

PROFESSIONAL PROGRAMME

MODULE 3, PAPER 9.7

PRACTICE QUESTIONS

Valuations & Business Modelling



**THE INSTITUTE OF
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Lesson 1

Overview of Business Valuation

Question 1

What do you understand by valuation and why there is a need for valuation?

Answer

Valuation is a process of appraisal or determination of the value of certain assets: tangible or intangible, securities, liabilities and a specific business as a going concern or any company listed or unlisted or other forms of organization, partnership or proprietorship. 'Value' is a term signifying the material or monetary worth of a thing, which can be estimated in terms of medium of exchange.

Valuation is the analytical process of determining the current (or projected) worth of an asset or a company. Valuation of business plays a very vital role, therefore a business owner or individual may need to know the value of a business. The fair market value standard consists of an independent buyer and seller having the requisite knowledge and facts, not under any undue influence or stressors and having access to all of the information to make an informed decision.

The need for valuation for various statutory and commercial purposes may be captured in the following points:

- i) Assessment under Wealth tax act, Gift tax act.
- ii) Formulation of scheme for amalgamation.
- iii) Purchase and sale of shares of private companies.
- iv) Raising loan on the security of shares.
- v) For paying court fees.
- vi) Conversion of shares.
- vii) Purchase of block of shares for the purpose of acquiring interest or otherwise in another company.
- viii) Purchase of shares by the employees of the company where retention of such shares is limited to the period of their employment.
- ix) Compensation to the shareholders by the government under a scheme of nationalization.

- x) Acquisition of shares of dissenting shareholders under a scheme of reconstruction.
- xi) To set a basis of value for a business when no valuation has been previously performed.
- xii) To set a base line value for the business and develop a strategy to improve the profitability of the business and increase the value of the business for an exit strategy.
- xiii) To identify whether the business is growing, stagnant or declining in value to restructure the business.
- xiv) To determine the potential built-in-capital-gains tax in a conversion from a C-Corporation to an S-Corporation.

Question 2

Enumerate the main objectives of corporate valuation.

Answer

The main objectives of corporate valuation are as under:

- a) Assist a purchaser or a seller in deciding the acceptable purchase consideration.
- b) Assist an arbitrator in settling a dispute between parties.
- c) Assist a lender in quantifying the security for loan.
- d) Establish value for stamp duty.
- e) Quantify a value for inclusion in accounting records.
- f) Assess a consequential loss claim.
- g) Assess a management buyout or a leveraged buyout.

Question 3

Enumerate the characteristics of a proper valuation exercise.

Answer

The characteristics of a proper valuation exercise are as under:

- a) Realistic and acceptable value conclusion.
- b) Application of convincing methods to arrive at the value conclusion.

- c) Transparency of the valuation process.
- d) Realistic consideration of factors responsible for valuation.
- e) Ensuring unbiased considerations and avoiding short-cut attempts.
- f) Validation under critical scrutiny.
- g) Meticulous work of a group of professionals representing various disciplines such as finance, accounting, economics, engineering, and investment banking.
- h) Comprehensive and detailed valuation report justifying fairness of opinion and accepted as an expert testimony.

Question 4

What are the benefits of business valuation?

Answer

Business valuation is an approach wherein the worth of a business and its assets are determined. Majority of business owners go through a valuation when they are opting to sell their enterprise. Other reasons include mergers, organizational restructuring, and partnership dissolution.

There are various elements to be considered with reference to business valuation. In this regard, revenues are an important determinant but they are not the only consideration in the valuation process. Other factors being weighed are the business type, i.e., its history, financial status, stock value, value of intangible assets, competition, and the general economic outlook.

Thus, the advantages of business valuation may be captured under the following points:

- i) ***Better Knowledge of Company Assets:*** It is significantly important to obtain an accurate business valuation assessment. Estimates are not acceptable as it is a generalization. Specific numbers need to be gained from valuation processes so that business owners can obtain proper insurance coverage, know how much to reinvest into the company, and how much to sell your company for so that you still make a profit.
- ii) ***Comprehending Company's Resale Value:*** If the management is contemplating to sell the company, knowing its true value is necessary. This process should be started far before the business goes up for sale on the open market because it will have an opportunity to take more time to increase the company's value to achieve a higher selling price. It is imperative to be conversant with the value of the business. One also need to be aware of the company's resale value really is in order to negotiate a higher selling price.

- iii) **Obtain a True Company Value:** The management of a company may be aware of its business worth on the basis of simple information like stock market value, total assets value and company's bank account balances. But, there is much more to business valuations than those simple factors.

Knowing the true value of the company is often a deciding factor if selling the business becomes a possibility. It also helps to show company income and valuation growth over the course of the previous years. Potential buyers like to see that a company has seen regular, consistent growth as it ages.

- iv) **Mergers and Acquisitions:** When a company goes for merger or acquisition, the valuation of business gains substantial significance. As it assist in determining the value of assets, current scenario of the company's growth going for merger / acquisition and whether post acquisition / merger it possess growth potential. A proper business valuation assist phenomenally in negotiating superior purchase consideration / price.
- v) **Access to More Investors:** While seeking additional investors to fund company's growth or save it from financial catastrophe, the investor will demand for a complete company valuation report. One should also provide potential investors with a valuation projection based upon their provided funding. Investors like to see where their money is going and how it is going to provide them with a return on the investment.

You are more likely to gain the attention of a potential investor when they can see that their funds will carry the company to the next level, increase its value, and put more money back into their own products.

Question 5

What are the different methods of valuation?

Answer

The different methods / approaches of valuation are as under:

1. **Income Approach:** The income valuation method is based on concept of valuing the present value of future benefits. This approach estimates business value by considering the future income accruing over a period of time. The methods most commonly used by business valuation professionals include the Capitalization of Earnings Method and the Discounted Earnings Method (Discounted Cash Flow Method).
2. **Market Approach:** Market Approach refers to the notion of arriving at the value of a company by comparing it to the market value of similar publicly listed companies. The market business valuation approach is also based on the principle

of substitution. The business valuation expert identifies business entities that have transacted as a way to compare the subject business. Sold businesses in comparison to the subject is a way to calculate value of an equally desirable company from an ownership or investment standpoint. The methods most commonly used for the market business valuation approach are the Guideline Public Company Method, Guideline Company Transactions Method, Multiple of Discretionary Earnings Method, and Gross Revenue Multiple Method.

3. **Asset Approach:** The asset business valuation approach is based on the principle of substitution that a prudent buyer will not pay more for a property than the cost of acquiring a substitute property of equivalent utility. All assets and liabilities are adjusted to reflect the business as a going concern entity or the company in liquidation, depending on the premise of value appropriate for the valuation.

An asset-based approach is a type of business valuation that focuses on a company's net asset value (NAV), or the fair-market value of its total assets minus its total liabilities, to determine what it would cost to recreate the business. There is some room for interpretation in the asset approach in terms of deciding which of the company's assets and liabilities to include in the valuation, and how to measure the worth of each.

Question 6

What are the various sources of referring information for undertaking valuation?

Answer

The following are important sources of referring information for valuation process:

1. Annual reports and audited accounts of the company or the business being valued.
2. Reports on future prospects, operational results, cash flows, acquisition and divestment strategies, internal documents related to business plan, board discussion papers, review documents after discussions with senior management.
3. Pertinent economic data and industry statistics.
4. Information available publicly i.e. newspapers, journals, periodicals, online journals, reports etc.
5. Survey reports of various sectors.

Question 7

Enumerate the steps involved in the computation of Net Asset Value (NAV)

Answer

The steps involved in the computation of Net Asset Value (NAV) is as under:

Particulars	Amount
Total assets (excluding miscellaneous expenditure & debit balance in P&L)	XXX
<i>Less</i> : Total Liabilities	XXX
Net Asset Value	XXX
OR	
Share Capital	XXX
Add: Reserves	XXX
<i>Less</i> : Miscellaneous expenses	XXX
P& L (Dr balance)	XXX
Net Asset Value (NAV)	XXX

Question 8

Tammy's Tool Company is a retail store that sells tools to construction companies across the country. Tammy reported net income of \$200,000 and issued preferred dividends of \$20,000 during the year. Tammy also had 30,000, \$5 par common shares outstanding during the year. Compute Return on Equity.

Answer

$$\begin{aligned} \text{Return on Equity Ratio} &= \frac{\text{Net Income} - \text{Preference Share Dividend}}{\text{No. of Equity Shares Outstanding} \times \text{Market Price per share}} \\ &= \frac{200,000 - 20,000}{30,000 \times 5} = \frac{180,000}{150,000} = \$1.2 \text{ per share.} \end{aligned}$$

Question 9

Equity shares of ABC Ltd. are currently selling at INR 100. The company is expected to pay a dividend of INR 5 per share with a growth rate of 10%. Compute the cost of equity, i.e. K_e .

Answer

$$P_0 = \text{INR } 100$$

$$g = 10\%$$

$$D_1 = \text{INR } 5$$

$$P_0 = D_1 / (K_e - g)$$

$$100 = 5 / (K_e - 0.10)$$

$$K_e = 0.15 \text{ or } 15\%$$

Question 10

In Super Steel Ltd., the value of 10% Debentures is INR 75,00,000. Assume the tax rate to be 50%. Compute the cost of debt.

Answer

$$K_d = \text{Interest } (1-t)$$

$$K_d = 10 (1 - 0.5) = 5\%$$

Question 11

The expected EPS of a company for the current year is INR 10. In the industry the standard P/E ratio is 15 to 20. The company is in high growth stage. What is the best estimate of company's share price? Should the share be purchased?

Answer

Since the company is in growth stage, it may be assumed that the appropriate P/E ratio is 20.

Therefore, share price = INR 20 x 10 = INR 200

If the actual price is lower than INR 200, then the share should be purchased.

Question 12

From the following information of Best Ltd. ascertain the following:

The current intrinsic value of share

Recent EPS = INR 2.00

Growth rate (constant) = 5%

Dividend Payout Ratio = 50%

Required Rate of Return = 10%

After five years the P/E ratio is 10.5

Answer

The current intrinsic value of share

$$E_0 = \text{INR } 2.00$$

$$E_1 = E_0 (1 + g)$$

$$E_1 = 2 (1 + 0.10)$$

$$E_1 = \text{INR } 2.2$$

$$P_0 = 2.2 (1 - 0.50) / (0.10 - 0.05)$$

$$P_0 = \text{INR } 22$$

Therefore, the current intrinsic value of the share = INR 22

Lesson 2

Purpose of Valuation

Question 1

What does the term 'Business Valuation' mean?

Answer

Business Valuation is the process of determining economic value of a business or company. It assesses a variety of factors to determine the fair market value in a sale, but there is no one way to verify the worth of a company. Business valuation can depend on the values of the assessor, tangible and intangible assets, goodwill and varying economic conditions. Business valuation provides an expected price of sale; however, the real price of sale can vary.

In other words, the process of examining various economic factors of a business using predetermined formulas to assess the value of the business or an owner's interest in a company. Business valuation may be conducted to provide an accurate snapshot of the company's financial standing to present to current or potential investors.

A business valuation requires a working knowledge of a variety of factors, and professional judgment and experience. This includes recognizing the purpose of the valuation, the value drivers impacting the subject company, and an understanding of industry, competitive and economic factors, as well as the selection and application of the appropriate valuation approach / (es) and method(s)

Question 2

What is the relevance of valuation in merger and acquisition (M & A) ?

Answer

M&A affects almost every industry, from technology firms and banking, to industrial manufacturers and healthcare organizations. Approximately every executive of every major industry faces a buy or sell decision at some point during his term in the company, and it is said that they spend as much as one third of their time considering merger and acquisition opportunities and other corporate restructuring decisions.

M& A transactions are also considered to be the most prominent profile part of investment banking activities. The act of buying, selling or combining with another company is usually a transformational event for not only involving companies' key executives, but also other major stakeholders such as shareholders, employees, clients and regulators. Both of the party sides – the buyer and seller always enter the transaction with purpose of reaching optimal results in term of value, deal terms, timing, structure, stability and many other important considerations. The process demands wide-ranging analysis, planning, resources, expense, and expertise as well as requires the involvement of many intermediary parties such as investment banks, accountants, lawyers, advisors and even regulators.

In view of the above facts, the success of any merger or acquisition depends on many factors, the most critical of which is appropriate and correct valuation. In a typical M&A transaction, valuation is often regarded as a key deal issue, along with financing, deal structuring, timing and tactics .

For the buying side, improper valuation can result in overpaying for the target and vice versa, improper valuation can also cause the target to accept a price that is lower than one expected by shareholders. Both of the cases will make a bad impact, not only on shareholders, but also employees, clients and others related parties, whose interest is directly affected by loss of value generated from the deal's strategic objectives and synergy.

However, valuation is a challenging process because each company is different and there is currently no single best way to value a company. Especially in the context of M&A, the valuation of a company might be subjected to many external factors, depending on the nature of each M&A deal. Proper valuation also comes with experience and involves perhaps in numerous assumptions, whose changes even in small quantity can result greatly on the valuation themselves.

Question 3

How valuation plays a pivotal role in fund raising?

Answer

Raising money is a complex task and involves several processes that successful entrepreneurs needs to master. Determining a valuation is one of most significant steps for raising funds. Aim too high and investors will look the other way. Aim too low and one will leave money on the table, or worse, one will lose investors who think you lack ambition.

One bizarre fact about the fundraising process is that the more it is raised, the higher the valuation tends to be. This seemingly illogical link between round size and share price comes because investors want to make sure founders retain enough equity to keep them motivated, even after multiple rounds of financing.

The first thing to do is to work out how much capital is required. In this regard, it is advisable that sufficient funds should be raised in order to reach to the next valuation milestone and then have time left to go out and find the next round.

The second thing is to make an attempt to comprehend the minds of the potential funds provider and then try to estimate how the potential funds provider would value the business.

Thus, money is the life blood of all the business whether it is a start-up or a well-established company. Prior to raising of funds through private or public investors or by taking loans an accurate valuation of business is a must. A well evaluated valuation adds credibility for investors to help them in determining whether to take a risk by investing or not. It also helps in making the regulators sure and confident about the fund raising process being fair and transparent. The other approaches of valuation during fund are – The Rules of Thumb and Market Forces.

Question 4

What are reasons for with reference to valuation for Voluntary Assessment?

Answer

The important reasons for doing valuation for Voluntary Assessment are:

1. ***Price is not the same as Value:*** The Value of a business, by whatever valuation method it is obtained, is not the selling price of the business. Value is an economic concept based on certain data & assumptions, however Price is what a Buyer is willing to pay keeping in view the Economic and Non Economic factors like Emotions, Perception, greed etc. which cannot be valued as such.
2. ***Value varies with Person, Purpose and Time:*** The Value is a subjective term and can have different connotations meaning different things to different people and the result may not be the same, as the context or time changes.
3. ***Transaction concludes at Negotiated Prices:*** Though the value of a business can be objectively determined employing valuation approaches, this value is still subjective, dependent on buyer and seller expectations and subsequent negotiations and the transaction happens at negotiated price only.
4. ***Valuation is Hybrid of Art & Science:*** Valuation is more of an art and not an exact science. The Art is Professional Judgment and Science is Statistics. Mathematical certainty is neither determined nor indeed is it possible as use of professional judgment is an essential component of estimating value.

Question 5

Assume that a deposit to be made at year zero into an account that will earn 8% compounded annually. It is desired to withdraw Rs. 4,000 three years from now and Rs. 6,000 six years from now. What is the size of the year zero deposit that will produce these future payments?

Answer

$$\begin{aligned}PV &= FV \times PVF(r,n) \\&= \text{Rs. } 4,000 \times PVF(8\%,3) + \text{Rs. } 6,000 \times PVF(8\%,6) \\&= \text{Rs. } 4,000 \times (0.794) + \text{Rs. } 6,000 \times (0.630) \\&= 3,176 + 3,780 = \text{Rs. } 6,956\end{aligned}$$

Therefore, PV = Rs.6,956

Question 6

From the following information of Axis Limited compute the Replacement Cost Value / Net Substantial Value

Liabilities	Amount (Mn\$)	Assets	Amount (Mn\$)
Equity Share Capital	2000	Fixed Assets	4100
Preference Share Capital	1100	Inventories	2350
Reserves and Surplus	800	Cash and Bank Balance	1150
Adjustment	1100	Debtors	1300
Long-term Debt	1400		
Short-term Debt	800		
Creditors	1700		
	8,900		8,900

Answer

<i>Particulars</i>	<i>Amount (Mn\$)</i>
Total Assets	8,900
<i>Less : Long-Term Debt</i>	1,400
<i>Less : Short Term Debt</i>	800
<i>Less : Creditors</i>	1,700
Replacement Cost Value or Net Substantial Value	5,000

Hence, as per replacement value method, the value of the company is \$5,000 Mn

Question 7

Explain share / stock swap deal with the help of a suitable example.

