains constant or grows, LIFO reduces taxable in-come indefinitely. Only if LIFO layers are stripped off in future years might taxable income under LIFO exceed taxable income under FIFO; and even in that case, LIFO will have postponed some income tax payments. These tax advantages of LIFO in periods of rising prices can improve a company's cash flow and therefore lead many companies to select the LIFO method regardless of the conceptual pros and cons of the various alternatives.

(i)ABC Stores is a departmental store, which sell goods on retail basis. It makes a gross profit of 20% on net sales. The following figures for the year-end are available:

Opening Stock Rs. 50,000
Purchases Rs. 3,60,000
Purchase Returns Rs. 10,000
Freight Inwards Rs. 10,000
Gross Sales Rs. 4,50,000
Sales Returns Rs. 11,250
Carriage Outwards Rs. 5,000.
Calculate the estimated cost of the inventory on the closing date.

Ans: Calculation of Cost for closing stock

Particulars	Rs.
Opening Stock	50000
Purchases less returns (360000-10000)	350000
Freight Inwards	10000
	410000
Less: net sales (450000-11250)	438750
	(28750)
Add: gross profits (438750x 20%)	87750
Closing stock	59000

Q.38 Oil company is a bulk distributor of high octane petrol. A periodic inventory of petrol on hand is taken when the books are closed at the end of each month. The following summary of information is available for the month of June, 2009.

Sales Rs. 945000
General Administrative cost Rs. 25000
Opening stock 100000 litres @ Rs. 3per litre Rs. 300000
Purchases (including freight):
June 1-200000 litres @ Rs. 2.85 per litre
June 30-100000 litre @ Rs. 3.03 per litre
Closing stock on June 30-130000 litres
Compute the following data by FIFO, Weighted average and LIFO methods of inventory costing on June 30

Ans.

STATEMENT SHOWING VALUE OF CLOSING STOCK OR INVENTORY ON 30TH JUNE, 2003 UNDER FIFO, WEIGHTED AND LIFO METHODS OF PRICING OF ISSUES [QUANTITY OF CLOSING STOCK (100000+20000) LITRES.]

Particulars	FIFO	Weighted Average	LIFO
1) First-in-First out Method:*			
100000litres @ Rs. 3.03 per litres	3,03,000		
30000 litres @ Rs. 2.85 per litres	85,500		
2) Weighted Average Method:**		3,03,000	
100000litres @ Rs. 3.03 per litres		87,000	
30000 litres @ Rs. 2.90 per litres			3,03,000
3) Last-in Last out Method:***			90,000
100000litres @ Rs. 3.03 per litres			
30000 litres @ Rs. 3.00 per litres			
Value of Closing Stock	3,88,500	3,90,000	3,93,000

- *Under FIFO method old lots are exhausted and new lots are kept in hand on 30.6.2003.
- **Under Weighted Average method, the Weighted Average rate is to be calculated or follows: 100000Litres × Rs.3+200000litres × Rs.2.85

  = Rs. 2.90

  (100000+200000)litres
- ***Under LIfo method, new lots are exhausted except purched on 30.06.09 and old lots are kept in hand on 30.06.09

Q.39 Closing Stock Valuation of Budgeted Raw Meterial Purchases

Quarter	1st	2nd	3rd	4th
Working Days	65	60	55	60
Production (units per working day)	100	110	120	105
Raw Material Purchase (% by weight of annual total)	30%	50%	20%	
Budgeted purchase price (Rs. Per kg.)	1.00	1.05	1.125	

Quantity of raw material per unit of production: 2kg

Budgeted opening stock of raw material: 4000kg (cost Rs.4000)

Budgeted closing stock of raw material: 2000kg

Issues are priced on FIFO basis.

Calculate the following budgeted figures:

Quarertly and annual purchases of raw material, by weight and value.

Closing quarterly stock by weighted and value.

Ans.

Consumption

Quarter	Day	Production per day	Qty. of RM per unit of production			Kg.
1st	65	x	100	x	2	13000
2nd	60	x	110	x	2	13200
3rd	55	x	120	x	2	13200
4th	60	x	105	x	2	12600
Total consumption for the year						52000

We know that:

Consumption =opening stock+ purchases-closing stock

Purchases= consumption + closing stock-opening stock

=52000=2000-4000 or, 50000Kg.

a) Purchases:

Quarter	Kg.	Purchase Price	Value(Rs.)
1	50000×30%i.e.15000×	1.00	15000
2	50000×50%i.e.25000×	1.05	26250
3	50000×20%i.e.10000×	1.125	11250
			52500

b) Closing quarterly Stock by weighted and value:

1st Quarter(FIFO method)	Quantity Kg.	Rate Rs.	Value Rs.
Opening Stock	4000	1	4000
Purchase	15000	1	15000
total	19000		19000
less: concumption	13000	1	13000
closing stock	6000	1	6000
2nd quarter			
Opening stock	6000	1	6000
Purchase	25000	1.05	26250
total	31000		32250
less: consumption	13200		13560*
closing stock	17800		18690
*600 @			
Re. 1.00	6000		
7200 @ Re. 1.05	7560		
13200	13560		
3rd quarter			
Opening stock	17800	1.05	18690
Purchase 10000	1.125	11250	
total	27800		29940
less: consumption	13200	1.05	13860
closing stock	14600		16080
4th quarter			
Opening stock	14600		16080
Purchases	nil		nil
total	14600		14600
less: cosumption	12600		13830*
closing stock	2000		2250
* 4600 (i.e 17800-13200) @ Rs. 1.05		4830	
8000	@ Rs. 1.125	9000	
12600		13830	

Q.40 The XYZ Machineries Ltd. requests you to ascertain the amount at which the inventory should be included in the financial statement for the year 2008-09. The value of inventory as shown in the books is Rs.12,50,000. To determine the net realisable value of the inventory (on a test check basis), you had selected several

items whose book value was Rs. 3,50,000. You ascertain that except for items *(i)* to *(iii)* mentioned below, the cost was in excess of the realisable value by Rs. 29,532.

The following items require special treatment.

(a) One machine (cost Rs. 1,30,000) can now fetch Rs. 1,15,000. It was priced at Rs. 70,000 and was written down to the same figure at the end of 2008-09.

(b) A pump (cost Rs. 50,000) was expected to realise Rs. 35,000. A special commission would have to be paid to the broker.

(c) 6 units of product No. 15,710 were in stock valued each at Rs. 5,520; the selling price was Rs. 4,500 per unit; selling expenses are 10% of the selling price.

Taking into consideration only the above mentioned items requiring special treatment, compute the value of their inventory as at 31 st March, 2009 you would consider reasonable.

Ans.

Book value of selected items is given. From the given information, realisable value of remaining selected items will have to be found. Then the value of inventory (net realisable value) for all the items to be included in the financial statements of the company for the year 2008-09 is to be determined.

Working showing Realisable Value of Selected Items

Book value of selected items		Rs.350000
Less: Book value of items *(a)* to *(c)*		
a. One machine	Rs.70000	
b. One pump	Rs.50000	
c. 6 units of product No. 15,710@ Rs. 5,520	33120	153120
Remaining book value		196880

It is given in the question that except for the items *(a)* to *(b)* the cost was in excess of realisable value by Rs.29,532. In order to find out the realisable value of remaining items, this amount should be deducted from the book value of selected items.

The realisable value of remaining selected items will be : Rs.1,96,880 - Rs.29,532 = Rs.1,67,348 Percentage of the cost in excess of realisable value to the book value of selected items = (29,532/1,96,880) x 100 = 15%.

Working showing the Inventory Valuation (on Net Realisable Value Basis)

(as on 31-03-2009)

Value of all the items as shown in the books		Rs.1250000
Less: Book value of special items		350000
Book value of the remaining items		900000
Less: Cost of excess of realisable value by 15% (9,00,000×15%)		135000
		765000
Add: Realisable value of remaining selected items		167348
		932348
Add*:* Realisable value of selected items:		
One machine	Rs.115000	
One pump (Rs.35,000 *less* 15% brokerage	29750	
6 units of product No. 15,710 (6 x 4,500 less 10% selling expenses)	24300	169050
Value of all items of inventory (as on 31-3-09)		1101398

5.4 Valuation of Investments

Q.41 Identify the characteristics of Investment Companies

Ans.

- Investment Companies are financial intermediaries that collect funds from individual investors and invest those funds in a potentially wide range of securities or other asset.
- Types: Unit investment trusts and managed investment companies (either closed-end or open-end). Open-end companies are called mutual funds.
- Unit investment trusts (unmanaged): Invested in a portfolio that is fixed for the life of the fund. Most unit trusts hold fixed-income securities and expire at their maturity. 90% of all unit trusts are invested in fixed-income portfolios, and about 90% of fixed-income unit trusts are invested in tax-exempt debt.
- NVA= (asset-liabilities)/ share outstanding

Mutual funds (open-end investment companies): account for about 90% of investment company assets.

Q.42 What are the basic tenets of risk & return?

Ans.

The investment process consists of two broad tasks. One task is security and market analysis, by which we assess the risk and expected-return attributes of the entire set of possible investment vehicles. The second task is the formation of an optimal portfolio of assets. This task involves the determination of the best risk-return opportunities available from feasible investment portfolios and the choice of the best portfolio from the feasible set. The formal analysis of investments with the latter task is called portfolio theory. Three central themes in portfolio theory, all centering on risk are as follows.

- The first is the basic tenet that investors avoid risk and demand a reward for engaging in risky investments. The reward is taken as a risk premium, the difference between the expected rate of return and that available on alternative risk-free investments.
- The second theme allows us to quantify investors' personal trade-offs between portfolio risk and expected return. To do this we introduce the utility function, which assumes that investors can assign a welfare or "utility" score to any investment portfolio depending on its risk and return.
- The third theme is that we cannot evaluate the risk of an asset separate from the portfolio of which it is a part; that is, the proper way to measure the risk of an individual asset is to assess its impact on the volatility of the entire portfolio of investments. Taking this approach, we find that seemingly risky securities may be portfolio stabilizers and actually low-risk assets.

Q.43 Write short notes on (i) Risk; (ii) Risk Premium; (iii)Risk Averse Investor; (iv)Utility score; (v) Certainty equivalent rate; (vi) Risk Neutral investors; (vii) Indifference Curve

Ans.

1. **Risk:** The chance that an investment's actual return will be different than expected. This includes the possibility of losing some or all of the original investment. It is usually measured using the historical returns or average returns for a specific investment. Higher risk means a greater opportunity for high returns... and a higher potential for loss.
2. **Risk Premium:** The extra return that a risky investment provides over the risk free rate to compensate for the risk of the investment. A higher rate of return is required to entice investors into a riskier investment.
3. **Risk Averse:** Describes an investor who, when faced with two investments with a similar expected return (but different risks), will prefer the one with the lower risk. A risk averse person dislikes risk.
4. **Utility score:** Assume each investor can assign a welfare, or utility, score to competing investment portfolios based on the expected return and risk of those portfolios. The utility score may be viewed as a means of

ranking portfolios. Portfolios receive higher utility scores for higher expected returns and lower scores for higher volatility. Many particular "scoring" systems or utility functions are legitimate.

5. **Certainty equivalent rate** of a portfolio is the rate that risk-free investments would need to offer with certainty to be considered equally attractive as the risky portfolio. A portfolio is desirable only if its certainty equivalent return exceeds that of the risk-free alternative. A sufficient risk-averse investor may assign any risky portfolio, even one with a positive risk premium, a certainty equivalent return that is below the risk-free rate, which will cause the investor to reject the portfolio.

6. **Risk neutral investors** judge risky prospects solely by their expected return. The level of risk is irrelevant to the risk-neutral investor, meaning that there is no penalization for risk. For this investor a portfolio's certainty equivalent rate is simply its expected return.

   On the contrary, a risk lover is willing to engage in fair games and gambles; this investor adjusts the expected return upward to take into account the "fun" of confronting the prospect's risk. Risk lovers will always take a fair game because their upward adjustment of utility for risk gives the fair game a certainty equivalent that exceeds the alternative of the risk-free investment.

7. **Indifference curve:** the curve that connects all portfolio points with the same utility value in the mean-standard deviation plan.

Q.44 What is an investment property? Discuss associated issues/terminologies in relation to investment properties.

Ans.

Investment properties are those properties,

(a) in respect of which construction work and development have been completed; and

(b) which is held for its investment potential, any rental income being negotiated at arm's length

Following terminologies are used in this Standard with the meanings specified: A current investment is an investment that is by its nature readily realisable and is intended to be held for not more than one year.

Fair value is the amount for which an asset could be exchanged between a knowledgeable, willing buyer and a knowledgeable, willing seller in an arm's length transaction.

An investment is an asset held by an enterprise for the accretion of wealth through distribution (such as interest, royalties, dividends and rentals), for capital appreciation or for other benefits to the investing enterprise such as those obtained through trading relationships. Inventories as defined in FRS 2 Inventories, are not investments. Property, plant and equipment as defined in FRS 16 Property, Plant and Equipment, (other than investment properties) are not investments.

An investment property is an investment in land or buildings that are not occupied substantially for use by, or in the operations of, the investing enterprise or another enterprise in the same group as the investing enterprise.

A long-term investment is an investment other than a current investment. Market value is the amount obtainable from the sale of an investment in an active market. Marketable means that there is an active market from which a market value (or some indicator that enables a market value to be calculated) is available. It is to be noted that

- A property which is owned and used by an entity for its own purposes is not an investment property, for example, a hotel or a warehouse.
- A property let to, and occupied by, another group company is not an investment property for the purposes of its own financial statements or the group financial statements.

Investment properties may be held by an entity which holds investments as part of its business such as an investment trust or a property investment company. Investment properties may also be held by an entity whose main business is not the holding of investments. For the purpose of this Standard, the term "same investment" should be interpreted as "same class of investments". "Same class of investments" means a category of investments which have a similar nature or function in the operations of the reporting enterprise.

Q. 45 Why enterprisers hold investments?

Ans.

Enterprises hold investments for diverse reasons. For some enterprises, investment activity is a significant element of operations and assessment of the performance of the enterprise may largely, or solely, depend on the reported results of this activity. Some hold investments as a store of surplus funds and some hold trade investments in order to cement a trading relationship or establish a trading advantage.

Enterprises, for which investment activity is a significant element of operations, such as insurance companies and some banks, are often subject to regulatory control. The Preface to Financial Reporting Standards provides that Financial Reporting Standards do not override local regulations governing the issue of financial statements.

Some investments are represented by certificates or similar documents; others are not. Then nature of an investment may be that of a debt, other than a short or long-term trade debt, representing a monetary amount owing to the holder and usually bearing interest; alternatively it may be a stake in an enterprise's results, such as an equity share. Most investments represent financial rights, but some are tangible — such as certain investments in land or buildings and direct investments in gold, diamonds or other marketable commodities.

For some investments, and active market exists from which a market value can be established. For such investments, market value is an indicator of fair value. For other investments, an active market does not exist and other means are used to determine fair value.

Q. 46 How do you classify investments?

An enterprise that distinguishes between current and long-term assets in its financial statements should present current investments as current assets and long-term investments as long-term assets.

Enterprises that do not distinguish between current and long-term investments in their balance sheets should nevertheless make a distinction for measurement purposes and determine the carrying amount for investments.

Current investments are included in current assets. The fact that a marketable investment has been retained for a considerable period does not necessarily preclude its classification as current.

Investments held primarily to protect, facilitate or further existing business or trading relations, often called trade investments, are not made with the intention that they will be available as additional cash resources and are thus classified as long-term. Other investments, such as investment properties, are intended to be held for a number of years to generate income and capital gain. They are therefore classified as long-term assets even though they may be marketable.

Some enterprises choose not to distinguish between current and long-term assets, and others may be required by regulations to adopt a balance sheet format that makes no distinction. Many such enterprises operate in the financial field, such as banks and insurance companies. Although such enterprises do not intend to realise their assets in current operations, they usually regard many of their investments as being available for the purposes of their current operations if required.

However, such enterprises may have investments properly regarded as long-term assets, for example a bank may hold shares in a leasing company.

Many such enterprises therefore analyse their investments and attribute carrying amounts to them according to whether their characteristics are those of current investments or long-term investments.

Q. 47 What do you mean by cost of investments?

Ans.

The cost of an investment includes acquisition charges such as brokerages, fees, duties and bank fees. If an investment is acquired, or partly acquired, by the issue of shares or other securities, the acquisition cost is the fair value of the securities issued and not their nominal or par value. If an investment is acquired in exchange, or part exchange, for another asset, the acquisition cost of the investment is determined by reference to the fair value of the asset given up. It may be appropriate to consider the fair value of the investment acquired if it is more clearly evident.

Interest, royalties, dividends and rentals receivable in connection with an investment are generally regarded

as income, being the return on the investment. However, in some circumstances, such inflows represent a recovery of cost and do not form part of income. For example, when unpaid interest has accrued before the acquisition of an interest-bearing investment and is therefore included in the price paid for the investment, the subsequent receipt of interest is allocated between pre-acquisition and post-acquisition periods; the pre-acquisition portion is deducted from cost. When dividends on equity securities are declared from pre-acquisition profits a similar treatment applies. If it is difficult to make such an allocation except on an arbitrary basis, the cost of an investment is normally reduced by dividends receivable only if they clearly represent a recovery of part of cost.

The difference between the acquisition cost and redemption value of an investment in debt securities (the discount or premium on acquisition) is usually amortised by the investor over the period from acquisition to its maturity so that a constant yield is earned on the investment. The amortised discount or premium is credited or changed to income as though it were interest and added to or subtracted from the carrying amount of the security. The resulting carrying amount is then regarded as cost.

Q. 48 What do you mean by carrying amounts of Investments?

Ans.

Investments classified as current assets should be carried in the balance sheet at either:

(a) market value; or

(b) the lower of cost and market value.

If current investments are carried at the lower of cost and market value, the carrying amount should be determined either on an aggregate portfolio basis, in total or by category of investment, or on an individual investment basis.

Opinions differ on the appropriate carrying amount for current investments. Some maintain that, for financial statements prepared under the historical cost convention, the general rule of lower of cost and net realisable value is applicable to investments; and since most current investments are marketable, the carrying amount is the lower of cost and market value. Supporters of this method of determining carrying amount claim that it provides a prudent balance sheet amount and does not result in recognising unrealised gains in income.

Others argue that, since current investments are a readily realisable store of wealth, or a cash substitute, it is appropriate to value them at fair value, usually market value. The enterprise is not concerned with the cost of such items but with the cash it could raise by disposing of them. Investments are distinguished from inventories because they can generally be sold without effort, whereas it would normally be inappropriate to recognise profit on sale of inventories before the sale was assured. Each investment is dispensable by the business - for example an equity investment could be sold and the proceeds re-invested in a bank deposit account without detriment to the business - and therefore it is appropriate to report it at market value. Supporters of market value also argue that reporting investments at historical cost allows management to recognise income at its discretion, since selected investments can be sold and immediately repurchased and the resulting profit reported in income, although such transactions have not changed the enterprise's economic position.

Q. 49 How do you value investments on the basis of their classification?

Ans.

Investments classified as long-term assets should be carried in the balance sheet at either:

(a) cost;

(b) revalued amounts; or

(c) in the case of marketable equity securities, the lower of cost and market value determined on a portfolio basis.

If revalued amounts are used, a policy for the frequency of revaluations should be adopted and an entire category of long-term investments should be revalued at the same time. The carrying amount of all long-term investments should be reduced to recognise a decline other than temporary in the value of the investments, such reduction being determined and made for each investment individually.

Long-term investments are usually carried at cost. However, when there is a decline, other than temporary, in the value of a long-term investment, the carrying amount is reduced to recognize the decline. Indicators of the value of an investment may be obtained by reference to its market value, the investee's assets and results and the expected cash flows from the investment. Risk and the type and extent of the investor's stake in the investee are also taken into account. Restrictions on distributions by the investee or on disposal by the investor may affect the value attributed to the investment.

Reductions for other than a temporary decline in the carrying amounts of long-term investments are charged in the income statement unless they offset a previous revaluation.

Reductions in carrying amount may be reversed when there is a rise in the value of the investment, or if the reasons for the reduction no longer exist. However, in some countries reductions in the carrying amount are not reversed.

Q. 50 How do you recognise carrying amount in relation to disposals of Investments?

Ans.

On disposal of an investment the difference between net disposal proceeds and the carrying amount should be recognised as income or expense. If the investment was a current asset carried on a portfolio basis at the lower of cost and market value, the profit or loss on sale should be based on cost. If the investment was previously revalued, or was carried at market value and an increase in carrying amount transferred to revaluation surplus, the enterprise should adopt a policy either of crediting the amount of any remaining related revaluation surplus to income or of transferring it to retained earnings. This policy should be applied consistently in accordance with Financial Reporting Standard.

Any reduction to market value of current investments carried at the lower of cost and market value on a portfolio basis is made against the cost of the portfolio in aggregate; individual investments continue to be recorded at cost. Accordingly the profit or loss on sale of an individual investment is based on cost; however the aggregate reduction to market value of the portfolio needs to be assessed.

When disposing of part of an enterprise's holding of a particular investment, a carrying amount must be allocated to the part sold. This carrying amount is usually determined from the average carrying amount of the total holding of the investment.

Q. 51 How do you account for transfers of Investments?

Ans.

For long-term investments re-classified as current investments, transfers should be made at:

- the lower of cost and carrying amount, if current investments are carried at the lower of cost and market value. If the investment was previously revalued, any remaining related revaluation surplus should be reversed on the transfer; and
- carrying amount if current investments are carried at market value. If changes in market value of current investments are included in income any remaining related revaluation surplus should be transferred to income.

Investments re-classified from current to long-term should each be transferred at the lower of cost and market value or at market value if they were previously stated at that value.

Q.52 What do you mean by switching of Investments within a Portfolio?

Ans.

An enterprise with significant investment activity typically maintains a portfolio of investments in which it trades constantly. In doing so, the enterprise seeks to improve the quality and yields of its portfolio of investments. On disposing of a particular investment, funds released are available for reinvestment or may remain as the cash element of the investment portfolio.

In view of the constant changes in investments in such a portfolio, different opinions are held as to the appropriate accounting treatment on disposal of a particular investment:

- some mentain that an excess or deficiency of net sale proceeds over carrying amount represents a realised profit or loss, which should be recognised in income immediately;
- others argue that the disposal merely reflects an adjustment of the constituents of the portfolio, representing no value increase or decrease since it is only a substitution of one investment for another, and that therefore no profit or loss should be reflected in income; and
- a few advocate a middle course, whereby the difference between net sale proceeds and cost is amortised to income over a given period.

Some enterprises that carry current investments at market value on the grounds that they are a store of freely disposable wealth recognise any gains or losses in market value as an element of income to be accounted for in the income statement along with profits and losses on disposals. However, in some countries such gains are not permitted to be included in income and are credited direct to owners' equity and accounted for in the same way as revaluation surplus on long-term investments.

If current investments are carried at the lower of cost and market value, any reductions to market value and any reversals of such reductions are included in the income statement along with profits and losses on disposals.

Any reductions in carrying amount for other than a temporary decline in value of long-term investments, and reversals of such reductions, and profits and losses on disposal of long-term investments are included in income.

Q. 53 What do mean by Specialised Investment Enterprises?

Ans.

Specialised investment enterprises which are prohibited from distributing profits on the disposal of investments may exclude from income changes in value of investments, whether realised or not, provided they carry their investments at fair value. Such enterprises should include in the financial statements a summary of all the movements in value of their investments for the period.

In certain countries, there are specialised investment enterprises whose main business is the holding of a portfolio of marketable securities as an investment vehicle for their individual shareholders. These enterprises carrying their investments at fair value, usually market value, because this is the most appropriate basis in the circumstances. They regard realised profits and losses on their investments as being the same in substance as unrealized gains and losses and therefore account for them in the same way. They disclose a summary of all the movements in the value of their investments for the period.

The constitutions of these enterprises prohibit the distribution as dividends of profits on disposal of investments and require a distinction to be drawn between income arising from interest and dividends and the gains or losses arising on the disposal of the investments. Hence these enterprises exclude from income all changes in value of investments whether or not they are realised.

Q.54 X Ltd. has the following portfolio of investment on 31st March 2010

Current investment	**Cost**	**Market value**
Shares of A Ltd.	**250**	**265**
Units of UTI	**160**	**160**
Shares of C Ltd.	**125**	**100**
	535	**525**
	Long term investment	
Shares of Y Ltd. (subsidiary)	**200**	**210**
Shares of Z Ltd.	**150**	**130**
Shares of W Ltd. (subsiriery)	**80**	**10**
	430	**350**

Compute the value of investment for balance sheet purpose assuming that the fall in value of investment Z Ltd. is temporary and that of W Ltd. is permanent.

Ans.

Current Investment(at lower of cost or market value, individually)	(Rs. In thousand)	
Shares of A Ltd.	250	
Units of UTI	160	
Shares of C Ltd.	100	
		510
Long term Investments		
Shares of Y Ltd.	200	
Shares of Z Ltd	150	
Shares of W Ltd.	80	
	430	
Less: Provision for permanent diminution invalue	70	360
Total: (510 + 360)		870

Interest, dividend and rental receivables in connection with an investment are generally regarded as income, being the return on the investment. However, in some circumstances, such inflows represent a recovery of cost and do not from part of income. This happens when the inflows relate to a period prior to the date of acquisition of investment. Such inflows will be deducted from the cost of acquisition.

Q.55 Navaratna Ltd. furnishes the following perticulars about their investment in shares of Samay Ltd. for the year 2009-10

Balance of shares held on 1st April 2009	Rs.262000	(10000 shares of Rs. 10 each)
Purchased 2000 shares on 1st July 2009	Rs. 60000	
Sold 500 shares on 1st August 2009 @ Rs. 35 per share cum dividend	Rs. 17500	
Navaratna Ltd. declared final dividend for 2008-09 on 1st September 2009.Received 1:5 bonus shares on 1st February, 2010.	20%	

brokerage for each transaction is 2%. Find out cost of shares held by Navaratna Ltd. as on 31st March 2010.

Ans.

Statement of cost

Date	Particulars	Amount(Rs)
1-4-09	Balance(10000 shares)	2,62,000
1-7-09	purchased(2000 shares):	
	Cost (cum-div)	60,000
	Add brokerage	1,200
		61,200
	Less: Dividend for 2008-09	4,000
		57,200

1-8-09	sold (500 shares cum div)	
	Sale proceeds	17500
	Less: brokerage 2%	350
		17150
	Less: Dividend for 2008-09	1000
	Cost of sales (500*319200/1200)	(13300)
1-2-10	Bonus shares (1:5) (1/5*11500)	—**
	Cost of investment	305900

*cost of sales is computed on aversge cost basis.

** Bonus shares are free and hence nothing is shown in amount column.

Treatment of dividend received

Dividend received from Samay Ltd. during 2009-10	
(11500*Rs.10)*20%	23000
Less: Dividend deducted from cost of investment	4000
	19000
Add: Dividend included in sales proceeds of 500 shares	
(receved by the new buyer)	1000
Dividend received to be shown in Profit & loss A/C	20000
Profit on sale of investment	
Sale proceds of 500 shares(net of brokerage)	17,150
less: Dividend for 2008-09 included above (to b considered as income)	1000
less: cost of sales (on average cost basis)	13300
Profit on sales	2850

5.5 Human Resource Accounting

Q.56 What is Human Resource Accounting? Identify and describe three human resource valuation models.

Ans.

The committee on HRA of the American Accounting Association defined HRA as the process of identifying and measuring data about human resources and communicating this information to interested parties. Three popular HR models are: (i) Cost Based Model (ii) Replacement Cost Approach (iii) Opportunity Cost Approach

(i) Cost Based Model:

Historical Cost Model: This model was first introduced by R. Likert at R.G. Barry Corporation in Columbus, ohio (USA) in 1967. Under this model, The actual cost of recruiting, selecting, hiring, placing and developing the employees of an organisation are capitalized and amortize over the expected useful life of the asset concerned. The sum of are the cost as mentioned above for all the employees of the enterprise is taken to represent the total value of human resources. If the assets are liquidated permanently, losses are recorded and if the asset has longer life than estimated, revisions are made in the amortized value. If an employee's leaves the from before the expiry of expected service life of the employees the net asset value to that extent is charged to current revenue.

The model is simple and easy to understand and to be consistent with the matching principle. But it fails to provide reasonable value to human assets. It only capitalize only recruiting training, development, placement and inducting cost but ignores the future expected costs to incurred for their maintenance. Secondly estimation of the no of years over which the capitalized expenditure is to be and is likely to be largely subjective. It is difficult to calculate the rate which total expenditure on human resources is to be amortized. Lastly value of human resource increase but through this treatment capital cost decrease through amortization.

(ii) The Replacement Cost Approach:

Value to an organisation of an individual's services is reflected by the amount that the organisation would have to pay to replace these services. This method consists of estimating the cost of replacing a firm's existing human resources; these costs will include costs of recruiting, selecting, hiring, training, placing and developing new compliance of the existing employee. Falmhotz has offered two different concepts of replacement cost individual and replacement cost refers to the cost that would have been incurred to replace an individual by a substitute who can provide the some kind of services as that of the individual replacement. On the other hand positional replacement cost represents cost of replacing the set services of any individual in a defined position in an organisation. The replacement cost approach incorporates the current value of companies' human resources. It takes into account fluctuation of the job market and general rise in price level. This method is regarded as a good surrogate for the economic value of the asset in the sense that market consideration is essential in reaching a final figure. But it is difficult to find replacement of the excising human resources in actual practice.

(iii) Opportunity Cost Approach:

This model proposed by J.S. Hekimian and C.H. Jones in 1967. These methods are used to value employees processing certain skills and thus are rate in availability. Under this method it is assumed that opportunity cost as the best means to value HRs. According to this approach, the opportunity cost of on employee is determined by using comparative bidding method. Under this method the investment centre managers will be for rare (scarce) employees they need to recruit. In other words, employees not consider are not included in the human asset base of the organisation. This model provide for more optimal allocation of **HR** and sets a quantitative base for planning, Developing and evaluation HRs of the organisation. However this approach adopts discriminating attitude. Since it takes into account only scarce HRs.

Q.57 A company has a capital base of Rs. 1 crore and has a earned profits to the tune of Rs. 11,00,000. The return on investment (ROI) of the particular industry to which the company belongs is 12.5%. If the acquired by the company, it is expected that profits will increase by Rs. 250,000 over and above the target profit.

Determine the amount of maximum bid price for that particular exceptive and the maximum salary that could be offered to him.

Ans.

Capital base Rs. 100,00,000

Actual profit Rs. 11,00,000

Target profit Rs. 100,00,000 x 12.57 = Rs. 1250,000

Expected profit on employing the particular exceptive = Rs. 12,50,000 + Rs. 250,000

Additional profit = expected profit – Actual profit

= Rs. 15,00,000 – Rs. 11,00,000

= Rs 4,00,000

Maximum bid price = Additional profit / rate of return on

= Rs. 400,000 / 12.5%

= Rs. 32,00,000

Maximum salary that can be offered = Rs. 32,00,000 x 12.5%

= Rs. 400,000

Maximum salary can be offered to that particular exceptive up to the amount of additional profit is Rs. 400,000.

Q.58 What is value based model to value Human Assets?

Ans.

This model was introduced by Baruch Lev and Schwariz on the basis of Present Value of future earning. According to the authors, valuations of HRs of homogenous group can be done by aggregating the present values of wages and salary payable to individual employees during the stay with the organisation. Measurement of HRs under this method involves a) division of employee according to their age, grade of pay and designation b) determination of average per year c) calculating of total earnings based on the remaining tenure of the service life d) discounters total earning on the basis of average rate of return.

This HRs can be valued on the basis of following formula:

$$V_x = \sum_{t=x}^{T} \frac{I(t)}{(I+R)^{T-x}}$$

Where V_x = The human capital value of a person 'x' years old.

T = Retirement Age

$I_{(t)}$ = The person's annual earning up to retirement.

R = Discount rate

Stochastic Rewards valuation model:

This model was proposed by Eric G Flamholtz in 1971 to measure the HR value to the organisation with the help of stochastic process. This model focuses on the measurement of a person's value to a specified organisation. It is recognized that a person genders value for on organisation as he occupies and plays different roles and readers services to the organisations. The movement of people from one organisation role (service state) to another over some specified period of time may be valued as stochastic process, depended up on the roles previously occupied and such movement can be estimated probabilistically. The expected service to be derived from an individual is ascertained by

E(R) =

Ri = Represent quantity of services expected to be derived in each state.

P(Ri) = The probability that they will be obtained.

$$\sum_{i=1}^{n} R_i \, P(R_i)$$

The major advantage of this model that it takes into account the probability of an individual's career movement and of his leaving the organisation prior to the retirement or death. However, it is very difficult to obtain reliable data pertaining to incomes of employee for various positions during different time periods.

Q.59 What is Group basis valuation model?

Ans.

This model is proposed by Jaggi and Law. This model recognised the fact that proper valuation of human resource is not possible unless the contributions of individuals as a group are taken into view. A group refers to homogeneous employees whether in the same investment centre or not. It might be difficult to predict on individual and expected service tenure in the organisation or at a particular level or position but not a group basis, it is easier to ascertain the percentage of people in a particular group likely either to leave the from during each for the committee period or to be promoted to huger leaves. The model aims at calculating the present value of all existing employees in each grade or rank. The following methodology is followed to measure present value.

a) Ascertain the number of employees in each rank.

b) Estimate the probability that an employee will be his grade within organisation or terminated/promoted in the next period.

c) Ascertain the economic value of an employee in a specified grade during each period of time.

d) The present value of existing employees in each rank/grade is obtained by multiplying the above three factors.

Limitations:

a) The existing HR valuation models are not face from drawback. Thus no model can be traded universally as a suitable model yet.

b) There are no clear guidance how to differentiate the cost and value of human resources. Like physical assets human assets can't be owned, retained or utilized at the sweet will and pressure of organisation.

c) There is no consensus as yet among the account and finance professional regarding in what form and manner the human assets are to valued and then shown in B-sheet.

d) There is also a fear that employees and trade unions may not accept the idea valuing HR may lead to division of labours.

5.6 Valuation of Brands

Q.60 What is brand?

Brands are strategic assets. The key to survival of companies is their brands in the modern world of complex and competitive business environment. According to American Marketing association, brand means a name, term, sign, symbol or design or group of sellers and to differentiate them from those of competitors.

Corporate branding can be taken to mean strategic exercise by managerial decision making of creating, developing, maintaining and monitoring the identity, image and ownership of a product etc. Brand comprises an important item in that they greatly determine the corporate market value of a firm.

Brand achieves a significant value in commercial operation through the tangible and intangible elements. Brand is that intangible assets which is acquired from outside source while acquiring business or may also be nurtured internally by a company, which are known as home grown brands. By assigning a brand name to the product, the manufacturer distinguishes it from rival products and helps the customer to identify it while going in for it. Necessity of branding of products has increased enormously due to influence of various factors like growth of competition, increasing importance of advertising etc. A powerful brand creates lasting impact on the consumers and it is almost impossible to change his preference even if cheaper and alternative products are available in the market. Brands have major influence on takeover decisions as the premium paid on takeover is almost always in respect of the strong brand portfolio of the acquired company and of its long term effect on the profit of the acquiring company in the post –acquisition period.

Q.61 Are brands asset?

Ans.

An asset is having following characteristics;

- there must exist some specific right to future benefits or service potentials;
- rights over asset must accrue to specific individual or firm;
- there must be legally enforceable claim to the rights or services over the asset;
- asset must arise out of past transaction or event.

Based on above characteristics, brands are considered as an asset. The sole purpose of establishing brand names are to incur future benefit increased sale to loyal customers increased sale price of the brand itself or Increased sale price of the brand itself.

The companies with valuable brand register those names and are legally entitled to sole ownership and use of

them. Brands are created through marketing efforts over time. They are the result of several past transactions and events.

Q.62 What are the objectives of corporate branding?

Ans.

Important objectives of corporate branding are as follows;

Corporate Identity: Brands help corporate houses to create and maintain identity for them in the market. This is chiefly facilitated by brand popularity and the eventual customer loyalty attached to the brands.

Total Quality Management (TQM): By building brand image, it is possible for a body corporate to adopt and practice TQM. Brands help in building lasting relationship between the brand owner and the brand user.

Customer Preference: Interaction between a specified group of products and services and a specified group of loyal customers creates a psychological lasting impression in the mind of those customers. Branding gives them advantage of status fulfilment.

Market Strength: By building strong brands, firms can enlarge and strengthen their market base. This would also facilitate programmes, designed to achieve maximum market share.

Market Segmentation: By creating strong brand values, companies classify market into more strategic areas on a homogeneous pattern of efficient operations. It enables firms to focus on target group of customers to meet competition.

Q.63 Identify the factors that have influence on brand valuation.

Ans.

Mode of valuation of brands depends on type of brands; (i) acquired or (ii) self acquired. In general method of valuation of brands on one or more following variables;

Cost of acquisition of brand

Expenses incurred on nurturing a home grown brand

Earning power of the brand

Product life cycle

Separating brand from other less important value drivers

Intrinsic strength of the people and process handling brand

Impact of other new brands in the market

Intrinsic strength of the people and process handling the brand

Accuracy in projecting the super or extra earnings offered by a brand and the rate of discounting cash flows

Cost of withdrawing or rejecting the brand.

Q.64 How do you value acquired brand?

Ans.

A purchased brand is one, which is acquired from other existing concerns. The acquiring company may acquire only the brand names. The value of acquired brands is given below:

Brand value=Price paid for acquisition.

On the other hand, a company may acquire an existing business concern along with its brands. It happens in case of mergers & acquisitions. The sum involved in these transactions provides an indication of the financial value of brands. In this case;

Brand value=Purchase consideration(x)-Net assets acquired(y).

Does excess price always represent brand value?(X-Y) represents the amount of purchased goodwill but acquiring company might have paid excess price for varied factors also. Those are;

Location of the factory;

Long term contracts with suppliers;

Better manufacturing technology etc.

Competitive force may make the acquirer to increase the bid price thereby increasing the amount of purchased goodwill. This inseparability of brand from other intangible assets makes it difficult to value brands.

Q.65 How do you value self- generated brands? Explain different methods of self-generated brands.

Ans.

Important methods of valuation of self-generated brands are discussed below;

(i) Historical Cost Model: Under historical cost model actual expenses incurred in creation, maintenance and growth of corporate brands are taken into consideration. The value of corporate brands is computed as follows:

Brand value=Brand Development Cost+ Brand marketing & distribution cost+ Brand promotion cost including advertising and other costs.

Historical cost model is applied for home-grown brands in most of the cases for which various costs like development costs, marketing costs, advertising and general communication costs etc. are incurred. However, the total advertisement costs cannot be regarded as incurred for brand. Further, several heavily advertised brands show hardly any value or presence. This is a simple method as it depends on actual cost but it fails to explain the impact of brand value on the profitability of the firm.

(ii) Replacement Cost Model: Under replacement cost model brands are valued at the costs which would be required to recreate the existing brands. The method is based on the assumption that the existing brands can be recreated exactly by new brands. It is the opportunity cost of investment made for the replacement of the brand.

(iii) Market Price Model: Probable value that a company would fetch by selling its brand is taken as the value of the brand. Brand value is given by ;

Brand Value=Net realisable value

As there is no readymade market for many brands, the value is only assumed one. Although the method determines the value from seller's point of view, the actual value is determined on the basis of expected benefit to be derived by the purchaser by purchasing the brand.

(iv) Present Value Model:

According to present value model, the value of a brand is the sum total of present value of future estimated flow of brand revenues for the entire economic life of brand plus the residual attached to the brand. The model is also called Discounted Cash Flow model which has been wisely used by considering the year wise revenue attributable to the brand over a period of 5,8 or 10 years. The discounting rate is the weighted average cost of capital cost. The residual value is estimated on the basis of a perpetual income, assuming that such revenue is constant or increased at a constant rate.

$$\text{Brand value} = \frac{R_t}{(1+r)^t} + \frac{\text{Re}\,sidualvalue}{(1+r)^N}$$

Where, R_t =Anticipated revenue in year t, attributable to the brand

t = Discounting rate

Residual value beyond year N

Brands supported by strong customer loyalty, may be visualised as a kind of an annuity. Great care must be taken to estimate as much correctly as possible, the future cash flow likely to estimate from a strongly positioned specific brand. A realistic present value of a particular brand having strong loyalty of customers can thus be obtained from summation of discounted values of the expected future incomes from it.

DCF model for evaluating brand values has got three sources of failure; (i) anticipation of cash flow; (ii) choice of period and (iii) discounting rate.

Q.66 The following data is given to you regarding a company having a share in branded portion as well as unbranded portion;

Branded revenue	Rs.500 per unit
Unbranded revenue	Rs.120 per unit
Branded cost	Rs.350 per unit
Unbranded cost	Rs.100 per unit
Research & Development	Rs.20 per unit
Branded products	1 lakh unit
Unbranded Products	40,000 units
Tax rate is 39.55%; capitalization factor 18%	

Calculate the brand value.

Ans.

The net revenue from the branded product= (revenue-cost)×Quantity sold

= (Rs.500—Rs.350)×100,000

= Rs.1,50,00,000

Net revenue from the unbranded product

= (Rs.120-Rs.100)×40,000

= Rs.8,00,000.

PAT for branded product

= (1,50,00,000-28,00,000)×(1-0.3955)

= (1,22,00,000)(.6045)

= Rs.73,74,900

Brand value = Returns/capitalization rate=Rs.73,74,900/.18

= Rs.409,71,667

Q.67 Why is brand valuation needed? What are the steps in valuation of a brand?

Ans.

Brand valuation is needed for

(i) Accounting purpose

(ii) Transactional purposes

(iii) Brand management purposes

Various companies find brand valuation helpful for the followings:

(i) Making decisions on business investments

(ii) Measuring the return on brand investment based on brand value to arrive at an ROI that can be directly compared with other investments.

(iii) Allocating marketing expenditures according to the benefit each business unit derives from the brand asset.

(iv) Organizing and optimizing the use of different brands in the business

(v) Managing a portfolio of brands across a variety of markets

(vi) Assessing fair transfer prices for the use of brands in subsidiary companies

(vii) Determining brand royalty rates for optimal exploitation of the brand asset through licensing the brand to third parties

(viii) Capitalizing brand assets on the balance sheet according to US GAAP, IAS and much country specific accounting standards.

Steps in Valuation of Brand:

(i) Market segmentation: Brands influence customer choice, but the influence varies depending on the market in which brand operates. For valuation we need to split brand's market into non-overlapping and homogeneous groups of consumers according to applicable criteria such as product or service, distribution channels, consumption patterns, purchase sophistication, geography existing and new customers and so on. The brand is valued in each segment and the sum of the segments constitutes the total value of the brand.

(ii) Financial analysis: Identify and forecast revenue and earnings from intangibles generated by the brand for each of the distinct segments determined in step-1.Intangibles earnings are defined as brand revenue less operating costs, applicable taxes and a charge for the capital employed. The concept is similar to the economic profit.

(iii) Demand analysis: Assess the role that the brand plays in driving demand for products and services in the markets in which it operates and determine what proportion of intangible earning is attributable to the brand measured by an indicator referred to as the "role of branding index". The role of branding index represents the percentage of intangible earnings that are generated by the brand. Brand earnings are calculated by multiplying the role of branding index by intangible earnings.

(iv) Competitive benchmarking: Determine the competitive strengths and weaknesses of the brand to derive the specific brand discount rate that reflects the risk profile of its expected future earnings. This comprises extensive competitive benchmarking and a structured evaluation of the brand's market, stability, leadership position, growth trend, support geographic footprint and legal protect ability.

(v) Brand value calculation: Brand value is the net present value (NPV) of the forecast brand earnings, discounted by the brand discount rate. The NPV calculation comprises both the forecast period and the period beyond, reflecting the ability of brands to continue generating future earnings.

This computation is useful for brand value modelling in a wide range of situations, viz.,

- Predicting the effect of marketing and investment strategies;
- Determining and assessing communication budgets;
- Calculating the return on brand investment;
- Assessing opportunities in new or unexpected markets and
- Tracking brand value management.

5.7 Valuation of Real Estate

Q.68 How do you value real estate?

Ans.

The valuation models developed for financial assets are applicable for real assets as well. Real estate investments comprise the most significant component of real asset investments. For many years, analysts in real estate

have used their own variants on valuation models to value real estate. Real estate is too different an asset class, to be valued with models developed to value publicly traded stocks.

A piece of land, including the air above it and the ground below it, and any buildings or structures on it. Real estate can include business and/or residential properties, and are generally sold either by a relator or directly by the individual who owns the property.

Real estate investments comprise the most significant component of real asset investments. . For several years, analysts in real estate have used their own variants on valuation models to value real estate.

Q. 69 Distinguish between real and financial asset.

Real estate and financial assets share several common characteristics. Their value is determined by the cash flows they generate, the uncertainty associated with these cash flows and the expected growth in the cash flows. Other things remaining equal, the higher the level and growth in the cash flows and the lower the risk associated with the cash flows, the greater is the value of the asset.

There are also significant differences between the two classes of assets. There are many who argue that the risk and return models used to evaluate financial assets cannot be used to analyze real estate because of the differences in liquidity across the two markets and in the types of investors in each market. There are also differences in the nature of the cash flows generated by financial and real estate investments. In particular, real estate investments often have finite lives and have to be valued accordingly. Many financial assets, such as stocks, have infinite lives. These differences in asset lives manifest themselves in the value assigned to these assets at the end of the 'estimation period'. The terminal value of a stock, five or ten years hence, is generally much higher than the current value because of the expected growth in the cash flows and because these cash flows are expected to continue forever.

Q.70 What are the different forms of ownership an investor may be interested with?

A real estate investor can choose to own an asset directly or indirectly. If you buy a piece of real estate directly, the title is in your name. The advantage of direct ownership is that you have complete control over the asset. However, you are also solely responsible for any damage to the property, or for personal injuries that may occur on the property. Indirect ownership is more complicated.

A real estate investor who does not want direct ownership can choose among several alternatives. First, the investor can make a mortgage loan to someone else, with real estate as collateral for the loan. Second, the investor can buy a mortgage -backed security. A third approach would be to form a real estate syndicate (A syndicate is usually formed by a real estate manager, who raises capital from individual investors) with partners. Some partners could be limited partners who merely invest money and take a share of any profits; some partners could be managers who also draw salaries. Still another approach is the real estate investment trust (REIT), an interesting form of indirect ownership.