Answer

A stock swap, also called a share exchange, share-for-share exchange, stock-for-stock, occurs during an acquisition. The company doing the takeover offers its own shares, at a predetermined rate, in exchange for the shares in the company it aims to acquire.

In most mergers and acquisitions only a part of the transaction is completed with a stock swap, while the rest is covered with cash and other forms of payment.

During the initial period, each shareholder of the company being sought for a takeover will be offered a pre-determined number of shares from the predatory corporation. Before the exchange takes place, each party carefully values the company so that a fair swap ratio can be calculated.

In order to make the share exchange appealing, the acquiring company usually offers the shareholders of the other company a 'premium', i.e. the shares are given a higher value than that quoted on the stock exchange.

Example of a stock swap

Imagine the fictitious company John's Chocolates Inc. wants to acquire a rival, Andy's Chocolate Corp. in a stock swap.

John's gives Andy's shareholders a certain number of its own shares for each share of Andy's stock they own.

In a 1.5-for-1 swap, an Andy's shareholder with 100 shares would end up with 150 shares of John's. The Andy's Chocolates stock is cancelled, and it no longer exists as a separate entity.

The company being targeted for acquisition might use the stock swap as a strategy to resist the takeover, by claiming that the terms are unfavourable, i.e. it is a way of seeking better terms.

In most cases, when the stock swap is done, shareholders are not allowed to sell them for a set period. Stock swaps are not exclusively used in takeovers. A corporation may use this strategy to gain a larger shareholding in another company.

Lesson 3

International Valuation Standards Overview

Question 1

Write a note on International Valuation Standards Council.

Answer

The International Valuation Standards Council (IVSC) is an independent, not-for-profit organization committed to advancing quality in the valuation profession. The primary objective of IVSC is to build confidence and public trust in valuation by producing standards and securing their universal adoption and implementation for the valuation of assets across the world.

Valuations are widely used and relied upon in financial and other markets, whether for inclusion in financial statements, for regulatory compliance or to support secured lending and transactional activity. The International Valuation Standards (IVS) are standards for undertaking valuation assignments using generally recognized concepts and principles that promote transparency and consistency in valuation practice. IVSC promotes leading practice approaches for proper execution and effective competency of leading professionals.

The IVSC is the body responsible for setting the International Valuation Standards (IVS). The Board has autonomy in the development of its agenda and approval of its publications. In developing the IVS, the Board:

- i) Follows established due process in the development of any new standard, including consultation with stakeholders (valuers, users of valuation services, regulators, valuation professional organizations, etc) and public exposure of all new standards or material alterations to existing standards.
- ii) Liaises with other bodies that have a standard-setting function in the financial markets.
- iii) Conducts outreach activities including round-table discussions with invited constituents and targeted discussions with specific users or user groups.

Question 2

Who can be a Registered Valuer?

Answer

The following persons shall be eligible to apply for Registered Valuer:

- a) A Chartered Accountant, Company Secretary or Cost Accountant who is in whole-time practice, or retired member of Indian Corporate Law Service or any person holding equivalent Indian or foreign qualification as the Ministry of Corporate Affairs may recognize by an order; provided that such foreign qualification acquired by Indian citizen.
- b) A Merchant Banker registered with the Securities and Exchange Board of India, and who has in his employment person(s) having qualifications prescribed under (a) above to carry out valuation by such qualified persons;
- c) Member of the Institute of Engineers and who is in whole-time practice;
- d) Member of the Institute of Architects and who is in whole-time practice;
- e) A person or entity possessing necessary competence and qualification as may be notified by the Central Government from time to time.

Provided that persons referred to in (a), (c) and (d) and qualified person in (b) above shall have not less than five years continuous experience after acquiring membership of respective institutions.

Provided further that in the case of merchant banker the valuation report shall be signed by the qualified person. Provided also that persons referred to in (a) and (b) shall be in respect of requirement for a “financial valuation” and the persons referred to in (c) and (d) shall be in respect of requirement for a “technical valuation” and a person or a firm or Limited Liability Partnership or merchant banker possessing both the qualifications may act in dual capacity.

For the purposes of this rule, a person shall be deemed “to be in whole-time practice”, when individually or in partnership or in limited liability partnership or in merchant banker with other persons in practice who are members of other professional bodies, he, in consideration of remuneration received or to be received:

- (i) engages himself in the practice of valuation; or
- (ii) offers to perform or performs services involving valuation of any assets with the object of arriving at financial value of the asset being valued; or

- (iii) renders professional services or assistance in or about matters of principle or detail relating to valuation.

Question 3

What is Financial Synergy?

Answer

Financial synergy is when the combination of two firms together results in greater value than if they were to operate separately. Financial synergies are most often evaluated in the context of mergers and acquisitions. These type of synergies relate to improvement in the financial metric of a combined business such as revenue, debt capacity, cost of capital, profitability, etc.

Examples of positive financial synergies include:

- i) Increased revenues through a larger customer base.
- ii) Lower costs through streamlined operations.
- iii) Talent and technology harmonies.

In addition, financial synergies can result in the following benefits post acquisition:

- i) Increased debt capacity.
- ii) Greater cash flows.
- iii) Lower Cost of Capital.
- iv) Tax Benefits.

Question 4

What do you understand by Liquidation Value?

Answer

Liquidation value is the total worth of a company's physical assets when it goes out of business or if it were to go out of business. Liquidation value is determined by assets such as real estate, fixtures, equipment and inventory. Intangible assets are not included in a company's liquidation value.

Liquidation value is usually lower than book value but greater than salvage value. The assets continue to have value but, due to a limited time frame, must be sold at a loss to book value.

Liquidation value does not include intangible assets. Intangible assets include a business's intellectual property, goodwill, and brand recognition. However, if a company is sold rather than liquidated, both liquidation value and intangible assets are considered to determine the company's going-concern value. Value investors look at the difference between a company's market capitalization and its going-concern value to determine whether the company's stock is currently a good buy.

Question 5

From the following information of Splendid Limited compute liquidation value:

Particulars	INR
Liabilities	55,00,000
Book value of the assets as per Balance Sheet	70,00,000
Estimated value to be realised by selling the assets in auction	65,00,000

Answer

Liquidation Value = Auction Value – Liabilities

Liquidation Value = 65,00,000 – 55,00,000 = INR 10,00,000

Question 6

Enumerate the steps involved in computation of the liquidation value.

Answer

Liquidation value is estimated through assets like fixtures, real estate, equipment, and inventory owned by a company. Intangible assets (like goodwill, business' intellectual property, and brand recognition) are, however, not counted in the liquidation value of a company.

The liquidation value is calculated as follows:

- i) Get a copy of the latest annual report. This report can be requested by contacting the Investor Relations department of the company. Besides, it can also be downloaded directly from the website of the company.

- ii) Find the line item assets and liabilities where assets refer to the complete range of assets owned by a company and liabilities represent the debt taken on by the company to purchase these assets.
- iii) Determine the expected liquidation value. This is done by subtracting the company's liabilities from its assets.

Question 7

What is Comparable Transactions Method?

Answer

A comparable transaction (comp transaction) is a basis for a method of valuing a company that is being targeted in a mergers and acquisitions (M&A) deal. Acquirers, with their investment bankers, look for comparable transactions - the more recent the better - that have involved companies with a similar business model with the company being valued. Also, the more comp transaction data, the better in order to derive a fair valuation. This method of valuation can help approximate the market-clearing price of the target that shareholders would be willing to accept.

The specific valuation metric in widespread usage for comparable transaction analysis is the EV-to-EBITDA multiple. EV is enterprise value and EBITDA is earnings before interest, taxes, depreciation and amortization. EBITDA is usually measured on an LTM (last twelve months) basis. A comparable transaction approach is generally used in conjunction with other valuation techniques including the discounted cash flow, price-to-earnings, price-to-sales, price-to-cash flow ratios and others that may be relevant to a particular industry. Data that is publicly available makes it possible to estimate the valuation of a target, but if many of the past transactions being used as comps are among private companies, there would likely be limited data to serve as guidance.

Question 8

From the following information compute intrinsic value of share using Gordon Growth Model.

Answer

ABC limited's share are listed at INR 50 per share. Furthermore, Company ABC Limited requires a rate of return of 10%. Currently, Company ABC Limited pays dividends of INR 2 per share for the following year which investors expect to grow 4% annually.

$$\text{A10. Intrinsic Value of share} = \text{Intrinsic Value} = \frac{D1}{(k - g)}$$

$$= \frac{2}{(0.1 - 0.04)}$$

$$= \text{INR } 33.33.$$

Question 9

Suppose that Stock B pays a \$1 annual dividend and is expected to grow its dividend 7% per year. The investor's required rate of return is 8%. Compute the value of Stock A.

Answer

$$\text{Value of Stock A} = (\$1 * (1 + 0.07)) / (0.08 - 0.07) = \$107$$

Question 10

Assume Treasury bills currently yield 2%, the broad stock market is expected to return 10% and Stock B has a beta of 1.3. Calculate the required rate of return of Stock B.

Answer

$$\text{Required rate of return for Stock A} = 2 + 1.3 (10 - 2) = 12.4\%$$

Question 11

Let's assume Sky Limited intends to pay a \$1 dividend per share next year and it is expected that this would increase by 5% per year thereafter. Let's further assume the required rate of return on Sky Limited's stock is 10%. Currently, XYZ Company stock is trading at \$10 per share. Further, assume that during the next few years Sky Limited's dividends will increase rapidly and then grow at a stable rate. Next year's dividend is still expected to be \$1 per share, but dividends will increase annually by 7%, then 10%, then 12%, and then steadily increase by 5% after that.

Compute the intrinsic value and fair value of Sky Limited's stock.

Answer

$$\text{Intrinsic value of the stock} = \$1.00 / (.10 - .05) = \$20$$

Current fair value of the stock

$$D_1 = \$1.00$$

$$k = 10\%$$

$$g_1 (\text{dividend growth rate, year 1}) = 7\%$$

$$g_2 (\text{dividend growth rate, year 2}) = 10\%$$

$$g_3 (\text{dividend growth rate, year 3}) = 12\%$$

$$g_n (\text{dividend growth rate thereafter}) = 5\%$$

Since we have estimated the dividend growth rate, we can calculate the actual dividends for those years:

$$D_1 = \$1.00$$

$$D_2 = \$1.00 * 1.07 = \$1.07$$

$$D_3 = \$1.07 * 1.10 = \$1.18$$

$$D_4 = \$1.18 * 1.12 = \$1.32$$

We then calculate the present value of each dividend during the unusual growth period:

$$\$1.00 / (1.10) = \$0.91$$

$$\$1.07 / (1.10)^2 = \$0.88$$

$$\$1.18 / (1.10)^3 = \$0.89$$

$$\$1.32 / (1.10)^4 = \$0.90$$

Then, we value the dividends occurring in the stable growth period, starting by calculating the fifth year's dividend:

$$D_5 = \$1.32 * (1.05) = \$1.39$$

We then apply the stable-growth Gordon Growth Model formula to these dividends to determine their value in the fifth year:

$$\$1.39 / (0.10 - 0.05) = \$27.80$$

The present value of these stable growth period dividends are then calculated:

$$\$27.80 / (1.10)^5 = \$17.26$$

Finally, we can add the present values of Sky Limited future dividends to arrive at the current intrinsic value of Sky Limited stock:

$$\$0.91 + \$0.88 + \$0.89 + \$0.90 + \$17.26 = \$20.84$$

The multistage growth model also indicates that Sky Limited stock is undervalued (a \$20.84 intrinsic value, compared with a \$10 trading price).

Lesson 4

Valuation Guidance Resources in India

Question 1

Elucidate the requirements of valuation under different laws of India.

Answer

The requirements of valuation under various laws of India is as under:

Fresh Issue of Shares	Reserve Bank of India- FDI Reserve Bank of India- ODI Income Tax Law Company Law SEBI Law
Transfer of Shares	Reserve Bank of India- FDI Reserve Bank of India- FDI Income Tax Law
Business Combination / Scheme of Arrangement	Company Law SEBI Law Financial Reporting
ESOP / Sweat Equity	Income Tax Law Company Law Financial Reporting

Question 2

Why valuations of Start-up organizations are different from other running organizations?

Answer

The valuation of a start-up organization differs from any other running business entity due to the following reasons:

- i) Business Experience
- ii) Operational skill set
- iii) Strong R&D base
- iv) Dedicated execution team
- v) Experience of affording sudden economic shocks
- vi) A required amount of fund etc.

Question 3

What are the steps that every Start-up needs to embrace irrespective of the valuation approach followed?

Answer

Irrespective of the valuation methods embraced by the start-up, the following points needs to be focused upon:

- i) It should be unbiased.
- ii) There should be relevancy of the valuation method.
- iii) All the aspects of the valuation should be taken into consideration.
- iv) It should be explanatory.
- v) It should serve the purpose of various stakeholders.
- vi) It should assist in formulating decisions.

Question 4

Write a note on cost approach with reference to valuation of a property.

Answer

The cost approach is based on the supposition that no one would pay more or accept less for an existing property than the amount it would cost to buy an equivalent property, in terms of size and location, plus the cost of constructing an equivalent building at present.

Where used for properties that are not new, the cost figure will be written down for age or obsolescence. The cost in such cases will be based on the cost of a simple substitute rather than that of replicating the actual building.

The method is sometimes used as a check measure for a market comparison valuation. The variances that can occur due to demand exceeding supply mean that, on many occasions, cost and Market Value simply cannot equate. Location can give real estate a monopoly in that there is no other substitute parcel of land with the same potential or utility in the same location. In addition, supply and demand push the price (value) of the property above the value of any substitute property. In other situations, over-improvement can mean that cost will considerably exceed Market Value.

Question 5

Write a note on residual method.

Answer

This method is used to assess the Market Value of land, or land and buildings, where there is potential for the land to be put to a higher value use. For instance:

- a) farm land being sold for residential, commercial or industrial development;
- b) existing buildings which could be cleared and the land redeveloped for another use; and
- c) existing buildings which could be converted to another, more valuable use.

The method is sometimes known as the 'development method'. Development in this context refers to the highest and best use, in terms of value, that is physically possible, legally permissible and economically viable. The economic factors that cause a change in land use will usually also cause a change in land value.

This method ignores the time required to actually complete the improvements (structure/building). Therefore in markets such as India, where risk associated with property investments results in the applicable discount rate being relatively high, arriving at Market Value through a residual method may not be appropriate.

Question 6

What is profit method of valuation?

Answer

The profits (or income approach) method is used for income-producing properties that are specifically designed for a particular type of business activity. It is typically also used when either the physical buildings are only sold as part of a business, or the buildings are

constructed solely for that type of business and can only be used for an alternative business after substantial alterations. Profit method is mostly applied in the valuation of hotels; golf courses, and other purpose-built sport and leisure centres; petrol stations and restaurants.

It is also known as the 'receipts and expenses' or 'income and expenditure' method, as the first step is to establish the level of maintainable profits. Valuers in these markets develop an awareness of the normal income and expense associated with a particular business activity.

Question 7

From the following information ascertain the value of a property-

- i) Yield of the Property = 7%**
- ii) Rent of the property = INR 10,00,000 per annum**

Answer

The value of the property = $\text{INR } 10,00,000 / 0.07$
 = INR 14,285,714.

Question 8

From the following information compute Residual Land Value (RLV)

- i) Development opportunity for 1,000m² offices that it is estimated will let for INR 13000 / m² and sell at initial yield of 10%**
- ii) Construction costs are estimated to be INR 800 / m² and the development will take, after a lead-in period of 0.5 years, 1.5 years to complete, plus a void of 0.75 years.**
- iii) The developer is seeking a minimum return on development value of 25%.**

Answer

The value of the site is as under:

<i>Particulars</i>	<i>Amount (INR)</i>
Development Value (DV):	
Total constructed area (m ²)	1,000
Estimated market rent (m ²)	1,300

Estimated annual market rent (INR) – 1000 x INR 1300	13,00,000
Capitalised @ 10% (INR 13,00,000 / 0.10)	
Development Costs (DC)	13,00,000
Less:	
Construction costs (1,000m ² @ INR 800 / m ²)	8,00,000
Profit on construction costs @ 25% of Development Costs	3,250,000
Residual Land Value	8,950,000

Question 9

From the following information compute the residual income of Elite Limited.

- a) Reported Earnings = INR 20,00,000
- b) Financed its capital structure with INR 10,00,000 worth of equity at a required rate of return of 10%.

Answer

Equity Charge = Equity Capital x Cost of Equity

Equity Charge = 10,00,000 x 0.10 = INR 1,00,000

<i>Particulars</i>	<i>Amount (INR)</i>
Net Income	20,00,000
<i>Less : Equity Charge</i>	1,00,000
Residual Income	19,00,000

Question 10

A 20 year building with an expected remaining life of 30 years and a total life of 50 years is depreciated using a straight line basis. The current value of the building is INR 10,00,000. Compute the value of the building after taking into account the depreciation.

Answer

Average annual rate of depreciation would be $100 / 50 = 2\%$ per annum.

Therefore, accumulated depreciation after 20 years would be 20 times 2%, i.e. 40%.

Therefore, the value of the building after taking into account depreciation = $10,00,000 - 4,00,000 = \text{INR } 6,00,000$

Question 11

From the following information compute Gross Residual Value:

Particulars	
Market rent	Rs 2,000 per sq.ft. per year
Building costs	Rs 1,000 per sq.ft.
Development period	2 years
Letting cost	10% of first year's rent
Sale Fee	1% of development value
Professional Fees	5% of all costs
Interest on borrowed money	14%
Market capitalisation rate	10%
Developer's profit	20% of construction cost.

Additional Information:

Consent has been given to construct building on the land area of 6,000 sq.ft. with a gross build area of 6,500 sq.ft.

Answer

Gross Development Value	
Particulars	
Annual Rent	Rs 1,30,00,000
Capitalised at 10%	Rs. 13,00,00,000
Letting fees at 10%	Rs.13,00,000
Sale fee at 1%	Rs. 13,00,000
Total fees	Rs. 26,00,000
Capitalised Rent - Total Fees	Rs. 12,74,00,000
Net Development Value	
Construction costs	Rs.65,00,000
Fees at 3%	Rs. 1,95,000
Interest at 14% for one year*	Rs. 9,37,300
Costs before profit	
Profit on costs at 25%	
Total costs	Rs. 76,32,300
Gross Residual Value (Gross Development Value - Net Development Value)	Rs. 11,97,67,700

Interest amount = Construction costs + Fees = Rs. 65,00,000 + Rs. 1,95,000 = Rs. 9,37,300

Lesson 5

Business Valuation Methods

Question 1

What is Discounted Cash Flow Analysis (DCF)?

Answer

Discounted Cash Flow Analysis (DCF)

Discounted cash flow (DCF) is a valuation method used to estimate the value of an investment based on its future cash flows. DCF analysis finds the present value of expected future cash flows using a discount rate. A present value estimate is then used to evaluate a potential investment. If the value calculated through DCF is higher than the current cost of the investment, the opportunity should be considered.

$$DCF = \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \frac{CF_3}{(1+r)^3} + \dots + \frac{CF_n}{(1+r)^n}$$

Where:

CF = Cash Flow in the Period

i = the interest rate or discount rate

n = the period number

Analyzing the Components of the Formula

1. *Cash Flow (CF) DCF Formula - Cash Flow*

Cash Flow (CF) represents the free cash payments an investor receives in a given period for owning a given security (bonds, shares, etc.)

When building a financial model of a company, the CF is typically what's known as unlevered free cash flow. When valuing a bond, the CF would be interest and or principal payments.

2. *Discount Rate (r) DCF Formula - Discount Rate*

For business valuation purposes, the discount rate is typically a firm's Weighted Average Cost of Capital (WACC). Investors use WACC because it represents the required rate of return that investors expect from investing in the company.

For a bond, the discount rate would be equal to the interest rate on the security.

3. *Period Number (n) DCF Formula - Period*

Each cash flow is associated with a time period. Common time periods are years, quarters or months. The time periods may be equal, or they may be different. If they're different, they're expressed as a decimal.

Question 2

Suppose you're a financial analyst at a company, and you are recommending whether the company should invest in Project A or Project B.

Each of the two projects has been proposed by a lead engineer, but the company can only invest in creating one of them this year, and so your manager wants you to give her advice on which one to invest in. Your company's WACC is 9%, so you'll use 9% as your discount rate.

Here are the two projects:

Project A

Year	Cash Flow (US\$)
0	-3 Million, initial investment
1	2 Million Profit
2	4 Million Profit
3	4 Million Profit
4	2 Million, Profit
5	0 Million, Project Closeout

Project B

Year	Cash Flow (US\$)
0	-3 Million, initial investment
1	0 Million
2	0 Million
3	0 Million
4	0 Million
5	14 Million Profit

Project A starts with an initial investment to make a tech product, followed by a growing income stream, until the product becomes obsolete and is terminated.

Project B starts with an initial investment to make a different product, and makes no sales, but the whole product is expected to be sold in five years to some other company for a large payoff of \$14 million.

Which project, assuming both carry the same risk, should the financial analyst recommend to her manager?

Answer

First, let's analyze the discounted cash flows for Project A:

<i>Year</i>	<i>Actual Cash Flow (US\$)</i>	<i>Discounted Cash Flow (US\$)</i>
1	\$2,000,000	\$1,834,862
2	\$4,000,000	\$3,366,720
3	\$4,000,000	\$3,088,734
4	\$2,000,000	\$1,416,850
5	\$0	\$0

The sum of the discounted cash flows (far right column) is \$9,707,166.

Therefore, the net present value (NPV) of this project is \$6,707,166 after we subtract the \$3 million initial investment.

Now, let's analyze Project B:

<i>Year</i>	<i>Actual Cash Flow (US\$)</i>	<i>Discounted Cash Flow (US\$)</i>
1	\$0	\$0
2	\$0	\$0
3	\$0	\$0
4	\$0	\$0
5	\$14,000,000	\$9,099,039

The sum of the discounted cash flows is \$9,099,039.

Therefore, the net present value (NPV) of this project is \$6,099,039 after we subtract the \$3 million initial investment.

We can conclude that from a financial standpoint, Project A is better, since it has a higher net present value.

Even though Project B will bring in \$14 million in cash over its lifetime and Project A will only bring in \$12 million, Project A is more valuable because of the earlier timing of those expected cash flows.

Thus, you should advise your manager to pick Project A to invest in for this year, if she can only invest in one.

Question 3

Consider two competing investments in computer equipment. Each calls for an initial cash outlay of \$100, and each returns \$200 over the next five years making for a net gain of \$100. But the timing of the returns is different, as shown in the table below (Company A Limited and Company B Limited), and therefore the present value of each year's gains is different. Using a 10% discount rate compute

the Net Present Value (NPV) of A Limited and B Limited and ascertain which company generates better NPV.

Answer

Year	A Limited		B limited	
	Net Cash Flow (US\$)	Present Value (US\$)	Net Cash Flow (US\$)	Present Value (US\$)
Current	- \$100.00	- \$100.00	- \$100.00	- \$100.00
Year 1	\$60.00	\$54.54	\$20.00	\$18.18
Year 2	\$60.00	\$49.59	\$20.00	\$16.52
Year 3	\$40.00	\$30.05	\$40.00	\$30.05
Year 4	\$20.00	\$13.70	\$60.00	\$41.10
Year 5	\$20.00	\$12.42	\$60.00	\$37.27
Total	Net CF _A = \$100.00	NPV _A = \$60.30	Net CF _B = \$100.00	NPV _B = \$43.12

Comparing the two investments, the larger the early returns in Case Alpha lead to a better net present value (NPV) than the later large return in Case Beta. Note especially the Total line for each present value column in the table. This total is the net present value (NPV) of each cash flow stream." When choosing alternative investments or actions, other things being equal, the one with the higher NPV is a better investment.

Question 4

XYZ Corporation sells 170,000 cars a year at a profit of \$1,000 per car. It is considering a proposal to produce 200,000 cars of a new model that can be sold at a profit of \$1,100 per car. Find the incremental cash flows that must be used to value the proposal.

Answer

Incremental Cash Flow = Cash Flow w/ Project - Cash Flow w/o Project = 170,000 = $\$50,000,000 \times 200,000 - \$1,000 \times = \$1,100$

Points to remember

- i) Include all externalities.
 - the effects (positive or negative) of the new project on the firm's existing business.
 - ii) Forget sunk costs.
 - Sunk costs = past and irreversible outflows. Example, expenses already incurred for research of the investment project shall not be taken into account when making the investment decision.
 - iii) Include opportunity costs.
 - Opportunity costs = benefit or cash flow forgone as a result of an action. For example, land under new manufacturing facility could otherwise be sold.
 - iv) Include changes in net working capital.
 - Net Working Capital = Current Assets – Current Liabilities. Example, starting new production requires creation of an inventory of raw materials. The money tied up in the inventory has to be taken into account.
 - v) Taking care of allocated overhead costs.
3. Treat inflation consistently.
 - Discount nominal cash flows using nominal interest rate.
 - Discount real cash flows using real interest rate.
 4. Separate Investment and Financing Decisions.

Question 5

A supermarket is deciding whether to install a sushi vending machine. The vending machine costs \$250,000 in year 0 and has a salvage value of \$0 at the end of 5 years.

Particulars	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Sales		250,000	300,000	300,000	250,000	250,000
Operating Expenses		200,000	200,000	200,000	200,000	200,000

Depreciation		50,000	50,000	50,000	50,000	50,000
Pre-tax Profit		0	50,000	50,000	0	0
After-tax Profit (if tax rate is 0%)		0	50,000	50,000	0	0

Ignoring taxes, what the cash flows of this project?

Answer

<i>Particulars</i>	<i>Year 0</i>	<i>Year 1</i>	<i>Year 2</i>	<i>Year 3</i>	<i>Year 4</i>	<i>Year 5</i>
Investment	-250,000					
Sales		250,000	300,000	300,000	250,000	250,000
Operating Expenses		200,000	200,000	200,000	200,000	200,000
Cash Flows	-250,000	50,000	100,000	100,000	50,000	50,000

Note:

1. All the figures are in US\$.
2. Formula for calculating Cash Flows

Total Cash Flow = Cash Flow from Investment in Plant and Equipment + Cash Flow from Investments in Working Capital + Cash Flow from Operations

Working Capital = Investments in Inventory and Accounts Receivable.

It is to be noted that cash flow is measured by the change in working capital rather than the level of working capital.

3. Cash Flow from Operations = Revenues – Cash Expenses – Tax Paid

= After Tax Profit + Depreciation

= (Revenues – Cash Expenses) x (1- Tax Rate) + (Depreciation x Tax Rate)

Note: Three equivalent ways to calculate cash flows from operations.

Question 6

A project generates revenues of \$1,000, has cash expenses of \$600, and depreciation charges of \$200 in a particular year. The firm's tax rate is 35%. What is the firm's net income?

Answer

Profit Before Taxes = revenues - cash expenses - depreciation = \$200

Taxes = profit before taxes * tax rate = \$70

Profit After Taxes = profit before taxes - taxes = \$130

Cash Flow from Operations

First Method

Revenues - Cash expenses - Taxes paid

$$= \$1000 - \$600 - \$70 = \$330$$

Second Method

After-tax profit + Depreciation

$$= \$130 + \$200 = \$330$$

Third Method

(Revenues - Cash expenses) x (1 - Tax rate) + (Depreciation x tax rate)

$$= (\$1000 - \$600) \times (1 - .35) + (\$200 \times .35) = \$330$$

Question 7

Assume a project costs INR 1200 Crore, has a life time of 10 years, and SV=INR 200 Crore at the end of 10 years. The company uses straight-line depreciation and the corporate tax rate is 50%. A new machine generates revenue of INR 400 Crore yearly for the next ten years and has expenses of INR 150 Crore yearly for the next ten years. The cost of capital is 10%.

Answer

Depreciation = INR 1200 Crore / 10 years = INR 120 Crore yearly.

$$CF_{1-10} = (R-E)(1-t) + D(t)$$

$$= (400 - 150) (1-.5) + 120(.5)$$

$$= 125+60= \text{INR } 185 \text{ Crore}$$

$$CF_{t=10} = \text{Recovery of SV after tax} = 200(1-.5) = \text{INR } 100 \text{ Crore}$$

$$\text{PV of cash inflow} = 185[\text{PVIFA}(10\%, 10 \text{ y})] + 100[\text{PVIF}(10\%, 10\text{y})]$$

$$= 185 (6.145) + 100(.386)$$

$$= 1136.825 + 38.6 = \text{INR } 1175.4 \text{ Crore}$$

$$\text{NPV} = 1175.4 - 1200 = \text{INR } -24.6 \text{ Crore}$$

$$\text{Pay Back} = 1200/185 = 6.5 \text{ years}$$

$$\text{IRR} = 185[\text{PVIFA}(10\text{y}, r\%)] + 100[\text{PVIF}(10\text{y}, r\%)] = 1200$$

IRR must be less than 10%

Lets try 9%:

$$185 (6.418) + 100(.4224) = 1187.3 + 42.3 = \text{INR } 1229.6 \text{ Crore}$$

IRR is between 9 and 10%.

Question 8

ABC purchase a machine 5 years ago at INR 7500 Crore expected lifetime of 15 years (n=15) and salvage value of zero (SV=0) ; The company uses straight line depreciation. Division Manager reports a new machine for INR 12,000 Crore, n=10 which will increase sales from \$60,000 to \$70,000 per year and increase operating expenses from INR 10,000 Crore to INR 17,000 Crore per year . SV = INR 2000 Crore at end of 10 yrs, old machine could be sold today for INR 1000 Crore . Corporate tax rate of 34%. Corporate cost of capital is 10%. New machine required additional net working capital of INR 1000 Crore at beginning of year zero. Should the company replace the existing machine with the new one?

Answer

$$\text{CF}_t = 0$$

- | | | |
|--------------------------------|---|---------------|
| 1. Cost of new machine | = | - 12000 Crore |
| 2. Selling old machine | = | 1000 Crore |
| 3. NWK | = | -1000 Crore |
| 4. Tax effect (5000-1000)(.34) | = | +1360 Crore |

-10640

Depreciation (Old Machinery) = $7500 / 15 = \text{INR } 500$ Crore yearly

Depreciation (New Machinery) = $12000 / 10 = \text{INR } 1200$ Crore yearly

Book value = $10 \times 500 = 5000$

or

Accumulated Depreciation = $5 \times 500 = \text{INR } 2500$ Crore.

Book Value = $7500 - 2500 = \text{INR } 5000$ Crore.

After Depreciation = $1200 - 500 = \text{INR } 700$ Crore.

Net cash flow 1-10

$(3000)(1-.34) + 700(.34) = 1980 + 238 = \text{INR } 2,218$ Crore yearly

$t = 10$

Recovery SV = $(2000 (1 - 0.34)) = \text{INR } 1320$ Crore

Recovery WK = $\text{INR } 1000$ Crore

 $\text{INR } 2320$ Crore

$PV = 2218(6.1446) + 2320(.3855) = \text{INR } 14,523$ Crore

$NPV = 14523 - 10640 = \text{INE } 3883$ Crore

Payback = $10640 / 2218 = 4.8$ Years

$IRR = \Sigma 2218 / (1+r)^t + 2320 / (1 + r)^{10} - 10640 = 0$

Question 9

Suppose the S Co. is planning to modernize its production facilities by replacement of its old fully depreciable machine. Two new models which are mutually exclusive are available.

End of Year	Change Cash Flow A	After tax B
0	-36100	-57500
1	9700	9500
2	9700	9500
3	9700	9500
4	9700	9500

5	9700	9500
6		9500
7		9500
8		9500
9		9500
10		9500

Cost of capital = 10%

Assume everything remains constant.

Most common use:

Find PV of each project assuming continuous replacement chains

- 1. Find NPV over its original life.**
- 2. Find annuity**
- 3. Assume infinite replacement this its perpetuity value is $PV=A / K$**

Answer

$$NPA_A = 671$$

$$NPA_B = 874$$

$$671 = A [PVIFA (10\%, 5y)]$$

$$A = 671 / 3.7908 = 177.01$$

$$874 = B [PVIFA (10\%, 10y)]$$

$$B = 874 / 6.1446 = 142.24$$

$$NPV_A = 177.01 / .10 = \text{INR } 1770.10 \text{ Crore}$$

$$NPV_B = 142.24 / .10 = 1422.40 \text{ Crore}$$

Problems of Dividend Discount Model

Question 10

Assume Company X paid a dividend of \$1.80 per share this year. The company expects dividends to grow in perpetuity at 5 percent per year, and the company's

cost of equity capital is 7%. The \$1.80 dividend is the dividend for this year and needs to be adjusted by the growth rate to find D1, the estimated dividend for next year.