Real Estate Investment Trusts: A real estate investment trust, or REIT, is a closed-end investment company that invests only in real estate. REITs are exempt from federal income tax if they do not violate any of the following conditions:

1. Keep 75 percent or more of their assets invested in real estate, mortgages, cash, or government securities
2. Derive 75 percent of their gross income from real estate
3. Distribute at least 90 percent of their income to shareholders (officially called beneficiaries)
4. Have at least 100 shareholders, no 5 of whom can control more than half the shares

REITs were granted tax exemption in order to eliminate double taxation (at both e corporate and the investor levels) and to encourage publicly held institutions to divert funds into real estate investing. Shares of REIT s are generally marketable, especially those listed on national or regional stock exchanges. Share prices are determined in the open market and may be above or below the actual value of the real estate holdings. There are many types of REITs: some emphasize owning real estate, some concentrate on mortgage investing, and others make construction loans.

Q.71 How do you classify different types of real estate?

Ans.

1. Raw land: Undeveloped land may be purchased by an investor who hopes that its market price will rise in the coming years. If the investor is energetic and the location desirable, the land can be developed by subdividing it and installing roads and sewers and other amenities. Then parcels of the developed land can be sold.
2. Rental residences: Investors may purchase residential space to generate rental income. The owner or hired manager must collect rents, maintain the premises, and keep the premises rented.
3. Office buildings: Rental income from a commercial office building can be tax-sheltered. Keeping the building well maintained and rented to compatible tenants usually requires professional management.
4. Warehouses: A building that is to be leased as storage space does not require much active management with a responsible tenant that will sign a long-term lease.
5. Neighbourhood shopping centres: A profitable shopping centre can be wonderful source money so long as the neighbourhood remains attractive and competing shopping centres are scarce.
6. Travel accommodations: A hotel or motel located near a heavily traveled route can be profitable, but such an asset generally requires professional management.
7. Private residences: The single-family residence remains the most popular invest-ment in the United States now a day in India also. In fact, the psychic income associated with home ownership clouds the rational economic thinking of many prospective buyers.

Q.72 What are the Advantages of Real Estate investing?

Ans. The advantages are :

1. Financial Leverage: Financial leverage can be defined as the use of borrowed money to buy an investment with a larger value than what the buyer could have afforded without any borrowed money. When an individual can invest borrowed money and earn a rate of return higher than the rate of interest payable on the loan, the financial leverage is profitable. Traditionally, real estate investors borrow from 60 to 80 percent of the value of the properties they acquire, which is a much higher leverage ratio (of loan to asset value) than is available on most other forms of investment.
2. Tax Shelter: Real estate investors benefit from tax; laws that encourage real estate ownership. Rental property can be depreciated, and this depreciation is a tax- deductible expense that will reduce taxes on the rental income.
3. Control: Real estate owners can control all physical aspects of their properties-the color their house is painted, how often the grass is cut, how soon leaking plumbing is repaired, and other factors, all of which may give them psychic income.

Q.73 What are the disadvantages of Real Estate investing?

Ans. The disadvantages are :

1. Structural Flaws: A home or building can have termites, sinking or shifting foundations, a leaky basement or roof, or other flaws. Furthermore, such flaws may be extremely difficult to detect and may involve difficult and costly repairs.
2. Change in Neighborhood Quality: Location has a tremendous impact on the value of a piece of real estate. If a famous actor moves into a home next door to a piece of real estate you own, the value of your property might increase substantially overnight. If municipality in which your real estate is located buys the lot next to yours and uses it as a garbage dump, the value of your investment would plummet.
3. Liquidity: Real estate is an example of an asset that typically has low liquidity, If you were forced to sell your house in a hurry because you had to move to your job, for instance, you might have to sell it for only half what you paid for it edit conditions are tight or the economy is depressed.

4. Financial Risk: Most real estate investors obtain mortgage loans to finance their purchases. Some mortgages have floating, or variable, interest rates. If market interest rise or fall, the interest on such a variable-rate mortgage, or VRM, rises or falls correspondingly. Since most of each monthly mortgage payment is interest expense, interest rates on a VRM can spell financial disaster for an investor.

5. The Landlord's Duties: Managing rental property is hard work. A landlord must the property rented, execute legally enforceable rental contracts, collect rent and with delinquent payments, stop violations of leases, keep peace between the tenants, and maintain the property in good condition.

6. Brokers Fees: Real estate agents typically receive different percent of the value of the transaction when a property is purchased. They collect the same commission rate when the property is sold.

Q.74 What are the issues involved in measuring Risk for Real Assets in Asset Pricing Models?

Ans.

If it is accepted that the risk of a real asset is its market beta in the CAPM and its factor betas in the APM, there are several issues related to the measurement and use of these risk parameters that need to be examined. To provide some insight into the measurement problems associated with real assets, consider the standard approach to estimating betas in the capital asset pricing model for a publicly traded stock. First, the prices of the stock are collected from historical data, and returns are calculated on a periodic basis (daily, weekly or monthly). second, these stock returns are regressed against returns on a stock index over the same period to obtain the beta. For non-traded real assets, these steps are not as straightforward.

1. Individual Assets: Prices and Risk Parameters

The betas of individual stocks can be estimated fairly simply because stock prices are available for extended time periods. The same cannot be said for individual real estate investments. A piece of property does not get bought and sold very frequently, though similar properties might. Consequently, price indices are available for classes of assets (Example: Downtown Manhattan Office Buildings) and risk parameters can be estimated for these classes.

Even when price indices are available for classes of real estate investments, questions remain about the comparability of assets within a class (is one mumbai building the same as any other? How does one control for differences in age and quality of construction? What about location?) and about the categorization itself (Office Buildings versus Residential Buildings; Single Family versus Multi Family Residences)?

There have been attempts to estimate market indices and risk parameters for classes of real estate investments. The obvious and imperfect solution to the non-trading problem in real estate is to construct indices of real estate investment trusts (REITs) and commingled real estate equity funds (CREFs), which are traded and have market prices. The reason this might not be satisfactory is because the properties owned by real estate investment trusts may not be representative of the real estate property market and the securitization of real estate may result in differences between real estate and REIT/CREF returns.

2. The Market Portfolio

In estimating the betas of stocks, we generally use a stock index as a proxy for the market portfolio. In theory, however, the market portfolio should include all assets in the economy, in proportion to their market values. This is of particular significance when the market portfolio is used to estimate the risk parameters of real estate investments. The use of a stock index as the market portfolio will result in the marginalization of real estate investments and the under estimation of risk for these assets.

3. Other Risk Factors

Diversifiable versus Non-Diversifiable Risk:

Risk and return models that assume that the marginal investor is well diversified is reasonable even though many investors in real estate choose not to be diversified. Part of the justification that offered was the presence of firms with diversified investors, such as real estate investment trusts and master limited partnerships, in the real estate market.

Lack of Liquidity:

The markets for many real estate investments are less liquid than markets for financial assets – transactions occur less frequently, transactions costs are higher and there are far fewer buyers and sellers. The less liquid an asset, it is argued, the more risky it is. The link between lack of liquidity and risk is much more difficult to quantify for several reasons. One is that it depends upon the time horizon of the investor. An investor who intends to hold long term will care less about liquidity than one who is uncertain about his or her time horizon or wants to trade short term. Another is that it is affected by the external economic conditions. For instance, real estate is much more liquid during economic booms, when prices are rising, than during recessions, when prices are depressed.

Exposure to Legal Changes:

The values of all investments are affected by changes in the tax law - changes in depreciation methods and changes in tax rates on ordinary income and capital gains. Real estate investments are particularly exposed to changes in the tax law, because they derive a significant portion of their value from depreciation and tend to be highly levered. Unlike manufacturing or service businesses which can move operations from one locale to another to take advantage of locational differences in tax rates and other legal restrictions, real estate is not mobile and is therefore much more exposed to changes in local laws.

Information Costs and Risk:

Real estate investments often require specific information about local conditions that is difficult (and costly) to obtain. The information is also likely to contain more noise. There are some who argue that this higher cost of acquiring information and the greater noise in this information should be built into the risk and discount rates used to value real estate. This argument is not restricted to real estate. It has been used as an explanation for the small stock premium - i.e., small stocks make higher returns than larger stocks, after adjusting for risk (using the CAPM). Small stocks, it is argued, generally have less information available on them than larger stocks and the information tends to be noisier.

Q.75 Identify issues involved in Diversification in Real Estate. Discuss its Trends and Implications

Ans.

In valuation of real estates there are several risk factors, estimation errors, legal and tax changes, volatility in specific real estate markets – that are often built into discount rates and valuations, the rationale for diversification becomes stronger. A real estate firm that is diversified across holdings in multiple locations will be able to diversify away some of this risk. If the firm attracts investors who are diversified into other asset classes, it diversifies away even more risk, thus reducing its exposure to risk and its cost of equity.

Estimating Cash Flows

Cash Inflows:

The cash flows from a real estate investment generally take the form of rents and lease payments. In estimating rents for future years, but have to consider past trends in rents, demand and supply conditions for space provided by the property and general economic conditions.

Cash Outflows:

Expenses on real estate investments include items such as property taxes, insurance, repairs and maintenance and advertising - which are unrelated to occupancy and are fixed, as well as items such as utility expenses, which are a function of occupancy and are variable. In addition, the following factors will affect projected expenses.

- *Reimbursability*: Some expenses incurred in connection with a property by the owner may be reimbursed by the tenant, as part of a contractual agreement.
- *Expense Stops*: Many office leases include provisions to protect the owner from increases in operating expenses beyond an agreed-upon level. Any increases beyond that level have to be paid by the tenant.

Expected Growth:

To estimate future cash flows, there is needed estimates of the expected growth rate in both rents/leases and expenses. A key factor in estimating the growth rate is the expected inflation rate. In a stable real estate

market, the expected growth in cash flows should be close to the expected inflation rate. In tight markets with low vacancy rates, it is possible for the expected growth rate in rents to be higher than the expected inflation rate at least until the market shortages disappear. The reverse is likely to be true in markets with high vacancy rates.

Terminal Value:

In all discounted cash flow valuation models, a key input is the estimate of terminal value, i.e., the value of the asset being valued at the end of the investment time horizon. There are three basic approaches that can be used to estimate the terminal value.

1. The current value of the property can be assumed to increase at the expected inflation rate to arrive at a terminal value. Thus, the terminal value of a property, worth Rs. 10 million now, in ten years will be Rs.13.44 million, if the expected inflation rate is 3% (Terminal Value = Rs. 10 * 1.0310). The danger of this approach is that it starts of with the assumption that the current value of the asset is reasonable and then tries to assess the true value of the asset.

2. An alternative to this approach is to assume that the cash flows in the terminal year (the last year of the investment horizon) will continue to grow at a constant rate forever after that. If this assumption is made, the terminal value of the asset is: Terminal Value of Equity/Asset =

   Expected CF n+1 / r – g. Where r is the discount rate (cost of equity if it is the terminal value of equity and cost of capital if it is the terminal value of the asset) and CFn+1 is the cash flow (cash flow to equity if terminal value is for equity and to firm if terminal value is total terminal value).

   Thus, if the property described in the previous example had produced a net cash flow, prior to debt payments, of Rs. 1.2 million in year 10, this cash flow was expected to grow 3% a year forever after that and the cost of capital was 13%, the terminal value of the property can be written as follows:

   = FCFF11 / WACC- g

   Terminal Value of Asset = (1.2)(1.03)/ 0.13 0.03= Rs. 12.36 million

3. A close variation on the infinite growth model is the 'capitalization rate' (cap rate) used by many real estate appraisers to value properties. In its most general form, the cap rate is the rate by which operating income is divided to get the value of the property. Property value=Capitalization rate/Operating income after taxes

Q.76 How DCF method of valuation can be used to value real estate? Give example.

Ans.

The building has a capacity of 528,357 square feet of rentable space. While 95% of this space is rented out for the next year, the occupancy rate is expected to climb 0.5% a year for the following four years to reach 97% of capacity in year 5. This is expected to be the occupancy rate in steady state. The average rent per square foot was Rs. 28.07 in the most recent year and is expected to grow 3% a year in perpetuity. Historically, there has been a credit loss, associated with tenants failing to make payments, of 2.5% of rental revenues. The building has a garage that generated Rs. 800,000 in income for the most recent year. This income is also expected to grow 3% a year in perpetuity. Real estate taxes were Rs. 5.24 a square foot in the most recent year and are expected to grow 4% a year for the next 5 years and 3% a year thereafter. The land under the building is rented under a long-term lease and the ground rent in the most recent year was Rs. 1.5 million. This rent is expected to remain unchanged for the next 5 years and grow 3% a year thereafter. Other expenses, including insurance, maintenance and utilities, amounted to Rs. 6.50 a square foot in the most recent year and are expected grow 3% a year in perpetuity. Approximately 10% of these expenses will be reimbursed by tenants each year (and thus will become a part of the revenues).The management fee for the most recent year was Rs. 300,000 and is expected to grow 3% a year in perpetuity.

The depreciation in the building is expected to be Rs. 2 million a year for the next 5 years. The capital maintenance and upgrade expenditures (including leasehold improvements for new tenants) last year amounted to Rs. 1.5 million and are expected to grow 3% a year for the next 5 years. Beyond year 5, depreciation is expected to increase 3% a year in perpetuity and capital maintenance expenditures will offset depreciation.The potential buyer of the building is a corporation that faces a marginal tax rate of 38% and expects to finance the building

with a mix of 60% debt and 40% equity. Then debt will take the form of a long-term balloon payment loan with an interest rate of 6.50%.

Ans.

Step 1:Estimating a cost of capital

Trying to estimate a cost of equity. To make this estimate, we began with the unlevered beta of 0.62 of equity real estate investment trusts with office properties. It estimated a levered beta using the debt equity mix proposed for the building:

$$= \text{Unlevered beta}\left(1+(1-\text{tax rate})\left(\frac{\text{debt}}{\text{Equity}}\right)\right)$$

Levered beta $= 0.62\left(1+(1.0.38)\left(\frac{0.6}{0.4}\right)\right)$

= 1.20

To estimate the cost of equity, we used a riskfree rate of 5.4% and a risk premium of 4%:

Cost of equity = Riskfree rate + Beta * Risk Premium

= 5.4% + 1.20 (4%) = 10.20%

Using the interest rate on the debt as the pre-tax cost of debt, we estimated a cost of capital.

Cost of capital = 10.20% (.40) + 6.5% (1-.38) (.60) = 6.49%

Step 2: Estimating cash flows on the building

It used the operating information specified above to estimate the cash flows prior to debt payments on the building for the next 5 years. Since all of the items grow at 3% beyond year 5, it estimated a cash flow for year 6 as the terminal year. The terminal value of the building was calculated based on this cash flow, a perpetual growth rate of 3% and a cost of capital of 6.49%:

= FCFF6 / Cost of capital - Expected growth rate

Terminal value = 4,079,682/0.0649 – 0.03

= Rs. 116,810,659

The present value of the expected cashflows for the next five years and the terminal value,

	1	*2*	*3*	*4*	*5*
Cash flow to firm	Rs. 3,617,845	Rs. 3,761,185	Rs. 3,909,538	Rs. 4,063,068	Rs. 4,221,946
Terminal value					Rs. 116,810,659
Present value @6.49%	Rs. 3,397,275	Rs. 3,316,547	Rs. 3,237,186	Rs. 3,159, 199	Rs. 88,370,242

The sum of the present value of the cash flows is Rs. 101.48 million. This is the estimated value of the building.

Q.77 What are the limitations of Discounted Cash flow method of valuation of real estate?

Ans.

There are many reasons given why discounted cash flow valuation is not appropriate for real estate. First, it is argued the discount rates are difficult, if not impossible, to estimate for most real estate investments. Second, it is argued that estimating cash flows for the time horizon is tedious and difficult to do, as is the estimation of the terminal value. Third, it is argued that discounted cash flow valuation does not reflect market conditions - that the market is strong or weak at the time of the valuation. The argument can be rejected at two levels. On one level, the cash flows should reflect the market conditions, since they will be higher (higher rents and lower vacancy rates) and grow faster in strong market conditions. On the other level, any additional value being assigned by the market beyond the cash flow levels can be considered to be 'overvaluation' and should not be built into the appraised value in the first place.

Q.78 Consider the purchase of a home of Rs.150,000. The real estate agent who sells the home typically informs the potential home buyer where to apply for a mortgage loan. If a husband and wife are buying the house and both are gainfully employed, a mortgage loan for 80 percent of the home's value can usually be obtained. However, the home buyers must be able to make a 20 percent down payment. In other words, Rs.30, 000 (20 percent of Rs.150, 000) of cash equity is required to obtain the mortgage. If the home buyers are gainfully employed, have good credit records, and can make the required down payment, the bank will probably grant a Rs.120,000 mortgage loan to be paid off over the next 30 years at 10 percent interest, in equal monthly instalments of Rs.1053.

Ans.

Following shows a budget for this home purchase.

Budget for Purchase of a Rs.150,000 Home with (a) Rs.30,000 Down Payment

Monthly payments:

	Rs
Mortgage *(b)*	1053
Real estate taxes	180
Heat, lights, and water	160
Home insurance	40
Repairs and upkeep	120
Total monthly payments	1553
Monthly savings:	
Income tax reduction: *(c)*	354
Price appreciation *(d)*	250
Equity accumulation *(e)*	53
Total monthly savings	657

Excess of monthly payments over savings (Rs.1,553 - Rs.657) Rs. 896 per month

(b) A Rs.120,000 mortgage at a fixed rate of 10% for 30 years.

(c) Rs.1000 of the Rs.1053 monthly mortgage payment is interest expense. This Rs.1000 interest and the Rs.180 real estate tax are both tax-deductible. If you are in the 30% income tax bracket, you save 30% of Rs.1,000 + Rs.180, or Rs.354 per month in income taxes.

(d) Assume 2 percent per year price appreciation, or Rs.3000 appreciation in the first year (or Rs.250 per month).

(e) Rs.636 of the Rs.120,000 loan will be paid off in the first year, which represents Rs.53 per month of equity accumulation (apart from the appreciation).

Above calculation indicates that if the price of the new home rises 2 percent per year, the home purchase will decrease its owner's wealth by Rs.896 per month in the first year. Moreover, the home buyer should not forget that the capital gain of Rs.3000 per year cannot be spent while the buyer continues to own the home. This accumulating capital will not be available until the home is sold, and the same is true of the equity accumulation.

The price appreciation and the equity accumulation associated with the home purchase are like savings programs from which no withdrawals are allowed. The Rs.354 income tax savings is the only reduction in cash outflows that results from the home purchase. Therefore, the home buyers must be prepared to make cash payments of Rs.1199 (that is, Rs.1553 - Rs.354) per month from their income. Considering the income and expense figures above, and the illiquidity of a home investment (6% sales commission to buy and 6% to sell), buying a home should be considered a long-term investment that restricts the investor's flexibility.

Q.79 Develop a model for Real Estate Valuation

Ans.

The APV methodology postulates that an asset has a value under perfect market conditions plus, possibly, an additional value resulting from market imperfections. Considering among market imperfections only the debt financing and using forecasted cash flows for a finite time horizon, the value of a property can be written as follows:

$$PV_0 = \sum_{t=1}^{T} \frac{FCF_t}{(1+k_u)^t} + \sum_{t=1}^{T} \frac{k_i * \tau * D_{t-1}}{(1+k_u)^t} + \frac{TV_T}{(1+k_u)^T} \quad \text{.....(1)}$$

where

PV_0 = value of the property at time t=0

FCFt = free cash-to-property at time t (t = 1 to T)

D_t = value of debt at time t

TV_T = terminal value at time T

ku = cost of capital for a fully equity-financed property

ki = pre-tax cost of debt

t = tax rate

The advantage of equation (1) above the standard DCF formula with the average cost of capital as the discount rate is that it considers the debt financing effects separately and consequently resolves the circularity problem. Moreover, the free cash flows are discounted at a rate that can be obtained from pension funds, as such investors in many countries (including Switzerland) buy properties without any leverage. When institutional investors are tax-exempt, which is the case in Switzerland but in many other countries as well, the present value of the tax shield is zero and equation (1) reduces to:

$$PV_0 = \sum_{t=1}^{T} \frac{FCF_t}{(1+k_u)^t} + \frac{TV_T}{(1+k_u)^T} \quad \text{.....(2)}$$

Equation (2) to compute the present value of a property. This requires that the behaviour of the parameters that enter into the formula be modelled: (1) the annual free cash flows during the forecasting period, (2) the terminal value at the end of the forecasting period and (3) the discount rate.

Free cash flows (FCF)

For tax-exempt investors, the free cash flow to property for year *t* can by written as:

FCFt = (1-*nt*)*PGIt* -*Ct* -*CAPEXt* .....(3)

where

nt = vacancy rate in year *t*

PGIt = potential gross income in year *t*

Ct = operating cash expenses in year *t*

CAPEXt = additional investment (i.e. capital expenses) in year *t*

Rents are the major source of cash inflows and they depend on future market conditions, the characteristics of the properties, but also on various legal constraints. The potential gross income (PGI) for the first year (Year 1) is assumed to be known for the various components of the property (apartments, underground garages, shops, etc.). We then assume that the growth of the PGI over time is normally distributed. The choice of the mean and the standard deviation of the growth rate are crucial. Growth will depend not only on macroeconomic factors such as expected GDP growth, expected inflation or demographic phenomena, but also on property-specific

characteristics such as the quality or the age of building, but also the quality of location. The actual level of rents partly captures theses variables, but we have to recognise that the appropriate future growth rate for a well located and well constructed new building might be quite different from the rate applicable to a low quality and poorly located old building. From a theoretical point of view, it would be better if various growth rates could be considered, but in practice these are very difficult to estimate. The growth rate of rents is one of the key drivers of property values and therefore its estimation should rely on a procedure that is as objective as possible.

The level of the cash inflow is also a function of a specific type of risk related to real estate investment, i.e. the vacancy rate (u). It is assumed that the latter is uniformly distributed between the historical minimum and maximum vacancy rates for similar properties. By multiplying the PGI by (1-n_t), we obtain the rent or total rent, i.e. the amount of cash inflow that is expected from renting out the property. For the sake of simplicity, we omit to explicitly consider the rate of unpaid rent (i.e. tenants who do not pay their rent), which implies that the PGI is net of unpaid rent.

Cash outflows include operating expenses, property taxes, ins urance, and utilities. These are largely fixed, ie they will occur whether the property is or is not fully occupied. The variable component of these expenses is largely dependent on the age of the building, such that we will model the uncertain part of these expenses as a function of both age and rent. Historical data and professional expertise can help determine the level of annual fixed expenses as a percentage of rents and be useful in creating a model to estimate variable expenses. If sufficient data were available, one could also model the level of operating expenses by including other independent variables, such as the building quality or the quality of recent improvements.

Additional investments have to be forecasted to maintain or to improve the quality of the properties, or in some cases to increase their size. The amounts taken into consideration should be those that are forecasted by the owner, preferably with the help of an architect who has received a clear mandate to estimate the future investments required to reach the goals set above. In some countries or cities, due to legal restrictions to rent increases, one difficulty will then be to model future cash flows which depend on such additional investments.

Terminal value

The terminal value should be a proxy for the market value of the property at the end of the forecasting period under normal market conditions.

$$TV_T = \frac{FCF_{T+1}}{k_u - \bar{g}} = \frac{\frac{\left(FCF_T + FCF_{T-1} + FCF_{T-2}\right)}{3}\left(1+\bar{g}\right)}{k_u - \bar{g}} \qquad \text{.....(4)}$$

where

FCF_{T+1} = free cash flow of period T+1

ku = discount rate

g = perpetual growth rate of the free cash flows

Discount rate

To forecast the expected return on real estate, it is assumed that the discount rate is time-varying and dependent on market interest rates.

ir < ku < ks ..... (5)

where

ir = interest rate observed on the market

ku = required rate of return for a fully equity-financed property

ks = historical rate of return of the stock market

Then compute the discount rate, ku, as the sum of the interest rate plus a risk premium that is required by investors. Thus:

ir <(ku = ir + P) < k s .....(6)

where *P* is the risk premium. The procedure used to set the interest rate and the risk premium is discussed next.

Interest rate model

The interest rate used should be highly correlated to the mortgage interest rate.

There exist various models to forecast interest rates and, in general, these have two components: the drift and the volatility. One of the most widely used model is that of Cox *et al.* (1985), thereafter CIR:

$drt = a(b - rt)dt + t\ r\ s\ dWt$ .....(7)

where

drt = increment in the interest rate at time *t*

a = a non-negative constant (the mean-reversion speed)

b = a constant (the long-term equilibrium interest rate)

s = the volatility of the interest rate

dWt = the Wiener increment, $dW_t = W_{t+dt} - W_t$

The drift term implies that the interest rate normally will rise when it is below the long-term mean, and that it will normally fall when it is above the mean. The discrete approximation of the CIR model is as follows:

$\Delta r = a(b - r)\Delta t + rs\ e\ \Delta t$ .....(8)

where $e \rightarrow N(0,1)$.

In the CIR model, there exists a linear relationship between the long rates, *R*(*t*,*T*), and the short rates, *rt*. This relationship is as follows:

$R(t,T) = A(t,T) + B(t,T)rt$ .....(9)

$$A(t,T)\left[\frac{2\gamma e^{(\alpha+\gamma)(T-t)/2}}{(\gamma+\alpha)\left(e^{\gamma(T-t)}-1\right)+2\gamma}\right]^{2\alpha b/\sigma^2} \quad \text{.....(10)}$$

$$B(t,T) = \frac{2\left(e^{\gamma(T-t)}-1\right)}{(\gamma+\alpha)\left(e^{\gamma(T-t)}-1\right)+2\gamma} \quad \text{.....(11)}$$

rt = short-term interest rate at time *t*

$$\gamma = \sqrt{\alpha^2 + 2\sigma^2} \quad \text{.....(12)}$$

The premium

The risk premium, *P*, that investors require is assumed to vary between two boundaries and to be always positive6. The size of this premium varies across countries and is also dependent on the characteristics of properties as proxied by selected hedonic attributes. This premium can therefore be divided into two parts:

$P = p1 + p2$ .....(13)

The first component, *p1*, stems from the participation in the real estate market. The second component, *p2*, is a function of property characteristics such as the quality of location, and the quality and the age of the property. To compute the *p2* premium, can construct a linear rating system whose quality will depend on the set of qualitative data that are available. If hedonic characteristics are available, as is the case in this research, those can be used7. The level of *p2* will most likely vary across regions. From a theoretical perspective, our approach

is thus close in spirit to an Arbitrage Pricing Theory (APT) set up as we consider that several sources of risk are priced.

The following procedure is suggested when the hedonic characteristics concerning the quality of construction and that of location as well as the age of buildings are available. For the first two characteristics, the ratings are 1-excellent; 2-very good; 3-normal; 4-bad. For the age of the buildings, we use the following criteria: age between 0-5 years (assigned a grade of 1), age between 5-15 years (grade of 2), age between 15-40 years (grade of 3) and age greater than 40 years (grade of 4).

We then assume that the quality of the building and that of location are more valuable features for an investor than the age of the building, so that we assign a 40% weight to each of the first two characteristics and a weight of 20% to age. We assign 100 points for a grade of 1; 75 points for a grade of 2; 50 points for a grade of 3 and 25 points for a grade of 4. The total number of points (TP) is given by:

$TP = w(\text{building quality})*P(\text{building quality}) + w(\text{location})*P(\text{location}) + w(\text{age})*P(\text{age})$……(14)

where w is the weight and P the number of points.

The value of $p2$ is then calculated as:

$p2 = (100 - TP) / 100$ …….(15)

To illustrate, consider a building of high quality (grade of 1), with an average quality location (grade of 3) and constructed 18 years ago (grade of 3). Therefore, TP = 40%*100 + 40%*50+ 20%*25 = 65 points. Then, the premium $p2$ would be equal to (100-65)/100 = 0.45%. In contrast, the $p2$ premium for a luxurious new building with an excellent location will be zero. Although this system is somewhat arbitrary, it makes sense and is consistent with the hedonic approach.

5.8 Valuation of Liabilities

Q.80 What do you mean by valuation of liabilities?

Ans.

Liabilities may be defined as currently existing obligation which a business enterprise intends to meet at some time in future. Such obligations arise from legal or managerial considerations and impose restrictions on the use of assets by the enterprise for its own purposes. Accounting Board of USA defines liabilities as .economic obligations of an enterprise that are recognised and measured in conformity with generally accepted accounting principles. Liabilities also include certain deferred credits that are not obligations but that are recognised and measured in conformity with generally accepted accounting principles.

Actual liabilities valuation can be done on the basis of true and fair financial position of the business entity. Valuation should be properly disclose, otherwise it can make disturb to show actual financial health of the company. More clearly under valuation or over valuation of liabilities may not only affect the operating result and financial position of the current period but will also affect these for the next accounting period.

Q.81 What are the determinants of liabilities valuation?

Ans. The determinants are :

(a) The obligation must, of course, exist at the present time. That is, it must arise out of some past transaction or event. It may arise from the acquisition of goods or services, from losses already sustained for which the firm is liable, or from the expectation of losses for which the firm has obligation itself.

(b) Equitable obligations or duties should be included if they are based on the necessity of making future payment to maintain good business relationships or if they are in accordance with normal business practice.

(c) There should be little or no discretion to avoid the future sacrifice. It is necessary that the amount of the obligation be known with certainty so long as a future sacrifice is probable.

(d) There should be a determinable maturity value or the expectation that payment of an amount determined by reasonable estimation will be required at some specific time in the future, even through the exact

timing is not known at present. The time of payment may be extended by the substitution of new liabilities, or the obligation may be terminated by their conversion into stockholder equities.

(e) Normally, the payee would be known or be identifiable either specifically or as a group. However, so long the payee becomes identifiable by the settlement date, it is not necessary that the payer knows the identity of the payee or that the creditor professes the claim or has knowledge of it at the present time.

The Valuation of liabilities is part of the process of measuring both capital and income, and is important to such problems as capital maintenance and the ascertainment of a firm's financial position. According to Borton, the requirements for an accurate measurement of the financial position and financial structure should determine the basis for liability valuation. Their valuation should be consistent with the valuation of assets and expenses. The need for consistency arises from the objectives of liability valuation, which are similar to those to asset valuation. Probably the most important of these objectives is the desire to record expenses and financial losses in the process of measuring income. However, the valuation of liabilities should also assist investors and creditors in understanding the financial position.

Liabilities may be valued (i) at their discounted net values in accordance with the manner of valuing assets in economics; (ii) in accordance with accounting conventions, they may be recorded at their historic value, that is, the valuation attached to the contractual basis by which they were created. There is no difference between the two methods of valuation as regards liabilities which are payable immediately and it is only as the maturity date of liabilities, that makes the difference. While accounting conventions dictate that the valuation of liabilities should be based on the sum which is payable, it is accounting practice to make a distinction between current and long-term liabilities. As regards current liabilities there is little difference between the discounted net value and the contractual value of liabilities. In this connection, current liabilities are defined as those which will mature during the course of accounting period. The gap between the two methods of valuation is significant as regards long term liabilities. Long term liabilities are valued on the basis of their historical value, that is, by reference to the contract from which they originated, and hence, during periods of inflation or where the interest payable is less than the current market rate of interest, the accounting valuation will certainly be overstated by comparison with the discounted net value.

Q.82 What are the different processes involved in liabilities valuation?

Ans. There is different process of valuation of liabilities those discussed below:

Historical Cost: The value of liabilities are recorded at the amount of proceeds received in exchange for the obligation, or in some situation, at the amount of cash or cash equivalents expected to be paid to satisfy the liabilities in the normal course of business.

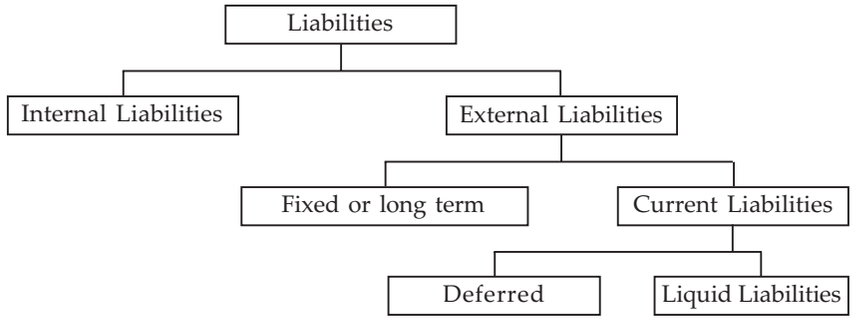
Current Cost: Liabilities are carried at the undiscounted amount of cash or cash equivalents that would be required to settle the obligation currently.

Settlement Value: The undiscounted amounts of cash or cash equivalents expected to be required to settle the liabilities in the normal course of business.

Present Value: Liabilities are carried at the present value of the future cash flow that are expected to be required to settle the liabilities in the normal course of business.

Q. 83 How do you classify liabilities?

Ans. Liabilities may be classified as follows :



Example of the above liabilities are as follows;

Internal Liabilities:Capital Reserve

External Liabilities-Debentures: Creditors, Bills Payable, Bank over Draft etc.

Fixed or long term liabilities: Debentures, Loan or Mortgage

Current Liabilities: Creditors, Bills Payable, Bank over draft

Deferred Liabilities: The Liabilities which are payable after one month but within one year are called Deferred liabilities.

Liquid Liabilities: The liabilities which are payable within one month called liquid liabilities.

Q.84 What do you fair value of liabilities?

Ans.

It is suggested that a more precise definition of fair value of liabilities would be:

The fair value of a liability is the value at which the liability could be settled or transferred between willing but not anxious parties, where both parties possess all material information relevant to the valuation of the liability. Any transfer parties are peers, who have a similar operational status, creditworthiness, and market access, and transact similar business in the same marketplace; and where the fair value is determined on an 'as is' basis, ignoring special transferee or other restructure benefits that have not actually been offered by an identifiable party. The condition of willing but not anxious parties would be taken to ameliorate short term 'irrational' market behaviour, notwithstanding the practical difficulties of actually quantifying the effect or value of such behaviour. It is noted that the settlement or transfer of liabilities is not inconsistent with the ongoing concept of the entity. The fair value of a liability is the value at which an ongoing entity would be indifferent between maintaining that particular liability and exchanging it for another equivalent liability or settling it with a payment.It is noted that the settlement or transfer of liabilities is not inconsistent with the ongoing concept of the entity. The fair value of a liability is the value at which an ongoing entity would be indifferent between maintaining that particular liability and exchanging it for another equivalent liability or settling it with a payment.

Q.85 What do you mean by contingent liability?

Ans.

A contingent Liabilities is not a actual liability. Instead, it is a potential liability that depends on a future event arising out of a past transaction. For example, a town Government may sue the company that setup new light, claiming that the electrical wiring is fault. The past transaction is the street light installation. The future event is the court case that will decide the suit. The light companies thus face a contingent liability, which may or may not become a actual obligation.

Sometime this liability has a definite amount. Discounting a note receivable creates a contingent that is, a potential liability for the endorser. If the marker of the note pays at maturity, the contingent liability ceases to exist. However if the maker defaults the payee, who sold the note, must pay its maturity value to the purchaser.

Another contingent liability of known amount arise from guaranteeing that another company will pay a note payable that the other company owes a third party, this practice is called consigning a note.

The line between contingent liabilities and real liabilities is heard to draw. The contingent liabilities appear in the body of the balance sheet of total liability, but with no amount. Generally an explanatory note accompanies a short presentation.

As a practical guide, the FASB says to record an actual liability if a) it is probable that the business has suffered a loss and b) it amount can be reasonably estimated. If both of these conditions are met, the FASB reasons that the obligation has passed from contingent to real, even if its amount is estimated.

Q.86 How do you disclose a contingent liability?

Ans.

For each class of contingent liability an entity should disclose at the balance sheet date a brief description of the nature of the contingent liability and, where practicable

- An estimate of its financial effect;
- An indication of the uncertainties relating to the amount or timing of any outflow; *and*
- The possibility of any reimbursement.

B) In extremely rare circumstances, when disclosure of any or all the above information is considered to be seriously prejudicial to the position of the entity in a dispute with other parties on the subject matter of the contingent liability, an entity need not disclose the information but should disclose the general nature of the dispute, together with the fact that, and reason why, the information has not been disclosed.

Q.87 What is bond? What are different types of bonds?

Ans.

A company needing millions of dollars may be unable to borrow so large an amount from a single lender. To gain access to more investor, the company may issue bonds. Each bond is, in effect, a long tern note payable that bears interest. Bonds are debts to the company for the amounts borrowed from the investors.

Type of Bonds

(a) Registered Bond
(b) Coupon Bonds
(c) Term Bonds
(d) Serial Bonds
(e) Unsecured Bonds, called debentures are backed only by good faith of the borrower.

Q.88 What is lease liability? How do you distinguish between operating lease & finance lease?

Ans.

Leasing is a contract between lessor (the owner of an asset) and lessee (the user) in which lessor provides right to use the asset to the lessee for an agreed period of time in return for periodic payment- of rent. Thus, it is an alternative to the purchase of an asset out of own / borrowed fund.

Operating lease

This leases are generally short term or cancelable. Many apartment lease and most car rental agreements extended a year or less. These operating leases give the lessee the right to use the assets but provide the lessee with no continuing right to the assets. The lessor retains the usual risks and rewards of owning the leased asset.

To account for an operating lease, the lessee debits rent expenses and credited cash for the amount of the lease payment. The lessee's book do not report the leased asset or any lease liability (except perhaps a prepaid rent amount or a rent accrual at the end of the period).

Capital or financial lease

A capital lease is long and not cancellable. Accounting for a capital lease is much like accounting for purchases. The lessor removes the asset from her books. The lessee enters the asset into his accounts and records a lease liability at the beginning of the lease.

Q.89 How do you distinguish between Equity and Liabilities

Ans.

Assets are probable future economic benefit owned or controlled by the enterprise. Liabilities and equity are mutually exclusive claims to or interest in the enterprise's assets by entities other than the enterprise. In a

business enterprise, equity or the ownership interest is a residual interest, remaining after liabilities, are deducted from assets and depending significantly on the profitability of the enterprise. Distributions to owners are discretionary, depending on its effect on owners after considering the needs of the enterprise and restrictions imposed by law, regulations, or agreement.

An enterprise is generally not obligated to transfer assets to owners except in the event of the enterprise's liquidations. In contrast, liabilities, once incurred, involve nondiscretionary future sacrifices of assets that must be satisfied on demand, at a specified or determinable date, or on occurrence of a specified event, and they take precedence over ownership interests.

Although the line of distinction between equity and liabilities is clear in concept, it may be obscured in practice. Often, several kinds of securities issued by business enterprises seem to have characteristics of both liabilities and equity in varying degrees or because the names given some securities may not accurately describe their essential characteristics. For example, convertible debt has both liability and residual interest characteristics, which may create problems in accounting for them. Preference share also often has both debt and equity characteristics and some preference shares may effectively have maturity amounts and dates at which they must be redeemed for cash.

Q.90 a) At April 30, 2009, XYZ company reported its 6 percent long term debt:

Current Liability (in part)	Millions
Portion of long term debt due within one year	Rs. 14
Interest payable (Rs. 200×.06×5/12)	5
Long term debt and other liabilities (in part)	
Long term debt	186

The company pays interest on its long term debt on November 30, each year.

Show how XYZ Company would report its liabilities on the year ended balance sheet at April 30, 2010. Assume the current maturity of its long-term debt is Rs.16 millions, and long term portion is Rs. 170 millions.

b) What distinguishes a contingent liability from an actual liability?

Ans.

a) XYZ company balance sheet at April 30, 2010

Current Liability (in part)	Millions
Portion of long term debt due within one year	Rs.16
Interest payable (Rs.186×.06×5/12)	4.65
Long term debt and other liabilities (in part)	
Long term debt	Rs.170

b) A contingent liability is a potential liability, which may or not become an actual liability.

Q.91 An Aircraft Company has outstanding an issue of 8 percent convertible bonds that mature in 2008. Suppose the bonds were dated Oct. 1, 1988, and pay interest each April 1 and Oct. 1.

Complete the following effective amortization table through Oct. 1, 1990

Bond data:

Maturity Value-Rs.100000

Contaract interest rate-8%

Interest paid-4% semiannually, Rs.4000(Rs.100000 x .04)

Market interest rate at time of issue-9% annually, 4.5% semiannually

Issue price-9%

Required Amortization Table

Ans.

Amortization Table

A Semiannual interest date Rs.	B Interest payament (4% of maturity value) Rs.	C Interest Expense (4.5% of preceding bond carrying value) Rs.	D Discount Amortization (B-A) Rs.	E Discount Account Balance (D-C) Rs.	F Bond Carrying Value (Rs.100000- D) Rs.
10-1-88				9250	90750
4-1-89	4000	4084	84	9166	90834
10-1-89	4000	4088	88	9078	90922
4-1-90	4000	4091	91	8987	91013
10-1-90	4000	4096	96	8891	91109

Q.92 ABC Ltd. is faced with a decision to purchase or acquire on lease a mini car. The cost of mini car is Rs. 126,965. It has a life of 5 years. The mini car can be obtained on lease by paying equal lease rental annually. The leasing company desires a return of 10% on the gross value of the lease assets. ABC Ltd. can also obtain 100% finance from its regular banking channel. The rate of interest will be 15% p.a. and the loan will be paid in 5 equal annual installments, inclusive of interest. The effective tax rate of the company is 40%. For the purpose of taxation it is to be assuming that the amount will be written off over the period of 5 years on a straight line basis.

Advice ABC Ltd. which option should the company considers.

What should be the annual lease rental to be chsrced by the leasing company to match the loan option?

	10%	**15%**	**9%**
1	**0.91**	**0.87**	**0.92**
2	**0.83**	**0.76**	**0.84**
3	**0.75**	**0.66**	**0.77**
4	**0.68**	**0.57**	**0.71**
5	**0.82**	**0.49**	**0.65**

Ans.

Cost of mini car Rs.126965

Assume lease rent is payable at beginning of each year for five years

So total present value of Re. $1=1+1/(1+0.10)+1/(1+1.10)^2+1/(1+0.10)^3+1/(1+0.10)^4 =4.17$

Therefore annual lease result beginning of each year for five year = 126965 /4.17=Rs.30447

As there is no security deposit so initial cost is zero.

Period	Rent	Tax save on rent	Inflow
0	30447	-	-30447
1	30447	12179	-18268
2	30447	12179	-18268
3	30447	12179	-18268
4	30447	12179	-18268
5	-	12179	12179

Cost of debt = 15% (fully financed by debt)

Cost of debt after tax [15% (1 - 0.40)] = 0/09 = 9% = cost of capital.

NPV = -30447 + -18268 + ... + -18268 +12179

$$1+\frac{1}{(1.09)}+\frac{1}{(1.09)^2}+\frac{1}{(1.09)^3}+\frac{1}{(1.09)^4}+\frac{1}{(1.09)^5}$$

$$= 30447-(18,268\times 3.24)+(12179\times 0.65)=81,719$$

If mini car is purchased:

Cost of machine Rs.1,26,965

Assume loan instalment including @15% interest p.a. is to be paid at beginning of the year.

So total present value of Re 1 @15% interest rate

$$1+\frac{1}{(1+0.15)}+\frac{1}{(1+0.15)^2}+\frac{1}{(1+0.15)^3}+\frac{1}{(1+0.15)^4}=3.86$$

So loan "installment inclusive of interest = $\frac{126965}{3.86}$ = Rs.32,892

Classification of interest and principal of loan payment Year

year		Loan	Interest	Principal
Beginning of 1 st year		1,26,965		
Less-	1st installment	32,892		
		94,073		
Add-	Interest 1st year@ 15%	14,111		
		1,08,184		
Less-	Installment of beginning of 2nd year	32,892	14111	18781
		75,292		
Add-	Interest of 2nd year @ 15%	11,294		
		86,586		
Less-	Installment of started of 3rd	32,892	11294	21598
		53,694		
Add-	Interest of 3rd year	8,054		
		61,748		
Less-	installment 4thyear	32,892	8054	24838
		28,856		
Add-	Intrest of 4th year	4,036		
		32,892		
Less-	Installment of 5th year	32,892	4036	28856
		Nil		

Year	1 Cash outflowfor principal payment	2 Cash outflow for interest	3 Tax save on interest 3 = 2 × 0.4	4 Depreciation	5 Cash inflow interms of taxsave on depreciation	6 Inflow (3 + 5 -1 - 2)
0	32892	-	-	(126965 - 0)	-	(32892)
1	18781	14111	5644	25393	10157	(17091)
2	21598	11294	4518	25393	10157	(18218)
3	24838	8054	3222	25393	10157	(19513)
4	28856	4036	1614	25393	10157	(21121)
5	-	-	-	25393	10157	10157

NPV=-32892/1+-17091/(1+.09)+-18218/$(1+.09)^2$+-19513/$(1+.09)^3$+-21121/$(1+.09)^4$+10157/$(1+.09)^5$-0

= (-) 87335

As revenue in both the cases are same and hence ignored. As revenue is ignored so NPV in both the cases are negative. In case of lease negative NPV is lower so it is advicable to take the lease.

(b) Assume lease rental at beginning of each year be Rs. X so that it matches with the loan option i.e., its NPV is equal to NPV of purchase option.

Year	Lease rent	Tax save on rent	Cash inflow
0	X	-	(x)
1	X	0.4x	(0.6x)
2	X	0.4x	(0.6x)
3	X	0.4x	(0.6x)
4	X	0.4x	(0.6x)
5	X	0.4x	0.4x

NPV= -x/1+-0.6x/$(1+.09)^2$+-0.6x/$(1+.09)^3$+-0.6x/$(1+.09)^4$+0.4x/$(1+.09)^5$-0

= -x-(0.6x3.124)+0.4x x 0.65=-2.684x

By condition

-2.684x= -87335

breakeven lease rent x= Rs.32539

Therefore, annual lease rent will be 32539, payable at beginning of each year for 5 years.

5.9 MM Hypothesis of Relevant Accounting Standards

Q.93 Describe Dividend Irrelevance Model propounded by Modigliani and Miller

Ans. (Adopted from Khan & Jain financial Management)

MODIGLIANI AND MILLER (MM) HYPOTHESIS

The most comprehensive argument in support of the irrelevance of dividends is provided by the MM hypothesis.[2] Modigliani and Miller mentioned that dividend policy has no effect on the share price of the firm and is, therefore, of no consequence. What matters, according to them, is the investment policy through which the firm can increase its earnings and thereby the value of the firm. Given the investment decision of the firm, the dividend decision-splitting the earnings into packages of retentions and dividends. 'Under conditions of perfect

capital markets, rational investors, absence of tax discrimination between dividend income and capital appreciation, given the firm's investment policy, its dividend policy may have no influence on the market price of shares.