Answer

$D_1 = D_0 \times (1 + g) = \$1.80 \times (1 + 5\%) = \1.89 . Next, using the GGM, Company X's price per share is found to be $D(1) / (r - g) = \$1.89 / (7\% - 5\%) = \94.50 .

Question 11

For example, Company X has paid a dividend of Rs. 10 per share last year (D) and its dividend is expected to grow at 5 % every year. If an investor's expected rate of return from Company X share is 7 %, what will be the market price of the share as per the dividend discount model?

Answer

$D_0 = 10$; $g = 5\%$ or 0.05; $r = 7\%$ or 0.07

$D_1 = D_0 \times (1 + g) = 10 \times 1.05 = 10.50$

$$P_0 = \frac{D_1}{(r - g)} = \frac{10.50}{0.07 - 0.05} = 525$$

The market price of Company X share as per the dividend discount model with constant growth rate is Rs. 525.

Estimate the intrinsic value of a stock which is currently trading at \$35 based on the following data:

- Required rate of return (i.e. cost of equity) is 10%.
- Current dividend per share is \$2.
- Dividend growth rate forever is 5%.

Dividend per share at the end of Year 1 = Current dividend per share * (1 + growth rate) = $\$2 \times (1 + 5\%) = \2.1

Intrinsic value = $\$2.1 / (10\% - 5\%) = \$2.1 / 5\% = \$42$

Since the intrinsic value (\$42) of the stock is higher than its current price (\$35), it is expected to generate positive return and hence it is a good investment.

Question 12

(ABC Ltd.) that has paid a dividend of \$ 4 this year. Assuming a higher growth for next 3 years at 15% and a stable growth of 4% thereafter; let us calculate the value using a two-stage dividend discount model.

Answer

We need to do an adjustment here to arrive at the dividend amount that needs to be discounted after adjusting for the different rates in different stages. Continuing with the above example and assuming a required rate of return of 10%, we can calculate the value of the stock/firm as follows:

Current Dividend = \$ 4.00

Dividend after 1st year will be = \$ 4.60 (\$ 4 x 1.15 – growing at 15 %)

Dividend after 2nd year will be = \$ 5.29 (\$ 4.60 x 1.15 – growing at 15%)

Dividend after 3rd year will be = \$ 6.0835 (\$ 5.29 x 1.15 – growing at 15%)

Since the growth in the first three years was 15% the value of dividend declared after 3 years will be \$ 6.0835 as calculated above

The second stage has a growth rate of 4% and hence the dividend value after 4th year will be \$ 6.0835 x 1.04 = \$ 6.3268. Assuming this as the constant dividend for the rest of the company' life of the company, we arrive at the present values as follows:

$$P_0 = D / (i - g)$$

Where, P_0 = Value of the stock/equity

D = Per-Share dividend paid by the company at the end of each year

i = Discount rate, which is the required rate of return* which an investor wants for the risk associated with the investment in equity as against investment in a risk-free security.

g = Growth rate

Now using the formula for calculating the value of the firm, we can arrive at the present value at the end of 3rd year for all future cash flows as follows:

$$\text{Value} = \$ 6.3268 / (10\% - 4\%) = \$ 105.45.$$

Table Showing Present Values

Currency in \$US

<i>Year</i>	<i>Cash Flow</i>	<i>Discount Rate</i>	<i>Present Value</i>
1	4.6	10%	4.18
2	5.29	10%	4.37
3	6.0835	10%	4.57
4	105.45	10%	79.23
Total Present Value			92.35

Present value calculations in the above table are arrived at as follows:

$$\text{\$ } 4.18 = \text{\$ } 4.60 / (1 + 10\%)^1$$

$$\text{\$ } 4.37 = \text{\$ } 5.29 / (1 + 10\%)^2$$

$$\text{\$ } 4.57 = \text{\$ } 6.0835 / (1 + 10\%)^3$$

$$\text{\$ } 79.23 = \text{\$ } 105.45 / (1 + 10\%)^4$$

The sum of all the present values will be the value of the firm which in our example comes to \$92.35.

Question13

Assume company ABC gives a constant annual dividend of Rs 1 per share till perpetuity (lasting forever). The required rate of return on the stock is 5%. Then what should be the purchasing price of the stock of company ABC?

Answer

Here, Expected return/ required rate of return (r) = 5%

Dividend (Div) = Rs 1 = Constant

Value of stock (P) = Div/r = 1/0.05 = Rs 20.

Therefore, the purchasing price of the stock ABC should be less than Rs 20 to get the required rate of return of 5% per annum.

Question 14

Assume a company QPR has a constant dividend growth rate of 4% per annum for perpetuity. This year the company has given a dividend of Rs 5 per share. Further, the required rate of return for the company is 10% per annum. Then, what should be the purchase price for a share of company QPR?

Answer

Div = Dividend at zeroth year = Rs 5

r = required rate of return = 10%

g = constant growth rate of dividends till perpetuity = 4%

Div₁ = Dividend per share expected to be received at the end of first year = $Div (1+g) = 5 (1+0.04) = Rs 5.2$

Value of share (P) = $Div_1 / (r-g) = 5.2 / (0.1 - 0.04) = 5.2 / 0.06 = Rs 86.67$

Question 15

From the following information of three groceries stores, i.e. Best Foods Limited, Super Foods Limited and Unique Foods Limited, compute the market value of the business.

Company	P/E Ratio
Best Foods Limited	10.8
Super Foods Limited	9.9
Unique Foods Limited	10.0

The sum total of the post tax earnings of the above mentioned companies are: INR 10,00,000.

Answer

The average P/E Ratio of Best Foods Limited, Super Foods Limited and Unique Foods Limited = $10.8 + 9.9 + 10.0 / 3 = 10.2$

Since post tax earnings of the above mentioned companies are INR 10,00,000, its market value would be estimated at $10.2 \times INR 10,00,000 = INR 1,02,00,00$

Question 16

Infinity Limited is intending to acquire Global Limited by merger and the following information is available in respect of both the companies

Particulars	Infinity Limited	Global Limited
No. of equity shares	6,00,000	2,00,000
Profit after tax	INR 20,00,000	INR 10,00,000
Market Price Per Share	INR 20	INR 15

Compute the following:

- i) EPS of both the companies
- ii) Exchange Ratio

Answer

- i) **EPS of both the companies**

$$\text{EPS} = \frac{\text{Profit available to equity shareholders}}{\text{No. of equity shares}}$$

$$\text{EPS of Infinity Limited} = 20,00,000 / 6,00,000 = \text{INR } 3.33$$

$$\text{EPS of Global Limited} = 10,00,000 / 2,00,000 = \text{INR } 5.00$$

- ii) **Exchange Ratio**

$$\text{Exchange ratio on the basis of EPS} = 5 / 3.33 = 1.5$$

Lesson 6

Steps to Establish the Business Worth

Question 1

Give the meaning of business valuation and mention the steps involved in establishing business worth.

Answer

Business valuation is a process and a set of procedures used to estimate the economic value of an owners interest in a business. Valuation is used by financial market participants to determine the price they are willing to pay or receive to effect a sale of a business.

Business Valuation gives the ability to owners to create a practical timeline for the potential sale of business and for other exit strategies. It provides a road map about how to adjust their short-term or long-term business goals and when to pull back in certain sectors or push forward in another.

The steps involved in establishing business worth are as under:

1. Planning and preparation
2. Adjusting the financial statements
3. Choosing the business valuation methods
4. Applying the selected valuation methods
5. Reaching the business value conclusion

Question 2

What are the significant facts that may affect the value of business?

Answer

The key facts that may exert an influence on the value of business are as under:

- 1) Well-documented financial statements and tax returns are essential to demonstrate the business earning power.

- 2) Steady, above industry norm earnings tend to translate into higher business value.
- 3) Detailed written business operating procedures make it easy to understand how the business works, who does what, and what skills are required.
- 4) Since it is easier to take over a well-organized business, there is higher business buyer interest and competition among them tends to increase the business selling price.
- 5) A good marketing plan provides the essential inputs into the future business earnings projections. And accurate earnings projections are key to establishing the business value based on its income.
- 6) A look at the customer list quickly shows where the business gets its revenues. Businesses that do not rely on a few large customers for most of their business sales tend to command a higher selling price.

Question 3

If a publicly-traded company has a beta of 1.7 and the riskless rate for one-year Treasury bills is 4.5% and the expected return for the market is 12.5%. What is the company's capitalization rate? Suppose the company has current earnings of \$5.20 per share that have been growing at a rate of 6.5%. What should be the company's share price using a capitalization of earnings approach?

Answer

Using the CAPM straight-line formula, the capitalization rate (the *required return* an investor would demand to invest in the company) is

$$4.8\% + 1.7*(12.5\% - 4.5\%) =$$

$$4.8\% + 13.6\% = 18.4\%.$$

Applying the Gordon model, the price should be

$$[\$5.20*(1+.065) / (.184 - .065) =$$

$$\$5.54 / .119 = \$46.54$$

Question 4

Consider the valuation of the two companies if we assume that Company A's earnings of \$200,000 will continue to grow at a 15% rate for the next five years and then level off, and that Company B's earnings will be \$148,000, but will grow at a 33% rate for the next five years before leveling off. Assume a discount rate of 20% -- to reflect the riskiness of both companies.

Answer

Year	Company A	Company B
6 (estimate)	\$230,000	\$196,840
7 (estimate)	\$264,500	\$261,797
8 (estimate)	\$304,175	\$348,190
9 (estimate)	\$349,801	\$463,093
10 (estimate)	\$402,271	\$615,914
11-on (estimate)	\$462,612	\$819,165
PV of Years 6-10	\$881,731	\$1,018,186
PV of Years 11-on perpetuity	\$905,398	\$1,603,224
TOTAL	\$1,787,130	\$2,621,410

Question 5

From the following information compute the estimated value of the building-

Sale value of the building = INR 20,00,000

Net operating income = INR 2,00,000

Assuming net operating income to be INR 1,00,000, and capitalization rate to be 10%, calculate the revised estimated value of the building

Answer

First, we need to calculate the capitalization rate.

Capitalization rate = Net Operating Income / Sale value of the building

$$= 2,00,000 / 20,00,000 \times 100 = 10\%$$

Estimated value of the building = Net Operating Income / Capitalization rate

$$= 2,00,000 / 0.10 = \text{INR } 20,00,000$$

Now presuming net operating income to be INR 1,00,000, the revised estimated value of the building = $1,00,000 / 0.10 = \text{INR } 10,00,000$

Question 6

Give the details of the steps involved in determining the business worth.

Answer

The following steps need to be adhered to for establishing the business worth.

- i) ***Planning and preparation:*** Just as running a successful business takes planning and disciplined effort, effective business valuation requires organization and attention to detail. The two key starting points toward establishing business worth are:
 - a) Determining the need for business valuation.
 - b) Assembling all the required information.
- ii) ***Adjusting the historical financial statements:*** Business valuation is largely an economic analysis exercise. Not surprisingly, the company's financial information provides key inputs into the process. The two main financial statements you need for business valuation are the income statement and the balance sheet. To do a proper job of valuing a small business, one should have 3–5 years of historic income statements and balance sheets available.

Many small business owners manage their businesses to reduce taxable income. Yet when it comes to valuing the business, an accurate demonstration of the full business earning potential is essential.

Since business owners have considerable discretion in how they use the business assets as well as what income and expenses they recognize, the company's historical financial statements may need to be recast or adjusted.

The idea is to construct an accurate relationship between the required business assets, expenses and the levels of business income these assets are capable of producing. In general, both the balance sheet and the income statement require recasting in order to generate inputs for use in business valuation. Here are the most common adjustments:

- Recasting the Income Statement
- Recasting the Balance Sheet

The recasting of income statement and balance sheet have been already discussed in Question 4.

Question 7

From the following information compute the following:

Approach	Valuation Method	Value (INR)	Weight
Market	Comparative business sales	10,00,000	30%
Income	Discounted Cash Flow	15,00,000	20%
Income	Multiple of Discretionary Earnings	20,00,000	10%
Asset	Asset Accumulation	25,00,000	40%

Additional Information:

Discount rate is 30% and the forecast suggests that the business profits would be growing at a steady rate of 5% per year.

- i) Calculate business value
- ii) Capitalisation rate

Answer

i) Business Value

Approach	Valuation Method	Value (INR)	Weight	Weighted Value
Market	Comparative business sales	10,00,000	30%	3,00,000
Income	Discounted Cash Flow	15,00,000	20%	3,00,000
Income	Multiple of Discretionary Earnings	20,00,000	10%	2,00,000
Asset	Asset Accumulation	25,00,000	40%	10,00,000

Thus, business value is the sum total of weighted values = INR 18,00,000

ii) Capitalisation rate

Capitalisation rate = $30 - 5 = 25\%$

Question 8

What are the points that need to be taken into consideration while valuing a business using market size?

Answer

The following format explains the points that need to be taken into consideration while valuing a business using market size.

Industry Based Top-Down Valuation	
Total Customers (million)	XXXX
Monthly Revenue Per Customer	INR XXXX
Annual Revenue Per Customer (Monthly Revenue Per Customer x 12 months)	INR XXXX
Total Addressable Market (INR Million)	XXXX
Operating Margin	Given Percentage
Tax Rate	Given Percentage
Total Addressable Profit (INR Million)	XXXX
Long-term Growth Rate	Given Percentage
Discount Rate	Given Percentage
Cash Flow Multiple	Given Value

Revenue Multiple	Given Value
Total Addressable Value (INR Million)	XXXX
Market Share	Given Percentage
Company Value (INR Million)	XXXX

Important points to remember while undertaking calculation of business value using market size.

1. Estimate total addressable revenue opportunity: Total Units x Revenue per Unit
2. Estimate the industry's after-tax profits: Revenue x Margin x (1-Tax Rate)
3. Apply a valuation multiple on the profits to estimate the total addressable value of the market: $(1 + \text{Growth}) / (\text{Discount Rate} - \text{Growth})$
4. Alternatively a revenue multiple could be applied to estimate the total addressable value of the market
5. Apply a current – or anticipated – market share to estimate the value of the business.

Lesson 7

Valuation of Tangibles

Question 1

What are the significant points that a Written Valuation Report needs to take into consideration?

Answer

Written Valuation Reports must adequately and effectively summarise the appraisal / assessment procedures, the methodology adopted and must certainly comprise of:

- a) A background of the Company / Asset under valuation.
- b) The chosen valuation method, it's appropriateness to the Company / Asset and the purpose and the circumstance at hand.
- c) The methodology in detail, referring to the source data and information.
- d) The reliance placed on any other business document.
- e) Qualitative assessment.
- f) Quantitative assessment.
- g) The limitations or constraints the appraisal process went through and the extent to which this may or may not have impacted the valuation.
- h) The certificate of valuation.
- i) The credentials and the qualifications of the valuer.

Question 2

From the following information compute FCInv (Fixed Capital Investment) of Acme Limited.

Selected Financial Data

Particulars	2018 (INR)	2017 (INR)
Gross PP & E (Property, Plant and Equipment)	500,000	415,000
Accumulated Depreciation	150,000	120,000
Net PP & E (Property, Plant and Equipment)	350,000	295,000

First Scenario : There were no sales of PP & E during the year; depreciation expense was INR 30,000

Second Scenario : The company reported capital expenditure of INR 140,000, long-term sales of INR 60,000 and depreciation expense of INR 85,000. The long-term assets sold were fully depreciated.

Answer

Calculate FCInv for the above mentioned scenarios.

First Scenario

FCInv = Capital Expenditures = Ending Gross PP & E – Beginning Gross PP & E

FCInv = 500,000 – 415,000 = INR 85,000

Second Scenario

Revised FCInv = Capital Expenditures – Proceeds from Sales of Long-term Assets

Revised FCInv = 140,000 – 60,000 = INR 80,000

Question 3

From the following information of Development Limited compute free cash flow to the firm (FCFF) and free cash flow to the equity (FCFE) for 2019. The income statement and balance sheet of 2019, as well as income statement, balance sheet of 2018 is also provided. It is assumed that there are no sales of long-term assets in 2018.

Income Statement

Particulars	2019 Forecast	2018 Actual
Sales	300,000	250,000
Cost of Goods Sold	120,000	100,000
Gross Profit	180,000	150,000
SG & A	35,000	30,000
EBITDA	145,000	120,000
Depreciation	50,000	40,000
EBIT	95,000	80,000
Interest Expense	15,000	10,000
Pre-tax Earnings	80,000	70,000
Taxes (30%)	24,000	21,000
Net Income	56,000	49,000

Balance Sheet

Liabilities	2019 Forecast	2018 Actual
Accounts payable	60,000	60,000
Short-term debt	60,000	30,000
Current Liabilities	120,000	90,000
Long-term debt	342,000	300,000
Common stock	150,000	150,000
Retained earnings	258,000	90,000
Total Liabilities and Equity	870,000	630,000

Assets	2019 Forecast	2018 Actual
Cash	30,000	15,000
Accounts receivable	90,000	45,000
Inventory	120,000	90,000
Current Assets	240,000	150,000
Gross PPE	12,00,000	900,000
Accumulated Depreciation	570,000	420,000
Total Assets	870,000	630,000

Answer

FCFF Formula = EBIT x (1-tax) + Depreciation & Amortisation + Changes in Working Capital – Capital Expenditure.

EBIT = 95,000, Tax Rate = 30%

EBIT x (1 – Tax) = 95,000 (1 – 0.30) = INR 66,500

Depreciation = INR 150,000

Changes in Working Capital

Working Capital	2019	2018	Cash Impact
Account Receivables	90,000	45,000	(45,000)
Inventory	120,000	90,000	(30,000)
Accounts Payable	60,000	60,000	-

Capital Expenditure = Change in Gross Property Plant and Equipment (Gross PPE) = 12,00,000 – 9,00,000 = INR 3,00,000.

FCFF calculation = 66,500 + 150,000 – 3,00,000 = INR - 83,500

Question 4

Compute the Net Operating Income of the property and value of the property from the following information:

- i) Number of rooms in the apartment = 100
- ii) Rent per apartment = INR 7,00,000 per month.
- iii) Operating expenses, including property taxes, insurance, maintenance, and advertising are typically @ 35% of EGI (Effective Gross Income).
- iv) Property management expenses are 15% of EGI.
- v) Other incomes generated from parking are expected to be INR 30,000 per room per month.
- vi) Currently 80 rooms have been rented.
- vii) Expected return from the property = 10% p.a.

Answer

<i>Particulars</i>	<i>Amount (INR)</i>
Rental Income @ full occupancy (INR 7,00,000 x 100 rooms)	7,00,00,000
Add: Other Incomes (INR 30,000 x 100 rooms)	30,00,000
Potential Gross Income (PGI)	7,30,00,000
Less: Vacancy and Collection Loss	1,46,00,000
Effective Gross Income (EGI)	5,84,00,000
Less: Property Management Expenses (15%)	87,60,000
Operating Expenses (35%)	2,04,40,000
Net Operating Income (NOI)	2,92,00,000

Since investors expect a return of 10% p.a. from the property, the value of the property =
NOI / Capitalisation Rate

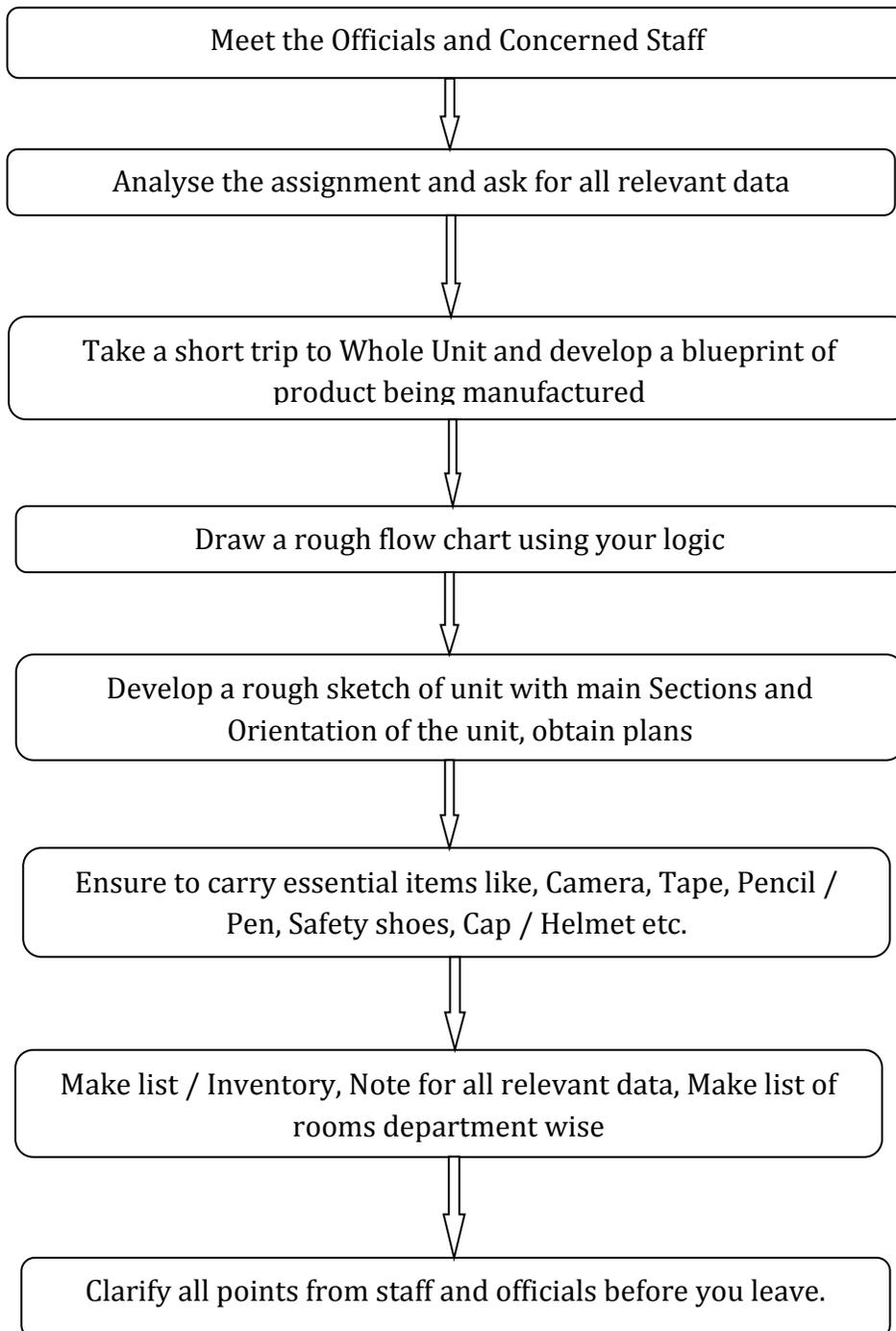
$$= 2,92,00,000 / 10\% = \text{INR } 29,20,00,000$$

Question 5

Enumerate the steps involved in the valuation of a tangible asset with the help of a flowchart.

Answer

Flowchart for Valuation Process



Question 6

What is Recoverable Value?

Answer

The recoverable amount of an asset is the greater of its 'fair value less costs to sell' and its 'value in use'. To measure impairment, the asset's carrying amount is compared with its recoverable amount.

The recoverable amount is determined for individual assets. However, if an asset does not generate cash inflows that are largely independent of those from other assets, the recoverable amount is determined for the CGU to which the asset belongs.

Question 7

What do you understand by Value in Use (VIU)?

Answer

Value in use (VIU) is the present value of the future cash flows expected to be derived from an asset or a CGU.

A VIU calculation includes:

- a) Cash flow projections.
- b) An estimate of the future cash flows that the entity expects to derive from the asset.
- c) Expectations about possible variations in the amount or timing of those future cash flows.
- d) An appropriate discount rate that reflects current market assessments of the time value of money and risks specific to the asset for which the future cash flow estimates have not been adjusted.
- e) The price for bearing the uncertainty inherent in the asset which can be reflected in either the cash flow estimates or the discount rate.

Question 8

What is the eye-catching fact about ship valuation?

Answer

In almost all cases the ship valuer does not inspect the ship. It is seldom, indeed, that he even sees a recent surveyor's report. If instructed to do so, the valuer will be able to arrange for the vessel to be surveyed, and the resultant report can greatly enhance the accuracy of a valuation, bringing to light information which would not otherwise be available to the valuer. Unless stated otherwise, however, it is the custom of the trade that valuation certificates are issued on the assumption that vessels are in good working order and free of charter. The actual condition of the vessel is usually ignored unless specific instructions are given to the valuer that they should be taken into account, and attention drawn to particular circumstances (which may be either defects, e.g. unrepaired damage, or enhancements, e.g. having undergone a formal Life Extension certified by a classification society).

Most valuers, hence, include wording in their certificates along the following lines:

“assuming the vessel to be in good working order and in the sound seagoing condition in hull and machinery which is to be expected of a vessel of its age, size and type, undamaged, fully equipped, with class fully maintained and with valid certificates, free from all conditions, charter free”.

Although they take account of when the next special survey and/or drydocking is due, which affects how long the vessel can be traded internationally before the cost of passing surveys is next incurred, valuers do not inspect classification society records nor do they usually have access to reports on such records.

Lesson 8

Valuation of Intangibles

Question 1

What do you understand by Domain Name?

Answer

A domain name is your website name. A domain name is the address where Internet users can access your website. A domain name is used for finding and identifying computers on the Internet. Computers use IP addresses, which are a series of number. However, it is difficult for humans to remember strings of numbers. Because of this, domain names were developed and used to identify entities on the Internet rather than using IP addresses.

A domain name can be any combination of letters and numbers, and it can be used in combination of the various domain name extensions, such as .com, .net and more.

The domain name must be registered before you can use it. Every domain name is unique. No two websites can have the same domain name. If someone types in www.yourdomain.com, it will go to your website and no one else's.

Different types of domains

- a) **TLD - Top Level Domains:** These are at the highest level in the DNS structure of the Internet. There are several different types of TLD's, being:
 - i) ccTLD - country code Top Level Domains : Two letter domains established for geographical locations; for example; .au signifies Australia. When originally designated, usually only residents of a country could register their corresponding ccTLD; but over the years quite a few countries have allowed parties outside their shores to register website names. An example of this is Tuvalu (.tv).

In the case of .au domain names, strict rules are still in place (and that's a good thing). For example, .com.au registrants must still be Australians or have registered business interests in Australia. The registration eligibility criteria for au names has meant .au is still strongly associated with Australia

and has fostered a great deal of trust and confidence in local and even overseas online shoppers.

- ii) *gTLD - generic Top Level Domain*: The best known generic TLD's include .com, .net, .biz, .org and .info - these can be registered by anyone, anywhere in the world. However, some of the new gTLD's more recently released have various restrictions.
- iii) *IDN ccTLD - internationalised country code top-level domains*: A top-level name with a specially encoded format that allows it to be displayed in a non-Latin character set (i.e. special characters).

Original top-level domains-

Name	Entity	Administrator
.int	international organizations	Internet Assigned Numbers Authority
.edu	education	Educause (via Verisign)
.gov	U.S. national and state government agencies	General Services Administration (via Verisign)
.mil	U.S. military	United States Department of Defense

- b) **Second Level**: Directly below a TLD in the DNS hierarchy, e.g. .com.au
- c) **Third level**: Directly below a second level in the DNS hierarchy. e.g. domainregistration.com.au The difference between second and third level can be a little confusing. For example, hotmail.com is considered a second level domain, but hotmail.com.au would be classed as a third level.
- d) **Sub domain**: Part of a higher ranked domain name in DNS hierarchy; e.g. example.Domain registration. com.au. Some services offer subdomain "registration" - but this usually isn't ideal for businesses and should probably be avoided for establishing a commercial website as the registrant of the upper hierarchy name has control over the address. Having your own name can also help with credibility.

Question 2

With the help of a case study explain the concept of Patent Licensing?

Answer

Case Study of the Patent License Agreement between Oppo and Ericsson

Ericsson is a company that mainly deals with communication service. The company portfolio consists of Network, Digital Services, Managed Services and Emerging business. It helps its customers to be digitalised which will increase their efficiency.

Oppo being a global leading smart device brand, has been relentlessly working towards in the pursuit of aesthetic satisfaction and innovative technology. It has total number of 40,000 employees, and it is working in 30+ countries and regions and has 6 research institutions and 4 R&D centers worldwide.

Recently they entered into a Global Patent license agreement. This agreement covers cross license covering 2G, 3G and 4G patent portfolios from both the companies. Besides, cross-license, the agreement also includes business cooperation on a number of projects related to 5G such as device testing, customer engagements.

Conclusion

Though various market players, multi-national companies, research institutions and universities invest a huge R&D to invent new product and get it patented in an expectation to generate more and more revenue out of the patented product. The above case study of 'Oppo and Ericsson' is clearly a business agreement and the sharing of the patented invention between the two companies has the sole purpose to generate money only by this sharing. Both companies are major players in the market and they invest a huge amount in their R&D for creating new technologies, so if any other person uses their technology and if it gets leaked then it will be a heavy loss for the companies.

But there are some market players who offer free license of their patented product for the use of mass public. One such entity is billionaire Elon Musk who provided free license of all the patented products of Tesla to be used by anyone who has good faith. He had quoted that, "No patent against people who use our tech in good faith". He said that the inventions were patented to be protected from the other big car manufacturers, but by doing so the ultimate goal of Tesla which is to lessen down the global warming by emitting zero Carbon Dioxide in transport sector. But 100 million fossil fuel powered internal combustion engine are being produced it was impossible to achieve its goal. Though there are many companies from China, Japan and Germany who are producing e-vehicles but they are very costly and not affordable by people to use on day to day basis. So, by free licensing these patents he is giving a chance to all the car manufacturers to use his technology more efficiently to create affordable e-vehicles which has more driving range and can be used by mass people.

If we consider the scenario in India, companies like Tata, Mahindra are trying to produce e-vehicles but they are not able to capture the mass market. However, some companies such as Ether a Bengaluru based start-up has come up with a proper e-scooter though the price of it is on the high-end side which is inaccessible by most of the people. Even the

Government of India has declared that all vehicles on Indian roads to be e-vehicles. Recently, the Kerela Government had declared that all its Government vehicles and mass transport buses will also be e-vehicles. Thus, it is need of hour to convert our transport medium through e-vehicles and abandon the internal combustion engines. So, this free license of the Tesla will serve the public at large and help them improving the e-vehicles more and more.

We can say that if any invention which will help the world to be a better place and improve the life-quality of people then it should be free licensed for more development condition it should be done in good faith having no malice intention to infringe the patent.

Question 3

From the following information compute the value of goodwill on the basis of 3 years purchase of super profits of the business calculated on the average profit of the last four years.

- i) Capital employed - INR 60,000**
- ii) Trading Profits (after tax)**
 - 2015 - INR 12,000**
 - 2016 - INR 15,000**
 - 2017- INR 2000 (Loss); and**
 - 2018 - INR 20,000**
- iii) Rate of interest expected from capital with reference to the risk involved in the business is 10%**
- iv) Remuneration from alternative employment of the proprietor (if not engaged in business) INR 4,000 p.a.**

Answer

- i) Calculation of Average Profits

Year	Profits (INR)
2015	12,000
2016	15,000

2017	(2000)
2018	20,000

Average Profit = 12000 + 15000 - 2000 + 20000 = 45,000 / 4 = INR 11,250

ii) Calculation of Super Profits

Particulars	Amount (INR)
Average Profit	11,250
<i>Less : Remuneration</i>	4,000
Average Trading Profit	7,250
<i>Less : Normal return @ 10% on capital employed</i>	6,000
Super Profits	1,250

Goodwill = 3 years Purchase of Super Profits = 3 x 1,250 = INR 3,750

Question 4

Based on the above information compute the value goodwill taking into account the following weights-

Year	Profits (INR)	Weights
2015	12,000	1

2016	15,000	2
2017	(2000)	3
2018	20,000	4

Answer

<i>Year</i>	<i>Profit (INR)</i>	<i>Adjusted Profit (INR)</i>		<i>Weight</i>	<i>Product</i>
2015	12,000	12,000 - 4000	8,000	1	8,000
2016	15,000	15,000 - 4000	11,000	2	22,000
2017	(2000)	[(2000) - 4000]	(6,000)	3	(18,000)
2018	20,000	20,000 - 4000	16,000	4	64,000
				Total	76,000

Average Profit = 76,000 /10 = 7,600

Normal Profit = 6,000

Super Profit = INR 7,600 - 6,000 = 1,600

Therefore, Goodwill = 1,600 x 3 = INR 4,800

Question 5

What do you understand by Service Contracts?