The MM hypothesis of irrelevance of dividends is based on the following critical assumptions:

1) Perfect capital markets in which all investors are rational. Information is available to all free of cost, there are no transactions costs, securities are infinitely divisible, no investor is large enough to influence the market price of securities, there are no flotation costs.
2) There are no taxes. Alternatively, there are no differences in tax rates applicable to capital gains and dividends.
3) A firm has a given investment policy which does not change. The operational implication of this assumption is that financing of new investments out of retained earnings will not change the business risk complexion of the firm and, therefore, there would be no change in the required rate of return.
4) There is a perfect certainty by every investor as to future investments and profits of the firm. In other words, investors are able to forecast future prices and dividends with certainty. This assumption had been dropped by MM later.

The crux of the MM position on the irrelevance of dividend is the arbitrage argument. The arbitrage process, as already explained in the chapter dealing with leverage and valuation, involves a switching and balancing operation. In other words, arbitrage refers to entering simultaneously into two transactions which exactly balance or completely offset each other. The two transactions, here are the acts of paying out dividends and raising external funds-either through the sale of new shares or raising additional loans-to finance investment programmes. Assume that a firm has some investment opportunity. Given its investment decision, the firm has two alternatives: (i) it can retain its earnings to finance the investment programme; (ii) or distribute the earnings to the shareholders as dividend and raise an equal amount externally through the sale of new shares/bonds for the purpose. If the firm selects the second alternative, arbitrage process is involved. In that case, payment of dividends is associated with raising funds through other means of financing. The effect of dividend payment on shareholders' wealth will be exactly offset by the effect of raising additional share capital.

When dividends are paid to the shareholders, the market price of the shares will decrease. What is gained by the investors as a result of increased dividends will be neutralised completely by the reduction in the terminal value of the shares. The market price before and after the payment of dividend would be identical. The investors, according to Modigliani and Miller, would, therefore, be indifferent between dividend and retention of earnings. Since the shareholders are indifferent, the wealth would not be affected by current and future dividend decisions of the firm. It would depend entirely upon the expected future earnings of the firm.

There would be no difference to the validity of the MM premise, if external funds are raised in the form of debt instead of equity capital. This is because of their indifference between debt and equity with respect to leverage. The cost of capital is independent of leverage and the real cost of debt is the same as the real cost of equity.

The proposition that investors are indifferent between dividend and retained earnings implies that the dividend decision is irrelevant. The arbitrage process also implies that the total market value plus current dividends of two firms which are alike, in all respects except D/P ratio will be identical. The individual shareholder can retain and invest his own earnings as well as the firm would.

With dividends being irrelevant, a firm's cost of capital would be independent of its D/P ratio.

Finally, the arbitrage process will ensure that under conditions of *uncertainty* also the dividend policy would be irrelevant. When two firms are similar in respect of business risk, prospective future earnings and investment policies, the market price of their shares must be the same. This, MM argue, is because of the rational behaviour of investors who are assumed to prefer more wealth to less wealth. Differences in current and future dividend policies cannot affect the market value of the two firms as the present value of prospective dividends plus terminal value is the same.

Proof

MM provide the proof in support of their argument in the following manner.

Step 1 : The market price of a share in the beginning of the period is equal to the present value of dividends paid at the end of the period plus the market price of share at the end of the period. Symbolically,

$$P_0 = \frac{1}{(1+k_e)}(D_1 + P_1) \quad (1)$$

where P_0 = Prevailing market price of a share

k_e = Cost of equity capital

D_1 = Dividend to be received at the end of period 1

P_1 = Market price of a share at the end of period 1

Step 2 : Assuming no external financing, the total capitalised value of the firm would be simply the number of shares *(n)* times the price of each share (P_0). Thus,

$$nP_0 = \frac{1}{(1+k_e)}(nD_1 + nP_1) \quad (2)$$

Step 3 : If the firm's internal sources of financing its investment opportunities fall short of the funds required, and Δn is the number of new shares issued at the end of year 1 at price of P_1, Eq. (2) can be written as:

$$nP_0 = \frac{1}{(1+k_e)}\left[\left(nD_1 + (n+\Delta n)P_1 - \Delta nP_1\right)\right] \quad (3)$$

where n = Number of shares outstanding at the beginning of the period

Δn = Change in the number of shares outstanding during the period/Additional shares issued

Equation 13.3 implies that the total value of the firm is the capitalised value of the dividends to be received during the period plus the value of the number of shares outstanding at the end of the period, considering new shares, less the value of the new shares. Thus, in effect, Eq. (3) is equivalent to Eq. (2).

Step 4 : If the firm were to finance all investment proposals, the total amount raised through new shares issued would be given in Eq. (4).

$$\Delta nP_1 = I - (E - nD_1)$$

$$\Delta nP_1 = I - E + nD_1 \quad (4)$$

where ΔnP_1 = Amount obtained from the sale of new shares of finance capital budget. I = Total amount/requirement of capital budget

E = Earnings of the firm during the period

nD_l = Total dividends paid

$(E - nD_l)$ = Retained earnings

According to Equation (4) whatever investment needs (I) are not financed by retained earnings, must be financed through the sale of additional equity shares.

Step 5 : If we substitute Eq. (4) into Eq. (3) we derive Eq. (5)

$$nP_0 = \frac{1}{(1+k_e)}\left[\left(nD_1 + (n+\Delta n)P_1 - (I - E + nD_1)\right)\right] \quad (5)$$

Solving, we have

$$nP_0 = \frac{nD_1 + (n+\Delta n)P_1 - I + E - nD_1}{(1+k_e)}$$

There is a positive nD_1 and negative nD_1. Therefore, nD_1 cancels. We then have

$$nP_0 = \frac{(n+\Delta n)P_1 - I + E}{(1+k_e)} \quad (6)$$

Step 6 – Conclusion : Since dividends (D) are not found in Eq. 13.6, Modigliani and Miller conclude that dividends do not count and that dividend policy has no effect on the share price.

Q.94

A company belongs to a risk class for which the approximate capitalisation rate is 10 per cent. It currently has outstanding 25,000 shares selling at Rs. 100 each. The firm is contemplating the declaration of a dividend of Rs. 5 per share at the end of the current financial year. It expects to have a net income of Rs. 2,50,000 and has a proposal for making new investments of Rs. 5,00,000. Show that under the MM assumptions, the payment of divided does not affect the value of the firm.

Ans. (i) Price per share at the end of year 1,

$$P_0 = \frac{1}{(1+k_e)}(D_1 + P_1)$$

$$Rs.100 = \frac{1}{1.10}(Rs.5 + P_1)$$

110 = Rs. 5 + P_1

105 = P_1

(ii) Amount required to be raised from the issue of new shares,

$$\Delta nP_1 = (E - nD_1)$$

= Rs. 5,00,000 – (Rs. 2,50,000 – Rs. 1,25,000) = Rs. 3,75,000

(iii) Number of additional shares to be issued, $\Delta n = \frac{Rs.3,75,000}{Rs.105} = \frac{75,000}{21}$ shares

(iv) Value of the firm $nP_0 = \frac{(n-\Delta n)P_1 - 1 + E}{(1+k_e)} = \left[\frac{25,000}{1} + \frac{75,000}{21}\right]$

= (Rs. 105) – Rs. 5,00,000

+ Rs. 2,50,000 = $\frac{Rs.27,50,000}{1.10}$ = Rs. 25,00,000

Q.95 Offer a profile of existing relevant accounting standards for business valuation

Ans.

Capital intermediation through stock market has superseded the volume of intermediation by banks across the world during the last two decades. India is not an exception too. As growing number of businesses have become multinational, different stakeholders of the business across the border require a single set of high quality and acceptable accounting standards that makes financial statements comparable and relevant. With this end in view, in April 2001, the International Accounting Standards Board (IASB) was founded to undertake the responsibilities of the International Accounting Standards Committee (IASC) established in 1973. Many of the standards forming part of IFRS are known by the older name of International Accounting Standards (IAS).

IAS was issued between 1973 and 2001 by the Board of the International Accounting Standards Committee (IASC). In their first board meeting IASB has adopted all (i) IASs published by IASC and (ii) its interpretations by Standard Interpretation Committee (SIC); responsible for issuing authoritative interpretations to each IAS. The IASB has continued to develop standards calling the new standards IFRS. Full conception of IFRS comprised of (i) all IASs that are in practice, (ii) interpretations to those IASs by Standard Interpretation Committee (SIC), (iii) 9 IFRS that have yet been released and (iv) interpretation to those standards by International Financial Reporting Interpretations Committee (IFRIC). From June 2009 we have two sets of IFRSs. Full IFRS and IFRS for Small & Medium Enterprises (IFRS for SMEs). This mini IFRS reduces the volume of full IFRS by 85% and will be useful for 95% business houses all over the world. Countries that have not adopted full IFRS may adopt IFRS for SMEs. IFRS for SME has been propounded mainly on the cost-benefit ground and has made no compromise on recognition and measurement criteria but has offered relaxation on disclosure aspects. IFRS is a principle based standard.

IASB is made up of fifteen members representing nine countries, including China, Japan, Australia, and the U.S. It is sponsored by a variety of financial institutions, companies, banks, and accounting firms. In 2002, a year after their establishment, the IASB got united with the Financial Accounting Standards Board (FASB) to combine their knowledge and develop a set of high-quality accounting standards that would be compatible with all countries in order to successfully carry out international business affairs and their accounting. This set of global accounting standards is referred to as the International Financial Reporting Standards (IFRS).

In India, IFRS was supposed to be introduced from 1st April, 2011 with Sensex and Nifty companies. However, it has been found that huge legislative changes are imperative in the field of Companies Law, Income tax Act & Rules, Securities & Exchange Board of India (Rules and Regulations), Foreign Exchange Management Act (FEMA) and other allied areas. IFRS give emphasis on fair value measurement practices about which sufficient numbers of Indian accountants are not yet fully equipped. As a result, Ministry of Company Affairs (MCA) in their meeting dated 22nd Januaryt, 2010 has decided not to adopt IFRS in its original form from 1st April, but to adopt it in a phased manner with the introduction of Ind.AS (Indian version of IFRS). Till date 35 Ind.AS has yet been released.

Corporate India looks forward to a clearer roadmap for shifting to International Financial Reporting Standards (IFRS) for accounting. The convergence of the Indian Accounting Standards, currently used by domestic companies and IFRS is one of the major issues concerning India Inc. As this would lead to a revaluation of their assets and liabilities and in several cases the new accounting norms will also result in change in income recognition norms. In accordance with India's commitment to converge with IFRS, the Ministry of Corporate Affairs (MCA) issued a press release on February 25, 2011 notifying thirty five Indian Accounting Standards converged with IFRS (Referred to as Ind AS).

In IFRS, financial and non-financial liabilities are measured to reflect present obligation. IFRS allows application of cost model for property, plant and equipment, intangible assets and investment property but cost is monitored through appropriate depreciation and / or amortization policy, annual review of useful life and residual value and elimination finance charge and / or income from cost.

Q.96 (i) Why Accounting Standard Board framed Accounting Standards in India. (ii) Give an overview of constitution of ASB and procedural steps of framing accounting standards.

Ans.

Accounting Standards are written policy documents issued by expert accounting body or by government or other regulatory covering the aspects of recognition, measurement, presentation and disclosure of accounting transactions in the financial statements. The accounting standards reduce the accounting alternatives in the preparation of financial statements within the bounds of rationality, thereby ensuring comparability of financial statements of different enterprises. The accounting standards deal with issues of (i) recognition of events and transactions in the financial statements; (ii) measurement of these transactions and events; (iii)presentation of these transactions and events in the financial statements in a manner that is meaningful and understandable to the reader and (iv) the disclosure requirement which should be there to enable the public at large and the stakeholders and the potential investors in particular, to get an insight into what these financial statements are trying to reflect and thereby helping them to take informed business decisions.

Accounting standards (i) make accounts comparable and (ii) provide a set of standard (a) accounting policies, (b) valuation norms and (c) disclosure requirements. With this end in view, Accounting Standard Board (ASB) was constituted in 1977. ASB constituted by the council of the ICAI had due representation from industry,

associations, banks, company law authority taxation authorities and the C& AG.ASB now has representatives from financial institutions, SEBI, office of the C&AG, Management institutes and Universities. The preliminary draft of accounting standards are prepared by the study group of the ASB and are sent to FICCI, ASSOCHEM,CLB,ICWAI,ICSI,CBDT etc. After taking into consideration their views, the draft of the standards is issued as an Exposure Draft (ED) for comments by members of ICAI and public at large. The comments on the ED are considered by ASB and a final draft of the standard is submitted to the Council of the ICAI for its approval and only after getting its approval, it comes out as 'Standard'. ASB has been able to frame 32 Accounting Standards (AS). We will discuss just three of them. These are AS 2: Valuation of Inventories; AS 28: Impairment of Assets and AS 30: Financial Instrument: Recognition & Measurement.

Q.97 How do you value inventories?

Inventories should be valued at lower of cost and net realisable value. Cost of goods is the summation of (a) Cost of Purchase; (b)Cost of Conversion; (c)Other cost necessary to bring the inventory in present location and condition.

Following example will make it clear.

X Ltd. Purchased 1,10,000 MT for Rs. 100 each. MT of raw material and introduced in the production process to get 85,000 MT as output. Normal wastage is 5%. In the process, company incurred the following expenses:

Direct labour	Rs.10,00,000
Direct Variable overhead	Rs.1,00,000
Direct Fixed overhead (including interest Rs. 36,785)	Rs.1,00,000

Of the above 80,000 MT was sold during the year and remaining 5000 MT remained in closing stock. Due to fall in demand in market, the selling price for the finished goods on the closing day was estimated to be Rs. 145 per MT. Calculate the value of closing stock.

Solution:

Computation of cost of Closing stock

Cost of purchase (1,10,000*100)	Rs.110,00,000
Direct labour	Rs.10,00,000
Variable overhead	Rs.1,00,000
Fixed overhead[(Rs.1,00,000-36,785)*85,000]/1,04,500	Rs.51419
Cost of production	1,21,51,419
Cost of Closing stock (1,21,51,419/85,000)	Rs.143 (approx)
Net Realisable value	Rs.145

Since net realisable value is less than cost, closing stock will be valued at Rs. 143. Therefore closing stock is Rs. 5,000*143=Rs.7,15,000.

Q.98 What is Net Realisable value and how do you estimate it?

Ans. Net realisable value is the estimated selling price in the ordinary course of business less than the estimated cost of completion and the estimated costs necessary to make the sale. While estimating the NRV, the purpose of holding the stock should be taken into consideration. If the sales contracts are for less than the inventory quantities held, the net realisable value of the excess inventory is based on general selling price. Contingent losses on firm sales contracts in excess of inventory quantifies held and contingent losses on firm purchases are dealt with in accordance with the principles enunciated in AS 4,Contingencies and Events occurring after the Balance Sheet date.

Let's assume, a concern has 15,000 a unit in stock of which 9,000 is to be delivered for Rs. 50 each as per contract

with one of the customer. Cost of stock is Rs.55 and NRV is estimated to be Rs. 65. In this case 9,000 is to be valued @ Rs. 50 each and rest 6,000 will be valued @Rs.55 each.

Q.99 Following information is obtained from P Ltd.

Opening Stock	Finished goods	1,000 Kg	Rs. 25,000
	Raw material	1,100 Kg	Rs. 11,000
Purchases		10,000Kg	Rs.1,00,000
Labour			Rs. 76,500
Overheads (fixed)			Rs.75,000
Sales		10,000Kg	Rs. 2,80,000
Closing Stock	Raw materials	900 Kg	
	Finished goods	1200 Kg	

The expected production for the year was Rs.15,000 Kg of the finished product. Due to fall in market demand, the sales price for the finished goods was Rs. 20 per Kg. and the replacement cost for the material was Rs. 9.50 per Kg on the closing day. You are required to calculate the closing stock as on that date. Compute closing stock as on that date.

Ans.

Computation of cost of closing stock

Cost of purchase(Rs.)	1,02.000
Direct labour(Rs.)	76,500
Fixed overhead (75,000*10,200)/15,000	Rs.51,000
Cost of production	Rs. 2,29,500
Cost of closing stock per unit (2,29,500/10,200)	Rs.22.50
Net Realisable Value per unit	Rs.20.00

Since net realisable value is less than cost, closing stock will be valued at Rs. 20.

As NRV of the finished goods is less than its cost, relevant raw materials will be valued at replacement cost i.e. Rs. 9.50

Therefore, value of closing stock: Finished goods (1200*20) or Rs. 24,000

(+)Raw Material (900*9.50) or Rs. 8550

Total : Rs.32,550

Q.100 What do you mean by impairment of asset? Describe provision of AS 28 in respect of impairment of asset.

Ans.

Impairment means loss in the value of an asset. AS 28 comes into effect in respect of the accounting period commencing on or after 1st April, 2011.AS 28 is applicable for all business entities whose securities are either already listed or in the process of listing on a recognised stock exchanges in India. This standard is also applicable for all commercial, industrial and business reporting enterprises whose turnover for the accounting period exceeds Rs. 50 crores.

Purpose of this standard is to ensure that the assets of an enterprise are carried at an amount not exceeding their recoverable amount. An enterprise is required to assess at each balance sheet whether there is an indication that an enterprise may be impaired. If such an indication exists, the enterprise is required to estimate the recoverable amount and the impairment loss, if any should be recognised in the Profit & Loss account.

Q.101 How do you measure recoverable amount?

Ans.

Recoverable amount is the higher of an asset's net selling price and its value in use

Recoverable amount for an asset is defined by the statement as the higher of the net selling price or value of use whichever is higher. If there is no reason to believe that an asset's value in use materially exceeds its net selling price, the assets recoverable amount may be taken to be its net selling price.

Value in use is the present value of estimated future cash flows expected to arise from the continuing use of an asset and from its disposal at the end of its useful life.

In order to estimate the value in use of an asset, one should follow following steps;

(a) Estimating the future cash inflows and outflows arising from continuing use of the asset and from its ultimate disposal; and

(b) applying the appropriate discount rate to these future cash flows.

Q.102 XYZ Ltd. Gives the following estimates of cash flows relating to fixed asset on 31-12-2010. The discount rate is 10%. Cash flows expected to generate for the next 5 years are,

2010: Rs.4000; 2011:Rs.6000; 2012: Rs. 6000; 2013:Rs.8,000 & 2014: Rs.4,000 (Rs. are all in lakhs.)

Residual value at the end of 2015	Rs. 1000 lakhs
Fixed assets purchased on 01.01.2008	Rs. 40,000 lakhs
Useful life	8 yrs
Net selling price as on 31-12-2010	Rs. 20,000 lakhs.

Calculate on 31-12-2010

(a) Carrying amount at the end of 2010

(b) Value in use as on 31-12-2010

(c) Recoverable amount as on 31-12-2010

(d) Impairment loss to be recognised for the year ended 31-12-2010

(e) Revised carrying amount

(f) Depreciation charge for 2011.

Solution.

Year	Cash flows(Rs. in lakhs)	PVIRF@10%	DCF(Rs. in lakhs)
2011	4,000	.909	3636
2012	6,000	.826	4956
2013	6,000	.751	4506
2014	8,000	.683	5464
2015	4,000	.620	2480
			21,042

Value is use = Rs.21,042 lakhs.

Computation of carrying amount:

Original cost Rs.20,000 lakhs

Depreciation for 3 years [(40,000-1,000)*3/8]=Rs.14,625

Carrying amount on 31-12-2010: [Rs.40,000-14,625] or Rs.25,375

Recoverable amount Rs. Rs.20,000 lakhs

Revised carrying amount Rs. (Rs.25,375-5375) or Rs.20,000 lakhs.

Depreciation charges for 2011: [20,000-1,000]/5 or Rs.3,800.

Q.103 PQR Ltd.is having a Machine carrying amount of which is Rs. 100 lakhs as on 31.3.2010. Its balance useful life is 5 years and residual value at the end of 5 years is Rs. 5 lakhs. Estimated future cash flows from the Machine for the next 5 years are;

Yr	Estimated cash flows (Rs. in lakhs)
2011	52
2012	34
2013	32
2014	28
2015	32

Compute "Value in use" for plant if the discount rate is 15% and also compute the recoverable amount if net selling price of the machine as on 31.12.2010 is Rs. 55 lakhs.

Ans.

Present Value of future cash flow

Yr	Future cash flows	Discount@15%	DCF
2011	52	.870	45.24
2012	34	.756	25.704
2013	32	.658	21.056
2014	28	.572	16.016
2015	32	.497	15.904
Total:			123.92

Present Value of residual price on 31.03.2015: Rs.5*.497 or Rs. 2.485 (Rs. in lakhs)

Present value of estimated cash flow by use of an asset and residual value, which is called " Value in use"

Value in use is (Rs. 123.92+Rs.2.485) or Rs. 126.405 lakhs.

Q.104 Give a brief introduction of accounting standard that deals with measurement (valuation) of financial instrument?

Ans. Accounting standard 30 deals with valuation or measurement of financial instruments. This accounting standard is applicable from 01.04.2011 for all commercial, industrial and business entities except Small and Medium –sized Enterprises.

SMEs are business entities

(i) whose equity or debt securities are neither listed nor in the process of listing with any stock exchanges.
(ii) Which is not carrying on bank or insurance business
(iii) Whose turnover does not exceed 50 crore in the immediately preceding accounting year.
(iv) It does not have borrowings in excess of rupees 10 crores at any time during the immediately preceding accounting year.
(v) Which is not holding or subsidiary of an entity which is not a small and medium sized entity.

The amortised cost of a financial asset or financial liability is the amount at which financial asset or financial liability is measured at initial recognition minus principal repayments, plus or minus the cumulative amortization using the effective interest method of any difference between the initial amount and the maturity amount and minus any reduction (directly or through the use of an allowance account) for impairment or uncollectibility. The effective interest method is a method of calculating the amortised cost of a financial asset or a financial liability (or group of financial assets or financial liabilities) and of allocating the interest income or interest expense over the relevant period.

The effective interest rates is the rate that exactly discounts estimated future cash payments or receipts through the expected life of the financial instruments or when appropriate a shorter period to the net carrying amount of the financial asset or financial liability. Like measurement, sometimes required to remove previously recognised financial asset or financial liability from an entity's balance sheet. As 30 required that financial instruments are to be measured at fair value. Fair value is the amount for which asset could be exchanged or a liability settled between knowledgeable, willing parties in an arm lengths transaction.

Q.105 Which categories of Financial Instruments are covered under AS 30?

Ans.

Four categories of financial instruments are covered under AS 30.They are

(i)Held for Trading; (ii) Held to maturity; (iii) Loans & Receivables and (iv) Available for sale.

A financial asset or financial liability is classified as ***held for trading*** if it is

(i) acquired or incurred principally for the purpose of selling or repurchasing it in near term; or

(ii) part of a portfolio of identified financial instruments that are managed together and for which there is evidence of a recent pattern of short –term profit taking;

(iii) a derivative (except for a derivative that is a financial guarantee contract or a effective hedging instrument).

Held- to-maturity investments are non-derivative financial assets with fixed or determinable payments and fixed maturity that an entity has positive intention and ability to hold to maturity other than;

(a) those that the entity upon initial recognition designates as at fair value through profit & loss;

(b) those that meet the definition of loans and receivables; and those that the entity designates as available for sale.

Loans and receivables are non-derivative financial assets with determinable payments that are not quoted in an active market, other than; (a) those that the entity intends to sell immediately or in near term, which should be classified as held for trading and (b)those that entity upon initial recognition designates as available for sale; or©those for which the holder may not recover substantially all of its initial investment, other than because of credit deterioration, which should be classified as available for sale.

Available –for –sale financial assets are those non-derivative financial assets that are designated as available for sale or are not classified as

(a) Loans and receivables

(b) Held to maturity investments or

(c) Financial assets at fair value through profit and loss.

Q.106 What is Embedded Derivatives?

Ans.

An embedded derivative is a component of a hybrid (combined) instrument that also includes a non-derivative host contract- with the effect that some of the cash flows of the combined instrument vary in a way similar to a standalone derivative. An embedded derivative causes some or all of the cash flows that otherwise would be required by the contract to be modified according to a specified interest rate, financial instrument price, foreign exchange rate, index of prices or rates, credit rating or credit index or other variable provided in the case of a non-financial variable that the variable is not specific to a party to the contract.

A derivative that is attached to a financial instrument but is contractually transferrable independently but is contractually transferable independently or has a different counterparty from that instrument is not an embedded derivative, but a separate financial instrument.

If a lease contract contains a provision that increase each year by 20%.. This not an example of an embedded derivative because lease rental does not depend on any underlying basis. On the other hand let's suppose," A Ltd. makes an agreement with B Ltd. To sell coal over a period of two years. Price of the coal will depend on electricity price."This is an example of embedded derivative because cash flow of the contract or settlement price is dependent on underlying electricity price.

Q.107 On February 1,2010 X Ltd. enters into a contract with Y Ltd to receive the fair value of 1000 X Ltd.'s own equity shares outstanding as of 31.01.2011 in exchange for payment of Rs. 1,04,000 in cash i.e.,Rs. 104 per share on 31.01.2011. The contract will be settled in net cash

(i) fair value of forward on 01.02.2010: Nil

(ii) fair value of forward on 31.12 2010: Rs. 6,300

(ii) Fair value of forward as on 31.01.2010: Rs. 2,000.

Give journal entries on the basis that net amount settled in cash.

Ans.

01.02.2010

No entry is required because fair value of derivatives is zero and no cash is paid or received.

31.12.2010

Debit forward asset and credit 'gain' by Rs.6,300

31.01.2011

Loss account to be debited and forward asset to be credited by Rs. 4,300

31.01.2011

Debit cash and credit forward asset by Rs.2,000

Q.108 PQR Ltd. Is a subsidiary of XYZ Ltd.It holds 9% Rs. 100 5 yr debentures of M Ltd. And designated them as held to maturity as per AS 30:"Financial Instruments: Recognition and Measurement"

Can PQR Ltd designate this financial asset as hedging instrument for managing currency risk?

Ans.

AS 30 states that for hedge accounting purposes only instrument that involve a party external to the reporting entity can be designated as hedging instrument. Therefore debenture issued by the parent company cannot be designated as hedging instrument for the purpose of consolidated financial statements of the group. However, it can be designated as hedging instrument for separate financial statement of PQR Ltd.

5.10 Valuation of Goodwill, Equity share and Business

Q.109 : The Balance Sheets of R Ltd. for the years ended on 31.3.2009, 31.3.2010 and 31.3.2011 are as follows:

Liabilities	31.3.2009 Rs.	31.3.2010 Rs.	31.3.2011 Rs.
3,20,000 Equity Shares of Rs. 10 each fully paid	32,00,000	32,00,000	32,00,000
General Reserve	24,00,000	28,00,000	32,00,000
Profit and Loss Account	2,80,000	3,20,000	4,80,000
Creditors	12,00,000	16,00,000	20,00,000
	70,80,000	**79,20,000**	**88,80,000**
Assets	31.3.2009 Rs.	31.3.2010 Rs.	31.3.2011 Rs.
Goodwill	20,00,000	16,00,000	12,00,000
Building and Machinery			
(Less: Depreciation)	28,00,000	32,00,000	32,00,000
Stock	20,00,000	24,00,000	28,00,000
Debtors	40,000	3,20,000	8,80,000
Bank Balance	2,40,000	4,00,000	8,00,000
	70,80,000	**79,20,000**	**88,80,000**
Actual valuation wore as under:			
	31.3.2009	31.3.2010	31.3.2011
	Rs.	Rs.	Rs.
Building and Machinery	36,00,000	40,00,000	44,00,000
Stock	24,00,000	28,00,000	32,00,000
Net Profit (including opening balance) after writing off depreciation and goodwill, tax provision and transfer to General Reserve	8,40,000	12,40,000	16,40,000

Capital employed in the business at market values at the beginning of 2009-10 was Rs.73,20,000, which included the cost of goodwill. The normal annual return on Average Capital employed in the line of business engaged by R Ltd. is 12½ %.

The balance in the General Reserve account on 1st April, 2009 was Rs. 20 lakhs.

The goodwill shown on 31.3.2009 was purchased on 1.4.2009 for Rs.20,00,000 on which date the balance in the Profit and Loss Account was Rs.2,40,000. Find out the average capital employed each year.

Goodwill is to be valued at 5 years purchase of super profits (Simple average method). Also find out the total value of the business as on 31.3.2011.

Answer

Note: 1. Since goodwill has been paid for, it is taken as part of capital employed. Capital employed at the end of each year is shown.

2. Assumed that the building and machinery figure as revalued is after considering depreciation.

	31.3.2009 Rs.	31.3.2010 Rs.	31.3.2011 Rs.
Goodwill	20,00,000	16,00,000	12,00,000
Building and Machinery (revalued)	36,00,000	40,00,000	44,00,000
Stock (revalued)	24,00,000	28,00,000	32,00,000
Debtors	40,000	3,20,000	8,80,000
Bank Balance	2,40,000	4,00,000	8,00,000
Total Assets	**82,80,000**	**91,20,000**	**1,04,80,000**
Less: Creditors	12,00,000	16,00,000	20,00,000
Closing Capital	**70,80,000**	**75,20,000**	**84,80,000**
Opening Capital	73,20,000	70,80,000	75,20,000
	1,44,00,000	1,46,00,000	1,60,00,000
Average Capital	72,00,000	73,00,000	80,00,000

Maintainable profit has to be found out after making adjustments as given below:

	31.3.2009 Rs.	31.3.2010 Rs.	31.3.2011 Rs.
Net Profit as given	8,40,000	12,40,000	16,40,000
Less: Opening Balance	2,40,000	2,80,000	3,20,000
	6,00,000	9,60,000	13,20,000
Add: Under valuation of closing stock	4,00,000	4,00,000	4,00,000
	10,00,000	**13,60,000**	**17,20,000**
Less: Adjustment for valuation in opening stock	-	4,00,000	4,00,000
	10,00,000	**9,60,000**	**13,20,000**
Add: Goodwill written-off	-	4,00,000	4,00,000
	10,00,000	**13,60,000**	**17,20,000**
Add: Transfer to Reserves	4,00,000	4,00,000	4,00,000
	14,00,000	17,60,000	21,20,000
Less: $12\frac{1}{2}\%$ Normal Return	9,00,000	9,12,500	10,00,000
Super Profit	5,00,000	8,47,500	11,20,000

Average super profits = (Rs.5,00,000 + Rs 8,47,500 + Rs. 11,20,000) / 3

= 24,67,500/3 = Rs 8,22,500

Goodwill = 5 years purchase = Rs. 8,22,500 x 5 = Rs. 41,12,500.

Total Net Assets (31/3/2002)	Rs. 84,40,000
Less: Goodwill	Rs. 12,00,000
	Rs. 72,80,000
Add: Goodwill	Rs. 41,12,500
Value of Business	Rs. 1,13,92,500

Q.110 Find out the average capital employed of ND Ltd. from its Balance sheet as at 31st March, 2011:

Liabilities	(Rs. in lakhs)	Assets	(Rs. in lakhs)
Share Capital:		Fixes Assets :	
Equity shares of Rs. 10 each	50.00	Land and Buildings	25.00
9% Pref. shares fully paid up	10.00	Plant and Machinery	80.25
Reserve and Surplus:		Furniture and Fixture	5.50
General reserve	12.00	Vehicles	5.00
Profit and Loss	20.00	Investments	10.00
Secured loans:		Current Assets :	
16% debentures	5.00	Stock	6.75
16% Term loan	18.00	Sundry Debtors	4.90
Cash credit	13.30	Cash and Bank	10.40
Current Liabilities and Provisions:		Preliminary expenses	0.50
Sundry creditors	2.70		
Provision for taxation	6.40		
Proposed dividend on:			
Equity shares	10.00		
Preference shares	0.90		
	148.30		**148.30**

Non-trade investments were 20% of the total investments.

Balances as on 1.4.2010 to the following accounts were:

Profit and Loss account Rs.8.70 lakhs, General reserve Rs.6.50 lakhs.

Ans. Computation of Average Capital employed

		(Rs. in Lakhs)
Total Assets as per Balance Sheet		148.30
Less: Preliminary Expenses	0.50	
Non-trade investments (20% of Rs.10 lakhs)	2.00	
		145.80
Less: Outside Liabilities:		
16% Debentures	5.00	
16% Term Loan	18.00	
Cash Credit	13.30	
Sundry Creditors	2.70	
Provision for Taxation	6.40	45.40
		100.40
Capital Employed as on 31.03.2011		
Less: ½ of profit earned:		
Increase in reserve balance	5.50	
Increase in Profit & Loss A/c	11.30	
Proposed Dividend	10.90	
27.70 x 50%	27.70	13.85
Average capital employed		86.55

Q.111 Briefly discuss methods of valuation of intangible assets.

Ans. Valuation of intangible assets is a complex exercise, as the non-physical form of intangible assets pose the difficulty of identifying the future economic benefits that the enterprise can expect to derive from them. There are three main approaches for valuing intangible assets:

a) *Cost approach: I*n cost approach, historical expenditure incurred in developing the asset is aggregated. Cost is measured by purchase price, where the asset has been acquired recently.

b) *Market value approach:* In comparable market value approach, intangible assets are valued with reference to transactions involving similar assets that have cropped up recently in similar markets. This approach is possible when there is an active market in which arm's length transactions have occurred recently involving comparable intangible assets and adequate information of terms of transactions is available.

c) *Economic value approach:* This approach is based on the cash flows or earnings attributable to those assets and the capitalization thereof, at an appropriate discount rate or multiple. Some of the key parameters used in this approach are projected revenues, projected earnings, discount rate, rate of return etc. The information required can be derived from either internal sources, external sources or both. Under this approach, the valuer has to identify cash flows or earnings directly associated with the intangible assets like the cash flows arising from the exploitation of a patent or copyright, licensing of an intangible asset etc. This approach can be put to practice only if cash flows arising from the intangible assets are identifiable from the management accounts and budgets, forecasts or plans of the company. In most situations of valuation of intangible assets, the economic based approach is used, because of the uniqueness of intangible assets and the lack of comparable market data for the use of market value approach.

Q.112 On the basis of the following information, calculate the value of goodwill of Gee Ltd. at three years' purchase of super profits, if any, earned by the company in the previous four completed accounting years.

Balance Sheet of Gee Ltd. as at 31st March, 2011

Liabilities	**Rs. in lakhs**	**Assets**	**Rs. in lakhs**
Share Capital:		Goodwill	310
Authorised	7,500	Land and Buildings	1,850
Issued and Subscribed		Machinery	3,760
5 crore equity shares of Rs. 10 each,			
fully paid up	5,000	Furniture and Fixtures	1,015
Capital Reserve	260	Patents and Trade Marks	32
General Reserve	2,543	9% Non-trading Investments	600
Surplus i.e. credit balance of Profit			
and Loss (appropriation) A/c	477	Stock	873
Trade Creditors	568	Debtors	614
Provision for Taxation (net)	22	Cash in hand and at Bank	546
Proposed Dividend for 2009-2010	750	Preliminary Expenses	20
	9,620		9,620

The profits before tax of the four years have been as follows:

Year ended 31st March	Profit before tax in lakhs of Rupees
2007	3,190
2008	2,500
2009	3,108
2010	2,900

The rate of income tax for the accounting year 2006-07 was 40%. Thereafter it has been 38% for all the years so far. But for the accounting year 2010-11 it will be 35%.

In the accounting year 2006-07, the company earned an extraordinary income of Rs. 1 crore due to a special foreign contract. In August, 2007 there was an earthquake due to which the company lost property worth Rs. 50 lakhs and the insurance policy did not cover the loss due to earthquake or riots.

9% Non-trading investments appearing in the above mentioned Balance Sheet were purchased at par by the company on 1st April, 2008.

The normal rate of return for the industry in which the company is engaged is 20%. Also note that the company's shareholders, in their general meeting have passed a resolution sanctioning the directors an additional remuneration of Rs, 50 lakhs every year beginning from the accounting year 2010-2011.

Ans.

(1) Capital employed as on 31st March, 2011 (Refer to 'Note')

		Rs. in lakhs
Land and Buildings		1,850
Machinery		3,760
Furniture and Fixtures		1,015
Patents and Trade Marks		32
Stock		873
Debtors		614
Cash in hand and at Bank		546
		8,690
Less: Trade creditors	568	
Provision for taxation (net)	22	590
		8100

(2) Future maintainable profit

(Amounts in lakhs of rupees)

	2006-07 Rs.	**2007-08 Rs.**	**2008-09 Rs.**	**2009-10 Rs.**
Profit before tax	3,190	2,500	3,108	2,900
Less: Extra-ordinary income due to foreign control	100			
Add: Loss due to earthquake		560		
Less: Income from non-trading investment			54	54
	3,090	2,550	3,054	2,846

As there is no trend, simple average profits will be considered for calculation of goodwill.

Total adjusted trading profits for the last four years = Rs. (3,090 + 2,550 + 3,054 + 2,846) = Rs.11,540 lakhs

	Rs. in lakhs	
Average trading profit before tax = $\frac{(Rs.11,540\,lakhs)}{4}$	2,885	
Less: Additional remuneration to directors	50	
Less: Income tax @ 35%(approx.)	992	(Approx)
	1,843	

3) Valuation of goodwill on super profits basis

Future maintainable profits	1,843
Less: Normal profits (20% of Rs. 8,100 lakhs)	1,620
Super Profits	223

Goodwill at 3 years' purchase of super profits = 3 x Rs. 223 lakhs = Rs. 669 lakhs

Note:

In the above solution, goodwill has been calculated on the basis of closing capital employed (i.e. on 31st March, 20011). Goodwill should be calculated on the basis of 'average capital employed' and not 'actual capital employed' as no trend is being observed in the previous years' profits. The average capital employed cannot be calculated in the absence of details about profits for the year ended 31st March, 2011. Since the current year's profit has not been given in the question, goodwill has been calculated on the basis of capital employed as on 31st March, 2011.

Q.113 The following Balance Sheet of X Ltd. is given:

X Ltd.

Balance Sheet as on 31st March, 2011

Liabilities	Rs.	Assets	Rs.
5,000 shares of Rs.100 each fully paid	50,00,000	Goodwill	4,00,000
Bank overdraft	18,60,000	Land and building at cost	32,00,000
		Plant and machinery at cost	28,00,000
Creditors	21,10,000	Stock	32,00,000
Provision for taxation	5,10,000	Debtors considered good	20,00,000
Profit and Loss Appropriation A/c	21,20,000		
	1,16,00,000		1,16,00,000

In 1992 whon tho company commenced operation the paid up capital was same. Tho Loss/Profit for each of the last 5 years was - years 2006-07 - Loss (Rs. 5,50,000); 2007-08 Rs. 9,82,000; 2008-09 Rs. 11,70,000; 2009-10 Rs. 14,50,000; 2010-11 Rs. 17,00,000;

Although income-tax has so far been paid @ 40% and the above profits have been arrived at on the basis of such tax rate, it has been decided that with effect from the year 2010-11 the Income-tax rate of 45% should be taken into consideration. 10% dividend in 2007-08 and 2008-09 and 15% dividend in 2009-10 and 2010-11 have been paid. Market price of shares of the company on 31st March, 2011 is Rs. 125. With effect from 1st April, 2011 Managing Director's remuneration has been approved by the Government to be Rs. 8,00,000 in place of Rs. 6,00,000. The company has been able to secure a contract for supply of materials at advantageous prices. The advantage has been valued at Rs. 4,00,000 per annum for the next five years.

Ascertain goodwill at 3 year's purchase of super profit (for calculation of future maintainable profit weighted average is to be taken).

Ans.

(i) Future Maintainable Profit

Year	Profit (P) Rs.	Weight (W)	Product (PW) Rs.
2007-08	9,82,000	1	9,82,000
2008-09	11,70,000	2	23,40,000
2009-10	14,50,000	3	43,50,000
2010-11	17,00,000	4	68,00,000
		10	1,44,72,000

Weighted average annual profit (after tax) = $\frac{\sum PW}{\sum W} = Rs.\frac{1,44,7200}{10} 14,47,200$

Weighted average annual profit before tax $\left(Rs.14,47,200 \times \frac{100}{60}\right)$	24,12,000
Less: Increase in Managing Director's remuneration	2,00,000
	22,12,000
Add: Saving in cost of materials	4,00,000
	26,12,000
Less: Taxation @ 45%	11,75,000
Future maintainable profit	14,36,600

(ii) Average Capital Employed

		Rs.	Rs.
Assets:			
Land and Buildings			32,00,000
Plant and Machinery			28,00,000
Stock			32,00,000
Sundry Debtors			20,00,000
			1,12,00,000
Less:	Outside liabilities:		
	Bank overdraft	18,60,000	
	Creditors	21,10,000	
	Provision for taxation	5,10,000	44,80,000
Capital employed at the end of the year			67,20,000
Add: Dividend @ 15% paid during the year			7,50,000
			74,70,000
Less: Half of the profit (after tax) for the year i.e. Rs. 17,00,000 x ½			8,50,000
			66,20,000

(iii) Normal Profit

Average dividend for the last 4 years $\left(\frac{10+10+15+15}{4}\right) = 12.5\%$

Market price of share = Rs. 125

Normal rate of return = $\frac{12.5}{125} \times 100 = 10\%$

Normal profit (10% of Rs.66,20,000) = Rs.6,62,000

(iv) Valuation of goodwill

	Rs.
Future maintainable profit	14,36,600
Less: Normal profit	6,62,000
Super profit	7,74,600
Goodwill at 3 years' purchase of super profits (Rs. 7,74,600 x 3)	23,23,800

Q.114 The following is the extract from the Balance Sheets of Popular Ltd.:

Liabilities	As at 31.3.10 Rs. in lakhs	As at 31.3.11 Rs. in lakhs	Assets	As at 31.3.10 Rs. in lakhs	As at 31.3.11 Rs. in lakhs
Share capital	500	500	Fixed assets	550	650
General reserve	400	425	10% investment	250	250
Profit and Loss account	60	90	Stock	260	300
18% term loan	180	165	Debtors	170	110
Sundry creditors	35	45	Cash at bank	46	45
Provision for tax	11	13	Fictitious assets	10	8
Proposed dividend	100	125			
	1286	1363		1286	1363

Additional information:

(i) Replacement values of Fixed assets were Rs.1,100 lakhs on 31.3.10 and Rs.1,250 lakhs on 31.3.2011 respectively.

(ii) Rate of depreciation adopted on Fixed assets was 5% p.a.

(iii) 50% of the stock is to be valued at 120% of its book value.

(iv) 50% of investments were trade investments.

(v) Debtors on 31st March, 2011 included foreign debtors of $35,000 recorded in the books at Rs.35 per U.S. Dollar. The closing exchange rate was $1= Rs.39.

(vi) Creditors on 31st March, 2011 included foreign creditors of $60,000 recorded in the books at $1 = Rs. 33. The closing exchange rate was $1 = Rs.39.

(vii) Profits for the year 2010-11 included Rs.60 lakhs of government subsidy which was not likely to recur.

(viii) Rs.125 lakhs of Research and Development expenditure was written off to the Profit and Loss Account in the current year. This expenditure was not likely to recur.

(ix) Future maintainable profits (pre-tax) are likely to be higher by 10%.

(x) Tax rate during 2010-11 was 50%, effective future tax rate will be 40%.

(xi) Normal rate of return expected is 15%.

One of the directors of the company Arvind, fears that the company does not enjoy a goodwill in the prevalent market circumstances.

Critically examine this and establish whether Popular Co. has or has not any goodwill.

If your answers were positive on the existence of goodwill, show the leverage effect it has on the company's result.

Industry average return was 12% on long-term funds and 15% on equity funds.

Ans. 1. Calculation of Capital employed (CE)

		Rs. in lakhs
	As on 31.3.10	As on 31.3.11
Replacement Cost of Fixed Assets	1100.00	1250.00
Trade Investment (50%)	125.00	125.00
Current cost of stock		
$130+130\times\frac{120}{100}$	166.00	
$150+150\times\frac{120}{100}$		330.00
Debtors	170.00	111.40
Cash-at-Bank	46.00	45.00
Total (A)	1727.00	1861.41
Less: Outside Liabilities		
18% term loan	18.00	165.00
Sundry creditors	35.00	48.60
Provision for tax	11.00	13.00
Total (B)	226.00	226.60
Capital employed (A - B)	1501.00	1634.80

Average Capital employed at current value = $\frac{\text{CE as on } 31.3.2004 + \text{CE as on } 31.3.2005}{2}$

$$=\frac{1501+1634.80}{2}=1567.90 \text{ Lakhs}*$$

2. Future Maintainable Profit

	Rs. in Lakhs
Increase in General Reserve	25
Increase in Profit and Loss Account	30
* Average capital employed can also be calculated in the following manner :	
Closing capital employed as on 31.3.2011	Rs. 1,634.80 lakhs
Less: ½ of actual post tax profit for 2010-11	Rs. 90.00 lakhs
Average capital employed	Rs. 1,544.80 lakhs
Proposed Dividends	125
Profit After Tax	180
Pre-Tax Profit $=\frac{180}{1-0.5}$	360
Less: Fictitious Assets written off (10-8)	2.00

Non-Trading investment income (10% of Rs.125)		12.50
Subsidy		60.00
Exchange Loss on creditors [0.6 lakhs x (39-33)]		3.60
Additional Depredation on increase in value of Fixed Assets (current year) $(1250-650=600\times\frac{5}{100})$ i.e.,	30.00	108.10
		251.90
Add: Exchange Gain on Debtors [0.35 lakhs x (39-35)]	1.40	
Research and development expenses written off		125.00
Stock Adjustment (30-26)	4.00	130.40
		382.30
Add: Expected increase of 10%		38.23
Future Maintainable Profit before Tax		420.53
Less: Tax @ 40% (40% of Rs. 420.53)		168.21
Future Maintainable Profit		252.32

3) Valuation of Goodwill **Rs. in lakhs**

(i) According to Capitalisation of Future Maintainable Profit Method

Capitalised value of Future Maintainable Profit $=\frac{256.28}{15}\times100$	1682.13
Less: Average capital employed	1567.90
Value of Goodwill	114.23

(ii) According to Capitalisation of Super Profit Method

Future Maintainable Profit	252.32
Less: Normal Profit @15% on average capital employed (1567.90 x 15%)	235.19
Super Profit	17.13
Capitalised value of super profit $\frac{17.13}{15}\times100$ i.e., Goodwill	114.2

Goodwill exists, hence director's fear is not valid.

Leverage Effect on Goodwill	**Rs. in lakhs**
Future Maintainable Profit on equity fund	252.32
Future Maintainable Profit on Long-term Trading Capital employed	
Future Maintainable Profit After Tax	252.32

Add: Interest on Long-term Loan (Term Loan)	14.85	267.17
(After considering Tax) 165x 18% = $29.7 \times \frac{50}{100}$		
Average capital employed (Equity approach)		1567.90
Add - 18% Term Loan (180+165)/2		172.50
Average capital employed (Long-term Fund approach)		1740.40
Value of Goodwill		
(A) Equity Approach		
Capitalised value of Future Maintainable Profit = $\frac{252.32}{15} \times 100$		1682.13
Less: Average capital employed		1567.90
Value of Goodwill		114.23
(B) Long-Term Fund Approach		
Capitalised value of Future Maintainable Profit = $\frac{267.17}{12} \times 100$		2226.42
Less: Average capital employed		1740.40
Value of Goodwill		486.02

Comments on Leverage effect of Goodwill:

Adverse Leverage effect on goodwill is 371.79 lakhs (i.e., Rs.486.02-114.23). In other words, Leverage Ratio of Popular Ltd. is low as compared to industry for which its goodwill value has been reduced when calculated with reference to equity fund as compared to the value arrived at with reference to long term fund.

Working Notes:

		Rs. in lakhs
(1)	Stock adjustment	
(i)	Excess current cost of closing stock over its Historical cost (330 - 300)	30.00
(ii)	Excess current cost of opening stock over its Historical cost (286-260)	26.00
(iii)	Difference [(i - ii)]	4.00
(2)	Debtors' adjustment	
(i)	Value of foreign exchange debtors at the dosing exchange rate ($35,000 x 39)	13.65
(ii)	Value of foreign exchange debtors at the original exchange rate ($35,000x35)	12.25
(iii)	Difference [(i - ii)]	1.40
(3)	Creditors' adjustment	
(i)	Value of foreign exchange creditors at the dosing exchange rate ($60,000 x 39)	23.40
(ii)	Value of foreign exchange creditors at the original exchange rate ($60,000 x 33)	19.80
(iii)	Difference [(i - ii)]	3.60

Q.115 The Balance Sheet of Domestic Ltd. as on 31a March, 2011 is as under:

(All figures are in lacs)

Liabilities	Rs.	Assets	Rs.
Equity Shares Rs. 10 each	3,000	Goodwill	744
Reserves (including provision for taxation of Rs. 300 lacs)	1,000	Premises and Land cost	400
5% Debentures	2,000	Plant and Machinery	3,000
Secured Loans	200	Motor Vehicles	40
Sundry Creditors	300	(purchased on 1.10.06)	
Profit & Loss A/c		Raw materials at cost	920
Balance from previous B/S Rs. 32			
Profit for the year Rs. 1,100			
(After taxation)	1,132	Work-in-progress	130
		Finished Goods at cost	180
		Book Debts	400
		Investment (meant for replacement of Plant and Machinery)	1,600
		Cash at Bank and Cash in hand	192
		Discount on Debentures	10
		Underwriting Commission	16
	7,632		7,632

The resale value of Premises and Land is Rs.1,200 lacs and that of Plant and Machinery is Rs.2,400 lacs. Depreciation @ 20% is applicable to Motor Vehicles. Applicable depreciation on Premises and Land is 2%, and that on Plant and Machinery is 10%. Market value of the Investments is Rs.1,500 lacs. 10% of book debts is bad. In a similar company the market value of equity shares of the same denomination is Rs.25 per share and in such company dividend is consistently paid during last 5 years @ 20%. Contrary to this, Domestic Ltd. is having a marked upward or downward trend in the case of dividend payment.

Past 5 years' profits of the company were as under :

2005-06	Rs.67lacs
2006-07	(-) Rs.1.305 lacs (loss)
2007-08	Rs.469 lacs
2008-09	Rs.546lacs
2009-10	Rs.405 lacs

The unusual negative profitability of the company during 2006-07 was due to the lock out in the major manufacturing unit of the company which happened in the beginning of the second quarter of the year 2005-06 and continued till the last quarter of 2006-07.

Value the Goodwill of the Company on the basis of 4 years' purchase of the Super Profit.

(Necessary assumption for adjustment of the Company's inconsistency in regard to the dividend payment, may be made by the examinee).

Ans.

1. Calculation of capital employed

		Rs. (in lacs)
Present value of assets:		
Premises and land		1,200
Plant and machinery		2,400
Motor vehicles (book value less depreciation for ½ year)		36
Raw materials		920
Work-in-progress		130
Finished goods		180
Book debts (400 x 90%)		360
Investments		1,500
Cash at bank and in hand		192
		6,918
Less: Liabilities:		
Provision for taxation	300	
5% Debentures	2,000	
Secured loans	200	
Sundry creditors	300	2,800
Total capital employed on 31.3.07		4,118

2. Profit available for shareholders for the year 2010-11

Profit for the year as per Balance Sheet		1,100
Less : Depredation to be considered		
Premises and land	24*	
Plant & machinery	240*	
Motor vehicles	4	268
		832
Less : Bad debts		40
Profit for the year 2010-11		792

3. Average capital employed

Total capital employed	4118
Less : ½ of profit for the current year [Refer point 2]	396
Average capital employed	3722

Rs. (in lacs)

4. Average profit to determine Future Maintainable Profits

Profit for the year 2010-11	792
Profit for the year 2009-10	405
Profit for the year 2008-09	546
Profit for the year 2007-08	469
	2212
Average Profit	2212/4 = 553

* Depreciation on premises and land and plant and machinery have been provided on the basis of assumption that the same has not been provided for earlier.

5. Calculation of General Expectation:

Domestic Ltd. pays Rs.2 as dividend (20%) for each share of Rs.10.

Market value of equity shares of the same denomination is Rs.25 which fetches dividend of 20%.

Therefore, share of Rs.10 (Face value of shares of Domestic Ltd.) is expected to fetch (20/25) x 10 = 8% return.

Since Domestic Ltd. is not having a stable record in payment of dividend, in its case the expectation may be assumed to be slightly higher, say 10%.

6. Calculation of super profit	**Rs. (in lacs)**
Future maintainable profit [See point 4]	553.0
Normal profit (10% of average capital employed as computed in point 3)	372.2
Super Profit	180.8

7. Valuation of Goodwill

Goodwill at 4 years' purchase of Super Profit (=180.80 x 4)	723.20

Notes:

1) It is evident from the Balance Sheet that depreciation was not charged to Profit & Loss Account.
2) It is assumed that provision for taxation already made is sufficient.
3) While considering past profits for determining average profit, the years 2005-06 and 2006-07 have been left out, as during these years normal business was hampered.

Q.116 The Balance Sheet of RNR Limited as on 31.12.2010 is as follows:

Liabilities	**(Rupees in Lakhs)**	**Assets**	**(Rupees in Lakhs)**
1,00,000 equity shares of Rs. 10 each fully paid	10	Goodwill	5
1,00,000 equity shares of Rs. 6 each, fully paid up	6	Fixed assets	15
Reserves and Surplus	4	Other tangible assets	5
Liabilities	10	Intangible assets (market value)	3
		Miscellaneous expenditure to the extent not written off	2
	30		30

Fixed assets are worth Rs. 24 lakhs. Other Tangible assets are revalued at Rs. 3 lakhs. The company is expected to settle the disputed bonus claim of Rs. 1 lakh not provided for in the accounts. Goodwill appearing in the Balance Sheet is purchased goodwill. It is considered reasonable to increase the value of goodwill by an amount equal to average of the book value and a valuation made at 3 years' purchase of average super-profit for the last 4 years.

After tax, profits and dividend rates were as follows:

Year	PAT (Rs. in Lakhs)	Dividend %
2007	3.0	11%
2008	3.5	12%
2009	4.0	13%
2010	4.1	14%

Normal expectation in the industry to which the company belongs is 10%.

Akbar holds 20,000 equity shares of Rs. 10 each fully paid and 10,000 equity shares of Rs. 6 each, fully paid up. He wants to sell away his holdings.

i) Determine the break-up value and market value of both kinds of shares.

ii) What should be the fair value of shares, if controlling interest is being sold ?

Ans. (i) Break up value of Re. 1 of share capital = $\frac{\text{Rs.}28.98\,\text{lakhs}}{\text{Rs.}16.00\,\text{lakhs}}$

= Rs. 1.81

Break up value of Rs. 10 paid up share = 1.81 x 10 = Rs. 18.10

Break up value of Rs. 6 paid up share = 1.81 x 6 = Rs. 10.86

Market value of shares:

Average dividend = $\left(\frac{11\%+12\%+13\%+14\%}{4}\right)=12.5\%$

Market value of Rs. 10 paid up share = $\frac{12.5\%}{10\%}\times 10=\text{Rs.}12.50$

Market value of Rs. 6 paid up share = $\frac{12.5\%}{10\%}\times 6=\text{Rs.}7.50$

(ii) Break up value of share will remain as before even if the controlling interest is being sold. But the market value of shares will be different as the controlling interest would enable the declaration of dividend upto the limit of disposable profit.

$$\frac{\text{Average Profit}*}{\text{Paid up value of shates}}\times 100=\frac{\text{Rs.}3.4\,\text{lakhs}}{\text{Rs.}16\,\text{lakhs}}\times 100=21.25\%$$

Market value of shares :

For Rs. 10 paid up share = $\frac{21.25\%}{10\%}\times 10=\text{Rs.}21.25$

For Rs. 6 paid up share = $\frac{21.25\%}{10\%}\times 6=\text{Rs.}12.75$

Fair value of shares = $\frac{\text{Breakup value}+\text{Market value}}{2}$

Fair value of Rs. 10 paid up share = $\frac{18.10+21.25}{2}=\text{Rs.}19.68$

Fair value of Rs. 6 paid up share = $\frac{10.86+12.75}{2}=\text{Rs.}11.81$

* (Transfer to reserves has been ignored)

Working Notes:

(a) Calculation of average capital employed

		(Rs. in lakhs)
Fixed assets		24.00
Other tangible assets		3.00
Intangible assets		3.00
		30.00
Less: Liabilities	10	
Bonus	1	11.00
		19.00
Less: 1/2 of profits [½ (4.1 - Bonus 1.0)]		1.55
Average capital employed		17.45

(b) Calculation of super profit

Average profit = ¼ (3 + 3.5 + 4 + 4.1 - Bonus 1.0)

= ¼ x 13.6 = 3.400

Less: Normal profit = 10 % of Rs. 17.45 lakhs = 1.745

Super profit = 1.655

(c) Calculation of goodwill

3 Years' purchase of average super-profit = 3 x 1.655 = Rs. 4.965 lakhs Increase in value of goodwill = ½ (book value + 3 years' super profit)

= ½ (5 + 4.965)

= Rs. 4.9825 lakhs

Net assets as revalued including book value of goodwill	24.00
Add: Increase in goodwill (rounded-off)	4.98
Net assets available for shareholders	28.98

Note: In the above solution, tax effect of disputed bonus and corporate dividend tax have been ignored.

Q.117 Following are the information of two companies for the year ended 31st March, 2011:

Particulars	Company A	Company B
Equity Shares of Rs. 10 each	8,00,000	10,00,000
10% Pref. Shares ofRs. 10 each	6,00,000	4,00,000
Profit after tax	3,00,000	3,00,000

Assume the Market expectation is 18% and 80% of the Profits are distributed.

(i) What is the rate you would pay to the Equity Shares of each Company ?

(a) If you are buying a small lot.

(b) If you are buying controlling interest shares.

(ii) If you plan to Invest only in preference shares which company's preference shares would you prefer ?

(iii) Would your rates be different for buying small tot, if the company 'A' retains 30% and company 'B' 10% of the profits ?

Ans.

(I) (a) Buying a small lot of equity shares: If the purpose of valuation is to provide data base to aid a decision of buying a small (non-controlling) position of the equity of the companies, dividend capitalisation method is most appropriate. Under this method, value of equity share is given by:

$$\frac{\text{Dividend per share}}{\text{Market capitalisation rate}} \times 100$$

Company A: Rs. $\frac{2.4}{18} \times 100$ = Rs. 13.33

Company B: Rs. $\frac{2.08}{18} \times 100$ = Rs. 11.56

(b) Buying controlling Interest equity shares: If the purpose of valuation is to provide data base to aid a decision of buying controlling interest in the company, EPS capitalisation method is most appropriate. Under this method, value of equity is given by:

$$\frac{\text{Earning per share (EPS)}}{\text{Market capitalisation rate}} \times 100$$

Company A: Rs. $\frac{3}{18} \times 100$ = Rs. 16.67

Company B: Rs. $\frac{2.6}{18} \times 100$ = Rs. 14.44

(ii) Preference Dividend coverage ratios of both companies are to be compared to make such decision.

Preference dividend coverage ratio is given by:

$$\frac{\text{Profit after tax}}{\text{Perference Dividend}} \times 100$$

Company A: $\frac{\text{Rs.}3,00,000}{\text{Rs.}60,000} = 5\,\text{times}$

Company B: $\frac{\text{Rs.}3,00,000}{\text{Rs.}40,000} = 7.5\,\text{times}$

If we are planning to invest only in preference shares, we would prefer shares of B Company as there is more coverage for preference dividend.

(iii) Yes, the rates will be different for buying a small lot of equity shares, if the company 'A' retains 30% and company 'B' 10% of profits.

The new rates will be calculated as follows:

Company A: Rs. $\frac{2.1}{18} \times 100$ = Rs. 11.67

Company B: Rs. $\frac{2.34}{18} \times 100$ = Rs. 13.00

Working Notes:

1. Computation of earning per share and dividend per share (companies distribute 80% of profits)

	Company A	Company B
Profit before tax	3,00,000	3,00,000
Less: Preference dividend	60,000	40,000
Earnings available to equity shareholders (A)	2,40,000	2,60,000
Number of Equity Shares (B)	80,000	1,00,000
Earning per share (A/B)	3.0	2.60
Retained earnings 20%	48,000	52,000
Dividend declared 80% (C)	1,92,000	2,08,000
Dividend per share (C/B)	2.40	2.08

2. Computation of dividend per share (Company A retains 30% and Company B 10% of profits)

Earnings available for Equity Shareholders	2,40,000	2,60,000
Number of Equity Shares	80,000	1,00,000
Retained Earnings	72,000	26,000
Dividend Distribution	1,68,000	2,34,000
Dividend per share	2.10	2.34

Q. 118 The following is the Balance Sheet of N Ltd. as on 31st March, 2011:

Balance Sheet

Liabilities	Rs.	Assets	Rs.
4,00,000 Equity shares of Rs. 10 each fully paid	40,00,000	Goodwill	4,00,000
13.5% Redeemable preference shares of Rs. 100 each fully paid	20,00,000	Building	24,00,000
General Reserve	16,00,000	Machinery	22,00,000
Profit and Loss Account	3,20,000	Furniture	10,00,000
Bank Loan (Secured against fixed assets)	12,00,000	Vehicles	18,00,000
Bills Payable	6,00,000	Investments	16,00,000
Creditors	31,00,000	Stock	11,00,000
		Debtors	18,00,000
		Bank Balance	3,20,000
		Preliminary Expenses	2.00,000
	1,28,20,000		1,28,20,000

Further information:

(i) Return on capital employed is 20% in similar businesses.

(ii) Fixed assets are worth 30% more than book value. Stock is overvalued by Rs. 1,00,000, Debtors are to be reduced by Rs. 20,000. Trade investments, which constitute 10% of the total investments are to be valued at 10% below cost.

(iii) Trade investments were purchased on 1.4.2010. 50% of non-Trade Investments were purchased on 1.4.2009 and the rest on 1.4.2008. Non-Trade Investments yielded 15% return on cost.

(iv) In 2008-09 new machinery costing Rs. 2,00,000 was purchased, but wrongly charged to revenue. This amount should be adjusted taking depreciation at 10% on reducing value method.

(v) In 2009-10 furniture with a book value of Rs. 1,00,000 was sold for Rs. 60,000.

(vi) For calculating goodwill two years purchase of super profits based on simple average profits of last four years are to be considered. Profits of last four years are as under: 2007-08 Rs. 16,00,000,-2008-09 Rs. 18,00,000, 2009-10 Rs. 21,00,000; 2010-11 Rs. 22,00,000.

(vii) Additional depreciation provision at the rate of 10% on the additional value of Plant and Machinery alone may be considered for arriving at average profit.

Find out the intrinsic value of the equity share. Income-tax and Dividend tax are not to be considered.

Ans. Calculation of intrinsic value of equity shares of N Ltd.

1. Calculation of Goodwill

(i) Capital employed

	Rs.	Rs.
Fixed Assets Rs.		
Building	24,00,000	
Machinery (Rs. 22,00,000 + Rs. 1,45,800)	23,45,800	
Furniture	10,00,000	
Vehicles	18,00,000	
	75,45,800	
Add: 30% increase	22,63,740	
	98,09,540	
Trade investments (Rs. 16,00,000 x 10% x 90%)	1,44,000	
Debtors (Rs. 18,00,000 - Rs. 20,000)	17,80,000	
Stock (Rs. 11,00,000 - Rs. 1,00,000)	10,00,000	
Bank balance	3,20,000	1,30,53,540
Less: Outside liabilities		
Bank Loan	12,00,000	
Bills payable	6,00,000	
Creditors	31,00,000	49,00,000
Capital employed		81,53,540

(ii) Future maintainable profit

Calculation of average profit

	2007-08 Rs.	2008-09 Rs.	2009-10 Rs.	2010-11 Rs.
Profit given	16,00,000	18,00,000	21,00,000	22,00,000
Add: Capital expenditure of machinery charged to revenue	-	2,00,000	-	-
Loss on sale of furniture	-	-	40,000	-
	16,00,000	20,00,000	21,40,000	22,00,000
Less: Depreciation on machinery	-	20,000	18,000	16,200
Income from non-trade investments	-	1,08,000	2,16,000	2,16,000
Reduction in value of stock	-	-	-	1,00,000
Bad debts Adjusted profit	-	-	-	20,000
Adjusted profit	16,00,000	18,72,000	19,06,000	18,47,800

	Total adjusted profit for four years (2007-2008 to 2010-11)	72,25,800
	Average profit (Rs. 72,25,800/4)	18,06,450
	Less: Depreciation at 10% on additional value of machinery	
	(22,00,000 + 1,45,800) x 30/100 i.e. Rs. 7,03,740	70,374
	Adjusted average profit	17,36,076
(iii)	Normal Profit	
	20% on capital employed i.e. 20% on Rs. 81,53,540	Rs.16,30,708
(iv)	Super profit	
	Expected profit - normal profit	
	Rs. 17,36,076 - Rs. 16,30,708 = Rs. 1,05,368	
(v)	Goodwill	
	2 years' purchase of super profit	
	Rs. 1,05,368 x 2 = Rs. 2,10,736	

2. Net assets available to equity shareholders

	Rs.	Rs.
Goodwill as calculated in 1(v) above		2,10,736
Sundry fixed assets		98,09,540
Trade and Non-trade investments		15,84,000
Debtors		17,80,000
Stock		10,00,000
Bank balance		3,20,000
		1,47,04,276
Less: Outside liabilities		
Bank loan	12,00,000	
Bills payable	6,00,000	
Creditors	31,00,000	49,00,000
Preference share capital		20,00,000
Net assets for equity shareholders		78,04,276

3. Valuation of equity shares

$$\text{Value of equity share} = \frac{\text{Net assets available to equity shareholders}}{\text{Number of equity shares}}$$

$$= \frac{\text{Rs. } 78,04,276}{4,00,000} = \text{Rs. } 19.51$$

Note :

1. Depreciation on the overall increased value of assets (worth 30% more than book value) has not been considered. Depreciation on the additional value of only plant and machinery has been considered taking depreciation at 10% on reducing value method while calculating average adjusted profit.
2. Loss on sale of furniture has been taken as non-recurring or extraordinary item.
3. It has been assumed that preference dividend has been paid till date.

Q.119 The Capital Structure ofM/s XYZ Ltd., on 31st March, 2011 was as follows:

	Rs.
Equity Capital 18,000 Shares of Rs. 100 each	18,00,000
12% Preference Capital 5,000 Shares of Rs. 100 each	5,00,000
12% Secured Debentures	5,00,000
Reserves	5,00,000
Profit earned before Interest and Taxes during the year	7,20,000
Tax Rate	40%

Generally the return on equity shares of this type of Industry is 15%. Subject to:

a. The profit after tax covers Fixed Interest and Fixed Dividends at least 4 times.

b. The Debt Equity ratio is at least 2;

c. Yield on shares is calculated at 60% of distributed profits and 10% of undistributed profits;

The Company has been paying regularly an Equity dividend of 15%.

The risk premium for Dividends is generally assumed at 1%.

Find out the value of Equity shares of the Company.

Ans.

Calculation of profit after tax (PAT)		Rs.
Profit before interest & tax (PBIT)		7,20,000
Less: Debenture interest (Rs. 5,00,000 x 12/100)		60,000
Profit before tax (PBT)		6,60,000
Loss: Tax @ 40%		2,64,000
Profit after tax (PAT)		3,96,000
Less: Preference dividend $\left(\text{Rs.}5,00,000\times\frac{12}{100}\right)$	60,000	
Equity dividend $\left(\text{Rs.}18,00,000\times\frac{15}{100}\right)$	2,70,000	3,30,000

Retained earnings (undistributed profit)

Calculation of Interest and Fixed Dividend Coverage

$$=\frac{\text{PAT}+\text{Debenture interest}}{\text{Rs.}60,000+60,000}$$

$$=\frac{\text{Rs.}3,96,000+60,000}{\text{Rs.}60,000+60,000}$$

$$=\frac{\text{Rs.}4,56,000}{\text{Rs.}1,20,000}=\text{Rs.}3.8\,\text{times}$$

Calculation of Debt Equity Ratio

Debt (long term loans) Debt Equity Ratio

$$= \frac{(\text{Debt})(\text{long term loan})}{\text{Equity(Shareholder's funds)}}$$

$$= \frac{\text{Debenture}}{\text{Preference share capital} + \text{Equity share capital} + \text{Reserves}}$$

$$= \frac{\text{Rs.}5,00,000}{\text{Rs.}5,00,000 + 18,00,000 + 5,00,000} = \text{Rs.}3.8 \text{ times}$$

$$\text{Debt Equity Ratio} = \frac{\text{Rs.}5,00,000}{\text{Rs.}28,00,000} = 1.78$$

Debt Equity Ratio = = 1.78

The ratio is less than the prescribed ratio.

Calculation of Yield on Equity Shares

Yield on equity shares is calculated at 60% of distributed profits and 10% of undistributed profits:

60% of distributed profits (60% of Rs. 2,70,000)	1,62,000
10% of undistributed profits (10% of Rs. 66,000)	6,600
	1,68,600

$$\text{Yield on shares} = \frac{\text{Yield on shares}}{\text{Equity share capital}} \times 100$$

$$= \frac{\text{Rs.}1,68,600}{\text{Rs.}18,00,000} \times 100 = 9.37\%$$

Calculation of Expected Yield on Equity Shares

Normal return expected	15%
Add: Risk premium for low interest and fixed dividend coverage (3.8 < 4)	1%*
Risk for debt equity ratio not required	Nil"
	16%

Value of an Equity Share

$$= \frac{\text{Actual yield}}{\text{Expected yield}} \times \text{Paid up value of share}$$

$$= \frac{9.37}{16} \times 100 = \text{Rs.}58.56$$

* When interest and fixed dividend coverage is lower than the prescribed norm, the riskiness of equity investors is high. They should claim additional risk premium over and above the normal rate of return. Hence, the additional risk premium of 1% has been added.

** The debt equity ratio is lower than the prescribed ratio, that means outside funds (Debts) are lower as compared to shareholders' funds. Therefore, the risk is less for equity shareholders. Therefore, no risk premium is required to be added in this case.

Q. 120 The following abridged Balance Sheet as at 31 st March, 2011 pertains to Glorious Ltd.

Liabilities	Rs. in lakhs	Assets	Rs. in lakhs
Share Capital:		Goodwill, at cost	420
180 lakh Equity shares of Rs. 10 each, fully paid up	1,800	Other Fixed Assets	11,166
90 lakh Equity shares of Rs. 10 each, Rs. 8 paid up	720	Current Assets	2,910
150 lakh Equity shares of Rs. 5 each, fully paid-up	750	Loans and Advances	933
Reserves and Surplus	5,628	Miscellaneous Expenditure	171
Secured Loans	4,500		
Current Liabilities	1,242		
Provisions	960		
	15,600		15,600

You are required to calculate the following for each one of the three categories of equity shares appearing in the above mentioned Balance Sheet:

i) Intrinsic value on the basis of book values of Assets and Liabilities including goodwill;

ii) Value per share on the basis of dividend yield. Normal rate of dividend in the concerned industry is 15%, whereas Glorious Ltd. has been paying 20% dividend for the last four years and is expected to maintain it in the next few years; and

iii) Value per share on the basis of EPS.

For the year ended 31st March, 2011 the company has earned Rs. 1,371 lakh as profit after tax, which can be considered to be normal for the company. Average EPS for a fully paid share of R$. 10 of a Company in the same industry is Rs. 2.

Ans. (i) Intrinsic value on the basis of book values

	Rs. in lakhs	Rs. in lakhs
Goodwill		420
Other Fixed Assets		11,166
Current Assets		2,910
Loans and Advances		933
		15,429
Less: Secured loans	4,500	
Current liabilities	1,242	
Provisions	960	6,702
		8,727
Add: Notional call on 90 lakhs equity shares @ Rs. 2 per share		180
		8,907

Equivalent number of equity shares of Rs. 10 each.	Rs. in lakhs
Fully paid shares of Rs. 10 each	180
Partly-paid shares after notional call	90
Fully paid shares of Rs. 5 each, $\left[\frac{Rs.150\,lakhs}{Rs.10}\times Rs.5\right]$	75
	345

Value per equivalent share of Rs. 10 each = $= Rs.\frac{8,907\,lakhs}{345\,lakhs} = Rs.25.82$

Hence, intrinsic values of each equity share are as follows:

Value of fully paid share of Rs. 10 = Rs, 25.82 per equity share.

Value of share of Rs. 10, Rs. 8 paid-up = Rs. 25.82 - Rs. 2 = Rs. 23.82 per equity share.

Value of fully paid share of Rs. 5 = $= \frac{Rs.25.82}{2}$ = Rs. 12.91 per equity share.

(ii) Valuation on dividend yield basis:

20 Value of fully paid share of Rs. 10 = $\frac{20}{15}$ x Rs.10 = Rs.13.33

Value of share of Rs. 10, Rs. 8 paid-up = $\frac{20}{15}$ x Rs.8 = Rs.10.67

Value of fully paid share of Rs. $\frac{20}{15} \times 5$ = Rs. 6.67

(iii) Valuation on the basis of EPS:

Profit after tax = Rs. 1,371 lakhs

Total share capital = Rs. (1,800 + 720 + 750) lakhs = Rs. 3,270 lakhs

Earning per rupee of share capital $Rs. \frac{1371 lakhs}{3270 lakhs}$ = Re. 0.419

Earning per fully paid share of Rs. 10 = Re. 0.419 x 10 = Rs. 4.19

Earning per share of Rs. 10 each, Rs. 8 paid-up = Re. 0.419 x 8 = Rs. 3.35

Earning per share of Rs. 5, fully paid-up = Re. 0.419 x 5 = Rs. 2.10

Value of fully paid share of Rs. 10 = Rs. $\frac{4.19}{2}$ = Rs. 20.95

Value of share of Rs. 10, Rs. 8 paid-up = Rs. $\frac{3.35}{2} \times 10$ = Rs.16.75

Value of fully paid share of Rs. 5 = Rs. $\frac{2.10}{2} \times 10$ = Rs.10.50

Q.121 The directors of a public limited company are considering the acquisition of the entire share capital of an existing company X Ltd engaged in a line of business suited to them. The directors feel that acquisition ofX will not create any further risk to their business interest.

The following is the Balance Sheet of X Ltd., as at 31st December, 2010:

Liabilities	Rs.	Assets	Rs.
Share Capital:		Fixed Assets	6,00,000
4,000 equity shares of Rs. 100 each			
fully paid-up	4,00,000	Current Assets:	
General reserve	3,00,000	Stock	2,00,000
Bank overdraft	2,40,000	Sundry debtors	3,40,000
Sundry creditors	3,00,000	Cash and bank balances	1,00,000
	12,40,000		12,40,000

X's financial records for the past five years were as under:

	2010 Rs.	2009 Rs.	2008 Rs.	2007 Rs.	2006 Rs.
Profits	80,000	74,000	70,000	60,000	62,000
Add: Extra ordinary item(s)	3,500	4,000	(6,000)	(8,000)	1,000
	83,500	78,000	64,000	52,000	61,000
Less: Dividends	48,500	40,000	40,000	32,000	32,000
	35,500	38,000	24,000	20,000	29,000

Additional information:

(i) There were no changes in the issued capital of X during this period.

(ii) The estimated values of X Ltd. 's assets on 31.12.2010 are:

	Replacement cost (Rs.)	Realisable value (Rs.)
Fixed assets	8,00,000	5,40,000
Stock	3,00,000	3,20,000

(iii) It is anticipated that1% of the debtors may prove to be difficult to be realized.

(iv) The cost of capital to the acquiring company is 10%.

(v) The current return of an investment of (the acquiring company is 10%. Quoted companies with similar businesses and activities as X have a P/E ratio approximating to 8, although these companies tend to be larger than X.

Required:

Estimate the value of the total equity capital of X Ltd., on 31.12.2010 using each of the following bases:

(a) Balance sheet value
(b) Replacement cost
(c) Realisable value
(d) Gordon's dividend growth model
(e) P/E ratio model.

Ans.

			Rs.	Rs.
(a)	**Balance Sheet Value**			
	Capital Reserve		4,00,000	
	Reserve		3,00,000	7,00,000
(b)	**Replacement cost value**			
	Capital		4,00,000	
	Reserve		3,00,000	
Appreciation:				
	Fixed assets		2,00,000	
	Stock	1, 00,000	3,00,000	10,00,000
(c)	**Realizable value**			
	Capital			4,00,000
	Reserve			3,00,000
	Appreciation in stock			1,20,000
	Depreciation in fixed assets			(60,000)
	Book debts (Bad)*			(3,400)
				7,56,600

(d) Gordon's dividend growth model

The formula to be used is P =

Where P = Price of share

E = Earning per share

b = retention ratio

k = cost of capital

br = growth rate

r = rate of return on investment.

Profits retained: Rs.35,500+ 38,000 + 24,000 + 20,000 + 29,000 = Rs. 1,46,500

Profits earned: Rs.83,500 + 78,000 + 64,000+ 52,000 + 61,000 = Rs. 3,38,500

* It has been assumed that estimated bad debts would net be relevant for estimating values under bases (a) and (b).

Retention ratio: $\frac{Rs.1,46,500}{Rs.3,38,500} = 0.43$

Return on investment for the year 2005 =

$$\frac{Rs.80,000}{4,00,000+3,00,000+\frac{1}{2}\text{of } 35,500} x100$$

$$=\frac{80,000}{7,17,750} x100 = 11.14$$

Growth rate = Return on investment x retention ratio

= 11.14 x 0.43 = 4.79%

Average profits = $\frac{Rs.\ 3,38500}{5}$ = Rs.67,700

Market value = $\frac{Rs.\ 67,700(1-0.43)}{0.10-0.0479} = \frac{Rs.\ 67,700\ x\ 0.57}{0.521}$

= Rs. 7,40,672 (approx.)

(e) P/E ratio model

Comparable quoted companies have a P/E ratio of 8. X Ltd. is prima facie small company.

If a P/E ratio of 6 is adopted, the valuation will be 80,000 x 6 = Rs. 4,80,000

If a P/E ratio of 7 were to be adopted, the valuation will be 80,000 x 7 = Rs.5,60,000

Q.122 P Limited is considering the acquisition of R Limited. The financial data at the time of acquisition being:

	P Limited	R Limited
Net profit after tax (Rs. in lakhs)	60	12
Number of shares (lakhs)	12	5
Earning per share (Rs.)	5	2.40
Market price per share (Rs.)	150	48
Price earning ratio	30	20

It is expected that the net profit after tax of the two companies would continue to be Rs.72 lakhs even after the amalgamation.

Explain the effect on EPS of the merged company under each of the following situations:

(i) P Ltd. offers to pay Rs. 60 per share to the shareholders of R Ltd.

(ii) P Ltd. offers to pay Rs. 78 per share to the shareholders of R Ltd. The amount in both cases is to be paid in the form of shares of P Ltd.

Answer) (i) In this case, P Ltd. offers to pay Rs.60 per share.

The share exchange ratio would be $\frac{60}{150} = 0.4$

It means, P Ltd. would give 0.4 shares for every one share of R Ltd. In other words, P Ltd. would give 2 shares for 5 shares of R Ltd. The total number of shares to be issued by P Ltd. to R Ltd.

= 5,00,000 x 0.4 = 2,00,000 shares

or

5,00,000 x $\frac{2}{5}$ = 2,00,000 shares

Total number of shares of P Ltd. after acquisition of R Ltd.

= 12,00,000 + 2,00,000 = 14,00,000 shares

Calculation of E.P.S. of the amalgamated company

$$= \frac{\text{Total Net Profit after Interest and Tax}}{\text{Total Number of shares}}$$

$$= \frac{72,00,000}{14,00,000} = \text{Rs.5.14per share}$$

After amalgamation, The EPS of P Ltd., will improve from Rs.5 to Rs.5.14 whereas EPS of former shareholders of R Ltd would reduce from present 2.40 per share to 5.14 x 0.4 = Rs.2.056 per share after merger.

(ii) In this case, P Ltd. offers Rs.78 per share to the shareholders of R Ltd.

The Exchange Ratio would be $\frac{78}{150} = 0.52$ shares of P Ltd. for each share of R Ltd. In other words, P Ltd would give 52 shares for per 100 shares of R Ltd. P Ltd would issue 5,00,000 x 0.52 = 2,60,000 shares to shareholders of R Ltd.

E.P.S. of the Merged Company = $\frac{72,00,000}{12,00,000+2,60,000} = 4.93$

After Merger, there is a dilution in the E.P.S., of P Ltd. from 5 to 4.93. After Merger E.P.S. of former shareholders of R Ltd.

= 4.93 x 0.52 = 2.56

There is a gain of Re. 0.16 in E.P.S. of merged company in comparison to E.P.S. of R Ltd. of Rs.2.40 before merger.

Comments

Initial increase in and decrease in earnings per share are possible in both cases of Merger. Generally, the dilution in E.P.S. will occur wherever the Price Earnings ratio of acquired company calculated on the basis of price paid exceed the PIE ratio of acquired company and vice-versa.

In Situation (i) The price offered by P Ltd. per share of R Ltd. is Rs.60 and E.P.S. of R Ltd. is 2.4, which would become the earnings of P Ltd. after merger.

Price Earning (P/E) Ratio of P Ltd. after merger = $\frac{60}{2.40}$ = 25. It is lower than the P/E Ratio of P Ltd. before merger i.e., 30, the E.P.S. of P Ltd. after merger increases to Rs.5.14.

In Situation (ii) The price earnings (P/E) ratio offered for Merger is $\frac{78}{2.4}$ = 32.5 which is higher than P/E Ratio of P Ltd. before Merger. Hence, the E.P.S. of P Ltd after merger would get diluted.

Q.123 The following is the Balance Sheet as at 31st December, 2010 of Sun Ltd.:

Liabilities	Rs.	Assets	Rs.
Share Capital:		**Fixed Assets:**	
80,000 Equity shares of Rs. 10 each fully paid	8,00,000	Goodwill	1,00,000
50,000 Equity shares of Rs.10 each Rs.8 paid up	4,00,000	Plant and Machinery	8,00,000
36,000 Equity shares of Rs.5 each fully paid up	1,80,000	Land and Building	10,00,000
30,000 Equity shares of Rs.5 each Rs.4 paid-up	1,20,000	Furniture and Fixtures	1,00,000
3,000 10% Preference shares of Rs.100 each fully paid	3,00,000	Vehicles	2,00,000
Reserve and Surplus:		Investments	3,00,000
General Reserve	1,50,000	**Current Assets :**	
Profit and Loss account	2,00,000	Stock	2,10,000
Secured Loan: 12% Debenture	2,00,000	Debtors	1,95,000
Unsecured Loan: 15% Term loan	1,50,000	Prepaid Expenses	40,000
Deposits	1,00,000	Advances	45,000
Current Liabilities :		Cash and Bank balance	45,000
Bank Loan	50,000	Preliminary Expenses	1,65,000
Creditors	1,50,000		
Outstanding expenses	20,000		
Provisions for tax	2,00,000		
Proposed Dividend :			
Equity	1,50,000		
Preferences	30,000		
	32,00,000		**32,00,000**

Additional Information:

1. In 2008 a new machinery costing Rs.50,000 was purchased, but wrongly charged to rovonue (no rectification has yet boon made for the same).
2. Stock is overvalued by Rs.10,000 in 2009. Debtors are to be reduced by Rs.5,000 in 2010, some old furniture (Book value Rs. 1,000) was disposed of for Rs.6,000,
3. Fixed assets are worth 5 per cent more than their actual book value. Depreciation on appreciated value of Fixed assets except machinery is not to be considered for valuation of goodwill.

4. Of the investment 20 per cent is trading and the balance is non-trading. All trade investments are to be valued at 20 per cent below cost. Trade investment were purchased on 1st January, 2010. 50 percent of the non-trade investments were acquired on 1st January, 2009 and the rest on 1a January, 2008. A uniform rate of dividend of 10 percent is earned on all investments.

5. Expected increase in expenditure without commensurate increase in selling price is Rs.20,000.

6. Research and Development expenses anticipated in future Rs.30,000 per annum.

7. In a similar business a normal return on capital employed is 10%.

8. Profit (after tax) are as follows:

In 2008 - Rs. 2,00,000, in 2009 - Rs. 1,90,000 and in 2010 - Rs. 2,00,000.

9. Current income tax rate is 50%, expected income tax rate will be 40%.

From the above, ascertain the ex-dividend and cum-dividend intrinsic value for different categories of Equity shares. For this purpose goodwill may be taken as 3 years purchase of super profits. Depreciation is charged on machinery @ 10% on reducing system.

Ans. **Computation of Value of Shares**

			Rs.
Value of Net Assets (As computed for Goodwill)			21,02,073
Value of Goodwill [Refer W.N.3]			11,406
Non-trade investments			2,40,000
			23,53,479
Less: Preference Share Capital		3,00,000	
Proposed Dividend of Preference shares	30,000		
Proposed Dividend of Equity shares		1,50,000	4,80,000
Net Assets available for Equity Shareholders			18,73,479

Computation of Number of Equivalent Equity Shares:

Equity shares	No. of Equivalent Shares
80,000 shares + 50,000 shares = $1,30,000 \times \frac{10}{10}$	1,30,000
1,30,000 shares of Rs. 10 each	
36,000 shares + 30,000 shares = $66,000 \times \frac{5}{10}$	33,000
66,000 shares of Rs.5 each	
Total Equivalent Equity Shares of Rs.10 each	1,63,000

Calculation of Ex-Dividend-intrinsic value of different categories of Equity Shares of Sun Ltd.

Net Assets available to deemed fully paid-up Equity Shareholders

= Net Assets as computed above + Notional Cash from partly paid-up shares

= Rs.18,73,479 + (50,000 x 2 + 30,000 x 1)

= Rs.18,73,479 + 1,00,000 + 30,000

= Rs.20,03,479

Computation of Ex-Dividend value per Equity Share

(i) Value of Rs.10 fully paid Equity Share $= \frac{20,03,479}{1,63,000}$

= Rs. 12.29 per share (approx.)

(ii) Value of Rs.8 paid-up Equity Share = 12.29 - 2

= Rs. 10.29 per share (approx.)

(iii) Value of Rs.5 fully paid-up Equity Share $= 12.29 \times \frac{5}{10}$

= Rs.6.15 per share (approx.)

(iv) Value of Rs.4 paid-up Equity Share = 6.15 - 1

= Rs.5.15 per share (approx.)

Valuation

Calculation of Cum-Dividend intrinsic value of different categories of Equity Shares of Sun Ltd.

Value of Net Assets (including proposed dividend on equity shares)

= Rs. 18,73,479 + 1,50,000 = Rs.20,23,479

Net assets (including dividend) available to deemed fully paid-up Equity Shareholders

= Net Assets as computed above + Notional Cash from partly paid-up shares

= Rs.20,23,479 + (50,000 x 2 + 30,000x1) = Rs.20,23,479 + 1,00,000 + 30,000

= Rs.21,53,479

Computation of Cum-Dividend value per share*

(i) Value of Rs.10 fully paid Equity Share $= \frac{21,53,479}{1,63,000}$

= Rs. 13.21 per share (approx.)

(ii) Value of Rs.8 paid-up Equity Share = 13.21 - 2

= Rs.11.21 per share (approx.)

(iii) Value of Rs.5 fully paid-up Equity Share $= 13.21 \times \frac{5}{10}$

= Rs.6.605 per share (approx.)

(iv) Value of Rs.4 paid-up Equity Share = 6.605 - 1

= Rs.5.605 per share (approx.)

Working Notes:

1. Calculation of Average Capital Employed

		Rs.
Fixed Assets:		
Plant and Machinery		8,36,450
(including Rs.36,450 for a Machine charged in 2004)		
Land and Building		10,00,000
Furniture & Fixtures (1,00,000 - 4,000)		96,000
Vehicles		2,00,000
		21,32,450
Add: Appreciation @ 5%		1,06,623
		22,39,073
Trade Investment $\left(3,00,000 \times \frac{20}{100}\right) \times \frac{80}{100}$		48,000
Current Assets:		
Stock		2,10,000
Debtors (1,95,000 - 5,000)		1,90,000
Prepaid Expenses		40,000
Advances		45,000
Cash & Bank Balance		2,00,000
Less:Outside Liabilities:		29,72,073
12% Debentures		2,00,000
15% Term Loan		1,50,000
Deposits		1,00,000
Bank Loan		50,000
Creditors		1,50,000
Outstanding Expenses		20,000
Provision for Tax		2,00,000
Capital employed at the end of the year i.e. Net Assets		21,02,073
Less : ½ of the current year's Accounting Profit after Tax:		
Profit before Tax	3,80,950	
Less: Tax 40% of	1,52,380	
	2,28,570	
50% of Rs.2,28,570	1,14,285	
Average capital employed	19,87,788	

Note: Candidates can also arrive at the cum-dividend value of shares by calculating the percentage of proposed dividend of equity shares to paid-up capital and adding that percentage of paid-up value of each share to ex-dividend value of equity shares.

2. Future Maintainable Profits

Statement of Average Profit

Particulars	2008	2009	2010
	Rs.	Rs.	Rs.
Profit after Tax	2,10,000	1,90,000	2,00,000
Profit before Tax (PAT $\times \frac{1}{0.50}$)	4,20,000	3,80,000	4,00,000
Add: Capital expenditure charged to revenue	50,000	-	-
Less: Depreciation of the Machinery	(5,000)	(4,500)	(4,050)
Dividend on Non-Trade Investments	(12,000)	(24,000)	(24,000)
Over-valuation of closing stock	-	(10,000)	-
Add : Overvaluation of opening stock	-	-	10,000
Add : Loss on sale of furniture	-	-	-
(Presumed to be extra ordinary items)	-	-	4,000
Less : Provision for debtors	-	-	(5,000)
	4,53,000	3,41,500	3,80,950
Total profit for the three years			11,75,450
Average Profit = $\frac{Rs.11,75,450}{3}$			3,91,817
Less : Depreciation @10% of increase in the value of machinery			
$8,36,450 \times \frac{5}{100} \times \frac{10}{100} = Rs.42,823 \times \frac{10}{100}$ i.e.,		4,182	
Expected increase in expenditure		20,000	
Annual R & D Expenses anticipated in future		30,000	54,182
Future Maintainable profit before tax			3,37,635
Less : Tax @40% of Rs. 3,37,635			1,35,054
Future Maintainable Profit After Tax			2,02,581

* Future tax rate has been considered.

3. Computation of Goodwill	Rs.
Future Maintainable Profit After Tax	2,02,581
Less : Normal Profit (10% of Rs. 19,87,788)	1,98,779
Super Profit	3,802
Value of Goodwill = Super Profit × No. of years' purchase	
= Rs. 3,802 x 3	14,406

Q.124 From the following data, compute the 'Net Assets' value of each category of equity shares of Smith Ltd.:

Shareholders funds

10,000 'A' Equity shares ofRs.100 each, fully paid

10,000 'B' Equity shares of Rs.100 each, Rs. 80 paid

10,000 'C' Equity shares of Rs.100 each. Rs.50 paid

Retained Earnings Rs. 9, 00, 000

Answer (i) Computation of Net assets

Worth of net assets is equal to shareholders' fund, i.e.

	Rs.
Paid up value of 'A' equity shares 10,000 × Rs. 100	10,00,000
Paid up value of 'B' equity shares 10,000 × Rs. 80	8,00,000
Paid up value of 'C' equity shares 10,000 × Rs. 50	5,00,000
Retained earnings	9,00,000
Net assets	32,00,000

(ii) Net asset value of equity share of Rs.100 paid up

Notional calls of Rs. 20 and Rs.50 per share on 'B' and 'C' equity shares respectively will make all the 30,000 equity shares fully paid up at Rs. 100 each. In that case,

	Rs.
Net assets	32,00,000
Add : Notional calls (10,000 × Rs. 20 + 10,000 × Rs. 50)	7,00,000
	39,00,000

Value of each equity share of Rs. 100 fully paid up = Rs. 39,00,000 / 30,000 = Rs.130

(iii) Net asset values of each category of equity shares

	Rs.
Value of 'A' equity shares of Rs. 100 fully paid up	130
Value of 'B' equity shares of Rs. 100 each, out of which Rs. 80 paid up 110 (130-20)	
Value of 'C' equity shares of Rs.100 each, out of which Rs. 50 paid up 80 (130-50)	

Alternatively value of an equity share may also be calculated as follows:

Total paid-up capital	Rs.
'A' equity shares (10,000 × Rs.100)	10,00,000
'B' equity shares (10,000 × Rs. 80)	8,00,000
'C' equity shares (10,000 × Rs. 50)	5,00,000
	23,00,000
Retained earnings	9,00,000
Net assets value of all shares	32,00,000

$$\text{Value per rupee of paid up capital} = \frac{\text{Net assets value of all shares}}{\text{Paid up capital}}$$

$$\frac{32,00,000}{23,00,000} = \text{Rs. } 1.391$$

Therefore,

Net assets value of Rs. 100 paid up share Rs.1.391 × 100 = Rs. 139.10

Not assets value of Rs. 80 paidd up share Rs.1.391 × 80 = Rs. 111.28

Net assets value of Rs. 50 paid up share Rs. 1.391 × 50 = Rs. 69.55

CHAPTER - 6

VALUATION OF DERIVATIVE FINANCIAL INSTRUMENTS

Q. 1. Give an overview of derivative financial instruments.

Ans : Derivatives are one of the most complex financial instruments. The word "Derivative" comes from the verb 'to derive' indicating that it has no independent value. A derivative is a contract whose value is derived from (i.e. depends on) the value of another asset, known as underlying, which could be a share, a stock market index, an interest rate, a commodity or a currency. The underlying is the identification tag for a derivative contract. The value of the derivative changes, when the price of these underlying asset changes. Without an underlying, derivative does not have any meaning. Financial Derivatives have become increasingly important in the field of finance. Forwards, Futures, Options, Swaps, Warrants and Convertibles are the major types of financial derivatives. These financial derivatives take care of market risks: volatility in interest rates, currency rates, commodity prices and share. They offer a sound mechanism for insuring against various kinds of risks arising in the world of finance.