Answer

Service Contracts are agreements between a customer or client and a person or company who will be providing services. For example, a Service Contract might be used to define a work-agreement between a contractor and a homeowner. Or, a contract could be used between a business and a freelance web designer.

Most often Service Contracts include details such as deadlines and payment agreements. Contracts also usually define the work to be performed and what process needs to take

place if changes need to be made. These are legal agreements and can be challenged if needed.

The components of a service contracts are as under:

- Contact information for both parties
- Description of service and scope of work
- Compliance and insurance requirements
- Payment terms
- Confidentiality agreements
- Indemnification
- Warranty
- Default terms
- Remedies and dispute resolution

There are many types of service contracts defined by what kind of work is being done. For example, a general service agreement defines the terms of work between a contractor offering services, such as a plumber, a gardener or a repair person, and a property owner, business owner or other client. A consultant service agreement is a contract between a consultant and a client identifying the terms and conditions of the consulting work. When an artist, such as a graphic designer or mural artist, enters into a contract with a business owner or other client, an artist service agreement is necessary. Accountants and bookkeepers need to enter into bookkeeping service agreements with their clients. Another common contract type is a child care service agreement between a child care provider and a parent or legal guardian.

A product service contract, also called an extended warranty, is a type of service contract that is similar to a basic or limited warranty, only this coverage comes at an additional cost, whereas a basic warranty does not. Some of these service agreements are sold separately from the product and offer free protection for the item for a period longer than the basic warranty or for more services than the basic warranty, whereas others are included with the cost of a product and specify repair costs if the item needs to be repaired. When the repair costs are defined, they are often less expensive than the fees charged by a repair person working outside of a service arrangement.

Lesson 9

Accounting for Share Based Payments

(Ind AS 102)

Question 1

Write a note on Ind-AS -102, Share Based Payment.

Answer

The objective of this Standard is to specify the financial reporting by an entity when it undertakes a share-based payment transaction. In particular, it requires an entity to reflect in its profit or loss and financial position the effects of share-based payment transactions, including expenses associated with transactions in which share options are granted to employees.

Currently, there is no accounting standard that deals specifically in the accounting of share-based benefit schemes. Guidance Note No 18 (GN 18) issued by the Institute of Chartered Accountants of India (ICAI) provides 'guidance' on how these schemes should be treated, but it does not have the force of an accounting standard. Consequently, many companies that run material stock option schemes do not make any disclosure or allowance in respect of these schemes.

The Securities and Exchange Board of India (SEBI) mandates that all listed companies that run stock option schemes, should follow and make disclosures as per GN 18. IFRS 2 is the corresponding Accounting Standard issued by International Accounting Standards Board (IASB). Ind AS 102 applies to all share-based payment arrangements.

Question 2

Define Share based payment

Answer

A share-based payment arrangement is defined as an agreement between the entity (or another group entity or any shareholder of any group entity) and another party (including an employee) that entitles the other party to receive:

- i) Cash or other assets of the entity for amounts that are based on the price (or value) of equity instruments (including shares or share options) of the entity or another group entity, or
- ii) Equity instruments (including shares or share options) of the entity or another group entity.
- iii) An entity has to recognise share-based payment transactions in its financial statements, including transactions with employees or other parties to be settled in cash, other assets, or equity instruments of the entity. There are no exceptions to Ind AS 102, other than for transactions to which other Ind AS apply. In simple language, there are so many situations where company does not make payment in cash but in shares and hence provisions of IND AS 102 would apply.

Question 3

Write a note on share based payment transactions among group entities

Answer

For share-based payment transactions among group entities, in its separate or individual financial statements, the entity receiving the goods or services shall gauge the goods or services received as either an equity-settled or a cash-settled share-based payment transaction by assessing:

- a) the nature of the awards granted, and
- b) its own rights and obligations.

The amount recognised by the entity receiving the goods or services may differ from the amount recognised by the consolidated group or by another group entity settling the share-based payment transaction.

The entity settling a share-based payment transaction when another entity in the group receives the goods or services shall recognise the transaction as an equity-settled share-based payment transaction only if it is settled in the entity's own equity instruments. Otherwise, the transaction shall be recognised as a cash-settled share based payment transaction.

Some group transactions involve repayment arrangements that require one group entity to pay another group entity for the provision of the share-based payments to the suppliers of goods or services. In such cases, the entity that receives the goods or services shall account for the share-based payment transaction in accordance with paragraph 43B regardless of intragroup repayment arrangements.

Lesson 10

Valuation during Mergers & Acquisitions

Question 1

What is Porter's 3 tests with reference to diversification and shareholder value?

Answer

According to Porter, if the M&A or diversification objective has to create shareholder value, it must meet 3 tests:

- i) ***The attractiveness test*** – the diversification must be directed towards potentially attractive industries. This is going to be important as the acquisition must be directed towards a target based out of a growing industry for it to create value for the shareholders.
- ii) ***The cost of entry test*** – the biggest challenge in fuelling an M&A exercise is finding the right target company, and consequently the dilemma that the acquirer typically faces is whether it should pay a premium price and acquire a successful company or buy a poorly performing company at a distress or reduced bargain price and then invest time and efforts on it. This again would be dependent on whether the Company is constrained by cash reserves available at its disposal or not. If it is constrained, but has the necessary knowledge and resource pools, it might be better off for it to acquire a struggling company with a long-term horizon. However, if the acquirer company is cash rich and is not constrained by funds, the most viable option would be to buy a strongly positioned company, more so when it has little knowledge of, unless off-course when the target fails the cost of entry test. The cost of entry test simply put requires “financial viability”, that is the present value of the future benefits from the combined entity must exceed the acquisition cost needed to pitch in and sustain the operations and hence a high acquisition price has chances of rendering the proposal not meeting the cost of entry test.
- iii) ***The better-off test*** – this is a reinforcement of the synergy principle, which clearly enunciates, that together the entities must be financially better off than each of them were individually.

Question 2

What do you understand by Comparable Company Analysis?

Answer

This is an alternative approach used by Merchant Bankers to estimate acquisition values. The very first step in this approach is to find companies that can comprise and constitute a comparable set to the target company. These could be from the same industry or from similar industries too. This sample should ideally be created using companies that have a similar capital structure to the target.

Once this is done, the next step is to create value-based measures for the comparable companies that could be used in the valuation exercise, and some of these are, as under:

- i) Enterprise Value / EBITDA
- ii) Enterprise Value / EBIT
- iii) Enterprise Value / Cash Flow
- iv) Enterprise Value / Sales

The other option is to use Equity Multiples, such as:

- i) Price / Cash Flow per share
- ii) Price / Sales per share
- iii) Price / Earnings per share
- iv) Price / Book Value per share

Post the above calculations, the analysts review the measures of central tendency (mean, median etc.), which are subsequently applied to arrive at the target valuation price.

There are several advantages of using the Comparable Company Analysis, which is as under:

- a) This is a method that approximates the target company's valuation relative to its peers (comparables) in the market place.
- b) The collation of data for the purposes of valuation could be easily accessed and retrieved from the annual reports and other reliable sources.
- c) The source data, being from the market is definitely a notch higher with regards to authenticity vis-à-vis the Discounted Cash Flow analysis, which is built on a number of assumptions.

Question 3

AB Limited is studying the possible acquisition of CD Ltd. by way of merger. The following data is available.

Particulars	AB Ltd	CD Ltd.
Profits after Tax (PAT)	INR 60,00,000	INR 10,00,000
No. of equity shares	10,00,000	2,00,000
Market value per share	INR 200	INR 160

If the merger goes through and the exchange ratio is based on current market prices, what is the new EPS for AB Ltd. ?

Answer

If the exchange ratio is based on market prices it is $200 / 160$ that is, for every 5 shares of CD Ltd., the target shareholders would receive 4 shares of AB Ltd.

Hence, for 2,00,000 shares of CD Ltd. they will receive $4 / 5 \times 2,00,000$ shares in AB Ltd., that is 1,60,000 shares.

Hence, the new EPS of AB Ltd. is as under

<i>Particulars</i>	
Combined PAT	INR 70,00,000
No. of Equity Shares	11,60,000
Revised EPS	INR 6.03

Question 4

What are the post-takeover defence strategies?

Answer

The post-takeover defence strategies are as under:

- i) **Share Repurchase:** After the takeover is initiated, a target may initiate a cash tender offer for its own outstanding shares. An effective repurchase offer has the

potential to increase the cost for the takeover (takeover premium) as the acquirer will now have to alter its bid upwards for it to remain competitive. That itself could be a put off for the deal.

- ii) **Leveraged Buy Out:** In case of a leveraged buyout, the management of the target can partner with a private equity firm that specialises in buyouts to put in some capital and the remaining purchase price comes through from borrowings and hence the term “leveraged”. With the proceeds that come in, that is used to buy all the shares of the target company. Hence, essentially what is done is the target company buys all its shares to convert in to a private limited company in the transaction, called Leveraged Buy Out (LBO). The stakes therefore in the target company now shift to the Private Equity Firm (may be 10%) and the balance 90% of the firm is financed by debt (Banks). Now, the Private Equity Firms enjoy the effects of financial leverage that can magnify the returns, the only catch is that there has to be a due diligence conducted prior to conclude that the target company has sufficient strength in the profit and cash forecasts to be able to cover the future debt payments. The management then is compensated basis the performance of the firm post the LBO is completed. This strategy therefore allows the target to defend against a hostile bid provided that the LBO provides to the target shareholders a price that is greater than the takeover price offer by the acquirer.
- iii) **Pac Man Defence:** The target can defend itself by making a counter-offer to acquire the hostile bidder. This is a rarely used technique as it is unlikely that the smaller company (target) makes a bid for the larger company (acquirer).
- iv) **White Knight Defence:** This is probably one of the best outcomes for the target shareholders. The way it works essentially is that the management or board of the target company to seek a third party to purchase the company in lieu of the hostile bidder. This third party is called the ‘White Knight’, as it is coming to the aid of the target. This technique is used by the target when the acquisition by the white knight sounds like a strategic fit as compared to the hostile bidder. Based on this strategic fit, the third party can also justify a higher price for the target than what the hostile bidder is offering. In such cases, the winners curse prevails, as often such negotiations are driven by a tendency for the winner to overpay to grab the deal and this competitive bidding ends up being extremely favourable for the target shareholders.

Lesson 11

Valuation of Various Magnitudes of Business Organizations

Question 1

What do you understand by Contingent Claims Valuation Approach?

Answer

Valuation based on DCF approach understates the value of assets as these methods do not consider the value of managerial flexibility. 'Flexibility' refers to the choices between alternative plans that managers may make in response to events.

In real life scenario, the managers adjust their plans and strategies as reaction to changes in the economic environment. This flexibility has value which cannot be captured by a single forecast or even an analysis of multiple scenarios. Flexibility (or options) occurs generally at the level of individual project or business. So flexibility can be valued in the context of individual project or business instead of incorporating in a corporate -wide valuation model.

Contingent claims model of valuation uses option pricing models to measure the value of assets that share option features. The options embedded in the real projects are classified into four broad types. They are Investment timing options, growth options, flexibility options and exit options. In addition to the options that naturally exist in many projects, managers can include flexibility in designing the project.

The options designed by the managers can be in the form of input flexibility options and output flexibility options. An input flexibility option permits a firm to switch between alternative inputs. An Electric power plant, for example, may go for flexible dual-fuel boiler which can shift between gas and oil as fuel, contingent on which resource of energy is cheaper at a given point of time.

On the other hand, output flexibility permits a firm to change the product mix. For example, Oil refineries are typically designed with output flexibility that allows them to switch from one product mix to another, depending on the profitability of the product mix at that point of time. As a result there should be an adjustment of option premium to the DCF value of the Oil refinery. It is this premium on value that makes real options so attractive and so possibly dangerous.

Question 2

Write a note on valuation of banks.

Answer

Financial Institutions like banks and insurance companies are among the most challenging companies to value, particularly for outside analysts as they do not have some crucial information such as asset-liability mismatch about these companies. Further, as these institutions are highly levered, their valuations are remarkably sensitive to small changes in key drivers. Their operations cannot be valued separately from interest income and interest expense, as they are the main components of their income statements.

In valuation of the banks, the focus has to be not on profit growth, but on growth of stability. Therefore, for financial companies which are highly levered, the equity cash flow approach is more appropriate. The equity DCF approach does not tell us how and where a Bank creates value in its operations. Is the bank creating or destroying value when receiving the percentage of interest i.e., for example assume that 6.5 percent on its loans or when paying. 4.3 percent on deposits.

When valuing banks and other financial institutions, where capital structure is an inseparable part of operations, capital cash flow and equity cash flow valuation models are used.

Question 3

Write a note on valuation of private companies.

Answer

Private companies can be of different types. These companies may include small family-owned enterprises, divisions/subsidiaries of larger private companies, or large corporations. It can be a single-employee company, unincorporated businesses and previously public companies that have been become private in management buyouts or other transactions. Many large, successful companies also exist that have remained private since inception, such as IKEA and Bosch in Europe and Life style, DHL, Marriott Hotels etc., in India. The varied features of private companies and the absence of a commonly recognized body providing guidance on valuation methods and assumptions have contributed to the progress of different valuation practices.

Private company valuation is the set of procedures used to assess a company's current net worth. Valuation approaches for large private companies are theoretically similar to those used for public companies though the labels used for them by analysts in each field and the details of application may differ.

The three common methods for valuing private companies, using data available to the public:

- i) **Market Approach:** This is the most common private company valuation method. The analysts use a relative valuation model when they apply a market-based approach in evaluating price and enterprise multiples relative to the value of a comparable.

Comparable Company Analysis (CCA) of the relative valuation model operates under the assumption that similar firms in the same industry have similar multiples and uses the recent valuation of comparable companies in the peer universe of the target company. Common valuation multiples such as EV/ Sales, EV/EBITDA were selected from the financial statements of the peers and the value of the target company is estimated based on the HIGH, LOW and AVERAGE multiples of the peer universe.

- ii) **Income Approach:** The income approach values an asset as the present discounted value of the cash flow (DCF) expected from it. DCF method has several variations depending on the assumptions the valuator makes.
- iii) **Asset-based approach:** This method values a private company based on the values of the underlying assets of the entity less the value of any related liabilities.

Question 4

Write a note on valuation of small companies.

Answer

Small companies are private in nature and financially less transparent than their publicly traded peers. Though often smaller in size these small private companies have a major importance in the world's economy. These businesses have noticeably more risk than larger ones. Size contributes to the discount in the valuation since it replicates the industry. These private company's owners do not publicly issue shares of their company, instead they keep ownership and associated transactions at low-key.

Valuation of such closely-held private companies can be costly and difficult due to non-availability of exact financial information. Small private companies may be good acquisition targets for larger competitors and publicly-traded counterparts. There are different methodologies and financial tools to evaluate a small private company.

When it comes to small businesses which are private in nature, the following three techniques are most commonly used:

- i) Comparable Company Trading Multiple Analysis, (also known as "peer group analysis",
- ii) Precedent/Comparable Transaction Analysis, and
- iii) Discounted Cash Flow ("DCF") Analysis.

Question 5

Write a note on valuation of start-ups

Answer

Start-up means an entity, incorporated or registered in India:

- i) Upto a period of seven years from the date of incorporation/registration or upto ten years in case of Start-ups in Biotechnology sector.
- ii) As a private limited company or registered as a partnership firm or a limited liability partnership.
- iii) With an annual turnover not exceeding Rs. 25 crore for any of the financial years since incorporation/ registration.
- iv) Working towards innovation, development or improvement of products or processes or services, or if it is a scalable business model with a high potential of employment generation or wealth creation.

Unlike valuing traditional cash-generating and profit-making businesses, there is no standard methodology in valuing start-ups. Valuation of start-ups is about assessing both the risks and rewards associated. Entrepreneurs want the value to be as high as possible and the venture capital want a value low enough so that they own a reasonable portion of the company for the amount they invest. With little or no past financial performance, valuing a start-up is mostly based on potential rather than past results.