In the era of globalization, the world is a riskier place and exposure to growing risk. This risk cannot be avoided or ignored. Average human beings prefer not to take risk. This risk-averse characteristic of human being has brought about growth in financial derivatives. Derivatives, actually, help the risk-averse individual by offering a mechanism for hedging risks. Few centuries ago, this hedging mechanism was related to the fluctuation in commodity prices only. Financial Derivatives came into existence in the post 1970 period. Presently they account for seventy five percent (75%) of the financial market activity in Europe, North America and East Asia. In commodity derivatives, the underlying is a commodity. It may be wheat, rice, crude oil, natural gas, coal, gold and silver and so on. In financial derivatives, the underlying includes treasuries, bonds, stock, stock-index, foreign exchange and so on. If we extract the fruits of financial derivatives in terms of economic benefits, we find that these derivatives can reduce risk, enhance liquidity of underlying asset, lower transaction costs, uplift price discovery process, manage portfolio risk, provide signals of market movements and facilitate financial market integrations.

Q. 1. Give a brief overview of the evolution of financial derivative instruments across the globe.

Ans : Derivatives trading in the form of forward delivery contracts existed in ancient Greece and Rome. Roman emperors entered forward contracts to provide the masses with their supply of Egyptian grain. These contracts were also undertaken between farmers and merchants to eliminate the risk arising out of uncertain future prices of grains. Thus, forward contract have existed for a long time for hedging price risks. The first organized commodity exchange came into existence in the early 1700's in Japan. The first formal commodities exchange, the Chicago Board of Trade (CBOT), was established in 1948 in the US to bring farmers and merchants together for dealing with the problem of credit risks and for providing centralize location to negotiate forward contracts within a few years. The first futures type contract called "to arrive at" was developed. Trading in futures began on CBOT in 1860's. In 1865, CBOT listed the first "Exchange-traded" derivative contracts known as future contracts. The Chicago Mercantile Exchange (CME), a spinoff of CBOT, was formed in 1919. However, it existed before in 1874 under the names of 'Chicago Produce Exchange' and Chicago Butter and Egg Board. 'The first financial futures to emerge were the currency futures contracts which were traded on16th May, 1972, on the International monetary market (IMM), a division of the CME. The currency futures traded on the IMM were the British pound, the Canadian dollar, the Japanese yen, the Swiss franc, the German mark, the Australian dollar and the euro-dollar. Currency futures were followed soon by interest rate futures. Interest rate futures contracts were traded for the first time on the CBOT on 20th October, 1975. Stock index futures contracts were traded on Kansas City Board of Trade on 24th February, 1982. The first of the several networks, which offered a trading link between two exchanges, was formed between the Singapore International Monetary Exchange (SIMEX) and the CME on 7th September.

Options are as old as futures. Their history also wave at to ancient Greece and Rome. The 1st account of options and its creator Thales was published in Aristotle's *Polities* in 332 BC. Hence, use of small amount of money to secure the right to use olive presses during harvest season. During olive picking time, he sold his options for a

great deal more then he paid for them. Options were very popular with speculators in tulip craze of 17th century Holland. In Holland, Tulips were a symbol of effluents. Owing to a high demand tulip bulb prices shot up. Dutch growers and dealers traded in tulip bulb options. There were so much speculation that people even mortgaged their homes and businesses. These speculators were wiped out when the tulip craze collapsed in 1637 as there was no mechanism to guarantee the performance of the option terms.

The first puts and calls option were introduced by an American financier, Russel Sage, in 1872. These options were traded over the counter. Agricultural commodities options were traded in 19th century in England and the US. Options shares are available in the US on the OTC market only until 1973 the Chicago Board Options Exchange (UBOE) was set up at the CBOT for the purpose of trading stock option. Specifically CBOT started trading call option contract in 1973 on stocks. It was in 1973, again that Black, Marton and Scholes invented the famous Black Scholes option formula. But CBOE already introduced trade–in-option just one month before publication of the option pricing model which helped in assessing the fair price of an option. These model was so popular that by 1975, that almost all the traders in the options exchange in American Stock Exchange (AMEX) and Philadelphia Stock Exchange (PHLX) began to apply the formula using specially programmed calculators to price and protect their option positions.

Now–a-days, thousands of traders and investors use the formula every day to value stock options in markets throughout the world. Such rapid and wide spread application of a theoretical result was new to economics. It was particularly remarkable since the mathematics used to derive the formula was not part of the standard training imparted to economists at that time. No doubt, Black, Merton and Scholes, thus laid the foundation for the rapid growth of markets for derivatives in the last 10 years. They, actually made a vital contribution by showing that it is, infact, not necessary to use any risk premium when valuing an option. This does not mean that the risk premium disappear. But it is already incorporated in the stock price.

Q. 3. How to convert (i) discrete interest rate into continuous interest rate and (ii) continuous interest rate into discrete interest rate?

Ans : If nothing is mentioned specifically, rate of interest implies annual rate and that too is expressed in percentage form. Further, the rate of interest which is generally used for computing interest income of funds is compound rate of interest. Compound rate of interest is the generalized form, while the simple rate of interest is its special case because the frequency of payment in a year in the latter case is only one, but this frequency is multiple (i.e. two or more) in case of the former. But the rate of interest which is used to price any futures contract is of the continuously compounded form. This section is devoted to make clear distinction between continuous compound and ordinary (i.e., discrete) compound rate of interest.

Suppose P is the initial investment (i.e., principal amount) for n years and *r* is the ordinary compound rate of interest which is paid m times per annum. If A be the terminal value of investment, then for compound rate of interest the following formula (8.1) is applicable.

$$A = P(1+r)^n \quad \text{... (1)}$$

$$A = P\left(1+\frac{r}{m}\right)^{mn} \quad \text{... (2)}$$

$$\frac{A}{P} = \left(1+\frac{r}{m}\right)^{mn} \quad \text{... (3)}$$

$$\log\frac{A}{P} = mn\log\left(1+\frac{r}{m}\right) \quad \text{... (4)}$$

$$\log\frac{A}{P} = \frac{n\log\left(1+\frac{r}{m}\right)}{\frac{r}{m}}\cdot r \quad \text{... (5)}$$

$$\log \frac{A}{P} = \frac{nr \log\left(1+\frac{r}{m}\right)}{\frac{r}{m}} \quad \text{... (6)}$$

$$\log\left(\underset{m\to\infty}{Lt}\frac{A}{P}\right) = nr \underset{rm\to\infty}{Lt} \frac{\log\left(1+\frac{r}{m}\right)}{\frac{r}{m}} \quad \text{... (7)}$$

$$\log\left(\underset{m\to\infty}{Lt}\frac{A}{P}\right) = nr \underset{rm\to\infty}{Lt} \frac{\log\left(1+\frac{r}{m}\right)}{\frac{r}{m}} \quad \text{... (8)}$$

$$\log\left(\underset{m\to\infty}{Lt}\frac{A}{P}\right) = nr \underset{\frac{r}{m}\to 0}{Lt} \frac{\log\left(1+\frac{r}{m}\right)}{\frac{r}{m}} \quad \text{... (9)}$$

$$\log\left(\underset{m\to\infty}{Lt}\frac{A}{P}\right) = nr.1 \quad \text{... (10)}$$

Because $\underset{\frac{r}{m}\to 0}{Lt} \frac{\log\left(1+\frac{r}{m}\right)}{\frac{r}{m}} = 1$

$$\underset{m\to\infty}{Lt}\frac{A}{P} = e^{nr} \quad \text{... (11)}$$

$$A = P.e^{nr}. \quad \text{... (12)}$$

When both *m* and *n* are equal to one, there is no difference between simple rate of interest and compound rate of interest. But in other cases, they differ and here we like to concentrate on widely used compound rate of interest.

Q. 4. (a) If an investor receives Rs. 550 after one year investing an amount of Rs. 500, what will be the rate of return (in percentage per annum form) with annual compounding?

(b) With the same problem, how will you calculate semi annual, quarterly and monthly com-pounding rates of return?

Ans : (a) The rate of return will be as follows :

$550 = 500\ (1 + R_1 / 1)^{1\times 1}$

i.e., $1 + R_1 = 550/500 = 1.1$

i.e., $R_1 = 0.1 = 10\%$

(b)

Semi Annual Rate :

$550 = 500 (1+ R_2 / 2)$

i.e., $(1 + R_2 / 2)^2 = 550/500 = 1.1$

i.e., $1+ R_2 / 2 = 1.0489$

i.e., $R_2 = 0.0976 = 9.76\%$

Quarterly Rate :

$550 = 500 (1 + R_3 / 4)^{4 \times 1}$

i.e., $(1 + R_3 / 4)^4 = 1.1$

i.e., $1+ R_3 / 4 = 1.0241$

i.e., $R_3 = 0.0964 = 9.64\%$

Monthly Rate :

$550 = 500 (1 + R_3 / 12)^{12 \times 1}$

i.e., $(1 + R_4 / 12)^{12} = 1.1$

i.e., $1 + R_4 / 12 = 1.00797$

i.e., $R = 0.0957 = 9.57\%$

Q. 5. From ordinary compound rate of interest how you we can derive the concept of continuous compounding rate of interest?

Ans : We may use same notations along with one additional notation R_C that implies rate of interest with continuous compounding. When frequency of pay-ment, m tends to infinity, ordinary compound rate of interest tends to continuous com-pounding rate of interest whose formula is derived below :

$$\text{Lim } A(1 + R/m)^{mn} = Ae^{Rn}$$
$$M \to \infty$$

This R is no more ordinary compound rather continuous compounding rate of inter-est. To make distinction between these two interest rates, the formula for continuous compounding is written as follows:

$$Y = Ae^R c^n$$

Q. 6. If Rs. 1000 is invested for one year at 10% continuously compounded rate of interest, what will be the terminal value of the invested fund?

Ans : The terminal value of the invested fund is as computed below :-

$Y = A\ e^R c^n = 1000\ e^{0.1 \times 1} = 1000 \times 1.10517$

= Rs. 1105.17

Q. 7. (a) How do you establish relationship between compound and continuous rate of interest?

(b) If the rate of interest is 8% per annum with quarterly compounding, what will be its equivalent rate of interest with continuous compounding?

(c) If continuously compounded rate of interest is 4% per annum, what will be its equivalent annual rate of interest with semi annual compounding?

Ans : (a) Now we can establish the relationship be-tween ordinary compound (R) and continuous compound (R_C) rate of interest. To establish equivalent relationship between these two rates of interest we assume that the terminal value (i.e. principal and interest; remains same in both cases. Therefore,

$$A (1 + R/m)^{mn} = A\ e^{Rc^n}$$

i.e., $(1 + R/m)^m = e^{Rc}$

i.e., $R_C = m/ln\ (1 + R/m)$ and $R = m\ (e\ Rc/m - 1)$

So we see that one form of rate of interest can be changed to its equivalent another form of interest rate.

(b) It will be as follows :

$R_c = mln\,(1 + R/m) = 4\,ln\,(1 + 0.08/4) = 4\,ln\,(1.02)$

$= 4 \times 0.0198 = 0.0792 = 7.92\%$ per annum.

(c) $R = m(e^{Rc/m} - 1) = 2\,(e^{0.04/2} - 1) = 2\,(e^{0.02} - 1)$

$= 2 \times 0.0202 = 0.0404 = 4.04\%$ per annum.

Q. 8. How do you value a futures contract?

Ans : Pricing of futures contract implies the determination of fair price. To determine fair or theoretical price of a futures contract there are different models, such as Keynesian model, Expectation model, Cost-of-Carry model, etc. But the well accepted model for pricing any stock or stock index futures is cost-of-carry model. We shall explain the cost-of-carry model to price any futures con-tract.

It is assumed that the stock whose futures contract is to be priced pays either no dividend income or no dividend yield. Here the cost-of-carry model can be explained in terms of cash-carry arbitrage as follows :

The opportunity of cash-carry arbitrage arises when a futures contract is over-priced in the market. For instance, the spot price of the underlying stock A is Rs. 100 and the risk less rate of interest for 2 month's maturity period is 6% per annum. For simplicity, we are assuming that the simple rate of interest is applicable. However, for valuation on futures we use contineously compound interest rate. Therefore, the value of Rs. 100 after two months is Rs. 101 [= 100 + 100 × (0.06/12) × 2]. Suppose the price of the futures contract on the underlying stock A is Rs. 105 now. In his situation one can take the cash-carry arbitrage strategy to earn risk less profit. More specifically, one may borrow Rs. 100 from the bank at a simple rate of interest of 6%. With this borrowed money stock A can be purchased from the spot market and at the same time the short position in one 'two-month futures contract' on underlying stock A at the strike price of Rs. 105 can be taken. After two months the person will get Rs. 105 as per the futures contract by offering the earlier purchased stock A and meeting the bank obligation of Rs. 101. He will be able to earn Rs. 4 without assuming any risk.

Therefore, we see that when a futures contract is overpriced, there remains the scope of arbitraging by taking short position in that futures contract and long position in the underlying asset. But more and more demand for short position leads to decline in the price of the overpriced futures contract. On the other, if any futures contract is underpriced, the reverse of this cash-carry arbitrage strategy will be adopted more and more by the arbitrageurs and that ultimately leads to rise in the price of the underpinned futures contract. The reverse of cash-carry arbitrage implies taking short position in spot market (i.e. short selling of the underlying asset) and long position in futures market (i.e. future buying of the underlying asset as per futures contract).

Due to adoption of these two arbitraging strategies no futures contract will be underpriced or overpriced; rather its fair price will always prevail. The fair price of a futures contract is determined on the basis of spot price of the underlying asset and risk free continuously compounded rate of interest. Here interest income is known as carrying cost (i.e., the cost of carrying the asset, here stock, from one time point to any future time point) and the model of determining fair price of futures contract is known as carrying cost model. The formula for computing fair price of a futures contract whose underlying stock pays no dividend yield or income is :

$$F_0 = S_0 e^{R_c T}$$

Where F_0 is current futures price, S_0 is the spot price, R_C denotes risk free interest rate with continuous compounding and T is time of the futures contract expressed in year.

Q. 9. Suppose the current spot price of XYZ stock is Rs. 320 and tor 2 month time period the risk free ordinary compound rate of interest is 4% per annum. Compute the fair price of a 2 month futures contract on XYZ stock. Is there any opportunity of arbitraging if the current price of XYZ 2-month futures contract is Rs. 330?

Ans : Here to determine the fair price of the futures contract, first, we have to change the ordinary compound rate of interest in its continuously compounded form as follows :

R_C = mln (l + R/m) = 1 × ln (1 + 0.04/1) = ln (1.04) = 0.0392 = 3.92%

Therefore, the fair price of the futures contract is :

$$F_0 = S_0 e^{R_c T} = 320 \times e^{0.0392 \times 2/12} = 320 \times 1.00656 \text{ or Fo = Rs. 322.10}$$

If the actual current price of the futures contract is Rs. 330, it is overpriced and one can take the strategy of cash-carry arbitraging to earn a risk less profit of Rs. 7.90 (= 330-322.10).

Q. 10. How pricing of futures differs if the same is computed with dividend yield?

Ans : It has been observed that the carrying cost of a stock is only R_C (interest rate with continuous compounding) if it does not pay any dividend. But if it is expected that the stock will provide dividend yield during the tenure of the futures contract, the net carrying cost of that stock will be R_C less dividend yield. Accordingly the formula for determining the fair price of futures contract will be changed. If q denotes continuously compounded dividend yield, the fair price of the futures contract will be :

$$F_0 = S_0 e^{(R_c - q)T} \quad \ldots (8.4)$$

Notations used here have their usual meanings.

Q. 11. Suppose the spot price of a stock is Rs. 370 and the current interest rate for 3-month's maturity is 10 per cent (continuously compounded). What will be the fair price of the futures contract developed on this stock if its expiration is 3 months away and if it is expected that the dividend yield to be received from the stock for the same period is 4 percent of the stock value?

Ans : Here the following information are given :

S_0 = 370; T = 3/12 = 0.25 (maturity time in years),

R (ordinary compound interest rate) = 10% p.a. m (frequency of interest payment) = 4 and q_1 (dividend yield which is not continuously compounded) = 4% p.a. Therefore, first R and q_1 are to be changed in their continuously compounded forms as follows;

R_C = mln (1 + R/m) = 4 ln (1+ 0.10/4) = 4 ln (1.025) = 4 × 0.02469 = 0.0988 = 9.88%,

And q = mln (l + q_1/m) = 4 ln (1 + 0.04/4) = 4 ln (1.01) = 4 × 0.00995 = 0.0398 × 3.98%

After determining R_C and q, next, we shall determine the fair price of the stock futures as follows:-

$$F_0 = S_0 e^{(R_C - q)T} = 370 e^{(0.0988 - 0.0398)0.25}$$

$$= 370\ e^{0.01475} = 370 \times 1.01486 = \text{Rs. } 375.50.$$

Q. 12. How pricing of futures differs if instead of dividend yield if it is expected that the underlying stock will generate different dividend incomes?

Ans : Then the net amount payable for the stock will come down and naturally the formula for determining the fair price of the stock futures will be revised. Let us assume that the spot price of the underlying stock is S_0 and the present value of expected dividend incomes to be received from the stock during the life of its related stock futures contract is I_0. Therefore, the net payment to be made for the stock is ($S_0 - I_0$) and accordingly the fair price of its futures contract is

$$F_0 = (S_0 - I_0) e^{RCT}$$

Q. 13. Consider a very simple index based on price weights like DJIA, except assuming that it has only 2 shares A and B. The price of A is Rs. 100 and B trades for Rs. 75. The current index value is 175. The futures contract based on this index expires in 3 months and the cost of carrying the stock forward is 0.75% per month. This is also the interest that you can earn on invested funds for all maturities. You expect stock A to pay a 3% dividend in one month and stock B to pay a 10% dividend in two months. Find the fair value of the futures.

Ans : We see that the dividend income to be received from stock A after 1 month is I_A= Rs. 100 × 3% = Rs. 3, whose present value is calculated below :-

$$I^{A_0} = I^A . e^{-R_C T_1}$$

Here $R_C = m \,.\, ln\,(1 + r/m) = 12\, ln\,(1 + 0.0075) = 12\, ln\,(1.0075) = 0.08966$

And $T_1 = 1/12$

So, I^A_0 = Rs. 3 . $e^{-0.08966 \times (1/12)}$ = Rs. 2.98

Similarly, the dividend income expected to be received from stock B after 2 months is I^B = Rs. 75 x 10% = Rs. 7.5, whose present value is calculated below:-

Therefore, the fair price of the index futures having expected dividend income is :

$$F_0 = (S_0 - I_0)\, e^{R_C T}$$

Here $R_C = m \,.\, In\,(1 + r/m) = 12\, In\,(1 + 0.0075) = 12\, In\,(1.0075) = 0.08966$

And $T_1 = 1/12$

So, I^A_0 = Rs. 3 . $e^{-0.08966 \times (1/12)}$ = Rs. 2.98

Similarly, the dividend income expected to be received from stock B after 2 months is I^B = Rs. 75 × 10% = % 7.5, whose present value is calculated below :-

$$I^B_0 = I^B . e^{-R_C T_2} = \text{Rs. } 75 \,.\, e^{-0.08966 \times (2/12)} = \text{Rs. } 7.39$$

Therefore, the fair price of the index futures having expected dividend income is :

$$F_0 = (S_0 - I_0)\, e^{R_C T}$$

where $S_0 = 175$, $I_0 = I^A_0 + I^B_0 = 2.98 + 7.39$

$= \$\ 10.37$, $R_C = 0.08966$ and $T = 3/12 = 0.25$

So, $F_0 = (175 - 10.37)e^{0.08966 \times 0.25}$

$= 164.63 \times 1.022668$

= Rs. 168.36.

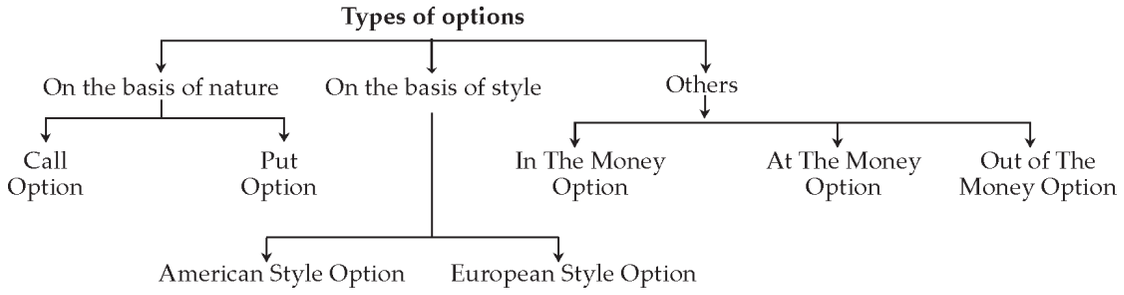
The actual price of any futures contract is, however, determined by the interaction of its demand and supply. Further, in reality the actual price of any futures contract may differ from its fair price due to differences in borrowing and lending rates, restrictions in short selling, temporary fluctuations in demand and supply, existence of varying transaction costs, etc. But it is to be noted that actual futures price moves in the same.

Q. 14. What do you mean by option?

Ans : An option is a contract that gives it holder the right, but not the obligation, to buy or sale specified quantity of an underlying asset at some predetermined price (called "strike price" or "exercise price") within a specified period of time (i.e. on or before a specified date) by paying a premium. Options are available for many products such as Stock options, Commodity options, Foreign change option, and interest rate options. But Most relevant options are options on stocks / shares, which are available for purchase or sale through an organized exchange in many countries such as NYSE, ASE, CME and also NSE in India. Although, the concept is generic, option is more commonly used in the context of corporate securities / stocks / shares. In this section we give emphasis therefore on the stocks / shares options only for structuring the theoretical foundations of stock option for developing the mathematical models of valuing the same.

Q. 15. What are the different types of option?

Ans : There are various types of options in the derivative market. These are exhibited in the following diagram.



Q. 16. What do you mean by call option?

Ans : A call option is a contract that gives its holder the right but not the obligation to buy a specified quantity of an underlying asset at a specified price (exercise price) on or before a specified date (the expiration date) by paying a premium. In fact, the call holder is under no obligation to buy securities. This means that holder has limited liability under this contract. In case, the price of stocks of a corporate entity falls on expiration date, holder would prefer to walk away from the call contract. In other words, holder would not exercise her right to buy stock of the company. In such a situation, the loss is limited to the option premium paid by holder at the time of contract. In contrast, if the price of the corporate share increases, holder exercises their right to buy those shares and consequently, gains from the transaction. So gain is equal to the difference between the share price and the exercise price minus the option premium.

Q. 17. What do you mean by put option?

Ans : A put option is a contract that offers the right to its holder but not the obligation to sale a specified quantity of an underlying asset at a specified price on or before the expiration date by paying a premium. The person who has the right to sale the underlying asset is known as the "buyer of the put option". Since the buyer of the put option has the right (but not the obligation) to sell the underlying asset, he will exercise his right to sell the underlying asset if and only if the price of the underlying asset in the market is less than strike price on or before the expiry date of the contract.

The sellers are writers of options who offer a deal that may or may not be 'taken up' by the buyer. It is always the buyer who has an option to exercise, not the seller. The writer is obliged to do what the buyer decides. Writers can offer a call option, meaning shares can be called away from the owners at an agreed price, or they can insist that the writers buy shares at an agreed price. The buyer is known as the option taker (who bids for the option).

Q. 18. What are the mutual rights and obligation of option buyer as well as option writer?

Ans :

Option right and obligation

	Buyers (Option Holders)	*Sellers (Option Writers)*
Call Option	Right to buy	Obligation to sale
Put Option	Right to sell	Obligation to buy

Q. 19. What do you mean by (i) American Style Option, (ii) European Style Option, (iii) Index Option, (iv)In the Money Option, (v) At the Money Option, (vi) Out of the Money Option?

Ans : (i) American Style option

It can be exercised at any time before and on the maturity date of the option, which is termed as the "Expiration date". Thus, American Option permits the holder to exercise his right early. Most exchange traded options are American.

(ii) European Style Option

It can be exercised only on the expiration date itself. European options are easier to analyze than American options and properties of an American option are frequently deduced from those of its European counterpart.

(iii) Index Option

These options have the index as the underlying asset

(iv) In The Money Option

An In-the-Money (ITM) option is an option that would lead to a positive cash flow to the holder if it is exercised immediately. A call option on the share is said to be 'In-the-Money' when the current share price exceeds the strike price (i.e. spot price>strike price). If the index is much higher than the strike price, the call is said to be deep ITM. In the case of a put, the put is ITM if the index is below the strike price.

(v) At the Money Option

An At-the-Money (ATM) option is an option that would lead to zero cash flow if it is exercised immediately. An option on the index is At-the-Money when the current index equals the strike price (i.e. spot price = strike price). In short, At-The-Money means the current share price which is the same as the exercise price.

(vi) Out of the Money Option

An Out-of-the-Money (OTM) option is an option that would lead to a negative cash flow if it is exercised immediately. A call option on the share is Out-of-the-Money when the current share price is lower then the strike price (i.e. spot price < strike price). If the index is much lower then the strike price, the call is said to be is deep OTM. In the case of a put, the put is OTM if the index is above the strike price.

Q. 20. Write short notes on :

(i) Buyer of an option.

(ii) Option seller,

(iii) Underlying asset,

(iv) Option premium,

(v) Strike premium,

(vi) Strike price intervals,

(vii) Expiration date,

(viii) Exercise date,

(ix) Open interest,

(x) Put-call ratio.

Ans : (i) Buyer of an Option / Option Holder :

The Buyer of an Option is the one who by paying the option premium buys the right either a call or a put option. He enjoys the right but not the obligation to buy or sale the underlying asset at a specified price on or before specified date, the expiration date. His profit under this contract is unlimited while losses are limited to the premium paid by him to the option writer.

(ii) Option Seller / Writer :

The Writer of call/put option is the one who receives the option premium and is thereby obliged to buy (incase of a put option) or to sale (in case of a call option) the underlying asset if the buyer decides to exercise his (the holder) option on him (the writer). His profits are limited to the premium received from the buyer while his loss is unlimited.

(iii) Underlying Asset

It is the specific security/asset on which an option contract is based. The price movement of these underlying assets determines the value of the option.

(iv) Option Premium / Option Price :

It is price of an option paid by the option buyer to the option seller to acquire the right to buy or sale.

(v) Strike Price / Exercise Price :

The price specified in the option contract at which the option buyer can exercise his right to buy or sale the securities (the underlying asset) is known as the strike price or the exercise price and it does not change over time.

(vi) Strike Price Intervals :

The difference between two strike prices, which is a constant, is called strike price interval. The NSE has set a strike price interval of 20 points on its NIFTY options while the BSE has set a strike price interval of 50 points on its SENSEX options.

(vii) Expiration Date :

The date on which the option expires or matures is known as the expiration date. It is also known as, the strike date or the maturity. On the expiration date, either the option is exercised or it expires worthless.

(viii) Exercise Date :

The date on which the option is actually exercised is known as exercise date. In case of European option, the exercise date is same as the expiry date, while in case of American option; option contract may be exercised any day between the purchase of the contract and its expiry date.

(ix) Open Interest :

The open interest represents the total number of option contracts that have not yet been exercised, expired or squared off. A change in open interest in a stock indicates fresh positions being initiated or positions being closed.

(x) Put-Call Ratio :

It is the ratio of puts (right to sell) to calls (right to buy) traded in the market. This ratio represents the number of bearish versus bullish participants. A fall in the put call ratio (PCR) implies a higher number of call buyers in the market which indicates that the market sentiment is bullish. It can be computed in two ways as the ratio of the number of puts traded to the number of calls traded, or the number of puts outstanding to the number of calls outstanding. The PCR can be calculated for a particular stock (say Infosys) or index (NIFTY) or market as a whole (all stocks in the derivative segment). An increase in the PCR can be caused by a rise in the number of puts traded/outstanding or a fall in the number of calls traded or outstanding.

Q. 21. How do you value an option?

Ans : The option premium can be broken down into the following :

(a) Intrinsic Value of the Option :

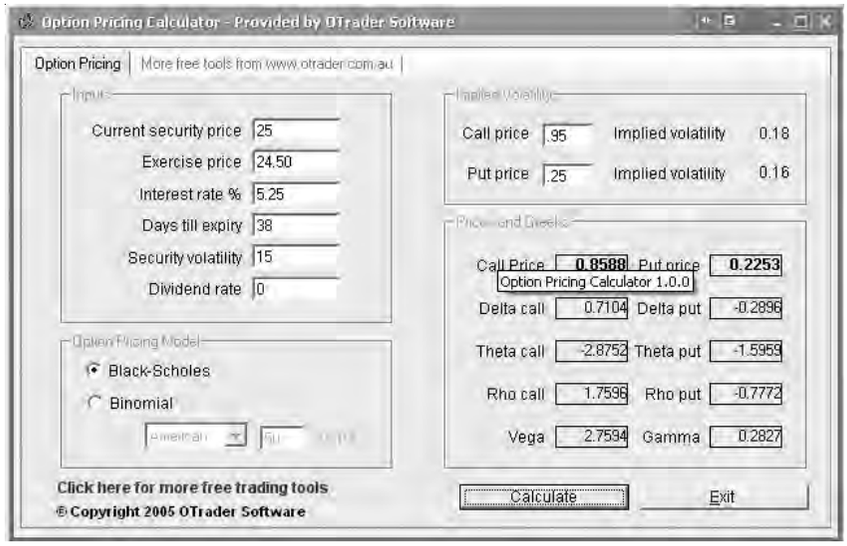
Intrinsic value of an option at a given time is the amount the holder of the option will get if he exercises the option at that time. In other words, the intrinsic value of an option is the amount the option is ITM. If the option is OTM, its intrinsic value is zero, putting it another way the intrinsic value of a call is Max[0, (S_T-K)] which means that the intrinsic value of a call is greater of 0 or (S_T-K). Similarly, the intrinsic value of a put is Max [O, (K- S_T)] i.e. the greater 0 or (K- S_T) where K is the strike price and S_T is the spot price.

(b) Time Value of an Option :

In addition to the intrinsic value, the seller charges a 'time value' from the buyers of the option. This is because the more time there is for the contract to expire, the greater the change, that the exercise of the contract will become more profitable for the buyer. This is a risk for the seller and he seeks compensation for it by demanding a 'time value'. The time value of an option can be obtained by taking the difference between its premium and its intrinsic value. Both calls and puts have time value. An option, that is OTM or ATM, has only time value and no intrinsic value. Usually, the maximum time value exists when the option is ATM. The longer the time to expiration, the greater is an option's time value, all else being equal. At expiration, options have no time value left in them.

Q. 22. How option premium can be computed by using Option calculates?

Ans : Many websites have option calculators that compute Option Value and Option Greeks.



Source: http://option-pricing-calculator.smartcode.com/screenshot.html

Picture displays the option calculator down loaded from the website of the Bombay Stock Exchange.

Q. 23. Demonstrate Pay off of Call Options to the Buyer.

Ans : The pay off of a European call option (C) on expiration depends on the relationship between stock price (S_T) at the expiration date T and exercise/ striking price K. Formally

$C = S_T - K$ if $S_T > K$

$= 0$, if $S_T < K$

This means that C= Max {(S_T – K), O}. When S_T d" K, The call option is said to be "Out of Money" and is worthless i.e. C=o. When $S_T > K$, then call is said to be "In the Money" and its value (C) is (S_T – K)

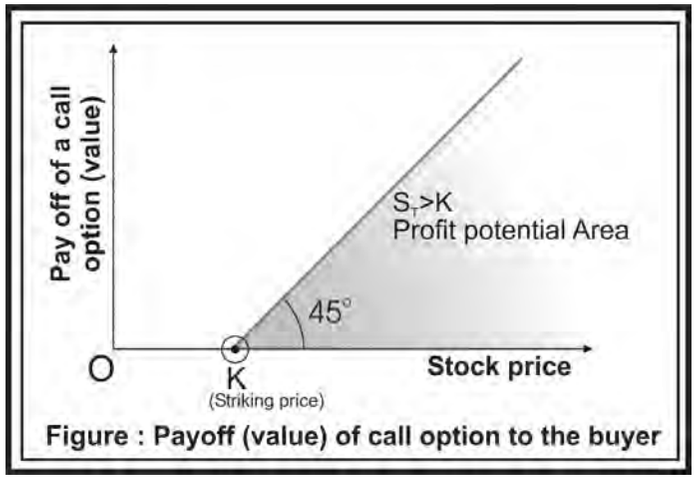


Figure : Payoff (value) of call option to the buyer

Pay off (Gain/Loss) of Call Option to the Buyer

The purchase of call option primarily requires the payment of premium, p (say), to the option writer, consequently, the gain (G) to the call holder will be reduced by the amount p.

Formally,

$$G = \text{Max}\ \{(S_T - K), 0\} - p$$

Therefore, it can be said that call holder suffers a loss until the esteemed rises to the point where it equals to K+p, i.e. S_T=K+p. This point of equality can be referred to as the breakeven point, symbolically

$$BEP = S_T - (K + p) = 0$$

Thus the pay off (gain /loss) profit of the call option buyer can be represented in the following figure.

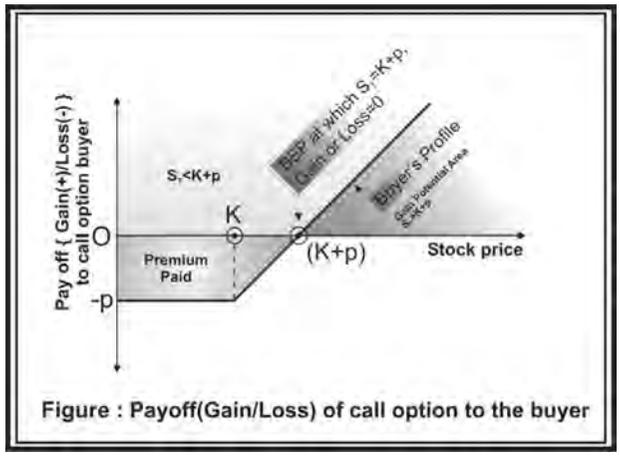


Figure : Payoff(Gain/Loss) of call option to the buyer

Q. 24. Demonstrate Pay off (Gain/Loss) of Call Option to the Writer?

Ans : The writer of the call option gains as long as price of the share (S_T) on the date of maturity is less than the sum of exercise price of premium received. Symbolically, gain to the writer of call option would be as follows:

$$S_T > (K + p), \text{ subject to } S_T - K < p$$

However, the maximum gain would be equivalent to the option premium receipt and this will accrue to him if $S_T < K$ at the date of maturity. The profit margin would be lower if $S_T > K$, but less than K + p. Gain/Loss position of the call option writer can be shown in the figure.

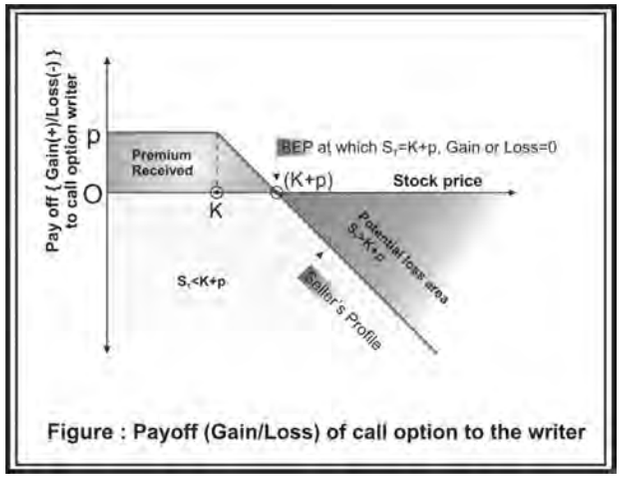


Figure : Payoff (Gain/Loss) of call option to the writer

For every buyer of an option, there must be a seller who is usually referred to as the writer. The buyer of a call option is said to have a long call position where as the seller of the call option is said to have a short call position. The options are actually the 'two-person-zero-sum' game and hence profits of the buyer must be equal to the losses of the seller, and vice –versa. It we draw the buyer's profile and seller's profile in the same diagram; we will get the following picture.

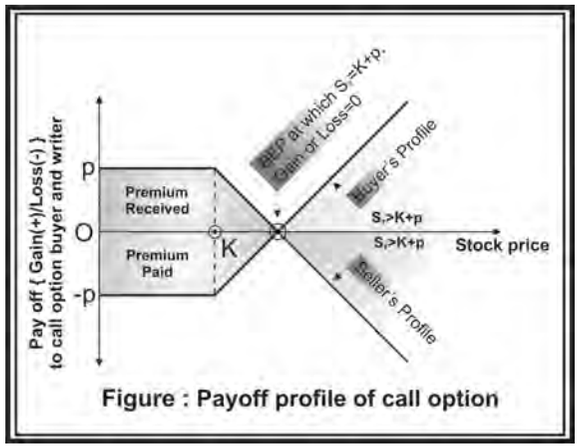


Figure : Payoff profile of call option

Q. 25. Demonstrate Payoff of a Put Option to the Buyer.

Ans : The pay off of a European put option (P) depends on the relationship between the exercise/strike price K and the price of the underlying Stock (S_T) at the expiration date T. Formally

$P = K - S_T$, when $S_T < K$

$= 0$, when S_T e" K

The means that P=Max {(K – S_T), 0} when S_Te"K, the put option is said to be "Out of Money" and is worthless i.e. P=0. When $S_T < K$, then put is said to be "In the Money" and its value (P) is (K – S_T).

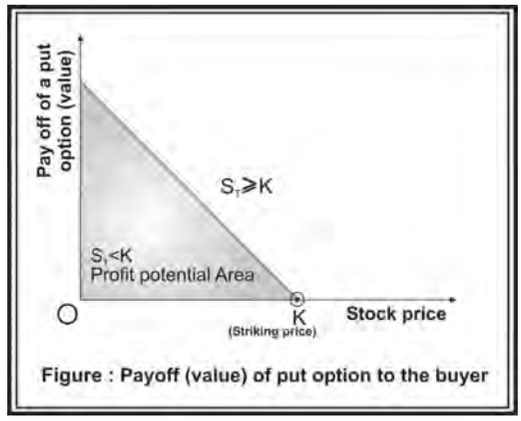


Figure : Payoff (value) of put option to the buyer

Pay off (Gain/Loss) of Put Option to the Buyer

The buyer of a put option can exercise his right or allow it to expire worthless at the expiration. The buyer of this option pays a premium, P to put option writer and exercise this option only if the market price of underlying asset (stock) turns out to be lower than the strike price. Therefore, the expected gain (G) to the put option buyer can be written as follows:

$$G = \text{Max } \{(K\text{-}S_T), 0\} - P$$

The put option buyer reaches the break even point where Gain/ Loss = 0 i.e. $(K\text{-}S_T)\text{-}p = 0$ or, $S_T = K\text{-}p$. The put option buyer gains as long as the price of the share (S_T) on the date of maturity is less than the difference of strike price

and premium paid i.e. $S_T < K - P$. He loses if $S_T > K - P$. The maximum loss of the put option buyer would be equal to the premium paid to the writer and it will be achieved when $S_T = K$. Diagramatically pay off profile (Gain/Loss) of the put option buyer can be shown below.

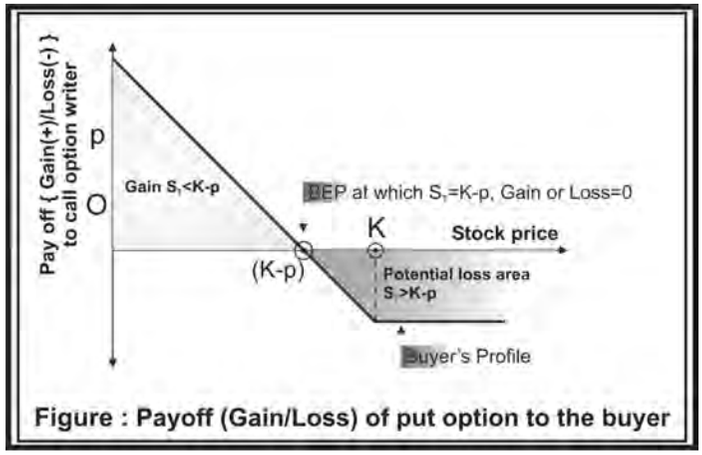


Figure : Payoff (Gain/Loss) of put option to the buyer

Q. 26. Demonstrate Pay off (Gain/Loss) of Put Option to the Writer.

The put option writer is exactly the opposite of what it is to the put option buyer. He loses when $S_T < K\text{-}p$. The put option writer is at the Break-even point where $S_T = K\text{-}p$. And gains it $S_T > K\text{-}p$. The writer's pay off (Gain/Loss) profile of the put option writer can be shown in the following diagram.

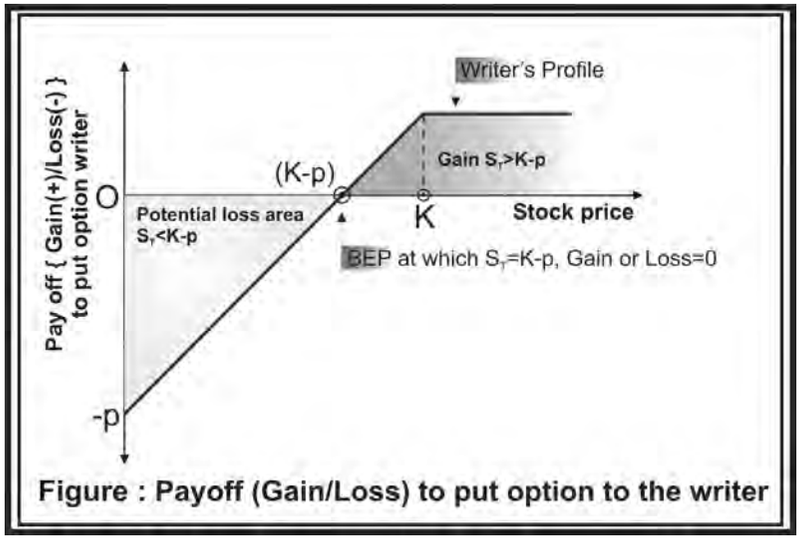


Figure : Payoff (Gain/Loss) to put option to the writer

His profit potential is limited to the extent of premium received. His maximum loss is equal to strike price minus premium received. If we draw the two pay off profiles in the same diagram, then we will have the following picture:

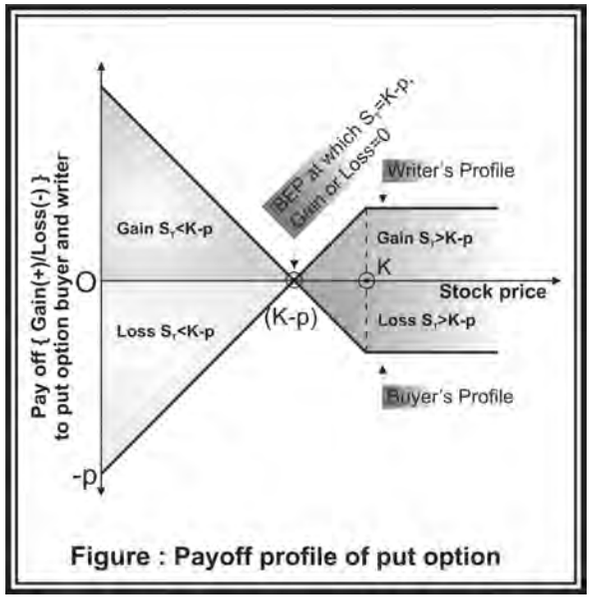


Figure : Payoff profile of put option

Q. 27. What do you mean by Moneyness of an Option?

Ans : "Moneyness" of an option indicates whether an option is worth exercising or not i.e. if the option is exercised by the buyer of the option whether he will receive money or not. "Moneyness" of an option at any given time depends on where the spot price of the underlying is at that point of time relative to the strike price. The premium paid is not taken into consideration while calculating moneyness of an option, since the premium once paid is a sunk cost and the profitability from exercising the option does not depend on the size of the premium. Therefore, the decision (of the buyer of the option) whether to exercise the option or not is not affected by the size of the premium. The following three terms are used to define the moneyness of an option.

In The Money Option :

An In-the-Money (ITM) option is an option that would lead to a positive cash flow to the holder it was exercised immediately. A call option on the share is said to be In-the-Money when the current share price exceeds the strike price (i.e. spot price > strike price). If the index is much higher than the strike price, the call is said to be deep ITM. In the case of a put, the put is ITM if the index is below the strike price.

At the Money Option :

An At-the-Money (ATM) option is an option that would lead to zero cash flow if it is exercised immediately. An option on the index is At-the-Money when the current index equals the strike price (i.e. spot price = strike price). In short, At-the-Money means the current share price is the same as the exercise price.

Out of the Money Option :

An Out-of-the-Money (OTM) option is an option that would lead to a negative cash flow if it is exercised immediately. A call option on the share is out of the money when the current share price (S_T) is lower than the strike price (K) (i.e. spot price <strike price). If the index is much lower then the strike price, the call is said to be is deep OTM. In the case of a put, the put is OTM if the index is above the strike price.