Question 6

Pinnacle Venture, PE investor is considering investing INR 4000 million in the equity of Best Systems, a start-up IT company. Pinnacle ventures required rate of return from this investment is 40 percent and it's planned holding period is 5 years. Best Systems has projected an EBITDA of INR 5000 million for year 5. An EBITDA multiple of 6 for year 5 is considered reasonable. At the end of year 5, Best Systems is likely to have a debt of INR 2000 million and a cash balance of INR 600 million.

- i. What ownership share in Best Systems should Pinnacle Venture ask for?**
- ii. What is the post-money investment value of Best Systems equity?**
- iii. What is the pre-money investment value of Best Systems?**

Answer

Required rate of return of Pinnacle Venture (K_{PE}) = 40%

Required value PE Investments₆ = 4000 x 5.3782 = INR 21,513 million.

Estimated Equity Value₆ = 5000 x 6 + 600 – 2000 = INR 28,600 million.

i) Ownership share = Required value of PE investments/ Estimated Equity Value
= 21,513 / 28,600 = 75.22 %

ii) Post-Money Investment Value of the firm's equity

$$\begin{array}{r} \text{Funds provided by the PE} \quad 40000 \\ = \text{-----} = \text{-----} \\ \text{PE's ownership interest (\%)} \quad 0.7522 \end{array}$$

= INR 5,317.73 million

iii) Pre-Money Investment Value of Best System's Equity = Post-Money Investment - Funding provided by the PE

= 5,317.73 – 4,000 = INR 1,317.73 million

Question 7

Write a note on Comparable Transaction Valuation method with reference to small enterprises.

Answer

Size has consequences for the level of risk and, hence, comparable transaction valuation method of relative valuation approach is also used for small enterprises. Small size naturally increases risk levels and in estimating required rates of return for small and private companies risk premiums for small size will often be incorporated. This method is usually used when the valuation is accepted by the valuer for sale.

Under this method, peer group is compared on similar standards. Similar companies are decided based on industry they belong to as well as the market capitalization for the purpose of valuation. The companies are then assessed on common multiples such as EV/EBITDA, PE ratio, PEG ratio and so on. For fair valuation, the company should be evaluated on more than one standard to ascertain the current and the potential value of the company. However, this approach has its own set of drawbacks when the historical data of the company is not available. Therefore, this approach is not used solely, but in combination with other approaches. Comparable Transaction Valuation is often used along with Discounted Cash Flow to present fair value of business.

Lesson 12

Valuation of Business During Distressed Sale

Question 1

What are the features of 'Input Uncertainty'?

Answer

The features of 'Input Uncertainty' are as under:

- 1) Input uncertainty arises where there are a number of equally reasonable or feasible inputs or assumptions that can be used from the degree of veracity that can be attached to the data inputs used in the valuation and their impact on the outcome. Examples of input uncertainty include:
 - a) Where the input is taken from consensus data or a composite of market data, there will normally be a range between which the market value can fluctuate.
 - b) Where inputs are based on historic data, the assumptions or methods used to adjust the data to market conditions at the valuation date can be a source of uncertainty.
 - c) Where inputs are estimated or extrapolated from directly observable prices, uncertainty can result from the adjustments made for differences in the assets or the transaction, particularly where there is little or no objective evidence for the adjustments.
- 2) Input uncertainty can be measured by the effect on the valuation of using reasonably possible alternative inputs.
- 3) The valuation method used may adjust for input uncertainty. For example, in a discounted cash flow model the cash flow inputs are based on current expectations of future performance and are therefore uncertain. However, market participants' views of the potential risk or reward implied by the expected cash flows differing from those that actually occur in the future should be reflected in the discount rate applied. Consequently, inputs based on current expectations of future performance are not automatically a source of material valuation uncertainty.

- 4) In some situations the effect of input uncertainty may be ameliorated by the use of statistical sampling techniques to analyse and weight the range of available data before it is applied in the valuation model. However, input uncertainty can also arise where reduced liquidity or reduced market activity result in a reduction in the relevant data available to provide empirical support for valuations.

Question 2

What are the different forms of Market Risk and why market risk management is important?

Answer

The market risk includes- Equity risk; Interest rate risk; Currency risk and Commodity risk.

- i) **Equity risk:** Equity risk can be defined as a kind of financial risk that arises due to holding of investments in equity of a particular company.
- ii) **Interest rate risk:** The risk arises due to fluctuations in the stock price. The main tool for calculating the equity risk is standard deviation.
- iii) **Currency risk:** Currency risk is the risk that arises from the change in price of one currency against another. Whenever investors or companies have assets or business operations across national borders, they face currency risk if their positions are not hedged.
- iv) **Commodity risk:** Commodity risk is the risk that commodity prices (e.g. corn, copper, crude oil, etc.) and/or their implied volatility will change.

Market risk management gains its importance due to the various factors because it, (i) provides senior management with information on the risk exposure taken by traders. This risk exposure can then be compared to the capital resources of the financial institutions, (ii) helps in measuring the market risk of traders' portfolios, which will allow the establishment of economically logical position limits per trader in each area of trading, (iii) compares returns to market risks in different areas of trading, which may allow the identification of areas with the greatest potential return per unit of risk into which more capital and resources can be directed, (iv) calculates the return-risk ratio of traders, which may allow a more rational evaluation of traders and a fair bonus system to be put in place, and (v) sets up the private sector benchmarks against the overpriced benchmarks of regulators.

Question 3

A case study to discuss valuation of distressed energy assets.

Answer

Background

In 2015, oil prices plummeted from a high above \$60 to below \$40 per barrel. By late 2015, no one expected prices to return to the \$80 to \$100 per barrel level that was the norm over most of the last decade.

Obviously, oil prices had a profound effect on the value of exploration and production companies as well as their underlying assets. In addition to the financial distress this caused companies with high levels of debt, the low price outlook affected the economics of operating an existing well and/or building a well, which ultimately would have an impact on the expected timing and volumes of production from the acquired reserves. Thus, the pricing forecast had a significant impact on the value of the tangible assets, from a standpoint of production volume and its impact on utilization levels, and the acquired reserves from a sales standpoint (price per barrel and volume) and its influence on realized cash flows.

When production utilization is lower, the economic viability of the tangible assets (i.e. return on investment) falls into greater question. Additionally, when prices are lower, it becomes prohibitive to extract value from oil and gas reserves, which are dependent on the stage of the reserves development, or reserve classification, which include:

- a) Production wells
- b) Ship and barge anchoring systems
- c) Two additional platforms under construction
- d) All oil and gas reserves

Group NASSA valued other ancillary assets such as vehicles.

The Challenge

To perform the valuation of the energy reserves VRG coordinated with multiple parties operating in different languages and valuing assets at several locations. This included VRC's US-based staff, Grupo NASSA's Mexico-based staff, the acquiring company and its subsidiary, the acquired company and VRC's expert geologists. The valuation included on-site evaluation of the acquired oil platforms as well as oil reserves and wells – some developed, some undeveloped – off the coast of Peru.

In selecting a valuation methodology, VRG needed to consider the significant divergence in the enterprise value of the business versus the undiscounted value of the assets given the dramatic drop in commodity prices at the time.

The Solution

VRG employed a cost approach to determine the value of the tangible assets. The value of the tangible assets required the calculation of a significant economic obsolescence factor given their low utilization. To determine the value of the oil and gas reserves, VRG employed a Multi-Period Excess Earnings Method (MPEEM).

In estimating the fair value of the personal property, the cost approach was used because it provided the most accurate reflection of the asset's value to the owner-user on an ongoing basis. Equipment is purchased by a company or investor for future use. Therefore, the valuation should reflect the remaining value to the company in its use of the assets, not the value of the assets in exchange on the market. Thus, the assets are viewed as service property. In this case, the value conclusion was arrived at by obtaining information from the used equipment market, making any necessary adjustments regarding comparability where information was sufficient to identify and compare with the subject, and adding all costs that would be required to convert an idle piece of equipment to an integral part of an operating unit.

Determining an economic obsolescence on the tangible assets was challenging given fluctuating energy prices and uncertain production projections. As of the Valuation Date, production volume from each of the operating wells ranged from 10-30% capacity. Economic obsolescence was determined based on aggregate prevailing production levels of the three platforms relative to their aggregate rated capacity. At the time, the platforms were only running at 14.7% of their rated capacity on a combined basis. This information helped to determine an economic obsolescence factor for the property associated with the platforms and the construction in-process.

To value the intangible reserve assets, VRG addressed valuation issues relative to the reserve interests. At the client's direction, valuation of the POS reserves was excluded from the scope of the valuation analysis due to both their relative uncertainty and because it was assumed these would be uneconomical given the prevailing price levels and the amount of capital and operating expenditures required to begin extracting the reserves and, ultimately, generating production. For each of the Proven reserve classes and the Probable reserves assets that were producing, or could be anticipated to produce in the determinable future, the appropriate premise of value was determined to be Market Value-in-Use. Both the Income approach to value and a modification of the Sales Comparison Approach to value (considered a market approach) can be appropriate in valuing such assets. The Cost approach was considered to be inapplicable because depleted assets such as oil and natural gas reserves cannot be reproduced or placed at their location.

In using the Income Approach, the results of the financial models were developed using the MPEEM. MPEEM is a form of a discounted cash flow analysis whereby an operating model is first constructed to forecast revenues and expenses derived from the business enterprise associated with the assets being valued. When other assets are required to produce this cash flow, then portions of the total cash flow attributable to these contributory assets must be identified and deducted from the total cash flow. As a result, the values of the

tangible assets and the oil and gas reserves are highly interdependent since the MPEEM is heavily reliant on the valuation of the tangible assets used to produce the oil since the use of the tangible assets is considered a contributory asset (the higher the value of tangible assets, the higher the contributory asset charge to the reserves, and the lower the value of the reserves). The remaining cash flow stream, or excess earnings, is attributable to the asset being valued. An appropriate discount rate is then selected and the present value for the excess earnings stream is derived to yield the value for the subject assets.

The market approach is based on a multiplier of a designated increment of forecast income used by prospective purchasers when valuing such interests. Multipliers can be established through interviews with persons knowledgeable of the market for such interests providing an alternate indication of value. This approach has historically been used in valuing producing oil and natural gas interests.

While this method was used by participants for rough estimations, the more sophisticated industry participants typically use a discounted cash flow method to determine values used in transactions. VRG believed that a multiple of income would not in itself represent the fair value so this technique was not used.

Conclusion

Valuing distressed assets in the energy sector presented many challenges. Certain methodologies and assumptions resulted in several “decision points” about the economic viability of the assets that had a significant impact on the concluded values of the various assets. Accordingly, the consideration and determination of the appropriate methodologies and assumptions was paramount.

Question 4

A case study to discuss valuation of agribusiness assets.

Answer

Challenge

A leading commercial agribusiness client in Argentina was interested in selling their company, which was focused on cultivating and producing olive oil, table olives and wines. The company retained Valuation Research Group’s Argentinian affiliate, R. Biasca & Associates, to develop a valuation analysis of all the assets the company owned as part of the process to get the company ready for sale.

At the time of engagement the company owned 1,000 hectares (=~2,471 acres) of developed land that was in production, as well as an additional 3,900 hectares (=~9,637 acres) of land, of which 1,000 hectares were suitable for cultivation and planting, however, the remaining 2,900 hectares (=~7,166 acres) required an additional investment to prepare the land for suitable use. The title for the 3,900 hectares had also been under

litigation for years. The company also had a state-of-the-art winery and pressurized irrigation drip systems that supplied high-quality ground water from ten wells producing 200,000 liters (=~52,834 gallons) per hour. Equipment used by the olive oil processing plant had been retrofitted for use while the wine processing plant equipment was almost new. Since the company's founding in 2010, it had made significant investments and set a goal to reach its full production capacity in five years, projecting olive and olive oil production would grow from five million kilograms in 2010 to 14 million kilograms in 2014. Grape production would remain steady at nearly two million kilograms

Solution

R. Biasca & Associates approached the full valuation and consulting process in three phases:

1. **Valuation Phase** - Conduct initial data gathering for development of the valuation.
2. **Mergers & Acquisition Phase** - Development of the Memorandum as part of the sell-side M&A process, assist in search for potential buyers, and assist in managing negotiations.
3. **Management Consulting Phase** - Develop and deliver strategic recommendations (specifically, to split the wine from the olive business) and operational proposals, and address shareholder/management issues.

At the time of the valuation, VRG's analysis arrived at an estimated fair value sale price of approximately US\$20 million dollars however, the company owners were targeting a price of US\$30-35 million dollars. In Argentina, oftentimes local inflation rates and a politically influenced exchange rate can add complexity to the valuation analysis.

To arrive at the final valuation, R. Biasca & Associates used three different valuation approaches:

1. **Market Approach** - Comparable food companies in Argentina had been sold at 0.7 to 1.5 times their annual sales revenue. Exceptional transactions were made at two times annual sales. When considering the company's projected 2014 sales and applying a ratio of two, we arrive at an amount of US\$21 million. Previous transactions in Argentina were made at 0.2 to 1.4 times EBITDA. Additional input from local M&A firms and accounting consultants suggested applying a ratio multiple of five or seven, respectively, and when applying a multiple of seven, the figure once again would reach US\$21 million dollars. Therefore, VRG felt this was an optimistic figure.
2. **Income Approach** - Present value was dependent on the interest rate but there was a lack of data to calculate the business risk and the country risk. It was difficult to imagine a discount rate of less than 15%. Another consideration was the number of

years and the perpetuity value. Sophisticated methods (options, etc.) were not considered appropriate for this particular client.

3. Cost Approach - The owners of the company added optimistic values

- a) The price of the land with olives and grapes in Spain.
- b) Market value for the machinery, buildings at cost less depreciation.
- c) Trademark value.
- d) Marketing network value (the company also created an export trading company for its products).
- e) Unproductive land values, which were determined to be unrealistic since a portion of the land parcel remained under litigation issues.

The total of these added values came to US\$32.5 million dollars. Although these numbers could be used for bargaining purposes, the assumptions could be easily challenged and lowered to a value of US\$25 million dollars or less.

Execution

After the data gathering and valuation analysis was complete, a Memorandum was made and an intense international search for potential buyers began. Of the large list of interested buyers, two ideal candidates were selected: an Australian company that had already purchased land in Argentina was very interested in the olive business, and a major Latin American wine company was interested in the wine business. Offers were presented that totaled approximately US\$ 18 million dollars, which was clearly much less than the desired and estimated value the owners assessed but was closely in line with R. Biasca & Associates' valuation of US\$21million dollars. As this was a family company and part of a set of companies that belong to a wealthy holding organization, the personal interests of some key shareholders prevailed and the sale of the company was ultimately postponed.

After the valuation engagement was completed, several events occurred -- both positive (commodity prices increased, and olive plants have grown and have better productivity) and negative (country risk in Argentina has sharply increased) – that would impact the state of the company and the assessment of its fair value.

Lesson 13

Introduction to Business Modelling

Question 1

What are the key points to be remembered for building Macros through Excel?

Answer

1. **Macro names:** Keep macro names short (but descriptive), especially if you record a lot of macros, so you can easily identify them in the Macro Dialog Box. The system also provides a field for Description, though not everyone uses it.

Macro names must begin with a letter and cannot contain spaces, symbols, or punctuation marks. After the first letter, you can use more letters, numbers, or the underscore character, but the maximum length is 80 characters.

2. **Use relative (not absolute) cell addresses:** Absolute means that the exact cell locations are recorded into the macro—hardcoded cell addresses such as A6 or B12, which limits the macro's ability to function if anything changes, new data is added/removed, or the list gets longer. Relative means the macro's recorded keystrokes are relative to the starting cell's location.

The default in Excel is Absolute, but you can change this to Relative on the Stop Recording toolbar: Click Developer>Record Macro.

- i) In the Record Macro dialog box, enter a macro name and Shortcut Key (if applicable). Choose Personal Macro Workbook in the Store Macro In box, enter a description (if desired), and click OK.
 - ii) The dialog box disappears, and the Record Macro button changes to a Stop Recording button. Click the Relative Reference button next—it turns dark green to indicate that it's active.
 - iii) Enter your keystrokes, formulas, and so forth, then click the Stop Recording button and run your macro. Record macros using Relative Cell addresses.
3. **Always begin at Home:** For Absolute reference macros, always begin in the Home position (cell A1)—with your cursor and your data. If you saved your macro in the Personal Macro Workbook (recommended), you can reuse this macro on other

worksheets with similar data. Regardless of where your cursor is positioned when you begin recording the macro, even if it's already located in cell A1, your first macro keystroke must be Ctrl+Home.

4. ***Always navigate with directional keys:*** Use the directional keys (End-Down, Ctrl+Up, etc.) to position your cursor so you can add, change, or delete the data inside the spreadsheet as needed. Using the mouse to navigate is more complicated and not as reliable. When it comes to macros, use the mouse only for selecting or clicking menu options.
5. ***Keep macros small and specific:*** Keep your macros small and specific to the tasks at hand. The bigger the macro, the slower it runs, especially if it's required to perform many functions or calculate a lot of formulas in a large spreadsheet. Also, if you combine all the tasks into one long macro and it fails, it takes forever to locate the point of failure. If you run each macro separately, you can quickly review the results and verify accuracy.

Question 2

How would you show the FV Schedule Function in MS-Excel?

Answer

The Excel FV Schedule function calculates the Future Value of an investment with a variable interest rate.

The syntax of the function is:

FVSCCHEDULE(principal, schedule)

where the arguments are as follows:

principal - The present value of the investment.

schedule - An array of values that provides the schedule of interest rates to be applied to the principal.

If provided as a range of cells, these may contain numeric values or be empty (empty cells denote a zero interest rate).

Question 3

Write the Excel FV Function.

Answer:

An investment with periodic constant payments and a constant interest rate.

The syntax of the function is:

FV (rate, nper, [pmt], [pv], [type])

Where the arguments are as follows:

rate - The interest rate, per period.

nper - The number of periods for the lifetime of the annuity.

[pmt] - An optional argument that specifies the payment per period.
(Note that if the [pmt] argument is omitted it uses the default value 0).

[pv] - An optional argument that specifies the present value of the annuity - i.e. the amount that a series of future payments is worth now.
(Note that if the [pv] argument is omitted, it takes on the default value 0).

[type] - An optional argument that defines whether the payment is made at the start or the end of the period.

The [type] argument can have the value 0 or 1, meaning:

- 0 - the payment is made at the end of the period;
- 1 - the payment is made at the start of the period.

If the [type] argument is omitted, it takes on the default value of 0 (denoting payments made at the end of the period).

Example 1

In the following spreadsheet, the Excel FV function is used to calculate the future value of an investment of \$1,000 per month for a period of 5 years. The present value is 0, the interest rate is 5% per year and the payments are made at the end of each month.

Formula:

Result:

	A		A
1	Future value of an investment of \$1,000 per month over 5 years, with a present value of \$0, and an interest rate of 5% per year (payment made at end of each mth):	1	Future value of an investment of \$1,000 per month over 5 years, with a present value of \$0, and an interest rate of 5% per year (payment made at end of each mth):
2	=FV(5%/12, 60, -1000)	2	\$68,006.08

Note that, in this example:

- The payments are made monthly, so it is necessary to supply the annual interest rate of 5% as a monthly interest rate (=5%/12), and to express the 5-year period as a number of months (=60).
- As the present value is zero, and the payment is to be made at the end of the month, the [pv] and [type]arguments can be omitted from the above function.
- As the monthly payments are paid out, they are input to the function as negative values.

Example 2

In the example below, the Excel FV function is used to calculate the future value of an investment of \$2,000 per quarter for a period of 4 years. The interest is 10% per year and each payment is made at the start of the quarter.

Formula:

	A
1	Future value of an investment of \$2,000 per quarter over 4 years, with a present value of \$0, and an interest rate of 10% per year (payment made at start of each qtr):
2	=FV(10%/4, 16, -2000, 0, 1)

Result:

	A
1	Future value of an investment of \$2,000 per quarter over 4 years, with a present value of \$0, and an interest rate of 10% per year (payment made at start of each qtr):
2	\$39,729.46

Note that, in this example:

- The payments are made quarterly, so the annual interest rate of 10% has been converted into a quarterly rate (=10%/4), and the 4-year period has been input as a number of quarters (=16).
- Again the quarterly payments are paid out, and so are input to the function as negative values.

Question 4

With the help of a suitable example explain the Excel PV Function.

Answer

The Excel PV function calculates the Present Value of an investment, based on a series of future payments.

The syntax of the function is:

PV (rate, nper, [pmt], [fv], [type])

Where the arguments are as follows:

rate - The interest rate, per period.

nper - The number of periods for the lifetime of the annuity or investment.

[pmt] - An optional argument that specifies the payment per period.
If the [pmt] argument is omitted, it takes on the default value 0.

[fv] - An optional argument that specifies the future value of the annuity, at the end of nper payments.
If the [fv] argument is omitted, it takes on the default value 0.

[type] - An optional argument that defines whether the payment is made at the start or the end of the period.

The [type] argument can have the value 0 or 1, meaning:

0 - the payment is made at the end of the period;
1 - the payment is made at the start of the period.

If the [type] argument is omitted, it takes on the default value of 0 (denoting payments made at the end of the period).

Excel Pv Function Examples

Example 1

In the following spreadsheet, the Excel Pv function is used to calculate the present value of an annuity that pays \$1,000 per month for a period of 5 years. The interest is 5% per year and each payment is made at the end of the month.

Formulas:

	A
1	Present value of an annuity with an interest rate of 5% per year and payments of \$1,000 per month over 5 years (payment made at end of each month):
2	<code>=PV(5%/12, 60, 1000)</code>

Results:

	A
1	Present value of an annuity with an interest rate of 5% per year and payments of \$1,000 per month over 5 years (payment made at end of each month):
2	-\$52,990.71

Note that, in this example:

- As the payments are made monthly, it has been necessary to convert the annual interest rate of 5% into a monthly rate ($=5\%/12$), and to express the 5-year period as a number of months ($=60$);
- As the forecast value is zero, and the payment is to be made at the end of the month, the [fv] and [type]arguments can be omitted from the above function;
- As the initial investment is paid out, the calculated present value is a negative cash amount.

Example 2

In the example below, the Excel Pv function is used to calculate the present value of an annuity that pays \$2,000 per quarter for a period of 4 years. The interest is 10% per year and each payment is made at the start of the quarter.

Formulas:

A
Present value of an annuity with an interest rate of 10% per year and payments of \$2,000 per quarter over 4 years (payment made at start of each quarter):
2 =PV(10%/4, 16, 2000, 0, 1)

Results:

A
Present value of an annuity with an interest rate of 10% per year and payments of \$2,000 per quarter over 4 years (payment made at start of each quarter):
2 -\$26,762.76

Note that, in this example:

- As the payments are made quarterly, it has been necessary to convert the annual interest rate of 10% into a monthly rate ($=10\%/4$), and to express the 4-year period as a number of quarters ($=16$);
- Again, as the initial investment is paid out, the calculated present value is negative.

For further details and examples of the Excel Pv function, see the Microsoft Office website.

Pv Function Error

If you get an error from the Excel Pv Function, this is likely to be the #VALUE error:

Question 5

Explain the Excel NPV Function.

Answer

Function Description

The Excel NPV function calculates the Net Present Value of an investment, based on a supplied discount rate, and a series of future payments and income.

The syntax of the function is:

NPV (rate, value1, [value2], [value3], ...)

where the arguments are as follows:

rate	- The discount rate over one period.
------	--------------------------------------

value1, [value2], ...	- Numeric values, representing a series of regular payments and income, where: Negative values are treated as outgoing payments; Positive values are treated as income.
--------------------------	---

Note that:

- If the value arguments are supplied individually, numbers, blank cells, logical values and text representations of numbers are interpreted as numeric values, while other text values and error values are ignored;
- If the value arguments are supplied as an array, all non-numbers in the array are ignored.
- In the latest versions of Excel, you can provide up to 254 value arguments to the NPV function, but in Excel 2003, the function can only accept up to 29 values.

Example 1

	A	B
1	2%	- Annual discount rate
2	-5000	- Initial investment cost after 1 year
3	800	- Return from year 1

4	950	- Return from year 2
5	1080	- Return from year 3
6	1220	- Return from year 4
7	1500	- Return from year 5
8		
9		Net Present Value:
10		=NPV(A1, A2:A7)

The spreadsheet on the right shows a simple example of the NPV function.

The rate and value arguments that are supplied to the function are stored in cells A1-A7 of the spreadsheet and the NPV function is entered into cell B10.

This function gives the result *196.88*.

Note that, in this example, the initial investment of \$5,000 (shown in cell A2), is made at the end of the first period.

Therefore, this value is included as the first value1argument to the NPV function.

Example 2

	A	B
1	5%	- Annual discount rate
2	-10000	- Initial investment cost at start of year 1
3	2000	- Return from year 1

4	2400	- Return from year 2
5	2900	- Return from year 3
6	3500	- Return from year 4
7	4100	- Return from year 5
8		
9		Net Present Value:
10		=NPV(A1, A3:A7) + A2

The spreadsheet on the right shows a further example of the NPV function in which the first payment is made at the start of the first period.

Again, the rate and value arguments of the investment are stored in cells A1-A7 of the spreadsheet and the NPV function is entered into cell B10.

This function gives the result **2,678.68**.

Note that, as the initial investment of \$10,000 (shown in cell A2), is made at the start of the first period, this value is not included in the arguments to the NPV function. Instead it is added on afterwards.

Question 6

From the following information compute the following ratios:

- a) Current Ratio**
- b) Quick Ratio**
- c) Inventory to Working Capital**
- d) Debt to Equity Ratio**
- e) Proprietary Ratio**

Liabilities	Amount (INR)	Assets	Amount (INR)
Share capital	2,00,000	Land and Buildings	2,00,000
Profit & Loss Account	30,000	Plant and Machinery	4,00,000
General Reserve	40,000	Stock	2,00,000
12% Debentures	5,00,000	Sundry Debtors	2,00,000
Sundry Creditors	2,00,000	Bills Receivable	10,000
Bills Payable	50,000	Cash at Bank	10,000
	10,20,000		10,20,000

Answer:

a) Current Ratio

Current Ratio = Current Assets / Current Liabilities

$$= 4,20,000 / 2,50,000 = 1.68:1$$

b) Quick Ratio

Quick Ratio = Liquid Assets / Liquid or Current Liabilities

$$= 2,20,000 / 2,50,000 = 0.88:1$$

c) Inventory to Working Capital

= Inventory / Working Capital

$$= 2,00,000 / 1,70,000 = 1.8$$

d) Debt to Equity Ratio

Debt to equity ratio = Total liabilities / Total Shareholders' equity

Debt to equity ratio = 7,50,000 / 2,70,000

$$= 2.78 :1$$

e) Proprietary Ratio

= Proprietor's Funds / Total Assets – Tangible Assets

$$= 2,70,000 / 10,20,000 = 0.26:1$$

Lesson 14

Business Model Analysis

Question 1

If sales for the year 2014 amounted to Rs 40,00,000 and working capital required was Rs 8,00,000; the requirement of working capital for the year 2015 on an estimated sales of Rs 50,00,000 would be-

Answer

On the basis of values of 2014-

$$8,00,000 / 40,00,000 \times 100 = 20\%$$

Therefore, for 2015, the working capital required on the basis of estimated sales of INR 50,00,000 = $50,00,000 \times 20 / 100 = \text{INR } 10,00,000$.

Question 2

How calculation of the following would be undertaken in MS-Excel?

- i) **Annuities**
- ii) **Front-End Debt Ratio vs. Back-End Debt Ratio**
- iii) **Borrowing Base**
- iv) **Loan's Monthly Payment in Excel With Tax & PMI**

Answer

- i) **Annuities**: Enter the monthly interest rate, in decimal format, in cell A1. Most interest rates are expressed as annual rates, so enter “=Interest/12” and replace “Interest” with the annual interest rate, such as “=0.06/12”.
- ii) **Front-End Debt Ratio vs. Back-End Debt Ratio**: Enter the number of payments in cell A2. Loans may be expressed in months or years. If you know the number of month for the loan, enter that value. If you know the number of years, enter “=Years12” and replace “Years” with the number of years, such as “=512”.
- iii) **Borrowing Base**: Enter the maximum amount you could comfortably afford paying each month in cell A3. This figure should be calculated based on your current budget, while factoring in a margin of safety for unexpected occurrences. As an

example, if you take home \$3,000 per month, but have expenses of \$2,000, you can afford \$1,000 per month. However, you might want to put some amount in savings each month. If you decide to save \$500 per month, then your payment can only be \$500.

- iv) **Calculate a Loan's Monthly Payment in Excel With Tax & PMI:** Enter “=PV(A1,A2,A3)” in cell A4 to calculate the maximum amount of the loan. Because this value expresses a debt, it appears red and parenthesized.

Question 3

With the help of a case study explain sensitivity analysis and reasons for performing sensitivity analysis.

Answer

John is in charge of sales for HOLIDAY CO that sells Christmas decorations at a shopping mall. John knows that the holiday season is approaching and that the mall will be crowded. He wants to find out whether an increase in customer traffic at the mall will raise the total sales revenue of HOLIDAY CO and if so, by how much.

The average price of a packet of Christmas decorations is \$20 and during the previous year's holiday season, HOLIDAY CO sold 500 packs of Christmas decorations, resulting in total sales worth \$10,000.

After carrying out a Financial Sensitivity Analysis, John determines that a 10% increase in customer traffic at the mall results in a 7% increase in the number of sales.

Using this information, John can predict how much money company XYZ will generate if customer traffic increases by 20%, 40%, or 100%.

Based on John's Financial Sensitivity Analysis, these will result in an increase in revenue by 14%, 28%, and 70%, respectively.

There are many important reasons to perform sensitivity analysis:

- a) Sensitivity Analysis adds credibility to any type of financial model by testing the model across a wide set of possibilities.
- b) Financial Sensitivity Analysis allows the analyst to be flexible with the boundaries within which to test the sensitivity of the dependent variables to the independent variables. For example, the model to study the effect of a 5-point change in interest rates on bond prices would be different from the financial model that would be used to study the effect of a 20-point change in interest rates on bond prices.
- c) Sensitivity analysis helps one make informed choices. Decision-makers use the model to understand how responsive the output is to changes in certain variables.

This relationship can help an analyst in deriving tangible conclusions and be instrumental in making optimal decisions.

Question 4

The Mammoth Limited provides the following information about its activities in the year 2016.

- **Marketable securities purchased: \$45,000**
- **Treasury stock purchased: \$56,000**
- **Inventory purchased: \$412,000**
- **Land sold: \$95,000**
- **Machinery purchased: \$278,000**
- **Common stock issued: \$168,000**

Compute net cash provided/used by investing activities to be reported in the statement of cash flows of Mammoth Limited

Answer

Cash flows from Investing Activities

Sale of Land	=	\$95,000
Purchase of Machinery	=	(\$278,000)
Purchase of Marketable Securities	=	(\$45,000)

Net Cash used by Investing Activities	=	(\$228,000)

Note : The following activities have not been included in the above computation because these are not investing activities.

1. Purchase of treasury stock – a financing activity.
2. Purchase of inventory – an operating activity.
3. Issuance of common stock – a financing activity.

Question 5

A case study on creation of business model and making it work. The case of Nigel Fellowes-Freeman

Answer

The Idea

For Nigel Fellowes-Freeman, necessity really was the mother of invention. Working in a small business and tasked with keeping overheads down, he discovered how time-consuming it was to find and compare the different deals from suppliers of electricity, insurance, telecommunications and from the countless other companies that provide services essential to running a business.

Creating the Model

The first step was conducting market research and speaking to a myriad of business owners, accounts departments and bookkeepers to determine if the idea was viable and what kind of arrangement would best suit, from subscription to zero cost.

The end result was a service that reviews the key costs of a business, delivering an analysis of the most cost-effective suppliers. Expense Check will then handle the account transfers to new suppliers or potentially negotiate a better rate with current ones.

The business doesn't pay anything for the service, Expense Check charges the supplier for the new lead. And Expense Check's agreements with suppliers in each category are quite uniform, to keep the model simple and neutral.

Making the Model Work

Before Nigel could attract clients, he needed to sign up suppliers. Researching the potential supplier markets, Nigel looked for market leaders, those who were more price competitive and who had strong reputations.

After a supplier short list was drawn up, Nigel drilled down further and spent time on business-networking site LinkedIn to find the key staff in each company. He practised different versions of his elevator pitch--the 60 second pitch, and three minute and 10 minute pitches- and then hustled, cold calling, turning up at offices and emailing these people to try to line up meetings.

Once a minimum of three suppliers in each category were signed up, Nigel was ready to pitch to potential clients. Now, after launching at the beginning of the year, the business is growing at about 150% month on month.