	Call Option	*Put Option*
In the Money Option	Spot price of underlying asset> Strike price (S_T>K)	Spot price of underlying asset<Strike price (S_T<K)
At the Money Option	Spot price of underlying asset = Strike price (S_T=K)	Spot price of underlying asset = Strike price (S_T=K)
Out the Money Option	Spot price of underlying asset < Strike price (S_T<K)	Spot price of underlying asset > Strike price (S_T>K)

Q. 28. How the market operators transact in option trading?

Ans : ***Option pay out*** **:**

There are two sides to every option contract. On the one side is the option buyer who has taken a long position (i.e., has bought the option). On the other side is the option seller who has taken a short position (i.e., has sold the option). The seller of the option receives a premium from the buyer of the option. It may be noted that while computing profit and loss, premium has to be taken into consideration. Also, when a buyer makes profit, the seller makes a loss of equal magnitude and vice versa. In this section, we will discuss payouts for various strategies using options.

(i) *A long position in a call option*

In this strategy, the investor has the right to buy the asset in the future at a predetermined strike price (say K) and the option seller has the obligation to sell the asset at the same strike price. If the settlement price (underlying stock closing price) of the asset is above the strike price, then the call option buyer will exercise his option and buy the stock at the strike price (K). If the settlement price (underlying stock closing price) is lower than the strike price, the option buyer will not exercise the option as he can buy the same stock from the market at a price lower than the strike price.

(ii) *A long position in a put option*

In this strategy, the investor has bought the right to sell the underlying asset in the future at a predetermined strike price (K). If the settlement price (underlying stock closing price) at maturity is lower than the strike price, then the put option holder will exercise his option and sell the stock at the strike price (K). If the settlement price (underlying stock closing price) is higher than the strike price, the option buyer will not exercise the option as he can sell the same stock in the market at a price higher than the strike price.

(iii) *A short position in a call option*

In this strategy, the option seller has an obligation to sell the asset at a predetermined strike price (K) if the buyer of the option chooses to exercise the option. The buyer of the option will exercise the option if the spot price at maturity is any value higher than (K). If the spot price is lower than (K), the buyer of the option will not exercise his/her option.

(iv) *A short position in a put option*

In this strategy, the option seller has an obligation to buy the asset at a predetermined strike price (K) if the buyer of the option chooses to exercise his/her option. The buyer of the option will exercise his option to sell at (K) if the spot price at maturity is lower than (K). If the spot price is higher than (K), then the option buyer will not exercise his/her option.

Q. 29. (i) What is Black Scholes (B-S) formula for pricing options?(ii) What are the underlying assumptions of Black Scholes option pricing formulae?

Ans :

(i) The Black Scholes (BS) Option Pricing Model was originally developed for European style options on non-divided paying stock by Fischer Black and Myron Scholes. This model uses the proposition that pricing of an option requires to build a portfolio in shares and a loan in such a manner that its pay offs are

equivalent to the pay offs of the option. The basic feature of this model is that it takes into account the changes in the price of the share at smaller and smaller intervals with each interval showing two possible changes in shares. Eventually, a situation is reached in which price of the share is changing continuously and generating a continuum of possible share price. To replicate option investors must continuously adjust their holdings in the shares. Though in practice, it is not feasible, the BS model performs remarkably well in the real world where shares trade only intermittently and prices jump from one level to another.

(ii) Assumptions of BS Model **:**

The BS model is based on the following assumptions :

(i) Stock price follow a geometric Brownian motion with constant drift (μ) and volatility (σ).

It follows from this that the return is a normal distribution (then the underlying is a lognormal distribution). It often implies the validity of the efficient market hypothesis.

(ii) It is possible to borrow and lend cash at a known and constant risk free interest rate, r_f.

(iii) The market is efficient and there are no transaction costs and taxes. Options and share are perfectly divisible. Information is available to all investors with no costs.

(iv) The stock does not pay any dividend.

(v) The short selling of securities with the full use of proceeds is permitted. There is no risk free arbitrage opportunity.

(vi) Option use the European exercise terms, which detects that option may only be exercised on the date of expiration.

(vii) Security trading is continuous. This means that the share prices behave in a manner consistent with a random walk in continuous time.

Q. 30. Given.

From the following information available to a market participant, determine the value of a European call option as per the BS formula.

Spot price of the share = Rs. 1120

Exercise price of the call option = Rs. 1100

Short-term risk free interest rate (continuously compounded) = 10 percent per annum.

Time remaining for expiration = 1 month

Volatility of the share/ standard deviation = 0.2

Compute the value of Call option by using B-S formulae.

Ans :

$C = SN(d_1) - Ke^{-rt} N(d_2)$

$$d_1 = \frac{\text{In}[\frac{S}{K}]+(r_f+\frac{\sigma^2}{2})T}{\sigma\sqrt{T}} = \frac{\text{In}(\frac{1120}{1100})+\{0.1+\frac{0.2^2}{2}\})0.8)}{0.2\sqrt{0.08}} = 0.5197$$

$$\therefore\ d_2 = 0.5197 - 0.2\sqrt{0.8} = 0.4631$$

$Ke^{-rt} = 1100e^{-0.008}$

$= (-)1100e^{-0.01}$

$= 1089.1$

$C = 1120N(0.5197) - 1089.1N(0.4631)$

$= 1120\,[N(0.51) + .97\{N(0.52) - N(0.51)\}] - 1089\,[N(0.46) + .31\,\{N(0.47) - N(0.46)\}]$

$= 1120\,[0.6950 + 0.97(0.6985 - 0.6950)] - 1089\,[0.6772 + 0.31(0.6808 - 0.6772)]$

$= 43.45$

Thus the value of call option is Rs. 43.4.

Consider the following data :

Stock price	= 50
Months to expiration	= 3 months
Risk-free rate of interest	= 10% p.a.
Standard deviation of stock	= 40%
Exercise price	= 55
Option type	= European call

Calculate value of call option as per Black-Scholes model

Ans :

$$C = SN(d_1) - Ke^{-rt} N(d_2)$$

$$d_1 = \frac{In(\frac{S}{K}) + rT}{\sigma\sqrt{T}} + 0.5\sigma\sqrt{T}$$

$$d_2 = \frac{In(\frac{S}{K}) + rT}{\sigma\sqrt{T}} - 0.5\sigma\sqrt{T}$$

Here, $d_1 = \frac{In(\frac{50}{55}) + 0.25(0.10)}{0.4\sqrt{0.25}} + 0.5(0.40)\sqrt{0.25}$

$$d_2 = \frac{In(\frac{50}{55}) + 0.25(0.10)}{0.4\sqrt{0.25}} - 0.5(0.40)\sqrt{0.25}$$

$N(d_1) = 0.5 - 0.0987 = 0.4013$

$N(d_2) = 0.5 - 0.1736 = 0.3264$

$C = 50(0.4013) - 55^{-0.1\times0.25} (0.3264) = 2.56$

Q. 31. Given

Current market price of :	X	Y
Option	Rs. 16.12	Rs. 10.62
Stock	Rs. 80	Rs. 80
Exercise price	Rs. 70	Rs. 80
Time to expiration	3 months	3 months
Risk-free return	12% p.a.	12% p.a.
Expected dividend	0	0
Standard deviation of stock returns	60%	60%

Calculate the option value for X and Y.

Ans :

For call option *X*

$C = SN(d_1) - Ke\text{-}rt\ N(d_2)$

$$d_1 \frac{\text{In}(\frac{S}{K}) + rT}{\sigma\sqrt{T}} + 0.5\sigma\sqrt{T} = \frac{0.13353 + 0.075}{0.3} = 0.70$$

$\therefore N(d_1) = 0.7580$

$$d_2 = \frac{0.13353 - 0.075}{0.3} = 0.40$$

$\therefore N(d_2) = 0.6554$

Value of call option = $80(0.7580) - 70e^{0.12\times0.25}(0.6554) = 16.62$

For call option *Y*

$C = SN(d_1) - Ke^{-rt} N(d_2)$

$$d_1 \frac{\text{In}(\frac{S}{K}) + rT}{\sigma\sqrt{T}} + 0.5\sigma\sqrt{T} = \frac{0.0 + 0.075}{0.03} = 0.25$$

$\therefore N(d_1) = 0.5987$

Now, $d_2 = \frac{0.0 - 0.015}{0.3} = -0.05$

$\therefore N(d_2) = 0.48$

Value of call option = $80(0.5987) - 80e^{0.12\times0.25}(0.48) = 10.62$

Q. 32. Given.

The following information is available for the equity stock of Prakash Limited.

S = Rs. 120, K = Rs. 110, r = Rs. 0.12, σ = 0.04

Calculate the price of a 6 month call option as per the Black-Scholes model.

Ans :

$C = SN(d_1) - Ke^{-rt} N(d_2)$

$$d_1 = \frac{\text{In}[\frac{S}{K}] + (r_f + \frac{\sigma^2}{2})T}{\sigma\sqrt{T}} = \frac{\text{In}[\frac{120}{110}] + (0.12 + \frac{0.4^2}{2})0.5}{0.4\sqrt{0.5}} = \frac{0.0870 + 0.10}{0.2828} = 0.6612$$

$$d_2 = d_1 - \sigma\sqrt{T} = 0.6612 - 0.2828 = 0.3784$$

$N(d_1) = N(0.6612) = 0.7457$

$N(d_2) = N(0.3784) = 0.6474$

$$Ke^{-rt} = \frac{110}{e^{0.12\times0.5}} = 103.60$$

$C = 120 \times 0.7457 - 103.60 \times 0.6474 = 22.41$

Q. 33. What is the price of a European put option on a non-dividend-paying stock when the stock price is $69, the strike price is $70, the risk-free interest rate is 5% per annum, the volatility is 35% per annum, and the time to maturity is six month?

Compute the value of Put option by using B-S formula

Ans : In this case S = 63, K = 70, r = 0.05, and T = 0.5

$$d_1 = \frac{\ln[\frac{S}{K}] + (r + \frac{\sigma^2}{2})T}{\sigma\sqrt{T}} = \frac{\ln[\frac{69}{70}] + (0.05 + \frac{0.35^2}{2})0.5}{0.35\sqrt{0.5}} = 0.1666$$

$$d_2 = d_1 - \sigma\sqrt{T} = 0.1666 - 0.35\sqrt{0.5} = -0.0809$$

The price of European put is

$70\, e^{-0.05\times0.5}\, N(0.0809) - 69N(-0.1666) = 70 \times 0.5323\, e^{-0.05\times0.5} - 69 \times 0.4338 = 6.40$ or $ 6.40

Q. 33. Calculate the price of a three-month European put option on a non-dividend-paying stock with a strike price of $50 when the current stock price is $ 50, the risk-free interest rate is 10% per annum, and the volatility is 30% per annum.

Ans : In this case S= 50, K= 50, r = 0.1, T= 0.25 and

$$d_1 = \frac{\ln[\frac{S}{K}] + (r + \frac{\sigma^2}{2})T}{\sigma\sqrt{T}} = \frac{\ln[\frac{50}{50}] + (0.1 + \frac{0.3^2}{2})0.25}{0.3\sqrt{0.25}} = 0.2417$$

$$d_2 = d_1 - \sigma\sqrt{T} = 0.2417 - 0.3\sqrt{0.25} = 0.0917$$

The European put price is

$50N(-0.0917)\, e^{-0.1\times0.25} - 50N(-0.2417) = 50 \times 0.4634\, e^{-0.1\times0.25} - 50 \times 0.4045 = \$2.37.$

Q. 34. What is swap?

Ans : Swap in the simplest form may be defined as an exchange of future cash flows between two parties as agreed upon according to the terms of the contract. The basis of future cash flow can be exchange rate for currency/ financial swap, and or interest rate for interest rate swaps. Apart from interest rates and currency rates, the formula for determination of the periodic cash flows can be equity returns, commodity prices etc. Out of two streams of cash flows one would be fixed, called fixed leg and other would be variable, called floating leg. Floating leg would be variable depending upon the value of the variable, identified for the swap.

In brief, there are two types of basic swap transaction; interest rate swap and currency swap.

Q. 35. What is interest rate swap?

Ans : If the exchange of cash flows is done on the basis of interest rate prevalent at the relevant time, it is known as interest rate swap. The simplest example of interest rate swap is a forward contract where only one payment is involved. Usually, interest rate swap involve payment of fixed rate of interest for receiving/paying a floating rate of interest. The basis of exchange of cash flows under interest rate swap is interest rate. Fixed to floating swap is called "plain vanilla swap" where company A agrees to pay Company B fixed interest rate of 8.5% in exchange of receiving from it the interest at 30 bps (100 bps = 1%)above the floating rate, Mumbai Inter Bank Offer Rate (MIBOR), at predetermined intervals of time.

Q. 36. What is currency swap?

Ans : In a currency swap, the exchanges of cash flows between counterparties take place in two different currencies. Since two currencies are involved, currency swaps become different from interest rate swaps in its uses. First official record of currency swap transaction was held in 1981 between IBM and World Bank. In currency swap, exchange of cash flows is in two different currencies on the basis of a predetermined formula

of exchange rates. It is known as currency swap. More complex swaps involving two currencies are called 'cocktail swap'.

Let us assume that an Indian firms needs fund for its US operation. The firm raises funds in Indian rupees and commits to serve the interest obligation and the final payment in Indian rupees. Fund raised in rupees are converted in US dollar to acquire assets in the USA. The assets provide income in US dollar. The Indian firm is facing a risk, if rupee strengthens and dollar depreciates in the currency markets as it receives lesser rupee amount for the fixed return in US dollar.

Similarly, an US firm which needs to acquire assets in India while raises dollar funds in USA faces some risk. Its earnings would be in Indian rupees and liabilities need to be serviced in US dollar. Like the Indian firm, the US firm also faces risk in shortfall in US dollar, if dollar appreciates or rupee depreciates. Currency swap could also be of three types;

(i) Fixed to fixed

(ii) fixed to floating and

(iii) floating to floating

Q. 37. Why do you value swaps?

Ans : Pricing of the swap is an important issue for two reasons. Banks function as warehouse of swaps and are ready to offer swap to the desired customers. For this they are ready to quote swap rates for paying and receiving fixed rate interest for receiving /paying benchmark variable rate. The other reason for valuing the swap is for the purpose of cancellation of an existing swap. On economic ground, a firm may like to cancel the obligations or part thereof by paying or receiving the value of the swap at that point of time.

Q. 38. How do you value Interest Rate swap?

Ans : Interest rate swap consists of fixed rate cash flows and floating rate cash flows in the opposite direction. At the time of inception of the swap, present value of these payments must be equal in the opinions of both parties to the swap else they would not agree to it. Therefore at inception, the value of swap is zero implying that the present value of cash inflows and outflows are equal and its aggregate flow is zero.

However, interest rate changes and value of cash flows as determined at the start of swap will not remain same as time elapses. The value of the swap will depend upon the behavior of bond prices with respect to changes in the interest rates. Let us assume value of the fixed rate bond is 'fb', value of variable (floating) rate bond is 'vb' and rate of interest is 'r'. Following is the general rule;

1. Value of 'fb' rises with fall in 'r'
2. Value of 'fb' decreases with increase in 'r'
3. Value of 'vb' remains equal to par value as coupon rate is aligned with market rates on each periodic payment of interest.
4. Value of 'vb' changes subsequent to payment of each interest, if the interest rate structure has changed since then, but again gets aligned to the par value on the next payment of interest.

Since the change in value of the floating rate bond will only be nominal and temporary, the value of swap determined on the basis of difference in the present values of the fixed and floating legs is predominantly dependent upon the value of fixed rate bond.

The value of the bond with fixed rate payments will be equal to sum of coupon payments and ther notional principal amount discounted at an appropriate rate. The discount rate to be used for each coupon payment is known from the term structure interest rates. The value of the fixed interest payment leg, Lc, is given by;

$$Lc = \Sigma \frac{Ci}{(1+r1)n} + \frac{NP}{(1+r1)n}$$

Where Ci = Coupon payment at time i; ri = discount rate for period I; n = number of periods remaining and NP = Notional principal amount.

Similarly, we can find the value of the floating rate bond Mc which is equal to present value of the floating rate bond coverage to the per value on each payment date, the value of the floating leg is

$Mc = \frac{t1}{(1+r1)} + \frac{NP}{(1+r1)}$; where t1=Next payment of interest; r1=discount rate for period 1 and NP = Notional principal amount.

Value of the swap for one receiving fixed and paying floating will be equal to the differential of the fixed leg and floating rate cash flows.

Value of swap=Present value(PV) of fixed interest bond—PV of floating rate bond or

Vs = Lc – Mc

$$= \Sigma \frac{Ci}{(1+r1)n} + \frac{NP}{(1+r1)n} - \frac{t1}{(1+r1)} + \frac{NP}{(1+r1)}$$

Let's assume 2 yrs back firm X has entered a 5 yr interest rate swap where it receives fixed 8% and pays LIBOR+1%.Payments are made annually. Now we have three outstanding annual payments.

Since the time of the swap, interest rate has moved upwards causing the value of swap to change. Note that the value of swap was zero two year back when it was set up. Payment of floating rate considered one period advance is at the rate of 9.5% (LIBOR was 8.5% then). The interest rate as on today is as follows;

1 yr : 10%;

2 yr : 10.5%;

3 yrs : 11%

We find the value of the floating rate bond for an assumed principal payment of Rs. 100 by discounting the interest (Rs.9.5%) and the principal (Rs. 100) at 10%.

Value of the floating rate bond=109.50/1.10=Rs.99.545

The value of fixed rate bond can be found by discounting the three cash flows at the appropriate discount rate given by term structure, would be

$$Vs = \frac{8}{(1+.10)} + \frac{8}{(1+.0.105)2} + \frac{8}{(1+.0.11)3} + \frac{100}{(1+.0.11)3}$$

= 7.273 + 6.552 + 5.849 + 73.119 = 92.793

The value of swap = PV of inflow – PV of outflow

= 92.793 – 99.545 = – Rs. 6.752

The present value of inflow of the fixed leg for Firm X is Rs. 92.793 and that of floating rate outflow is Rs. 99.545. The swap can be cancelled if firm X pays Rs. 6.752 now to the counterparty.

Q. 39. What is Credit Risk?

Ans : Credit risk implies risk arising from debtors default on financial claim. Credit risk is assessed by the amount of debt or claims on the debtor (exposure) multiplied by the probability of the debtor defaulting before the end of contract with the product adjusted for the hope of recovering from the asset after default. Therefore credit risk=Exposure amount*Probability of default*(1-R). 'R' represents rate of recovery.

There are three types of credit risk. Credit default risk is the risk that the issuer will fail to satisfy the terms of the obligation with respect to the timely payment of interest and repayment of the amount borrowed. This form of credit risk covers counterparty risk in a trade or derivative transaction where the counterparty fails to satisfy its obligation. To gauge credit default risk, investors typically rely on credit ratings.

Credit spread risk is the loss or underperformance of an issue due to an increase in the credit spread. The credit spread is the compensation sought by investors for accepting the credit default risk of an issue or issuer. The credit spread varies with market conditions and the credit rating of the issue or issuer. On the issuer side credit spread risk is the risk that an issuer's credit spread will increase when it must come to market to offer bonds, resulting in a higher funding cost.

Downgrade risk is the risk that an issue or issuer will be downgraded, resulting in an increase in the credit spread demanded by the market. Hence, downgrade risk is related to credit spread risk. The ability of an issuer

to make interest and principal payments diminishes seriously and unexpectedly because of an unforeseen event. This risk is referred to generically as event risk and will result in a downgrading of the issuer by the rating agencies.

Q. 40. (a) How to Transfer Credit Risk? (b) What is securitization?

Ans : There are various ways that investors, particularly institutional investors can reduce their exposure to credit risk. These arrangements are referred to as credit transfer vehicles. For a bank, the most obvious way to transfer the credit risk of a loan it has originated is to sell it to another party. The bank management's concern when it sells corporate loans is the potential impairment of its relationship with the corporate borrower. This concern is over come with the use of syndicated loans, because banks in the syndicate may sell their loan shares in the secondary market by means of either an assignment or participation. With an assignment, a syndicated loan requires the approval of the obligor; that is not the case with a participation since the payments by the borrower are merely passed through to the purchaser and therefore the obligor need to know about the sale.

Two credit risk vehicles that have increased in importance since the 1990s is securitization and credit derivatives. It is important to note that the pricing of these credit risk transfer instruments is not an easy task. Pricing becomes even more complicated for lower- quality borrowers and for credits that are backed by a pool of lower quality assets as recent events in the capital markets have demonstrated.

(b) Securitization :

Securitization involves the pooling of loans and /or receivable and selling that pool to a third party, a special purpose vehicle (SPV). By doing so, the risk associated with that pool of assets, such as credit risk, are transferred to the SPV. In turn, the SPV obtains the funds to acquire the pool of assets by selling securities. When pool of assets consists of consumer receivables or mortgage loans, the securities issued are referred to as asset-backed securities. When the pool consists of corporate loans the securities issued are called collateralized loan obligations. Lower funding cost and risk management are the two reasons why corporations use securitization as fund raising vehicle. Although entity employing securitization retains some of the credit risk associated with pool of loans, the majority of the credit risk is transferred to the holders of the securities issued by the SPV.

Q. 41. What are Credit Derivatives?

Ans : Credit derivative is vehicle of transferring credit risk. It is the contract between two financial market participants for transferring credit risk from one party to another party. Credit derivatives enable the transfer of credit risk from lender to some one else. It provides the lender the possibility to hedge against debtors default.

Credit derivatives also permit banks to transfer credit risk without the need to transfer assets physically. For example in a collateral loan obligation, a bank can sell a pool of corporate loans to a SPV in order to reduce its exposure to the corporate borrowers. Alternatively, it can transfer the credit risk exposure by buying credit protection for the same pool of corporate loans. In this case the transaction is referred to as synthetic collateralized loan obligation.

Alan Greenspan, Chairman, Federal Reserve Bank in a speech on September 25th 2002 mentioned "The growing prominence of the market for credit derivatives is attributable not only to its ability to disperse risk but also to the information it contributes to enhanced risk management by banks and other financial intermediaries. Credit default swaps, for example are priced to reflect the probability of net loss from the default of an ever broadening array of borrowers, both financial and non financial."

Q. 42. State the features of Credit Derivative.

Ans : In general, credit derivative products have following features;

- It is a contract between two counterparties protection buyer and protection seller
- The contract is based on reference asset. It could be bank loan, corporate loan, corporate bond and debenture or trade receivables.
- Protection buyer pays premium for exchanging /transferring credit risk to protection seller
- The credit event for which protection is bought and sold is also predefined. It could be bankruptcy, insolvency, payment default, price decline etc.

- The settlement between protection buyer and protection seller on the credit event can be cash settled

Q. 43. Classification of Credit Derivatives

Ans : Exhibit –I illustrates various structural dimensions of credit derivative products with reference to four types of credit events.

Exhibit-I: Classification Credit Derivative Products

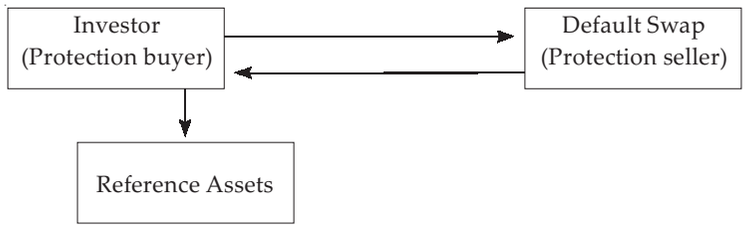
Credit Events	Options	Swaps	Forwards	Structural Notes
Change in Credit Spread	Credit Spread Options	Credit Spread Swap/Total Return swap	Credit Spread Forward	Credit Linked Notes
Changes in Credit Rating	Credit Event Options	Credit Event Swap/Total return Swap	Credit Event Forwards	Credit Linked Notes
Default	Credit Default Option	Credit Default Swap (CDS)		Credit Linked Notes

Credit Default Swap :

A credit default swap (CDS) is an agreement in which one party pays protection against losses occurring due to accredit event of a reference entity up to maturity date of swap. It is one kind of insurance against credit risk. The protection buyer pays periodic fees (premiums) to the protection sellers for this protection up to maturity date. If certain pre-specified credit events occurs.

The protection seller pays compensation to the protection buyer. A credit event could be bankruptcy of a company, called reference entity or default of a bond. If no credit event occurs during the term of the swap, the protection buyer continues to pay premium until maturity. Exhibit-II displays the operational aspect of CDS arrangement.

Exhibit-II: CDS Arrangement



Q. 44. What is CDS Pricing?

Ans : Valuation of the CDS can be best understood if we try to understand valuation of a machine. Apart from other ways of valuation one way is to calculate present value of all receipts out of sale of products that will come out of the machine (A) minus present value of all input required to produce those outputs (B). We have attempted to value CDS contracts from protection buyers perspective and used two technical terminologies for A & B. A is contingent leg and B is fixed premium leg for our CDS valuation.

Our basic model of CDS valuation is

Value of CDS to the protection buyer=Present Value of Contingent leg—Present value of fixed premium leg …(1)

Protection buyer makes a series of fixed premium until maturity which is known as fixed leg on the other hand protection seller makes one payment, if the reference credit defaults. It is dependent on notional amount and recovery rate and this payment is totally dependent on a contingent event. For this purpose, it is known as contingent leg.

Let's assume S is the total CDS premium payable by a protection seller and d_i is the accrual days as a fraction of a year. The periodic payment will be S (d_i). This periodic payment is to be made till maturity or until reference credit is not defaulted. For that we need to consider the survival probability. Let's assume q(ti) represent survival probability at time ti.Since pricing is done at the present moment, we need to convert these payments at present values. D(t_i) represent discount factor at time t_i.

Therefore present value of payment at time t_i is

D(ti).q (ti).S(di)

Present value of all these payments is

$$= \sum_{1=1}^{n} D(t_i) . q(t_i) . S . d_i$$

If the reference entity defaults between payment date t_{i-1} and t_i then CDS premium is

S d_i/2

For a particular interval, expected accrued payment

$$\left\{q_{(t_{i-1})} - q(t_i)\right\}. Sd_i / 2$$

Where.. $\left\{q_{(t_{i-1})} - q(t_i)\right\}$. represent probability that reference entity survived through payment date but not to next payment date

Present value all expected accured payments

$$\sum_{1=1}^{n} D(t_i) . q(t_i) . S . d_i / 2$$

Present value of the fixed leg

$$= \sum_{1=1}^{n} D(t_i) . q(t_i) . S . d_i + \sum_{i=1}^{n} D(t_i) . \left\{q_{(t_{i-1})} - q(t_i)\right\} . Sd_i / 2$$

The protection buyer will receive the contingent payment of (1-R) where R is the recovery rate. The protection seller makes the contingent payment if the reference credit defaults. Therefore it has to be adjusted $\{q_{(t_{i-1})} - q(t_i)\}$, the probability that defaults actually occurs in this time period, discounting each expected payments and summing over the term of a contract, we get present value of contingent leg

When two parties enter in a CDS spread the CDS spread is set so that value of swap transaction is zero. Hence the following equality holds.

$$\sum_{1=1}^{n} D(t_i) . q(t_i) . S . d_i + \sum_{1=1}^{n} D(t_i) . \left\{q_{(t_{i-1})} - q(t_i) . Sd_i / 2\right\}$$

$$= (1-R) \sum_{1=1}^{n} D(t_i) . \left\{q_{(t_{i-1})} - q(t_i)\right\}$$

$$\therefore S = \frac{(1-R) = (1-R) \sum_{1=1}^{n} D(t_i) . \left\{q_{(t_{i-1})} - q(t_i)\right\}}{\sum_{i=1}^{n} D(t_i) q . \frac{(t_i)}{s\, d_i} + \sum_{i=1}^{n} D(t_i) \left\{q_{(t_{i-1})} - q(t_i)\right\} \times di / 2}$$

Q. 45. Example of CDS Valuation.

Let's assume that CDS agreement has been entered into between A & B. A protection buyer and B is protection seller. Annual CDS spread (premium) is Rs160bps Premium is to be paid quarterly. Notional amount of the agreement is Rs.100000

It is assumed that survival probability of the reference entity is given as

Month	0	3	6	9	12	15	18	21	24
Survival Probability	100	99.9	99.6	99.1	98.4	97.5	96.4	95.2	94

Recovery rate is given to 45%.

Solution :

Present value of fixed leg (Periodic payment made by A to B)

Month	Quarterly Premium	Survival Probability	Discounting Factor	Notional amount (,000)	PV of Fixed leg	Default probability	PV of Expected accrued payment
0	0	100	1	100000	0	0	
3	40	99.9	.99	100000	395	0.1	.198
6	40	99.6	.98	100000	390	0.3	.588
9	40	99.1	.97	100000	385	0.5	.097
12	40	98.4	.96	100000	378	0.7	1.344
15	40	97.5	.95	100000	371	0.9	1.71
18	40	96.4	.94	100000	362	1.1	2.068
21	40	95.2	.93	100000	354	1.2	2.232
24	40	94	.92	100000	346	1.2	2.208
				2982		11.318	

Present Value of Contingent Leg (Payment by B to A subject to non- survival of reference entity)

Month	Survival Probability	Default probability	Discounting Factor	Notional amount	Recovery	PV of Contingent leg
0	100	0	1	100000	55000	0
3	99.9	0.1	.99	100000	55000	54.45
6	99.6	0.3	.98	100000	55000	161.70
9	99.1	0.5	.97	100000	55000	266.75
12	98.4	0.7	.96	100000	55000	369.60
15	97.5	0.9	.95	100000	55000	470.25
18	96.4	1.1	.94	100000	55000	568.70
21	95.2	1.2	.93	100000	55000	613.80
24	94	1.2	.92	100000	55000	607.20
						3112.45

Value of CDS = PV of expected contingent leg-present value of fixed leg.

= Rs. 3112.45 – (Rs. 2982 + Rs. 11.32)

= Rs. 119.13

Rs. 119.13 is the positive CDS value to the protection buyer.

CHAPTER - 7

QUESTIONS & ANSWERSS

[From All Chapters]

Q. 1. [A] State weather flowing statements are True [T] or False [F]:

1. Point estimation of the value of a business is the right way to determine its value.
2. Higher debt/Equity ratio implies higher valuation of a company.
3. The key importance of annual reports information is that it is used by investors when they from there expectation about the firm's future earnings and dividends and riskiness of those of cash flow.
4. Management by out is not a takeover method.
5. Paying a onetime extraordinary dividend is a defensive financial technique.
6. The corporate valuation model cannot be used for a company that doesn't pay dividends.
7. Free cash flow should be discounted at the weighted average cost of capital to find the value of a company's operations.
8. An ESOP can be used to improve workers' productivity and to prevent hostile takeovers.
9. In a synergistic merger, the post-merger value exceeds the sum of the separate companies' pre-merger values.
10. Since the basic rationale for any operating merger is synergy, in planning such mergers, the development of accurate pro forma cash flows is the single most important aspect of the analysis.
11. The book value of an asset is the historical cost less depreciation.
12. Valuing a firm using discounted cash flow method is conceptually different from valuing a capital project using percent value method.
13. It is important to cross-check the financial statement information by studying financial statement information with respect to the changes in financial ratio during the period of forecast.
14. The provinces of accounting standards do not impact mergers of companies.
15. Divestitures represent the sale of a part of the total undertaking.
16. Horizontal mergers are also known as conglomerate mergers.
17. Possession of complimentary resources is one of the reasons for mergers negotiations.
18. Brands do not influece customers' demand.
19. For calculating the value of an equity share by yield method, it is not essential to know capital employed.
20. 'Comparable Companies Approach' to valuation is same as 'Relative Valuation Approach'.
21. The return estimated from Capital Asset Pricing Model (CAPM) provides the weighted average cost of capital (WAAC) of a company.
22. Industrial groups are inherently less conservative than investors in allocating resources.
23. Value gap is the difference between the synergy value and purchase price.
24. All types of investments involve sacrifice of present consumption.
25. Buying the units of a mutual fund is an indirect investment.
26. When price rise, last in first out (LIFO) results in lower earnings.
27. A market is efficient when trading oriented strategies can beat the market.
28. A levered portfolio provides increasing returns with increased risk.
29. Market capitalization refers to the total market value of all the equity shares issued by a company.
30. Systemic risk of a portfolio is diversifiable.

31. The CAPM is appealing in its elegance and logic but its assumptions are not entirely correct.
32. Stock dividends and stock splits may increase the stock price but not the value of business.
33. If the investor's required rate of return is greater than the annual interest on the bond, the value of the bond is greater than its par value.
34. A brand is nothing but a glorified product name, hence it has no value.
35. A stock with low price – earnings ratio shows that it is undervalued and may earn excess return.
36. Intrinsic value and market price of equity shares are always equal.
37. For companies, which are not expected to pay dividends, equity shares cannot be valued.
38. In constant growth model, the value of equity share is sensitive to growth rates.
39. Diversification is an important strategic alternative to growth.
40. Zero coupon bonds have no coupon rate, hence no yield.
41. Floating rate loans have interest payments that increase as market rates fall and fall as rates rise.
42. Existence of strong from of market efficiency requires a well developed stock exchange network.
43. Gordon's model and constant growth model are one and the same.
44. In Walter's model, the value of equity share depends upon the dividend payout ratio.
45. The dividend discount model generally tends to undervalue stock when the overall market is depressed.
46. Under DCF method, in general, higher the risk level, higher will be the discount rete.
47. Land and Building is an example of financial asset.
48. Market value per share is expected to be lower than the book value per share in case of profitable and growing firms.
49. Firms tend to be more profitable when there is higher real growth in the underlying market than when there is lower real growth.
50. A lower discount would be applied to the cash flows of the government bond.
51. Variable dividend feature makes the computation of share value difficult.
52. If there are no anticipated excess earnings over normal earnings, then the goodwill of the business on the basis of super profit method will be zero.
53. Under yield method of valuation of equity shares if the expected rate of return is less than the normal rate of return, the paid up value of shares increases proportionately.
54. In industries where the investors expect a high normal rate of return, the price earnings ratio will be right.
55. Firms with higher operating margins, lower reinvestment rates and lower costs of capital will trade at lower value-to-sales multiplies.
56. Market price of firms with high revenue ratios and low profit margins are considered by investors as overvalued.
57. The intrinsic value of a share decreases after a bonus issue.

Ans : 1. [A]

1. False
2. False
3. True
4. False
5. True
6. False
7. True
8. True

9. True
10. True
11. True
12. False
13. True
14. False
15. True
16. False
17. True
18. False
19. True
20. True
21. False
22. False
23. False
24. True
25. True
26. True
27. False
28. True
29. True
30. False
31. True
32. True
33. False
34. False
35. True
36. False
37. False
38. True
39. True
40. False
41. False
42. True
43. True
44. True
45. True
46. True
47. False
48. False

49. True
50. True
51. True
52. True
53. False
54. False
55. False
56. True
57. True

Q. 1. [B] Fill in the blanks by using the words/phrases during in the bracket :

1. While valuing the leasehold land of a company, one _____ subject it to amortization (Should/ Should not).
2. The most appropriate method of determining the cost of equity for calculating the Weighted Average Cost of Capital is _____ (The Dividend Discount Model/The Capital Asset Pricing Model).
3. LIFO as a method of inventory valuation _____ allowed as per Indian Accounting Standards (Is/Is not).
4. A ratio between the market value of a company to the replacement value of its assets is known as _____ Ratio (Market Value to Book Value/Market Value to replacement Value/Tobin's Q/ Price to book Value).
5. _____ requires that the expected profit stream of an acquired business provides an attractive return on the total acquisition cost and on any new capital investment needed to sustain or expand the operations (The Cost of Entry Test/Principle of Investment).
6. The _____ Assets Monitor of management tool for organisations that wish to track and value their _____ assets (tangible/intangible).
7. The cash flows associated with common stock are _____ to evaluate due to the uncertainty and variability associated with them (easy/difficult).
8. When a corporation's shares are owned by _____ individuals who are associated with the firm's managements, we say that the firm is "closely held" (Few/many).
9. Post-merger control and the _____ are two of the most important issues in agreeing on the terms of a merger (negotiated price/calculated price).
10. A theory that explains why the total value from the combinations resulted from a merger is a greater than the sum of the values of the component companies operating independently is known as _____ theory (synergy/hubris/agency).
11. A _____ is essentially a container for a customer's complete experience with the offer and the company (good will/brand).
12. A _____ is contractual agreement under which one party grants the other party the right to sell certain products or services or to use certain trade names or trademarks (licence/franchise).
13. _____ is a research the purpose of which in mergers and acquisitions is to support valuation process, arm the negotiator, fest the accuracy of representations and warranties contained in the merger agreement, fulfil disclosure requirements and inform the planners of post-merger integration(Due diligence/Certification).
14. In a debt for equity swap, a firm replacing equity with debt _____ its average ratio (increases/ decreases).
15. Operating department in manufacturing firms is a productions department that adds value to a product or service that is observable by the _____ (production manager/customer).

16. Revaluation of assets is undertaken to attract _____ (creditors/investors) by indicating them the _____ value of the assets (current/future).
17. The commonly used bass for revaluation of freehold land would be _____ (current replacement cost/present value of future earnings).
18. Dividend yield is the dividend per share as a % of the _____ (book/market) value of the share.
19. Estimated fair value of an asset is based on the _____ (current/discounted/future) operating cash flows.
20. DCF analysis requires the revenue and expenses of _____ (past/future).
21. Current liabilities are payable _____ (within/beyond) a period of one year.
22. Key to income-based approach of valuation is _____ (capitalization rate/ internal rate of return).
23. Capital Asset Pricing Model helps in determining _____ of return (fixed rate/required rate).
24. _____ risk is the objective of risk-return trade-off (sufficient/insufficient).
25. Yield to maturity of a bond depends upon the _____ price of the bond (market/issue).
26. Existence of strong form of market efficiency requires a _____ stock exchange network (developed/underdeveloped).
27. In order to calculate the holding period return on equity shares, the selling price is _____ (required/not required).
28. In Walter's model, the value of equity share depends upon the _____ (dividend payout ratio/ price earnings ratio).
29. β factor does not measure _____ risk (systematic/unsystematic).
30. In case of Deep Discount Bonds, the issue price is always _____ the face value (lass than/ more than).
31. Super profit is the excess of future maintainable profits over _____ expected profits (normally/ abnormally).
32. Current liabilities are anything that are due and payable with in a _____ period (twelve months/ twenty four months).
33. Value of a business is _____ the aggregate value of its assets (equal to/different from).
34. The _____ the market price and the book value is an indication of intellectual capital if the shares are widely held and traded for a non-cyclical firm (sum of/difference between).
35. In a finance lease the _____ assumes some of the risks of ownership and enjoys some of the benefits (lesser/lessee).
36. The value of the patent does not show up if it is _____ generated. (internally/externally).
37. The risk that the cash flows will not be delivered is called _____ (liquidity risk/default risk).
38. Normal yield curves indicate that short term borrowing costs are _____ long term borrowing costs (above/below).
39. Organizational capital is a _____ component of intellectual capital (primary/secondary).
40. _____ method of valuation is used. (direct capitalization/yield capitalization).
41. In _____ , a firm separates out assets or a division, creates shares with claims on these assets, and sells them to the public (spin-off, spilt-up, equity carve out).
42. _____ companies have volatile earnings and high-growth potential choose low-debt ratios (telephones/software).
43. _____ measures the variation of distribution for the expected returns (standard division/ regression).
44. Shares of listed companies which are traded on the stock exchange are _____ (quoted/ unquoted).
45. A negative economic value added indicates that the firm is _____ value (creating/destroying).

46. An investment is risk free when actual returns are always _____ the expected returns (less than/equal to/more than).
47. In valuing a firm, the _____ tax rate should be applied to earnings of every period (marginal/effective/average).
48. If a company's share is priced at Rs. 20 and EPS is Rs. 5, then P/E ratio will be _____ (0.25/4/400).
49. Dividend yield ratio is equal to dividend per share divided by _____ and the quotient multiplied by 100. (EPS/market price per equity share).
50. If EPS of a company is Rs. 15 and the P/E ratio of other similar company is Rs. 10, then market value of the share of this company will be Rs. _____ (150/1.5/.67).
51. If firms defer taxes, the taxes paid in the current period will be at a rate _____ than the marginal tax rate (lower/higher).

Ans : 1. [B]

1. Should
2. The Capital Asset Pricing Model
3. Is not
4. Tobin's Q
5. The Cost of Entry Test
6. Intangible
7. Difficult
8. Few
9. Negotiated Price
10. Synergy
11. Brand
12. Franchise
13. Due diligence
14. Increases
15. Customer
16. Investors
17. Current replacement cost
18. Market value of the share
19. Discounted
20. Future
21. With in
22. Capitalization rate
23. Required rate
24. Sufficient
25. Market
26. Developed
27. Required
28. Dividend payout ratio
29. Unsystematic
30. Less than
31. Normally
32. Twelve months
33. Different from

34. Difference between
35. Lessee
36. Internally
37. Default risk
38. Below
39. Primary
40. Yield capitalization
41. Equity carve out
42. Software
43. Standard division
44. Quoted
45. Destroying
46. Equal to
47. Marginal
48. 4
49. Market price per equity share
50. Rs. 150
51. Lower

Q. 1. [C] In each of the questions given below one out of the four options is correct. Indicate the correct answer :

1. Which of the following items would not be included in a WACC calculation?
   (i) Proportion or weight of debt
   (ii) Proportion or weight of equity
   (iii) Personal tax rate on interest payments
   (iv) Cost of equity
2. If a firm's market to book value ratio is currently greater than 1.0, it implies :
   (i) The firm's equity is currently valued at less than what the stockholders invested in the firm.
   (ii) The firm's equity is currently valued at more than what the stockholders invested in the firm.
   (iii) The firm is currently a poor buy in the marketplace.
   (iv) None of the above.
3. Valuing target firms for cross-border merger may include which of the following?
   (i) The basic discounted cash flow model.
   (ii) The multiplies of earnings models (earnings or cash flow)
   (iii) Industry specific models
   (iv) Any one of the above
4. Shareholders of target companies are typically paid in
   (i) Government bonds held by the target company
   (ii) Government bonds held by the acquiring company
   (iii) Cash and/or shares of the acquiring company
   (iv) None of the above
5. Which of the following statements is false?
   (i) There are two potential sources of cash flows from owning a stock.
   (ii) An investor will be willing to pay a price today for a share of stock up to the point that this transaction has a zero NPV.

(iii) An investor might generate cash by choosing to sell the shares at some future date.

(iv) Because the cash flows from stock are known with certainly, we can discount them using the risk-free interest rate.

6. Which of the following statements is most correct?
   (i) Actions which increase net income will always increase net cash flow.
   (ii) One way to increase EVA is to maintain the same operating income with less capital.
   (iii) One drawback of EVA as a performance measure is that it mistakenly assumes that equity capital is free.
   (iv) Answer (1) and (2) are correct.
7. Which of the following statements is most correct?
   (i) The constant growth model takes into consideration the capital gains earned on a stock.
   (ii) It is appropriate to use the constant growth model to estimate stock value even if the growth rate never becomes constant.
   (iii) Two firms with the same dividend and growth rate must also have the same stock price.
   (iv) Statements (1) and (3) are correct.
8. Which of the following statements is correct?
   (i) Although some methods of estimating the cost of equity capital encounter severe difficulties, the CAPM is a simple and reliable model that provides great accuracy and consistency in estimating the cost of equity capital.
   (ii) The DCF model is preferred over other models to estimate the cost of equity because of the case with which a firm's growth rate is obtained.
   (iii) The bond-yield-plus-risk-premium approach to estimating the cost of equity is not always accurate but its advantages are that it is a standardized and objective model.
   (iv) Depreciation-generated funds are an additional source of capital and, in fact, represent the largest single source of funds for some firms.
9. An increase in a firm's expected growth rate would normally cause the firm's rate of return to
   (i) Increase
   (ii) Decrease
   (iii) Fluctuate
   (iv) Possibly increase, possibly decrease, or possibly remain unchanged.
10. In the expected rate of return on a stock exceeds the required rate
   (i) The stock is experiencing supernormal growth.
   (ii) The stock should be sold.
   (iii) The company is probably not trying to maximize price per share.
   (iv) The stock is a good buy.
11. Which of the following best describes free cash flow?
   (i) Free cash flow is the amount of cash flow available for disturbing to all investor after all necessary investments in operating capital have been made.
   (ii) Free cash flow is the amount of cash flow available for disturbing to shareholders after all necessary investments in operating capital have been made.
   (iii) Free cash flow is the net change in the cash account on the balance sheet.
   (iv) Free cash flow is equal to net income plus depreciation.
12. In defending against a hostile takeover, the strategy that involves the target firm creating securities that give their holders certain rights that become effective when a takeover is attempted is called the _____ strategy.
   (i) Shark repellent

(ii) Greenmail
(iii) Poison pill
(iv) Golden parachute

13. Trailing P/E is current market price divided by
    (i) Most recent four quarters' EPS
    (ii) Current book value
    (iii) Last year market price
    (iv) Average of last 4 years EPS

14. The sale of security with a commitment by the seller to buy the same sequrity back at a specified price at a designated future date' defines :
    (i) Prepayment risk.
    (ii) A repurchase agreement.
    (iii) An adjustable price issue
    (iv) A sinking fund provision

15. A wishes to sell his business. Business has been good. Revenues are growing each year. He desires to pick a best offer and have patience till he gets best price. In this situation he should value on the basis of :
    (i) Book value
    (ii) NPV of future earnings
    (iii) Auction value
    (iv) Fair Market Value

16. Marketing relating intangible asset is
    (i) Process patents
    (ii) Software copyrights
    (iii) Trade marks
    (iv) None of the above

17. Which is not a human-capital related intangible asset?
    (i) Trained workforce
    (ii) Employment agreements
    (iii) Union contracts
    (iv) Design patents

18. Customer related intangible asset is
    (i) Customer lists
    (ii) Open purchase orders
    (iii) Both (i) and (ii)
    (iv) None of the above

19. If the operating profits of a company register a growth without employing more capital then
    (i) The economic value added will increase
    (ii) The economic value added will decrease
    (iii) The economic value added will remain constant

20. If unproductive capital of a firm is liquidated the economic value added
    (i) Will decrease

(ii) Will not be affected

(iii) Will increase

21. The strategy of increasing the economic value added of a firm by achieving growth using retained profits will work favourable as long as

(i) Returns are equal to weighted average cost of capital

(ii) If the returns exceed the weighted average cost of capital

(iii) The percentage returns are less than the weighted average cost of capital of the firm

22. Firms that intend to buy only a small percentage of the outstanding stock can buy them in the market, in a process called

(i) Repurchase tender offer

(ii) Open market purchase

(iii) Privately negotiated repurchase

23. Which of the following is not an input in calculating cash flow return on investment?

(i) Gross investment

(ii) The salvage value of the asset

(iii) Commercial life of the asset

24. If the divestiture value is greater than the present value of the expected cash flows, the value of the divesting firm will

(i) Increase on the divestiture

(ii) Decrease on the divestiture

(iii) Remains same on the divestiture

25. Which of the following is not a direct cost of bankruptcy?

(i) Rise in legal and administrative costs

(ii) Present value effects of delays in paying out the cash flows

(iii) The loss in revenue that may occur due to the customer's perception that the firm is in trouble

26. The optimal policy for liquidation or divestiture of poor investment is

(i) Divest when the unit divested is worth more as a stand-alone business.

(ii) Liquidate when liquidation value > continuing value

(iii) Divest when divestiture value > continuing value

27. In the valuation of a business if price to sales ratio of ABC Ltd is 0.35 and revenue is Rs. 150 lakh, then the market value of equity of ABC Ltd will be

(i) Rs. 30.50 lakh

(ii) Rs. 52.50 lakh

(iii) Rs. 428.50 lakh

(iv) Rs. 500.25 lakh

28. Identify which of the following is not a financial liability

(i) AB Ltd has 1 lakh Rs. 10 ordinary shares in issue

(ii) AB Ltd has 1 lakh 8% Rs 10 redeemable preference shares in issue

(iii) AB Ltd has Rs. 2,00,000 of 6% bonds in issue

(iv) Both (i) and (ii)

Ans : 1. [C]

1. Personal tax rate on interest payments
2. The firm's equity is currently valued at more than what the stockholders invested in the firm.
3. Any of the above
4. Cash and/or shares of the acquiring company
5. Because the cash flows from stock are known with certainity, we can discount them using the risk-free interest rate.
6. One way to increase EVA is to maintain the same operating income with less capital.
7. The constant growth model takes into consideration the capital gains earned on a stock.
8. Depreciation-generated funds are an additional source of capital and, in fact, represent the largest single source of funds for some firms.
9. Possibly increase, possibly decrease, or possibly remain unchanged
10. The stock is a good buy
11. Free cash flow is the amount of cash flow available for disturbing to all investor after all necessary investments in operating capital have been made
12. Poison pill
13. Most recent four quarters' EPS
14. A repurchase agreement.
15. Fair Market Value
16. Trade marks
17. Design patents
18. Both (i) and (ii)
19. The economic value added will increase
20. Will increase
21. If the returns exceed the weighted average cost of capital
22. Open market purchase
23. Commercial life of the asset
24. Increase on the divestiture
25. The loss in revenue that may occur due to the customer's perception that the firm is in trouble
26. Liquidate when liquidation value > continuing value
27. Rs. 52.50 lakh
29. AB Ltd has 1 lakh Rs. 10 ordinary shares in issue

Q. 1. [D] Attempt the questions by selecting the correct option :

1. If a bond is currently trading at a premium then—
   (i) It's current yield is more than its yield-to-maturity.
   (ii) It's current yield is less than its yield-to-maturity.
   (iii) It's current yield is equal to its yield-to-maturity.
   (iv) Nothing can be concluded.

2. A share, Y currently sells for RS. 50. It is expected that in one year it will either rise to Rs. 55 or decline to Rs. 45. The value of a European Call, if the strike price of the underlying share is Rs. 48 and the risk free interest rate is 9% p.a. is :
   (i) Rs. 9.33
   (ii) Rs. 11.33
   (iii) Rs. 18.33
   (iv) Rs. 20.50

3. Which one of the following statements is not true about Efficient Markets?
   (i) Share price behave randomly and do not shoe my systematic pattern in the behaviour
   (ii) Shares prices fully reflect all available information.
   (iii) Price of one share is independent of the price of other shares in the market.
   (iv) None can earn abnormally high profiles on a constant basis.

4. Hindustan Telecom, a national telecom company, is considering purchasing a smaller company, Tee Telecom. Analysis project that the merger will result in incremental free flows and interest tax saving with a combined present value of Rs 100 crores and they have determined that the appropriate discount rate for valuing tee Telecom is 16 percent.

   Tee Telecom has 50 Lakh share outstanding. Tee Telecom's current price is Rs. 170. What is the maximum price per share that Hindustan should offer?
   (i) Rs. 150
   (ii) Rs. 200
   (iii) Rs. 250
   (iv) Rs. 300

5. Bharat Gas Corporations has Rs. 100 crores worth of common equity on its balance sheet, and 50 lakhs shares of stock outstanding. The company's Market Value Added (MVA) is Rs. 24 crores. What is the company's stock price?
   (i) Rs. 230
   (ii) Rs. 238
   (iii) Rs. 248
   (iv) Rs. 264

6. The price of a company's share is Rs. 100 and the value of growth opportunities is Rs. 25. The company's capitalization rate is 20%. The P/E ratio is
   (i) 15%
   (ii) 11.25%
   (iii) 20%
   (iv) 5%

7. A firm has PAT of Rs. 33.6 lakh with extraordinary income of Rs. 6 lakh. Cost of capital is 20% and the applicable tax rate is 40%. The value of the firm is
   (i) Rs. 250 lakh
   (ii) Rs. 150 lakh
   (iii) Rs. 180 lakh
   (iv) Rs. 168 lakh

8. Free Cash Flow to Equity (FCFE) at the end of last year of explicit forecast period is Rs. 10 lakh. If cost of capital is 15% and steady growth rate is 5%, the terminal value of the firm is
   (i) Rs. 100 lakh
   (ii) Rs. 10 lakh
   (iii) Rs. 10.5 lakh
   (iv) Rs. 105 lakh

9. A share has a current market price of Rs. 30. One month call is available at a strike price of Rs. 29. It is known that after 1 month, this share price may be Rs. 32 or Rs. 28. If the risk free rate is 8%, the value of the call is
   (i) Rs.3.
   (ii) Nil
   (iii) Re. 1
   (iv) Re. 1.67

10. The number of shares outstanding as on 31.03.09 for a company is 10 lakh and it has reported net profit of Rs. 20 lakh for the year 2008-2009. The company decides to repurchase 20% shares at Rs. 32 per share. The P/E ratio remains unchanged after repurchase. The post-buyback price/share is
   (i) Rs. 42
   (ii) Rs. 32
   (iii) Rs. 40
   (iv) Rs. 25.6

Ans : 1. [D]

1. It's a current yield is more than its yield-to-maturity.
2. Rs. 11.33
3. Price of one share is independent of the price of other shares in the market.
4. Price per share = Rs. 100 crores/ 50 lakhs = Rs. 200.
5. Rs. 248. MVA = (Shares Outstanding) (Stock Price) – Total Common Equity

   Rs. 24crores = (50lakhs) PO – Rs. 100 crores

   Rs. 124crores = (50lakhs) PO; So, Po = Rs. 248.
6. 15%
7. Rs. 150 lakh
8. Rs. 105 lakh
9. Rs. 1.67
10. Rs. 40

PROBLEMS :

Problems of Techniques of Valuation

Q. 1. From the annual report 2010 of Precision Tools Limited, the following information has been collected : Profit & Loss Account of Precision Tools Ltd. for the year ending on 31st March 2010.

	(Rs. In crores)
INCOME :	
Net sales	1,665.40
Other Income	265.50
Total income	1,930.90
EXPENDITURE :	
Generation, Administration & Other Expenses	121.80
Employees Remuneration & Benefits	628.10
	749.90
Profit Before Depreciation, Interest and Tax	1,181.00
Depreciation	238.70
Profit Before Interest and Tax	942.30
Interest & Finance charges	486.80
Profit Before Tax and Prior Period Adjustments	455.50
Prior period adjustments (Net)	8.40
Profit Before Tax	447.10
Provision for tax	3.70
Profit After Tax	443.40
P & L Balance brought forward	871.20
Total Profit Available for Appropriations Appropriations	1,314.60
Dividend :	
Proposed Final Dividend	(30.00)
Corporate-Dividend Tax	(3.10)
Appropriation from profit to reserves	(1,110.00)
Amount written back from bonds redemption reserve	242.20
Balance Carried to Balance Sheet	413.70

Assume that the company follows a 'Constant Payout Policy' and it is committed to maintain the same. Number of shares outstanding as on 31.03.2010 is 5 crores. Net worth of the company as on 31.03.2010 is Rs. 3,100.58 crores and its cost of equity is 15%. Find the value of the equity shares of Precision Tools Ltd. Use Constant Growth Model for Valuation.

Solution :

Valuation of Equity shares of Precision Tools Ltd. as at 31.03.2010 using the constant Growth Model for valuation.

Dividend per share = Rs. 30 crores/5 crores = Rs. 6.00

Return on Equity = 443.40/3100.58 = 14.30%

Dividend Payout Ratio = (30.00+3.10)/443.40 = 7.47%

Retention Ratio = 100% – 7.47% = 92.53%

Growth Rate = 14.30% × 92.53% = 13.23%

Value of Equity Share = (6 × 1.1323)/(15.00% – 13.23%) = Rs. 384.49 [Ref. Po = $\frac{Do(1+g)}{ke-g}$]

$$ke = \frac{D_1}{P_o} + g$$

$$Ke - g = \frac{D_1}{P_o}$$

$$Po = \frac{D_1}{ke - g} = \frac{D_o(1+g)}{kg - g}$$

Assumption: The Company uses a "Constant Dividend Payout Policy"

Q. 2. The finance Director of Green Field Ltd. is investing a potential Rs. 250 lakh investment. The investment would be in a bio-tech project away from existing mainstream activities of computer hardware manufacture. Rs. 60 lakh of investment would be financed by internal funds, Rs. 90 lakh by long term loans and Rs.100 lakh by right issue. The investment is expected to generate pre-tax net cash flows of appropriately Rs. 50 lakh a year, for a period of 10 years. The residual value at the end of year 10 is forecast to be Rs. 50 lakh after tax. Government loan of Rs. 40 lakh out of total 90 lakh is also available. This will cost 2% below the company's normal cost of long term debt finance which is 8%.

Green Field Ltd's financial gearing is 60% equity and 40% debt by market value and its equity beta is 0.85. The average equity beta in computer hardware industry is 1.2, and average gearing 50% debt and 50% equity by market value.

The risk free rate is 5.5% per annum and the market return is 12% per annum. Issue costs are estimates to be 1% for debt financing (excluding subsidized loan) and 4% for equity financing.

The corporate tax is 30%.

(Issue costs are not tax deductible)

(a) Estimate the adjusted present value of the proposed investment.

Solution :

Assuming the risk of companies in the computer hardware industry is similar to that of Greenfield Ltd. the beta of computer hardware industry will be used as proxy to estimate the discount rate for the base case NPV.

Asset beta = Equity beta × E / {E+D(1-t)} = 1.2 × 50 / {50+50(1-0.30)} = 0.706

Using the capital asset pricing model:

Ke ungeared = 5.5 + (12-5.5) 0.706 = 10.09 = > 10%

Annual after tax cash flows = Rs 50 lakh × (1-0.3) = Rs. 35,00,000

From the annuity table with a 10% discount rate:

PV of annual cash flows, Rs. 35,00,000 × 6.145	=	2,15,07,500
PV of residual value, Rs. 50,00,000 × 0.386	=	19,30,000
		2,34,37,500
(Less) initial investment		(2,50,00,000)
Net Present Value		Rs. (15,62,500)

Subsidy :

The company saves 2% per year on Rs. 40,00,000 or Rs. 80,000.

The net of tax is Rs. 80,000 (1–0.3) = 56,000

Since it is a government subsidy, it is assumed to be risk-free. It would be discounted at 5.5% per year. Rs. 56,000 × 7.541 = Rs. 4,22,296.

Tax relief :

Interest payable per year: on Rs. 50,00,000 @ 8% and on Rs. 40,00,000 @ 6% = Rs. 6,40,000.

Tax relief Thereon @ 30% = Rs. 1,92,000 p.a.

The PV of these reliefs (assumed to be tax-free) at the discount rate of 5.5% is Rs. 1,92,000 × 7.541 = Rs. 14,47,872.

Issue costs : Debts Rs. 50 lakh × 1% + Equity Rs. 100 lakh × 4%
= Rs. 4,50,000

The adjusted net present value is estimated to be :

Rs. (15,62,500) + Rs. 4,22,296 + 14,47,872 – 4,50,000 = Rs. (1,42,332).

Since it is negative, the project is not financially viable.

Q. 3. ABC Co. Ltd. an engineering company is considering the purchase of a new machine for its immediate expansion program.

There are three possible machines at the same cost, which are suitable for the purpose;

The details of these are given with estimated cost and sale values.

ITEMS	Machine A (Rs.)	Machine B (Rs.)	Machine C (Rs.)
Capital cost.	3,00,000	3,00,000	3,00,000
Sales (at standard prices)	5,00,000	4,00,000	4,50,000
Net cost of production			
Direct Material	40,000	50,000	48,000
Direct Labour	50,000	30,000	36,000
Factory Overheads	60,000	50,000	58,000
Administration costs	20,000	10,000	15,000
Selling & Distribution costs	10,000	10,000	10,000

The economic life of machine 1 is 2 years, white it is 3 years for other two machines, after which the scarp value will be Rs. 40,000 Rs. 25,000 and Rs. 30,000 respectively.

Sales are expected to be at the rates shown for each year during the lifetime of machines. The cost relates to the annual expenditure resulting from each machine.

Average tax rate is 45%.

Payables and Receivables are settles promptly.

Return on capital is to be on an uniform basis of 8% p.a.

You are required to value the proposals and show which machine would be the most profitable investments on the basis of net cash flows.

Solution :

Statement Showing Valuation of the Proposals :

Items	Machine A (Rs.)	Machine B (Rs.)	Machine C (Rs.)
Capital Cost	3,00,000	3,00,000	3,00,000
Sales	5,00,000	4,00,000	4,50,000
Cost of production	1,50,000	1,30,000	1,42,000
Administration Cost	20,000	10,000	15,000
Selling and Distribution Cost	10,000	10,000	10,000
Total Cost	1,80,000	1,50,000	1,67,000

PBDI (Sales-Cost)	3,20,000	2,50,000	2,83,000
Depreciation: Cost less Scarp value/life	1,30,000	91,667	90,000
Interest on borrowings	24,000	24,000	24,000
PDBT	1,66,000	1,34,333	1,69,000
Taxation @ 45%	74,700	60,451	76,050
Profit after tax	91,300	73,882	92,950
Add Depreciation+Interest	1,54,000	1,15,667	1,14,000
Net Cash Flow	2,45,300	1,89,549	2,06,950
No. of years for cost recovery	1.21 years	1.58 years	1.45 years

The following are the assumptions made while arriving at the answer:

- Factory overheads do not include depreciation
- Interest will have to be paid on borrowings for machine purchased during the life of the machine
- No borrowings have been made for working capital.

Q. 4. A firm has the following summary balance sheet (in Rs Crores).

Net Operating Assets	441
Net Financial Obligations	52
Common Shareholder's Equity	389

The firm is currently earning a return on net operating assets (RNOA) of 14 percent from sales of Rs. 857 crores and after tax operating income of Rs. 60 crores. Its required return on operations is 10%. Forecasts indicate that RNOA is likely to continue at the same level in the future with growth in sales of 3 percent per year and growth in net operating assets to support the sales growth of 3 percent per year. Management is considering a plan to introduce new products that are expected to increase the sales growth rate to 4 percent a year and maintain the current profit margin of 7 percent. But the plan will require additional investment in net operating assets that will reduce the firm's asset turnover to 1.67.

What effect will this plan have on the value of the firm?

Solution :

Effect on value of the firm:

Analysis of Value Added

Pro-forma and valuation under the status quo :

	0	1	2	3	
Sales (Rs.)	857.0	882.7	909.2	936.5	(grows at 3%)
Operating income (PM=7%) (Rs.)	60.0	61.8	63.6	65.6	(grows at 3%)
Net operating assets (Rs.)	441	454.2	467.8	481.9	(grows at 3%)
PM	7%	7%	7%	7%	
ATO	2.0	2.0	2.0	2.0	
RNA	14%	14%	14%	14%	
ROI		17.64	18.18	18.73	(grows at 3%)

Value of operations under the status quo

Value of NOA = 441 + (17.64) / (1.10 – 1.03)

= 693

PM = Profit Margin
ATO = Asset Turnover
RNOA = Return on Net Operating Assets

	0	1	2	3	
Sales	857.0	891.3	926.9	964.0	(grows at 4%)
Operating income (PM = 7%)	60.0	62.4	64.9	67.5	(grows at 4%)
Net operating assets (ATO = 1.67)	534.8	556.1	578.4	601.6	(grows at 4%)
PM	7%	7%	7%	7%	
ATO	1.67	1.67	1.67	1.67	
RNOA	11.67%	11.67%	11.67%	11.67%	
ROI		8.93	9.29	9.66	(grows at 4%)

Value of operations under the plan:

Value of NOA = 534.8 + (8.93) / (1.10 – 1.04)

= 684

The plan (marginally) losses value. The additional growth (that generates additional profit margin) is not sufficient to cover the required return on the additional investments in net operating assets.

Q. 5. Tara Ltd. is comprised of only four major investment projects, details of which are as follows:

Project	% of market value	Annual % return during the last 5 years	Risk % of standard deviation	Correlation with the market
Alpha	28	10	15	0.55
Beta	17	18	20	0.75
Gamma	31	15	14	0.84
Delta	24	13	18	0.62

The risk free rate is expected to be 5% per year, the market return is 14% per year and the standard deviation of market returns is 13%.

Assume that Tara Ltd.'s shares are currently priced based upon the assumption that the last five years experience of returns will continue for the foreseeable future. Evaluation whether or not the share price of Tara Ltd. is undervalued/overvalued.

Solution :

Project	Beta Factor	% of Company Value
Alpha	15 x 0.55/13 = 0.635	28%
Beta	20 x 0.75/13 = 1.154	17%
Gamma	14 x 0.84/13 = 0.905	31%
Delta	18 x 0.62/13 = 0.858	24%

Overall Beta = 0.635 × 28% + 1.154 × 17% + 0.905 × 31% + 0.858 × 24% = 0.860

Assuming the company has no debt, and using the CAPM,

Required Return = 5% + (14% - 5%) 0.860 = 12.74%

The historical return over the last 5 years has been

= 10% × 28% + 18% × 17% + 15% × 31% + 13% × 24% = 13.63%

The actual return is higher than the required return. Hence, shares are undervalued.

Q. 6. A textile company is contemplating to diversify into cement business. It has decided to set up a cement plant at a total cost of Rs. 200 crore. The project cost is to be financed as below :

Equity	Rs. 75 crore
12% Debt	Rs. 125 crore

The managing Director of the company has asked the Director (Finance) to estimate the net present value of the estimate business using Discounted Cash Flow (DCF) method. The Director (Finance) was facing problem in estimating cost of equity for the cement business. He collected the following information with respect to comparable cement company :

Long-term Debt	Rs. 115 crore
Paid up share capital	Rs. 85 crore
Reserves & Surplus	Rs. 155 crore
Equity & beta	0.90

Help the Director (Finance) to estimate the cost of equity and hence the weighted average cost of capital for the cement business. The tax for the companies is 35%. Use a risk-free rate of 7.5% and expected risk premium of 8%.

Solution :

Equity-to-value ratio of the comparable firm = (85 + 155) / 355 = 0.68 (i.e. textile-cum-cement)

Equity beta of the comparable firm (given) = 0.90

Unlevered (Asset) beta of the comparable firm = 0.90 × 0.68 = 0.61

Proposal Equity-to-value ratio of the cement business = 75 / 200 = 0.38

Equity beta of the cement business = 0.61 / 0.38 = 1.62

Since the cement business of the textile company would be highly levered as compared to the comparable player, the equity beta of the cement business is substantially high.

Estimation of Weighted Average Cost of Capital:

Cost of debt = 12% × (1 – 0.35) = 7.8%

Cost of equity = 7.5% + 1.62 × 8% = 20.48%

Weighted Average Cost of Capital (WAC) = (7.8% × 125/200) + (20.48% × 75/200) = 12.56%

Q. 7. The following information is given for Glow-Health Ltd. A leading pharmaceutical company:

Year	After tax earnings (Rs. In lakh)	Dividends (Rs. In lakh)	Issued shares in lakh	Price per share In paisa
2000	129.3	51.75	270	540
2001	138.6	54.30	270	615
2002	148.95	56.40	270	518
2003	201.60	77.40	360	689
2004	222.90	79.95	360	672

Year	All share index	Inflation rate
2000	4343	6%
2001	4950	5%
2002	4268	4%
2003	3915	3%
2004	3458	3%

Glow health's cost of equity is estimated to be 12%

Explain with numerical workings, the current dividend policy of Glow-Health Ltd and also discuss whether or not this appears to be successful.

Solution :

Year	Post tax (earnings per share)	Growth %	Dividend per share (paisa)	Growth %	Inflation %
2000	47.9		19.2		
2001	51.3	7.1	20.1	4.7	5
2002	55.2	7.6	20.9	4	4
2003	56	1.4	21.5	2.9	3
2004	61.9	10.5	22.2	3.3	3
Overall Compound-growth		6.6		3.7	

Year	All share index	Growth %	Share price (Rs.)	Growth %
2000	4343		540	
2001	4950	14	615	13.9
2002	4268	-13.8	518	-15.8
2003	3915	-8.3	689	33
2004	3458	-11.7	672	-2.5
Overall compound Growth		-5.5		5.6

The company is following a stable dividend policy with moderate growth although the growth itself is not fixed.

Grow Health's share price has increased over the four year period by an annual compound rate of 5.6% much better than the annual fall of 5.5% suffered by all-share index. This does not prove that the dividend policy has been successful. This share price might be influenced by many other factors, especially the potential long-term cash flow expectations of the shareholders. Admittedly, comparison with the all-share index does not measure the performance of Glow Health relative to companies in its own industry/sector.

Q. 8. A company has been making a machine to order for a customer but the customer has, however, since gone into liquidation and there are no prospects that any money will be obtained from the winding up of his company.

Costs incurred to-date in manufacturing the machine are Rs. 50,000 and progress payments of Rs. 15,000 have been received from the customer prior to the liquidation.

The sales department has found another company willing to buy the machine for Rs. 34,000 once it is completed. To complete the work, the following costs have to be incurred:

(i) Material – These have been bought at a cost of Rs. 6,000. They have no other use and if the machine is not finished, they would be sold as scarp for Rs. 2,000.

(ii) Further labour costs would be Rs. 8,000. Labour is in short supply and if the machine is not finished, the workforce would be switched over to another job, which earns Rs. 30,000 in revenue, and incurs direct costs (not including direct labour) of Rs. 12,000 and absorbs (fixed) overheads of Rs. 8,000.

(iii) Consultancy fees, Rs. 4,000. If the work is not completed, the consultant's contract would be cancelled at a cost of Rs. 1,500.

(iv) General overheads of Rs. 8,000 would be added to the cost of the additional work should be new customer's offer be accepted? Prepare a statement showing the economics of the proposition.

Solution :

By an incremental analysis we can find the answer to the question: whether the new customer's offer be accepted or not.

	Rs.	Rs.	Rs.	Rs.
Incremental sales revenue				34,000
(Deduct) incremental relevant				
and opportunity costs				
(i) Cost of material-sale of scarp			2,000	
(ii) Cost of direct labour			8,000	
(iii) Incremental opportunity cost				
of contribution foregone on				
another job:				
Sales revenue		30,000		
(-) Direct costs				
(a) Labour	8,000			
(b) Other Dir. Cost	12,000	20,000	10,000	20,000
				14,000
(iv) Incremental cost of consultancy				2,500
(4,000 – 1,500)				
Increment profit				11,500

Decision – The new customer's offer should be accepted.

Q. 9. Kitkat Ltd. Made an investment of Rs. 65,000 in a new machine that is expected to bring in the following cash flows in years 1 and 2:

	Amount / Rs.		
	Cash flow	Cash flow	Residual
	Year 1	Year 2	Value
Favourable (60%)	52,000	39,000	2,600
Unfavourable (40%)	26,000	19,500	1,300

Should the environment turn out to be unfavourable, the company will dispose of the machine for a value of Rs. 32,500 at the end of year 1. They can nevertheless continue with the machine, if they so choose. Reckoning the cost of capital at 15%, evaluate the overall investment decision, and decide the course of action for the owner of the project.

[Note: Discounting/PV factor for year 1 = 0.870, year 2 = 0.756]

Solution :

Assuming that the project's life is for two years the NPV of the project is computed as follows:

Expected in cash flow in

Year 1	Operational: Rs. 52,000 × .6 + Rs. 26,000 × .4 = Rs. 41.600
Year 2	Operational: Rs. 39,900 × .6 + Rs. 19,500 × .4 = Rs. 31,200
Year 2	Residual value: Rs. 2,600 × .6 + Rs. 1,300 × .4 = Rs. 2,080

Discounted present value	**Rs.**
Year 1	Rs. 41,600 × 0.870 = 36,192
Year 2	Rs. 31,200 × 0.756 = 23,587
Year 2	Rs. 2,080 × 0.756 = 1,572
Total inflow	Rs. 61,351

(Less) investment in year 0 = 65,000

NPV = (Rs. 3,649)

Since the NPV of the project is negative, it is not acceptable.

Evaluation whether the project should be abandoned at the end of year 1:

Under favorable environments in both the years, the discounted cash inflow is

Year 1	Rs. 52,000 × 0.870 × 0.60 = Rs. 27,144 [CF × Df × P]
Year 2	Rs. 39,000 × 0.756 × 0.60 = Rs. 17,690 [CF × Df × P]
Year 2	Rs. 2,600 × 0.756 × 0.60 = Rs. 1,180 [Rv × Df × P]

& under unfavorable environments going to be abandened at the end of year 1.

Rs. (26,000 + 32,000) × 0.870 × 0.40 = Rs. 20,358 [(CF + RV) × Df × P]

PV = Rs. 66,372

(Less) Investment in year 0 = Rs. 65,000

NPV = Rs. 1,372

Advise the management:

The project should be continued if successful. If unsuccessful, the asset should be sold and project abandoned at the end of the year 1, for otherwise there will be a loss of Rs. 3,649.

Q. 10. Dr. Udayan Saha has just completed her post qualification internship in a reputed medical hospital. He wants to buy the running practice of Dr. Bannerjee, a renowned child specialist located at Lansdowne in Kolkata. The revenue and the costs of this practice in 2007-2008 were as under:

	Rs.
Revenue	10,00,000
Employee expenses	3,00,000
Annual rent for the facilities	1,00,000
Rental of medical equipments	80,000
Medical insurance	90,000
The tax rate on the income	
Including local taxes and subscription	35%
The cost of capital for this practice	10%

The above revenue and all the associated expenses are estimated to grow at 4% p.a. for the next 10 years if Dr. Bannerjee continues to run the practice.

Dr. Udayan Saha anticipates that upon the changeover there will be drop in revenue by 25% in the first year of his practice. The growth rate in revenue and expenses will remain at 4% p.a. thereafter i.e. for year 2 onwards.

Dr. Udayan Saha wants your advice for the price she should offer to Dr. Bannerjee to purchase the latter's practice at Lansdowne, Kolkata.

Solution :

We make two evolution of the practice-

Run by Dr. Bannerjee as if he is continuing as before, and

Run by Dr. Udayan Saha assuming that he has bought the practice from Dr. Bannerjee.

(1) Cash flow in year 1 = (Revenue$_1$ – Operating expenses$_1$) (1 – Tax rate)

= [10,00,000 (1.04) – (3,00,000 + 1,00,000 + 80,000 + 90,000) (1.04)] × (1 – 0.35)

= [10,40,000 – 5,92,800] × 0.65 = Rs. 2,90,680

With the growth rate of 4% p.a. and using the cost of capital as the discount rate and assuming that the practice will have no terminal value after 10 years, the value of the practice:

$$\text{Value of practice} = CF_1\left[\frac{1-\frac{(1+g)^n}{(1+r)^n}}{(r-g)}\right] = \text{Rs. } 2{,}90{,}680\left[\frac{1-\frac{(1.04)^{10}}{(1.10)^{10}}}{0.10-0.04}\right]$$

= Rs. 2,90,680 (7.155029) = Rs. 20,79,824

(2) Similarly, cash flow in year 1 under Dr. Udayan Saha

= Rs. [7,50,000 (1.04) – 5,92,800] × 0.65 = Rs. 1,21,680

Value of practice for Dr. Udayan Saha for 10 years = Rs. 1,21,680 (7.155029) = Rs. 8,70,624

The difference of Rs. (20,79,824 – 8,70,624) or Rs. 12,09,200 is attributed as the value of Dr. Bannerjee – the key person.

Dr. Saha should offer Rs. 8,70,624 to Dr. Bannerjee for the practice. If Dr. Bannerjee agree to stay with the practice for a transition period after the transfer of the business, a higher price may be paid.

Dr. Saha should ensure by the agreement of transfer of practice that Dr. Bannerjee cannot start a competing practice and extract business from Dr. Saha for the foreseeable future.

Problems on Mergers and Acquisition :

Q. 1. Perfect Precision Limited has adopted a strategy of inorganic growth and as a consequence, it is always on the lookout for a soft target to be acquired. Recently, the company has identified Exact Precision Limited as a target company and the concerned team is working on this acquisition. Some of the financial data collected by the team is given below:

	Perfect Precision Limited	Exact Precision Limited
Earnings Per Share (EPS)	Rs. 7.50	Rs. 5.00
Market Price Per Share (MPS)	Rs. 80.00	Rs. 35.00
Number of shares (in crores)	100	25

It is expected that there may be a synergy gain of 5%. Assume that you are one of the members of the concerned team and have requested to determine the exchange ratio if Perfect Precision Limited wants to have post-merger earning per share of Rs. 6.

Solution :

	Perfect Precision Limited	Exact Precision Limited
Earnings Per Share (EPS)	Rs. 7.50	Rs. 5.00
Market Price per Share (MPS)	Rs. 80.00	Rs. 35.00
Number of Shares (in crores)	100	25
Total Earnings of Perfect Precision Ltd.		Rs. 750.00
Total Earnings of Exact Precision Ltd.		Rs. 125.00
Total		Rs. 875.00
Synergy Gain @ 5%		Rs. 43.75
Total Earnings of the Combined Entity	Rs. 918.75	
Desire Post-Merger EPS	Rs. 6.00	
No. of Shares of perfect Precision Ltd. post-merger	153.125	
Therefore, new shares are to be issued	53.125	
Hence, exchange ratio will be (53.125/25)	2.125	

Q. 2. Consider the two firms that operate independently and have following characteristics:

	Ganga Ltd.	Yamuna Ltd.
Revenues	6000	3000
Cost of Goods Sold (COGS)	3500	1800
EBIT	2500	1200
Expected Growth rate	5%	7%
Cost of capital	8%	9%

Both firms are in steady state with capital spending offset by depreciation. Both firms have an effective tax rate of 40% and free financed only by equity. Consider the following two scenarios:

Scenario – 1: Assume that combing the firms will create economies of scale that will reduce the COGS to 50% of Revenues.

Scenario – 2: Assume that as a consequence of the merger the combined firm is expected to increase its future growth to 7% while COGS will be 60%.

It is given that Scenario 1 & 2 are mutually exclusive.

You are required to :

(a) Compute the values of both the firms as separate entities.

(b) Compute the value of both the firms together if there were absolutely no synergy at all from the merger.

(c) Compute the value of cost of capital ad the expected growth rate.

(d) Compute the value of synergy in Scenario 1 and Scenario 2.

Solution :

(a) Value of Ganga Ltd. = FCFF (1 + g) / (Ke - g) = EBIT (1 - t) (1 + 0.05) / (0.08 – 0.05)
= 2500 (1 – 0.4) (1+ 0.05) / 0.03
= Rs. 52,500.

Value of Yamuna Ltd. = 1200 (1 – 0.4) (1 + 0.07) / (0.09 – 0.07) = Rs. 38,520

(b) Value of both firms without synergy = Rs. 52,500 + 38,520 = Rs. 91,020

(c) Cost of capital 8% × 52,500/91,020 + 9% × 38,520/91,020 = 8.42%

Expected growth = .05 × 52,500/91,020 + .07 × 38,520/91,020 = 5.84%

(d)

Calculating of Value of Synergy	**Scenario - I Rs.**	**Scenario - II Rs.**
Revenues	9,000	9,000
Cofst of Goods Sold	4,500 [@ 50%]	5,400 [@ 60%]
EBIT	4,500	3,600
PAT [Cost of capital: 8.42%, 8.42%		
Growth rate: 5.84%, 7.00%]	2,700	2,160
Value [2700(1.0584)/(.0842-.0584)]		
[2160(1.07)/(.0842-.07)]	110,763	162,760
Value of the firm without synergy	91,020	91,020
Value of synergy	19,743	71,740

Q. 3. The Chairman of Rose Ltd. at a board meeting proposed the acquisition of Beauty Ltd.

He started:

'As a result of this takeover we will diversify our operations and our earnings per share will rise by 13 per cent, bringing great benefits to our shareholders'.

No bid has yet been made, and Rose currently owns only 2 per cent of Beauty.

A bid would be based on a share-for-share exchange, which would be one Rose share for every six Beauty shares. Financial data for the companies include:

	Rose Rs. crore	**Beauty Rs. crore**
Turnover	5.60	4.20
Profit before tax	1.20	1.00
Profit available to equity holders	0.78	0.65
Dividend	0.32	0.34
Retained earnings	0.46	0.31
Issued ordinary shares (crore)	4	15
Market price per share (Rs.)	3.20	0.45

Required :

(a) Explain whether you agree with the chairman of Rose when he says that the takeover would bring great benefits to our shareholders.

Support your explanation with relevant calculations. State clearly any assumptions that you make.

(b) On the basis of information provide, calculating the likely post-acquisition share price of Rose if the bid is successful.

Solution :

(a) The current ratio of the two companies are –

Rose = 3.20/0.195 = 16.4, Beauty = 0.45/0.433 = 10.4

The P/E ratios reflect market expectations about future growth in earnings with Rose currently expected to have much better prospects. There is no gain to investors as a result of the acquisition. Although the current earnings per share has increased this is at the expense of slower growth prospects.

Rose's shareholders are likely to suffer a fall in wealth, as will be evidenced from the solution to section (b) given below:

Of course, diversification will reduce unsystematic risk for the company, which the chairman hinted at. If the shareholders so wish they can diversify their portfolios for themselves in an easier and cheaper way (e.g. by investing in mutual/investment trusts) rather than purchase the shares of partially diversified companies such as Rose. Because of expensive professional, administrative and other incidental costs that a company has to incur in such cases investors can benefit themselves when they arrange their own diversification.

One possible benefit from diversification is a reduction in default risk on debt finance, leading to an increase in debt capacity, which might benefit shareholders through the tax relief on any additional finance that can now be raised.

(b) Current market values of the two companies are –

	Rs. Crores
Rose :	4cr. × Rs. 3.20 = 12.80
Beauty :	15cr. × Rs. 0.45 = 6.75
	19.55

A one-for-six share offer requires 2.5 crore new shares.

As the total market value of the companies should remain unchanged the market price per share is anticipated to fall to:

19.55 / 6.5 = Rs. 3.008 i.e. Rs. 3.01 in place of the original price of Rs. 3.20

Q. 4. Santa Ltd. wants to take over Dayal Ltd. and the financial details of both are as under:

	Santa Ltd. Rs.	**Dayal Ltd. Rs.**
Preference share capital	20,000	—
Equity share capital of Rs. 10 each	1,00,000	50,000
Share premium	—	2,000
Profit and loss a/c	38,000	4,000
10% Debentures	15,000	5,000
	1,73,000	61,000
Fixed Assets	1,22,000	35,000
Current Assets	51,000	26,000
	1,73,000	61,000
Profit after tax and preference dividend	24,000	15,000
Market price	24	27

What should be the share exchange ratio to be offered to the shareholders of Dayal Ltd. based on (1) Net assets value (2) EPS and (3) Market price?

Which should be factors are considered for selecting target in a business acquisition strategy?

Solution :

(i) Share Exchange ratio (SER) based on assets value

	Santa Ltd. Rs.	Dayal Ltd. Rs.
Total Assets	1,73,000	61,000
(-) debentures (liabilities)	15,000	5,000
(-) Pref. Share capital	20,000	—
Net Worth	1,38,000	56,000
No. of Equity shares	10,000	5,000
Worth per share	13.80	11.20

SER = 11.20/13.80 = 0.812

No. of shares to be issued = 5000 × 4,060

(ii) SER based on EPS

	Santa Ltd. Rs.	Dayal Ltd. Rs.
Earnings	24,000	15,000
No. of shares	10,000	5,000
EPS	2.40	3.00

SER = 3/2.40 = 1.25

No. of shares to be issued = 5000 × 1.25 = 6.250

(iii) SER based on market price –

SER = 27/24 = 1.125

No. of shares to be issued = 5000 × 1.125 = 5625

From the point of view of Santa Ltd. the SER based on net asset value may be preferred because in this case the number of shares to be issued is the least (i.e. 4,060 only).

Q. 5. The chief executive of a Company thinks that shareholders always look for the earnings per share. Therefore, he considers maximization of the earning per share(EPS) as his Company's objective. His Company's current net profits are Rs. 80 lakh and EPS is Rs. 4. The current market price is Rs. 42. He wants to buy another firm which has current income of Rs. 15.75 lakh, EPS of Rs. 10.50 and the market price per share of Rs. 85.

What is the maximum exchange ratio which the chief executive should offer so that he could keep EPS at the current level? If the chief executive borrows funds at 15 per cent rate of interest and buys out the other Company by paying cash, how much should he offer to maintain his EPS? Assume a tax rate of 52%.

Solution :

Combined net profit / No. of shares = 4.00

(80 + 15.75) / (20 + x) = 4; 95.75 = 80 + 4x ; x = 3.9375 lakh.

Share exchange ratio = 3.9375 / 1.5 = 2.625

For 1 share of the target Company the acquiring Company should at the maximum offer 2.625 shares.

Working Notes :

Total shares of acquiring company are 80/4 = 20 lakh.

Total share of target company are 15.75/10.50 = 1.5 lakh.

{80 + 15.75 – 0.15 (debt) (1 – 0.52)} / 20 = 4.00; (95.75 – 0.072 debt) / 20 = 4

Debt = Rs. 218.75 lakhs.

CFO should offer Rs. 218.75 lakh for the whole company. This work out to Rs. 218.75 ÷ 1.5

= Rs. 145.83 per share in cash.

Note : the earnings would be reduced by 15% of the debt amount. Since the entire payment for shares is to be out of debt the net earnings of the merged company after providing interest on debt should yield an EPS of Rs. 4.00 per shares.

Q. 6. You have been provided the following financial data of two companies:

	Krishna Ltd.	**Rama Ltd.**
Earnings after taxes	Rs. 7,00,000	Rs. 10,00,000
Equity shares outstanding	Rs. 2,00,000	Rs. 4,00,000
Earning per share	3.5	2.5
Price-earning ratio	10 times	14 times
Market price per share	Rs. 35	Rs. 35

Company Rama Ltd. is acquiring the company Krishna Ltd. exchanging its share on a one-two-one basis of company Krishna Ltd.'s share. The exchange ratio is based on the market prices of the shares of the two companies.

You are required to calculate –

(i) The EPS subsequent to merger,
(ii) Change in EPS for the shareholders of Rama Ltd. and Krishna Ltd.,
(iii) The market value of the post-merger firm,
(iv) The profits accruing to shareholders of both the Companies.

Solution :

Exchange ratio	1:1
New shares to be issued	2,00,000
Total shares of Rama Ltd. (4,00,000 + 2,00,000)	6,00,000
Total earnings	17,00,000
New EPS (17,00,000 / 6,00,000)	Rs. 2.83
Existing EPS of Rama Ltd.	Rs. 2.50
Increase in EPS (2.83 – 2.50) of Rama Ltd.	Rs. 0.33
Existing EPS of Krishna Ltd.	Rs. 3.50
Decrease in EPS (3.50 – 2.83) of Krishna Ltd.	Rs. 0.67
P/E ratio of new Co.	14 times
New Market Price (14 x 2.83)	Rs. 39.62
Total No. of shares	6,00,000
Total market capitalization (6,00,000 x 39.62)	2,37,72,000
Existing market capitalization (70,00,000 + 1,40,00,000)	2,10,00,000
Total Gain	27,72,000

	Total	Rama Ltd.	Krishna Ltd.
No. of share after merger	6,00,000	4,00,000	2,00,000
Market price	Rs. 39.62	Rs. 39.62	Rs. 39.62
Total Market value	Rs. 2,37,72,000	Rs. 1,58,48,000	Rs. 79,24,000
Existing market value	Rs. 2,10,00,000	Rs. 1,40,00,000	Rs. 70,00,000
Gain Share holders	Rs. 27,72,000	Rs. 18,48,000	Rs. 9,24,000

Q. 7. Efficient Ltd wants to acquire Healthy Ltd by exchanging 0.5 of its shares for each share of Healthy Ltd. Relevant financial data are as follows :

	Efficient Ltd.	Healthy Ltd.
Earnings after taxes	18,00,000	Rs. 3,60,000
Equity shares outstanding	6,00,000	1,80,000
Earnings per share	Rs. 3	Rs. 2
Price earnings Ratio	10 times	7 times
Market price per share	Rs. 30	Rs. 14

Required :

(i) The number of equity shares required to be issued by Efficient Ltd. For acquisition of Healthy Ltd.

(ii) What is the EPS of Efficient Ltd after acquisition?

(iii) Determine the equivalent earnings per share Healthy Ltd.

(iv) What is the expected market price per share Efficient Ltd. after the acquisition, assuming its P/E multiple remains unchanged?

(v) Determine the market value of the merged firm.

Solution :

(i) Exchange ratio is 0.5

So, new shares = 1,80,000 × 0.5 = 90,000 shares.

(ii) Total earnings Rs. 18,00,000 + Rs. 3,60,000 = Rs. 21,60,000

No. of share 6,00,000 + 90,000 = 6,90,000

EPS (21,60,000 + 6,90,000) = Rs. 3.13

(iii) Equivalent EPS (3.13 × 0.5) = Rs. 1.57

(iv) Expected market price (3.13 × 10) = Rs. 31.30

(v) Market value of merged firm – 6,90,000 × 31.30 = Rs. 2,15,97,000

Q. 8. XYZ Ltd. is considering merger with ABC Ltd. XYZ Ltd's shares are currently traded at Rs. 25. It has 2,00,000 shares outstanding and its earnings after taxes (EAT) amounts to Rs. 4,00,000. ABC Ltd. has 1,00,000 shares outstanding; its current market price is Rs. 12.50 and its EAT is Rs. 1,00,000. The merger will be effected by means of a Stock Swap (exchange). ABC Ltd's has agreed o plan under which XYZ Ltd. will offer the current market value of ABC Ltd's shares.

(a) What is the pre-merger earnings per share (EPS) and P/E ratios of both the companies?

(b) If ABC Ltd's P/E ratio is 8, what is its current market price? What is the exchange ratio? What will XYZ Ltd's post merger EPS be?

(c) What must the exchange ratio be for XYZ Ltd's pre-merger and post-merger EPS to be the same?

Solution :

(a) Merger and EPS :

Company	XYZ	ABC
Market price of equity shares	Rs. 25.00	Rs. 12.50
No. of shares outstanding	2,00,000	1,00,000
EAT	Rs. 4,00,000	Rs. 1,00,000
EPS	Rs. 2.00	Rs. 1.00
P/E ratio	12.5	12.5

(b) If ABC Ltd's P/E ratio is 8, its current market price will be Rs. 8.00

The exchange ratio will be 8/25 i.e. 32/100 for every 100 shares of ABC Ltd or a total of 32,000 shares of XYZ Ltd will be issued to ABC Ltd for distribution to their shareholders. Post-merger EPS of XYZ Ltd will be Rs. 5,00,000 / 2,32,000 = Rs. 2.16 per share.

(c) The pre-merger EPS of XYZ Ltd is Rs. 2. To remain as it is, the post-merger EPS of XYZ Ltd should be Rs. 2. Total number of shares will then be Rs. 5,00,000 / Rs. 2 = 2,50,000, i.e. 50,000 shares of XYZ Ltd will have to be issued to ABC Ltd, the exchange ratio being 1:2.

Problems of Valuation of Assets:

Q. 1. ABC Publishers Ltd. has been approached by other publishers Aajkal. Ltd. which is interested in buying the copy right of the book 'shareholders value creation'.

To estimate the value of the copy right, the following assumptions are made;

(i) The book is expected to generate Rs. 1,50,000 in after –tax cash flows each year for the next three years to ABC Publishers Ltd. and Rs. 1,00,000 a year for the subsequent two years. These are the cash flows after author royalties, promotional expenses and production costs.

(ii) About 40% of these cash flows are from large organisations that make bulk orders and considered predictable and stable. The cost of capital applied to these cash flows is 7%.

(iii) The remaining 60% of the cash flows are to the general public and this segment of the cash flows is considered much more volatile. The cost of capital applied to these cash flows is 10%.

Based on the information given above, estimate the value of the copyright.

Solution :

The value of the copyright can be estimated as follows:

Year	Stable cash flows Rs.	PV @ 7% Rs.	Volatile cash flows Rs.	PV @ 10% Rs.
1	60,000	56,075	90,000	81,818
2	60,000	52,406	90,000	74,380
3	60,000	48,978	90,000	67,619
4	40,000	30,516	60,000	40,981
5	40,000	28,519	60,000	37,255
		2,16,494		3,02,053

The value of the copyright is

Rs. 2,16,494 + Rs. 3,02,053 = Rs. 5,18,547

Q. 2. The following financial share date pertaining to TECHNO LTD an IT company are made available to you :

Year ended March 31st	2010	2009	2008
EBIT (Rs.)	696.03	325.65	155.86
Non-branded Income (Rs.)	53.43	35.23	3.46
Inflation compound factor @ 8%	1.000	1.087	1.181
Remuneration of Capital	5% of average capital employed		
Average capital Employed (Rs.)	1112.00		
Corporate Tax Rate	35%		
Capitalization Factor	16%		

You are required to calculate the Brand Value for Techno Ltd.

Solution :

TECHNO LTD.

Computation of Brand Value (Amount in Rs. Crores)

Year ended March 31st		**2010**	**2009**	**2008**
EBIT	(Rs.)	696.03	325.65	155.86
Less : Non-brand income	(Rs.)	53.43	35.23	3.46
Adjusted Profits	(Rs.)	642.60	290.42	152.40
Inflation Compound Factor @ 8%		1.000	1.087	1.181
Present Value of Profits for the brand	(Rs.)	642.60	315.69	179.98
Weight age Factor		3	2	1
Weight age Profits	(Rs.)	1927.80	631.38	179.98
Profits	(Rs.)	456.53		
Remuneration of Capital (5% of Average capital employed)		55.60		
Brand Related		400.93		
Corporate tax @ 35%		140.33		
Brand Earning		260.60		
Capitalization Factor		16%		

Brand Value: (Return / Capitalization Rate)

260.60 / 0.16 = Rs. 1628.75 Crore

Q. 3. Coca-colas Balance sheet for December 2008 is modified and summarized below:

	(Rs. mn)		(Rs. mn)
Cash and Near Cash	1,648	Account Payable	3,141
Marketable Securities	159	Short-term Borrowing	4,462
Accounts Receivable	1,666	Other Short-term liabilities	1,037
Other Current Assets	2,017	Current Liabilities	8,640
Current Assets	5,490	Long-term Liabilities	687
Long-term Investments	1,863	Other Long-term Liabilities	1,415
Depreciable Fixed Assets	5,486	Non-current Liabilities	2,102
Non-depreciable Fixed Assets	199	Share Capital (paid-in)	3,060
Accumulated Depreciation	2,016	Retained Earnings	5,343
Net Fixed Assets	5,532	Shareholders' Equity	8,403
Other Assets	12,214		
Total Assets	**38,290**	**Total Liabilities & Equity**	**38,290**

Required:

Coca-Cola's most valuable asset is its brand name. Where in the balance sheet do you see its value?

Is there any way to adjust the balance sheet to reflect the value of this asset?

Solution :

Coca-cola's brand name value does not appear in its balance sheet. Of course, there is an item called non-depreciable fixed assets, but it is too small to represent the brand-name value; it's probably land.

One way to adjust the balance sheet to reflect the value of this asset (brand-name) is for Coca-cola to set up a separate subsidiary that would buy the rights to the brand name. The brand-name value would then show up as an asset for the subsidiary, which would then be reflected in Coca-cola's balance sheet as well, even if the financial statements were consolidated.

Q. 4. The following is the data regarding two Companies 'X' and 'Y' belonging to the same risk class.

	Company X	Company Y
No. of ordinary shares	90,000	1,50,000
Face value of share	Rs. 10	Rs. 10
Market price per share	Rs. 1.20	Rs. 1.00
6% Debentures	Rs. 6,00,000	
Profit before interest	Rs. 18,000	Rs. 18,000

All profits after debentures interest are distributed as dividends.

Examine how under Modigliani and Miller approach an investor holding 10 per cent of shares in company. X will better off in switching his holdings to company Y.

Solution :

(1) Investors current position in firm X with 10% equity holdings:

(i) Investments (9000 shares × Rs. 1.20) Rs. 10,800

(ii) Dividend income 0.10 (18000-3600) Rs. 1,440

(2) Investor sells his holdings of firm X for Rs. 10,800 and creates a personal leverage by borrowing Rs. 6,000 (60,000 × 0.10). Thus, the total amount available with him is Rs. 16,800.

(3) He purchases 10% equity holdings of company Y for Rs. 15,000 (15,000 shares × Re. 1), his dividend income is Rs. 1,800 (Rs. 1,800 × 0.10)

(4)

Gross Income	Rs. 1,800
(-) Interest on personal borrowing (0.06 × 6000)	Rs. 360
	Rs. 1,440

He breaks even by investing in firm Y. But in the process he reduces his investment outlay by Rs. 1,800. Therefore, he is better off by investing in firm 'Y'

Alternatively :

By investing Rs. 16,800 he could augment his income to Rs. 1,656

Dividend income from firm Y = 18,000 (16,800/1,50,000) = Rs. 2.016

Less : Interest on personal borrowing (0.06 × 6,000) Rs. 360/

Net Income = Rs. 1,440

He breaks even by investing in firm Y. But in the process he reduces his investment outlay by Rs. 1,800. Therefore, he is better off by investing in firm 'Y'

Alternatively :

By investing Rs. 16,800 he could augment his income to Rs. 1,656

Dividend income from firm Y = 18,000 (16,800/1,50,000) = Rs. 2,016

Less : Interest on personal borrowing Rs. 360

Net Income = Rs. 1656

Decision : He is better off by investing in firm Y.

Q. 5. Estimate the brand value of the following information technology firm:

Year ended March 31st	2001	2000	1999 (Rs. In crores)
PBIT (Rs.)	696.03	325.65	155.86
Non-branded income (Rs.)	53.43	35.23	3.46
Inflation Compound factor @ 8%	1.000	1.087	1.181
Remuneration of Capital (5% of average capital employed)	55.57		
Tax @ 39.55%	158.58		
Multiple applied	22.18		

Solution :

The Computation of Brand value for the IT firm is as follows :

Year ended March 31st	2001	2000	1999
PBIT (Rs.)	696.03	325.65	155.86
Less: Non-brand income	53.43	35.23	3.46
Adjusted profits (Rs.)	642.60	290.42	152.40
Inflation compound factor @ 8%	1.00	1.087	1.181
Present value of profits for the brand	642.60	315.69	179.98
Weightage factor	3	2	1
Weightage profits (Rs.)	1927.80	631.38	179.98
Three years average weighted profits (Rs.)	456.53		
Remuneration of capital (5% of avg. capital employed)	55.57		
Brand related profits	400.96		
Tax at 39.55%	158.58		
Brand earnings	242.38		
Multiple applied	22.18		
Brand value	Rs. 5376.00 crore		

Note: The earnings would be reduced by 15% of the debt amount. Since the entire payment for shares is to be out of debt the net earnings of the merged Company after providing interest should yield an EPS of Rs. 4 per share.

Q. 6. S.K. Lab a pharmaceutical company in Western India was expected to have revenues of Rs. 50 lakhs in 2003 and report net income of Rs. 9 lakhs in that year.

The firm had a book value of assets of Rs. 110 lakhs and a book value of equity of Rs. 58 lakhs at the end of 2002. Its market value was Rs. 85 per share.

The firm was expected to maintain sales in its niche product, a multivitamin tablet and grow at 5% a year in the long term, primarily by expanding into the generic drug market. The beta of S.K. Lab traded in Mumbai Stock Exchange was 1.25

The return on 10 year GOI bond in India in 2002 was 7% and the risk premium for stocks over bond is assumed to be 3.5%

Do you consider the market price as the fair value of the shares of S.K. Lab?

Solution :

Expected net income = Rs. 9 lakhs.

Return on equity = 9/58 = 15.52%

Cost of equity = 7% + 1.25 (3.5%) = 11.375%

Price – book value ratio = (0.1552 – 0.005)/(0.11375 – 0.05) = 1.65

Estimated Market Value of equity = BV equity × price / BV ratio = 58 × 1.65 = Rs. 95.70 lakh

Hence the market price of shares of S.K. Lab is undervalued.

Q. 7. The financial data of G.D. Pharma is as follows :

	Rs.
Paid up capital (4 lakh shares)	40 lakhs
Reserve and surplus	180 lakhs
Profit after tax	32 lakhs

The P/E multiple of the shares of G.D. Pharma is 7. The company has taken up an expansion project at Gaziabad. The cost of the project is Rs. 200 lakhs. It proposes to fund it with a term loan of Rs. 100 lakhs from ICICI and balance by a rights issue. The rights will be priced at Rs. 25 per share including Rs. 15 as premium.

You are required to calculate :

(i) The value of the rights and the market capitalization of G.D. Pharma after the rights issue and

(ii) The Net Asset Value (NAV) of the shares after the rights issue.

Solution :

(i) Amount needed by rights issue = Rs. 200 – Rs. 100 = Rs. 100 lakhs

Subscription price/right share = Rs. 25

Number of rights share on offer = Rs. 100,00,000/25 = Rs. 4,00,000 shares

Hence ratio of right is 1 share for every share held.

Earnings per share = Rs. 32,00,000 / 4,00,000 = Rs. 8 per share

P/E multiple = 7

Market price = Rs. 8 × 7 = Rs. 56 per shares

Value of the rights $R = \frac{P_o - S}{N+1}$ [Where, P_o = cum-rights market price per share;

S = Subscription price of a right share; N = Number of existing shares required for a right issue]

$R = \frac{56-25}{1+1}$ = Rs. 15.50

Market value after the right issue : $\frac{NP_o + s}{N+1} = \frac{1 \times 56 + 25}{2}$ = Rs. 40.50

Number of shares outstanding after rights issue = 4 + 4 = 8 lakh shares

Market capitalization = Ex-rights price x Number of outstanding shares = Rs. 40.5 × 8 = Rs. 324 lakhs

(ii) Net asset value (NAV) per share after rights issue: (Rs. in lakh)

Paid-up Capital		80
Reserve and Surplus		
Existing	180	
Premium on right issue	60	240
Net worth of the Company		320

Number of share outstanding 8 lakh shares

NAV per share = Rs. 320 lakh / 8 lakh = Rs. 40 per share.

Q. 8. Sunny Ltd. is studying the possible acquisition of Rainy Ltd. and the following information is available:

	Sunny Ltd.	Rainy Ltd.
Profit after tax	Rs. 3,00,000	Rs. 75,000
Equity share outstanding	Rs. 50,000	Rs. 10,000
P/E multiple	3	2

If the merger takes place by exchange of equity shares based on market price, What is the EPS of the new firm?

Solution :

Exchange of shares on the basis of market price:

Market price of shares of Sunny Ltd. = Rs. 3,00,000 ÷ 50,000 × 3 = Rs. 18

Market price of shares of rainy Ltd. = Rs. 75,000 ÷ 10,000 × 2 = Rs. 15

Exchange Ratio = Rs. 15 / Rs. 18 = 0.833

Number of shares to be issued by Sunny Ltd. = 10,000 × 0.833 = 8330 shares

Total earnings of Sunny Ltd. = Rs. 3,75,000

Earnings per share = Rs. 3,75,000 ÷ Rs. 58,330 = Rs. 6.429 [Say Rs. 6.43 per share]

Q. 9. A company belongs to a risk class for which the appropriate capitalization rate is 10 per cent. It currently has outstanding 25,000 shares selling at Rs. 100 each. The firm is contemplating the declaration of dividend of Rs. 5 per share at the end of the current financial year. The company expects to have a net income of Rs. 2.5 lakh and has a proposal for making a new investment of Rs. 5 lakhs.

Show that under the Modigliani and Miller assumptions, the payment of dividend does not affect the value of the firm.

Solution :

Value of the firm under MM assumptions when dividends are paid –

$$\text{Value of firm } = \frac{1}{1+K_e}[nD_1 + (n+\Delta n)P_1 - I + E - nD_1] = \frac{(n+\Delta_n)P_1 - 1 + E}{1+K_e}$$

Where:

nD_1 = Total dividends paid at end of period 1

n = Number of shares outstanding at the beginning of the period

Δn = Additional shares during the period

P_1 = Market price of a share at end of period 1

I = Total amount required for capital budget

E = Earnings during the period

K_e = cost of equity capital

$$= \frac{\left(\frac{25,000}{1} + \frac{75,000}{21}\right)\text{Rs. } 105 - \text{Rs. } 5,00,000 + 2,50,000}{1.10} = \text{Rs. } 25,00,000$$

When dividends are not paid

$$V = \frac{\left(\frac{25,000}{1} + \frac{75,000}{11}\right)\text{Rs. } 115 - \text{Rs. } 5,00,000 + 2,50,000}{1.10} = \text{Rs. } 25,00,000$$

Thus under this approach the payments of dividend or otherwise, does not affect the value of the firm.

Q. 10. True value Ltd. is planning to raise funds through issue of common stock for the first time. However, the management of the company is not sure about the value of the company and therefore it attempts to study similar companies in the same line which are comparable to True value in most of the aspects.

From the following information, you are required to compute the value of True value Ltd. using the comparable firms approach.

(Rs. in crore)

Company	True value Ltd. Rs.	Jewel-value Ltd. Rs.	Real value Ltd. Rs.	Unique value Ltd. Rs.
Sales	250	190	210	270
Profit after tax	40	30	44	50
Book value	100	96	110	128
Market value		230	290	440

The value feels that 50% weightage should be given to earnings in the valuation process; sales and book value may be given equal weightages.

Solution :

The valuation multiples of the comparable firms are as follows :

Particular	Jewel-value Ltd.	Real value Ltd.	Unique value Ltd.	Average
Prices/Sales ratio	1.21	1.38	1.62	1.403
Price/Earnings ratio	7.67	6.59	8.80	7.69
Price/Book value ratio	2.39	2.63	3.43	2.82

Based on the above multiples, the value of True value Ltd. is estimated to be Rs. 311.99 crore. As per working below :

Particular	Multiple Average	Parameter Rs. cr.	Value Rs. cr.
Prices/Sales	1.403	250	350.750
Price/Earnings	7.69	40	307.600
Price/Book value	2.82	100	282.000

The weighted value of True value Ltd. using the comparable firm approach is

Rs. (350.750 × 1 + 307.600 × 2 + 282.000 × 1) / 4 = Rs. 311.99 crore.

Alternative :

Rs. (350.750 × 0.25 + 307.600 × 0.50 + 282.000 × 0.25) = Rs. 311.99 crore.

Problems of Derivative Financial Instrument :

Q. 1. The settlement price of sensex futures contract on a particular day was Rs. 4,600.

The initial margin was set at Rs. 10,000 while the maintenance margin was fixed at Rs. 8,000. The multiple of each contract is 50.

The settlement prices on the following four days were as follows :

Day	Settlement Price Rs.
1	4700
2	4500
3	4650
4	4750
5	4700

Calculate the mark to market cash flows and the daily closing balance in the accounts of

(a) An investor who has gone long, and

(b) An investor who has gone short at 4600.

Calculate net profit (loss) on each of the contracts.

Solution :

(a) Status of the investor who has gone long on the contract

Margin Account

Day	Settlement Price	Opening Balance	Mark to Market	Margin Call	Closing Balance
1	4700	10,000	5,000		15,000
2	4500	15,000	(-) 10,000	5,000	10,000
3	4650	10,000	7,500		17,500
4	4750	17,500	5,000		22,500
5	4700	22,500	(-) 2,500		20,000

Net Profit (loss) on the contract = + 5000 – 10,000 + 7500 + 5000 – 2500 = 5000

(b) Status of the investor who has gone short on the contract

Day	Settlement Price	Opening Balance	Mark to Market	Margin Call	Closing Balance
1	4700	10,000	(-) 5,000	5000	10,000
2	4500	10,000	10,000		20,000
3	4650	20,000	(-) 7,500		12,500
4	4750	12,500	(-) 5,000	2500	10,000
5	4700	10,000	2,500		12,500

Net Profit (loss) on the contract = -5000 + 10,000 - 7500 - 5000 + 2500 = (Rs. 5000) loss.

Q. 2. Ritz Ltd's assets are currently valued at Rs. 100 lakh. The standard deviation in this asset value is 40%. The face value of debt is Rs. 80 lakhs (it is zero coupon debt with 10 years left to maturity). The 10 years Treasury bond rate is 10%.

Based on the information and future date (given $d_1 = 1.5994$ and $d_2 = 0.3345$) given find the

(i) Value of equity as a call option of the firm

(ii) Value of the outstanding debt.

Solution :

Value of the underlying asset S = Value of the firm = Rs. 100 lakh
Exercise Price K = Face value of outstanding debt = Rs. 80 lakh
Life of the option = t = Life of zero coupon debt = 10 years
Variance in the value of the underlying Asset = σ^2 = variance in firm value = 0.16, Riskless rate = r = 10%
Now, values for $N(d_1)$ and $N(d_2)$, as given (*), are 0.9451 and 0.6310 respectively.

Hence, (i) Value of the call, ie call price, $vc = S \times N(d_1) - Kxe^{-rt} \times N(d_2)$
$= 100\ (0.9451) - 80\ e^{(-0.10)(10)} \times 0.6310 = 75.94$
Value of the call = Rs. 75.94 lakh.

And (ii) The estimated value of the outstanding debt is

(S – Vc) = Rs. 100 lakh – Rs. 75.94 lakh = Rs. 24.06 lakh.

(*) If the values were not given, we could have derived them by using the following formulae from 'Black and Scholes' model:

$d_1 = [\text{In } \{So/E\} + \{r + 0.5\sigma^2\} t]/\sigma\sqrt{t}$

$= \text{In (Rs. 100/80)} + [.10 + \frac{1}{2}(.40)^2]10/.40\sqrt{10}$

$= .223 + 1.80 = 2.023 / 1.2649 = 1.5994;$

$d_2 = [\text{In } \{So/E\} + \{r - 0.5\sigma^2\} t]/\sigma\sqrt{t}$

$= 0.3345$

Table values for 1.5994 = 0.4451 and for 0.3345 = 0.1310
Both d_1 and d_2 are positive

So, $Nd_1 = N(1.5994) = 0.5 + 0.4451 = 0.9451$ and
$Nd_2 = N(0.3345) = 0.5 + 0.1310 = 0.6310$

Q. 3. From the last 5 years annual reports of Queen India Limited, the following information about dividend declared has been collected:

Year	Rate of Dividend
2004-05	10%
2005-06	12%
2006-07	18%
2007-08	22%
2008-09	25%

The average dividend yield in the Industry is estimated to be 8%. If the nominal value of the company's share is Rs. 10, then determine the value per share of Queen India Limited using the Dividend Yield Method (Use Weighted Average Method for determine the average dividend rate of the company).

Solution :

Year	Rate of Dividend	Weight	Product
2004-05	10%	1	10.00%
2005-06	12%	2	24.00%
2006-07	18%	3	54.00%
2007-08	22%	4	88.00%
2008-09	25%	5	125.00%
	Total		301.00%

Weight Average Rate of Dividend : 20.07%
Value per Share : Rs. 25.08

Q. 4. The Managing Director of Smartdeal Ltd. has just attended a meeting with an investment analyst who has suggested that Smartdeal's shares are overvalued by 10%. The data used by the investment analyst is shown below :

Year	Total Dividend Rs.	Number of shares No.	Total earnings Rs.
2000	1,13,000	57,200	3,65,200
2001	1,22,680	57,200	4,26,400
2002	1,62,160	70,000	5,34,200
2003	2,00,140	80,000	5,72,400

Smartdeal's current share price is Rs. 75 and the cost of equity is estimated to be 12%.

Prepare a brief report for the managing director. Discuss whether or not Smartdeal's shares are overvalued. Relevant calculations should form part of your report.

Solution :

According to the dividend growth model the intrinsic value of the Smart deal's shares should be

Year	Dividend per share (Rs.)	Growth in dividends (g) (%)
2000	1986	
2001	2144	8
2002	2317	8
2003	2.502	8

$$\text{Price} = \frac{Dt}{Ke - g} = \frac{2.502(1.08)}{0.12 - 0.08} = \frac{2.70216}{0.04} = 67.554$$

Using the dividend growth model the intrinsic value of the company's shares should be Rs. 67.55 as calculated above but the current market price is Rs. 75, suggesting that the shares are overvalued by approximately (Rs. 75/Rs. 67.55) – 1 = 11.03%

Q. 5. On March 9, 2004, Ferguson Systems was trading at Rs. 13.62
To value a July 2004 call option with a strike price of Rs. 15, trading on the Board Option Exchange on the same day for Rs. 2. The following are the other parameters of the options :
The annualized standard deviation in Ferguson Systems stock price over the previous year was 81%.
The option expiration date is Friday, July 23, 2004. There are 103 days to expiration (year = 365 days) and the annualized Treasury Bill rate corresponding to this option life is 4.63%.
The value using the normal distribution of $N(d_1) = 0.5085$ and $N(d_2) = 0.3412$.

Solution :

From the given information we can find the value of the call using Black and Scholes Model.
This value is a function of five variables. So, the inputs for the model in this case are :

S = Current stock price = Rs. 13.62
K = Strike price of the option = Rs. 15
t = Option life = 103/365 = 0.2822
o = Standard deviation in (stock prices) = 81%
r = Riskless rate = 4.63%

Inputting these numbers into the model, we get:

$$d_1 = \frac{\text{In}\left(\frac{13.62}{15.0}\right) + \left(0.463 + \frac{81^2}{2}\right)0.2822}{0.81\sqrt{0.2822}} = 0.0212$$

$$d_2 = 0.212 - 0.81\sqrt{0.2822} = -0.4091$$

Using the normal distribution, we can estimate the $N(d_1)$ and $N(d_2)$

$N(d_1) = 0.5085$

$N(d_2) = 0.3412$

The value of the call can now be estimated:

Value of Ferguson call = $S\ N(d_1) - K\ e^{-rt}\ N(d_2)$

$= 13.62\ (0.5085) - 15[e^{-(0.463)(0.2822)}]\ (0.3412) = \text{Rs. } 1.87$

APPENDIX – A

INTERNATIONAL GLOSSARY OF BUSINESS VALUATION TERMS

As *adopted by the following professional societies and organizations:*

American Institute of Certified Public Accountants, American Society of Appraisers National Association of Certified Valuation Analysts, The Canadian Institute of Chartered Business Valuators, The Institute of Business Appraisers.

Adjusted Book Value Method – a method within the asset approach whereby all assets and liabilities (including off-balance sheet, intangible, and contingent) are adjusted to their fair market values (NOTE: In Canada on a going concern basis).

Adjusted Net Asset Method – see Adjusted Book Value Method.

Appraisal – see Valuation.

Appraisal Approach – see Valuation Approach.

Appraisal Date – see Valuation Date.

Appraisal Method – see Valuation Method.

Appraisal Procedure – see Valuation Procedure.

Arbitrage Pricing Theory – a multivariate model for estimating the cost of equity capital, which incorporates several systematic risk factors.

Asset (Asset-Based) Approach – a general way of determining a value indication of a business, business ownership interest, or security using one or more methods based on the value of the assets net of liabilities.

Beta – a measure of systematic risk of a stock; the tendency of a stock's price to correlate with changes in a specific index.

Blockage Discount – an amount or percentage deducted from the current market price of a publicly traded stock to reflect the decrease in the per share value of a block of stock that is of a size that could not be sold in a reasonable period of time given normal trading volume.

Book Value – see Net Book Value.

Business – see Business Enterprise.

Business Enterprise – a commercial, industrial, service, or investment entity (or a combination thereof) pursuing an economic activity.

Business Risk – the degree of uncertainty of realizing expected future returns of the business resulting from factors other than financial leverage. See **Financial Risk.**

Business Valuation – the act or process of determining the value of a business enterprise or ownership interest therein.

Capital Asset Pricing Model (CAPM) – a model in which the cost of capital for any stock or portfolio of stocks equals a risk-free rate plus a risk premium that is proportionate to the systematic risk of the stock or portfolio.

Capitalization – a conversion of a single period of economic benefits into value.

Capitalization Factor – any multiple or divisor used to convert anticipated economic benefits of a single period into value.

Capitalization of Earnings Method – a method within the income approach whereby economic benefits for a representative single period are converted to value through division by a capitalization rate.

Capitalization Rate – any divisor (usually expressed as a percentage) used to convert anticipated economic benefits of a single period into value.

Capital Structure – the composition of the invested capital of a business enterprise, the mix of debt and equity financing.

Cash Flow – cash that is generated over a period of time by an asset, group of assets, or business enterprise. It may be used in a general sense to encompass various levels of specifically defined cash flows. When the term is used, it should be supplemented by a qualifier (for example, "discretionary" or "operating") and a specific definition in the given valuation context.

Common Size Statements – Financial Statements in which each line is expressed as a percentage of the total. On the balance sheet, each line item is shown as a percentage of total assets, and on the income statement, each item is expressed as a percentage of sales.

Control – the power to direct the management and policies of a business enterprise.

Control Premium – an amount or a percentage by which the pro rata value of a controlling interest exceeds the pro rata value of a non-controlling interest in a business enterprise, to reflect the power of control.

Cost Approach – a general way of determining a value indication of an individual asset by quantifying the amount of money required to replace the future service capability of that asset.

Cost of Capital – the expected rate of return that the market requires in order to attract funds to a particular investment.

Debt-Free – ***we discourage the use of this term.*** **See Invested Capital.**

Discount for Lack of Control – an amount or percentage deducted from the pro rata share of value of 100% of an equity interest in a business to reflect the absence of some or all of the powers of control.

Discount for Lack of Marketability – an amount or percentage deducted from the value of an ownership interest to reflect the relative absence of marketability.

Discount for Lack of Voting Rights – an amount or percentage deducted from the per share value of a minority interest voting share to reflect the absence of voting rights.

Discount Rate – a rate of return used to convert a future monetary sum into present value.

Discounted Cash Flow Method – a method within the income approach whereby the present value of future expected net cash flows is calculated using a discount rate.

Discounted Future Earnings Method – a method within the income approach whereby the present value of future expected economic benefits is calculated using a discount rate.

Economic Benefits – Inflows such as revenues, net income, net cash flows, etc.

Economic Life – the period of time over which property may generate economic benefits.

Effective Date – see Valuation Date.

Enterprise – see Business Enterprise.

Equity – The owner's interest in property after deduction of all liabilities.

Equity Net Cash Flows – those cash flows available to pay out to equity holders (in the form of dividends) after funding operations of the business enterprise, making necessary capital investments, and increasing or decreasing debt financing.

Equity Risk Premium – a rate of return added to a risk-free rate to reflect the additional risk of equity instruments over risk free instruments (a component of the cost of equity capital or equity discount rate).

Excess Earnings – that amount of anticipated economic benefits that exceeds an appropriate rate of return on the value of a selected asset base (often net tangible assets) used to generate those anticipated economic benefits.

Excess Earnings Method – a specific way of determining a value indication of a business, business ownership interest, or security determined as the sum of (a) the value of the assets derived by capitalizing excess earnings and (b) the value of the selected asset base. Also used frequently to value intangible assets. See Excess Earnings.

Fair Market Value – the price, expressed in terms of cash equivalents, at which property would change hands between a hypothetical willing and able buyer and a hypothetical willing and able seller, acting at arms length in an open and unrestricted market, when neither is under compulsion to buy or sell and when both have reasonable knowledge of the relevant facts.

Note : In Canada, the term "price" should be replaced with the term "highest price".

Fairness Opinion – An opinion as to whether or not the consideration in a transaction is fair from a financial point of view.

Financial Risk – the degree of uncertainty of realizing expected future returns of the business resulting from financial leverage. See Business Risk.

Forced Liquidation Value – liquidation value, at which the asset or assets are sold as quickly as possible, such as at an auction.

Free Cash Flow – *we discourage the use of this term.* See Net Cash Flow. Going Concern - An ongoing operating Business Enterprise.

Going Concern Value – The value of a Business Enterprise that is expected to continue to operate into the future. The intangible elements of Going Concern Value result from factors such as having a trained work force, an operational plant, and the necessary licenses, systems, and procedures in place.

Goodwill – that intangible asset arising as a result of name, reputation, customer loyalty, location, products, and similar factors not separately identified.

Goodwill Value – The value attributable to goodwill.

Guideline Public Company Method – a method within the market approach whereby market multiples are derived from market prices of stocks of companies that are engaged in the same or similar lines of business, and that are actively traded on a free and open market.

Income (Income-Based) Approach – a general way of determining a value indication of a business, business ownership interest, security, or intangible asset using one or more methods that convert anticipated economic benefits into a present single amount.

Intangible Assets – non-physical assets such as franchises, trademarks, patents, copyrights, goodwill, equities, mineral rights, securities and contracts (as distinguished from physical assets) that grant rights and privileges, and have value for the owner.

Internal Rate of Return – A Discount Rate at which the present value of the future cash flows of the investment equals the cost of the investment.

Intrinsic Value – the value that an investor considers, on the basis of an evaluation or available facts, to be the "true" or "real" value that will become the market value when other investors reach the same conclusion. When the term applies to options, it is the difference between the exercise price or strike price of an option and the market value of the underlying security.

Invested Capital – The sum of Equity and Debt in a Business Enterprise. Debt is typically a) all interest bearing debt or b) long-term interest-bearing debt. When the term is used, it should be supplemented by a specific definition in the given valuation context.

Invested Capital Net Cash Flows – those cash flows available to pay out to equity holders (in the form of dividends) and debt investors (in the form of principal and interest) after funding operations of the business enterprise and making necessary capital investments.

Investment Risk – The degree of uncertainty as to the realization of expected returns.

Investment Value – the value to a particular investor based on individual investment requirements and expectations.

Note : in Canada, the term used is "Value to the Owner".

Key Person Discount – an amount or percentage deducted from the value of an ownership interest to reflect the reduction in value resulting from the actual or potential loss of a key person in a business enterprise.

Levered Beta – The beta reflecting a Capital Structure that includes debt.

Limited Appraisal – The act or process of determining the value of a business, business ownership interest, security, or intangible asset with limitations in analysis, procedures, or scope.

Liquidity – the ability to quickly convert property to cash or pay a liability.

Liquidation Value – the net amount that would be realized if the business is terminated and the assets are sold piecemeal. Liquidation can be either "orderly" or "forced."

Majority Control – the degree of control provided by a majority position.

Majority Interest – an ownership interest greater than 50% of the voting interest in a business enterprise.

Market (Market-Based) Approach – a general way of determining a value indication of a business, business ownership interest, security, or intangible asset by using one or more methods that compare the subject to similar businesses, business ownership interests, securities, or intangible assets that have been sold.

Market Capitalization of Equity – the share price of a publicly traded stock multiplied by the number of shares outstanding.

Market Capitalization of Invested Capital – The market capitalization of equity plus the market value of the debt component of invested capital.

Market Multiple – the market value of a company's stock or invested capital divided by a company measure (such as economic benefits, number of customers).

Marketability – the ability to quickly convert property to cash at minimal cost. **Marketability Discount –** see Discount for Lack of Marketability.

Merger and Acquisition Method – a method within the market approach whereby pricing multiples are derived from transactions of significant interests in companies engaged in the same or similar lines of business.

Mid-Year discounting – a convention used in the Discounted Future Earnings Method that reflects economic benefits being generated at midyear, approximating the effect of economic benefits being generated evenly throughout the year.

Minority Discount – A Discount for lack of control applicable to a minority interest.

Minority Interest – an ownership interest less than 50% of the voting interest in a business enterprise.

Multiple – The inverse of the Capitalization Rate.

Net Book Value – With respect to a Business Enterprise, the difference between total assets (net of accumulated depreciation, depletion, and amortization) and total liabilities as they appear on the balance sheet (synonymous with Shareholder's Equity). With respect to a specific asset, the capitalized cost less accumulated amortization or depreciation as it appears on the books of account of the business enterprise.

Net Cash Flows – When the term is used, it should be supplemented by a qualifier. See Equity Net Cash Flows and Invested Capital Net Cash Flows.

Net Present Value – the value, as of a specified date, of future cash inflows less all cash outflows (including the cost of investment) calculated using an appropriate discount rate.

Net Tangible Asset Value – the value of the business enterprise's tangible assets (excluding excess assets and non-operating assets) minus the value of its liabilities.

Non-Operating Assets – Assets not necessary to ongoing operations of the business enterprise.

Note : in Canada, the term used is "Redundant Assets".

Normalized Earnings – economic benefits adjusted for nonrecurring, non economic, or other unusual items to eliminate anomalies and/or facilitate comparisons.

Normalized Financial Statements – financial statements adjusted for non operating assets and liabilities and/or for nonrecurring, non economic, or other unusual items to eliminate anomalies and/or facilitate comparisons.

Orderly Liquidation Value – liquidation value at which the asset or assets are sold over a reasonable period of time to maximize proceeds received.

Premise of Value – an assumption regarding the most likely set of transactional circumstances that may be applicable to the subject valuation; e.g. going concern, liquidation.

Present Value – the value, as of a specified date, of future economic benefits and/or proceeds from sale, calculated using an appropriate discount rate.

Portfolio Discount – an amount or percentage deducted from the value of a business enterprise to reflect the fact that it owns dissimilar operations or assets that do not fit well together.

Price/Earnings Multiple – the price of a share of stock divided by its earnings per share.

Rate of Return – an amount of income (loss) and/or change in value realized or anticipated on an investment, expressed as a percentage of that investment.

Redundant Assets – see Non-Operating Assets.

Report Date – the date conclusions are transmitted to the client.

Replacement Cost New – the current cost of a similar new property having the nearest equivalent utility to the property being valued.

Reproduction Cost New – the current cost of an identical new property.

Required Rate of Return – The Minimum Rate of return acceptable by investors before they will commit money to an investment at a given level of risk.

Residual Value – the value as of the end of the discrete projection period in a discounted future earnings model.

Return on Equity – the amount, expressed as a percentage, earned on a company's common equity for a given period.

Return on Investment – see Return on Invested Capital and Return on Equity.

Return on Invested Capital – the amount, expressed as a percentage, earned on a company's total capital for a given period.

Risk-Free Rate – the rate of return available in the market on an investment free of default risk.

Risk Premium – a rate of return added to a risk-free rate to reflect risk.

Rule of Thumb – a mathematical formula developed from the relationship between price and certain variables based on experience, observation, hearsay, or a combination of these; usually industry specific.

Special Interest Purchasers – acquirers who believe they can enjoy post-acquisition economies of scale, synergies, or strategic advantages by combining the acquired business interest with their own.

Standard of Value – the identification of the type of value being used in a specific engagement; e.g. fair market value, fair value, investment value.

Sustaining Capital Reinvestment – the periodic capital outlay required to maintain operations at existing levels, net of the tax shield available from such outlays.

Systematic Risk – the risk that is common to all risky securities and cannot be eliminated through diversification. The measure of systematic risk in stocks is the beta coefficient.

Tangible Assets – physical assets (such as cash, accounts receivable, inventory, property, plant and equipment, etc.).

Terminal Value – see Residual Value.

Transaction Method – see Merger and Acquisition Method.

Unlevered Beta – the beta reflecting a capital structure without debt.

Unsystematic Risk – the risk specific to an individual security that can be avoided through diversification.

Valuation – the act or process of determining the value of a business, business ownership interest, security, or intangible asset.

Valuation Approach – a general way of determining a value indication of a business, business ownership interest, security, or intangible asset using one or more valuation methods.

Valuation Date – the specific point in time as of which the valuator's opinion of value applies (also referred to as "Effective Date" or "Appraisal Date").

Valuation Method – within approaches, a specific way to determine value.

Overview of Valuation

Valuation Procedure – the act, manner, and technique of performing the steps of an appraisal method.

Valuation Ratio – a fraction in which a value or price serves as the numerator and financial, operating, or physical data serves as the denominator.

Value to the Owner – see Investment Value.

Voting Control – *dejure* control of a business enterprise.

Weighted Average Cost of Capital (WACC) – the cost of capital (discount rate) determined by the weighted average, at market value, of the cost of all financing sources in the business enterprise's capital structure.

APPENDIX – B

GLOSSARY OF ADDITIONAL TERMS

Assumptions and Limiting Conditions : Parameters and boundaries under which a valuation is performed, as agreed upon by the valuation analyst and the client or as acknowledged or understood by the valuation analyst and the client as being due to existing circumstances. An example is the acceptance, without further verification, by the valuation analyst from the client of the client's financial statements and related information.

Business Ownership Interest : A designated share in the ownership of a business (business enterprise).

Calculated Value : An estimate as to the value of a business, business ownership interest, security, or intangible asset, arrived at by applying valuation procedures agreed upon with the client and using professional judgment as to the value or range of values based on those procedures.

Calculation Engagement : An engagement to estimate value wherein the valuation analyst and the client agree on the specific valuation approaches and valuation methods that the valuation analyst will use. Its signifies the extent of valuation procedures the valuation analyst will perform to estimate the value of a subject interest. A calculation engagement generally does not include all of the valuation procedures required for a valuation engagement. If a valuation engagement had been performed, the results might have been different.

The valuation analyst expresses the results of the calculation engagement as a calculated value, which may be either a single amount or a range.

Capital or Contributory Asset Charge : A fair return on an entity's *contributory assets,* which are tangible and intangible assets used in the production of income or cash flow associated with an intangible asset being valued. In this context, *income or cashflow* refers to an applicable measure of income or cash flow, such as net income, or operating cash flow before taxes and capital expenditures. A capital charge may be expressed as a percentage return on an economic rent associated with, or a profit split related to, the contributory assets.

Capitalization of Benefits Method : A method within the income approach whereby expected future benefits (for example, earnings or cash flow) for a representative single period are converted to value through division by a capitalization rate.

Comparable Profits Method : A method of determining the value of intangible assets by comparing the profits of the subject entity with those of similar uncontrolled companies that have the same or similar complement of intangible assets as the subject company.

Comparable Uncontrolled Transaction Method : A method of determining the value of intangible assets by comparing the subject transaction to similar transactions in the market place made between independent (uncontrolled) parties.

Conclusion of Value : An estimate of the value of a business, business ownership interest, security, or intangible asset, arrived at by applying the valuation procedures appropriate for a valuation engagement and using professional judgment as to the value or range of values based on those procedures.

Control Adjustment : A valuation adjustment to financial statements to reflect the effect of a controlling interest in a business. An example would be an adjustment to owners' compensation that is in excess of market **compensation.**

Engagement to Estimate Value : An engagement, or any part of an engagement (for example, a tax, litigation, or acquisition-related engagement), that involves determining the value of a business, business ownership interest, security, or intangible asset. Also known as *valuation service.*

Excess Operating Assets : Operating assets in excess of those needed for the normal operation of a business.

Fair Value. In valuation applications, there are two commonly used definitions for fair value:

(1) For financial reporting purposes only, the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.

Source : **Financial Accounting Standards Board definition in Statement of Financial Accounting Standards (SFAS) No. 157, Fair Value Measurements, as used in the context of Generally Accepted Accounting Principles (GAAP) (Effective 2008).**

(2) For state legal matters only, some states have laws that use the *term fair value* in shareholder and partner matters. For state legal matters only, therefore, the term may be defined by statute or case law in the particular jurisdiction.

Guideline Company Transactions Method : A method within the market approach whereby market multiples are derived from the sales of entire companies engaged in the same or similar lines of business.

Hypothetical Condition : Condition which is or may be contrary to what exists, but is supposed for the purpose of analysis.

Incremental Income : Additional income or cash flow attributable to an entity's ownership or operation of an intangible asset being valued, as determined by a comparison of the entity's income or cash flow with the intangible asset to the entity's income or cash flow without the intangible asset. In this context, *income or cashflow* refers to an applicable measure of income or cash flow, such as license, royalty income or operating cash flow before taxes and capital expenditures.

Normalization : See *Normalized Earnings* in Appendix A, "International Glossary of Business Valuation Terms."

Pre-adjustment Value : The value arrived at prior to the application, if appropriate, of valuation discounts or premiums.

Profit Split Income : With, respect to the valuation of an intangible asset of an entity, a percentage allocation of the entity's income or cash flow whereby (1) a split (or percentage) is allocated to the subject intangible and (2) the remainder is allocated to all of the entity's tangible and other intangible assets. In this context, *income or cash flow* refers to an applicable measure of income or cash flow, such as net income or operating cash flow before taxes and capital expenditures.

Relief from Royalty Method : A valuation method used to value certain intangible assets (for example, trademarks and trade names) based on the premise that the only value that a purchaser of the assets receives is the exemption from paying a royalty for its use. Application of this method usually involves estimating the fair market value of an intangible asset by quantifying the present value of the stream of market-derived royalty payments that the owner of the intangible asset is exempted from or "relieved" from of paying.

Residual Income : For an entity that owns or operates an intangible asset being valued, the portion of the entity's income or cash flow remaining after subtracting a capital charge on all of the entity's tangible and other intangible assets. *Income or cash flows* can refer to any appropriate measure of income or cash flow, such as net income or operating cash flow before taxes and capital expenditures.

Security : A certificate evidencing ownership or the rights to ownership in a business enterprise that (1) is represented by an instrument or by a book record or contractual agreement, (2) is of a type commonly dealt in on securities exchanges or markets or, when represented by an instrument, is commonly recognized in any area in which it is issued or dealt in as a medium for investment, and (3) either one of a class or series or, by its terms, is divisible into a class or series of shares, participations, interests, rights, or interest-bearing obligations.

Subject Interest : A business, business ownership interest, security, or intangible asset that is the subject of a valuation engagement.

Subsequent Event : An event that occurs subsequent to the valuation date.

Valuation Analyst : For purposes of this Statement, an AICPA member who performs an engagement to estimate value that culminates in the expression of a conclusion of value or a calculated value.

Valuation Assumptions : Statements or inputs utilized in the performance of an engagement to estimate value that serve as a basis for the application of particular valuation methods.

Valuation Engagement : An engagement to estimate value in which a valuation analyst determines an estimate of the value of a subject interest by performing appropriate valuation procedures, as outlined in the AICPA Statement on Standards for Valuation Services, and is free to apply the valuation approaches and methods he or she deems appropriate in the circumstances. The valuation analyst expresses the results of the valuation engagement as a conclusion of value, which may be either a single amount or a range.

Valuation Service : See Engagement to Estimate Value.

APPENDIX – C

SOME IMPORTANT FINANCIAL RATIOS

Liquidity Ratios

Liquidity ratios measure the ability of a business to meet short term obligations.

Current Ratio

Measures the company's ability to pay its short-term liabilities from short-term assets.

$$= \frac{\text{Current Asset}}{\text{Current Liabilities}}$$

Quick Ratio

Also known as **Acid Test,** measures the company's ability to pay off its short-term obligations from current assets, excluding inventories.

$$= \frac{(\text{Current Asset} - \text{Inventory})}{\text{Current Liabilities}}$$

It draws a more realistic picture of a company's ability to repay current obligations than the current ratio as it excludes inventories that may hardly be liquidated at their book value.

Cash Ratio

Measures the extent to which current obligations can be paid from cash or near cash assets.

$$= \frac{(\text{Cash and cash equivalents})}{\text{Current Liabilities}}$$

Activity Ratios

Activity ratio helps in assessment of efficiency of managers' actions.

Gross Profit Margin :

Margin available to cover other expenses beyond cost of goods sold.

$$= \frac{(\text{Sales} - \text{Cost of goods sold})}{\text{Net Sales}}$$

Operating Margin

Margin available to cover interest costs, taxes and dividends.

$$= \frac{\text{Operating Income}}{\text{Net Sales}}$$

Operating Income is also known as profit from operations. Two noticeable examples of items that are non operation related are the "currency gains and losses" and the "profit or loss on sales of fixed assets."

Net Profit Margin

Shows how much after tax profit (net income) are generated by each dollar of sales.

$$= \frac{\text{Net profit after taxes}}{\text{Net Sales}}$$

Return on Investment

Also known as **return on assets.**

$$= \frac{\text{Net profit after taxes}}{\text{Total assets}}$$

Return on Equity

Rate of return on the book value of the stockholders' investment.

$$= \frac{\text{Net profit after taxes}}{\text{Stockholders' equity}}$$

Earnings Per Share

After tax earnings generated for each share of common stock.

$$= \frac{(\text{Net profit after taxes} - \text{preferred stock dividends}}{\text{Number of shares}}$$

Fixed Asset Turnover

Measures the utilization of the company's fixed assets.

$$= \frac{\text{Sales}}{\text{Fixed assets}}$$

Typically, fixed assets are a combination of tangible assets (property, plants and equipment), intangible assets (trademarks, goodwill) and investments in subsidiaries.

Accounts Receivable Turnover

Number of times that accounts are cycled during the period.

$$= \frac{\text{Sales}}{\text{Accounts Receivable (average)}}$$

Average Collection Period

Average length of time that a company must wait to collect a sale after making it. Does it fit the credit terms it offers?

$$= \frac{\text{Accounts receivable (average)}}{\left(\frac{\text{Sales}}{\text{Period of accounting statements}}\right)}$$

The average number of days to receive a payment greatly vary from one sector of activity to another, or from a country to another.

Productivity

Level of Sales per Employee.

$$= \frac{\text{Sales}}{\text{Number of Employees}}$$

Leverage Ratios

Debt to Asset **Ratio**

Measures the extent to which borrowed funds have been used to finance the acquisition of assets.

$$= \frac{\text{Total debt}}{\text{Assets}}$$

Assets can be financed by available cash (purchase), debt (borrowing) or leases.

Sometimes, management may yield to some objectives rather than a careful assessment (through a discounted cash flow analysis for example) of the long term benefit of one financing method over another.

Long-term Debt to Capital Structure

Measures the long-term component of the capital structure.

= Long-term liabilities / stockholders' equity

Times Interest Earned

Also known as **Coverage Ratio,** it indicates the ability of the company to meet its interest costs.

= Operating Profit / interest charges

$$\text{Debt Service Coverage Ratio} = \frac{\text{EBITDA}}{\text{Interest} + \frac{\text{Loan repayment}}{1 - \text{Tax rate}}}$$ where EBITDA = Enrnings before in there, taxes, depreciation and amortisation

Leverage

Measures the extent to which assets are financed with debt.

= Assets / stockholders' equity

The higher the leverage of a company, the greater the sensitivity of its profit to variations in sales volume. In other words, the more debt a company bears, the more likely it is to fail when sales go down, following a recession for instance. Note that for most financial institutions (banks), a leverage of up to 14 (7% equity, 93% debt) is considered normal. For manufacturing companies however, a leverage of up to 2 (50% equity) is normal.

Other Ratios :

Price/Earning Ratio

It shows how much an investor is willing to pay for each dollar of earnings given the actual market price.

= Market price per share / earnings per share

Dividend Payout Ratio

Percentage of profit that is paid out as dividend.

= dividends per share / earnings per share

Index of Sustainable Growth

Developed by Robert L. Higgins, this index helps determine the level of growth of sales beyond which external capital will be needed. In other words, when planning for a specific growth in sales, one must be aware of whether external financing will be needed.

$$g = \frac{\left(X_1 (1 - X_2)(1 + X_3)\right)}{\left(X_4 - (X_1 (1 - X_2)(1 + X_3)\right)}, \text{ with}$$

X_1 = Profit Margin = (Income before Taxes / Sales) × 100

X_2 = Dividend Payout Ratio = Total Dividends / Net Income

X_3 = Leverage = Liabilities / Equity X_4 = (Assets/Sales) × 100

If sales growth forecast are above g:

– External financing (equity or debt) should be sought after,

– or the profit margin should be improved,

– or the distribution of dividends should be lower,

– or the level of assets should be lower (lease instead of buy).

Bankruptcy Index :

Developed by Edward I. Altman on a sample of 66 manufacturing companies, it is a formula used to predict a company's likelihood of going bankrupt. The Z-score is reputed for becoming more accurate as a firm nears bankruptcy. As a general rule, a score below 1.81 is dangerous while a score above 2.99 is comfortable.

$Z = 1.2(X_1) + 1.4\ (X_2) + 3.3(X_3) + 0.6(X_4) + 1.0(X_5)$, with

X_1 = (Working capital = Current assets - Current Liabilities) / total assets

X_2 = Retained earnings / total assets

X_3 = EBIT / total assets

X_4 = (Market va3ue of equity = Market Price per share * Number of stocks) / total debt

X_5 = Asset turnover = Sales / Total Assets.