

MAFA

Suggestion

**Most Important For Students
Appearing On Nov08 /May09/Nov09**

By

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Now a Visiting Faculty Of ICAI

I will act now. I will act now. I will act now. Henceforth, I will repeat these words each hour, each day, everyday, until the words become as much a habit as my breathing, and the action which follows becomes as instinctive as the blinking of my eyelids. With these words I can condition my mind to perform every action necessary for my success. I will act now. I will repeat these words again and again and again. I will walk where failures fear to walk. I will work when failures seek rest. I will act now for now is all I have. Tomorrow is the day reserved for the labor of the lazy. I am not lazy. Tomorrow is the day when the failure will succeed. I am not a failure. I will act now. Success will not wait. If I delay, success will become wed to another and lost to me forever. This is the time. This is the place. I am the person.

Important Theory Question

QUESTION NO. 1 Explain briefly Capital Rationing? [Solution on Page 11 of Aaditya Jain theory Book]

QUESTION NO. 2 What is the Sensitivity Analysis or Scenario Analysis in Capital Budgeting? [Page 12]

QUESTION NO. 3 How project appraisal is done under inflationary conditions? [Page 20]

QUESTION NO. 4 Write a note on "Credit Rating" in India? OR Briefly explain the meaning and importance of "Credit Rating"? [Page 26]

QUESTION NO. 5 Explain the factors/determinants for determining Dividend Policy? [Page 33]

QUESTION NO. 6 Write a short note of "Bridge Finance"? [Page 41]

QUESTION NO. 7 Write a short note on Debt Securitisation? or What are the advantages of Debt Securitisation? OR What is securitisation? What are its various instruments? OR Write a short note on Asset Securitisation**Important [Page 46]

QUESTION NO. 8 Write a short note on Systematic and Unsystematic Risk? OR Distinguish between 'Systematic risk' and 'Unsystematic risk'? or Discuss the various kinds of Systematic and Unsystematic Risk ? [Page 50]

QUESTION NO. 9 Write a short note on CAPM? OR Write a short note on Assumptions of CAPM? [Page 51]

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QUESTION NO. 17 Briefly discuss the growth of Mutual Funds in India? [Page 75]

QUESTION NO. 18 Mention three broad classification of a Mutual Fund Schemes? or What is the difference between Open Ended and Close Ended Funds ? [Page 79]

QUESTION NO. 19 Write short note on NAV (Net Asset Value)? [Page 83]

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QUESTION NO. 21 What is a Takeover by Reverse Bid or Reverse Takeover? [Page 89]

QUESTION NO. 22 What are the risk which a businessman faces in international business? OR Explain the term "Foreign Exchange Rate Risk"? [Page 94]

QUESTION NO. 23 Mention various products which are available in the market to cover exchange rate risks? [Page 95]

- QUESTION NO. 24** Write a short note on “ Currency Futures”? *****Important[Revised Notes attached]
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- QUESTION NO. 26** What are the issues to be considered under Working Capital Management in PSU?[Page 110]
- QUESTION NO. 27** Write short note on Strategic Financial Planning in Public Sector. [Page 114]
- QUESTION NO. 28** What are the Advantages and Disadvantages of a Depository? or Explain Briefly the advantage of holding security in Demat form ? [Page 115]
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- QUESTION NO 30** Write a short note on Basis?[Page 121]
- QUESTION NO.31** Distinguish between Forward Contracts and Futures Contracts? [Page 124]
- QUESTION NO. 32** Explain the terms ‘Intrinsic Value of an Option’& the ‘Time Value of an Option’? OR Distinguish between Intrinsic Value &Time Value of an option? [Page 125]
- QUESTION NO. 33** Write a Short Notes on BOOK BUILDING*****Important [Page 128]
- QUESTION NO. 34** Write a short note on Buy-Back of shares by companies? OR Briefly explain ‘Buy Back of Securities’ and give the management objectives of buying Back Securities?[Page 135]
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- QUESTION NO. 36** What are the Differences between Primary & Secondary Markets?[Page 141]
- QUESTION NO. 37** What is Money Market Operations?[Page 143]
- QUESTION NO. 38** Explain the terms ESOS and ESPS with reference to the SEBI guidelines for The Employees Stock Option Plans (ESOPs). [Page 153]
- QUESTION NO. 39** Explain the term Insider Trading and why Insider Trading is punishable?[Page 142]
- QUESTION NO.40** Write a short note on
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For Theory Solution Refer Aaditya Jain Theory Book
Book Are Available in Leading Book Stores

Delhi : Pooja Law House , ITO and Durga Photostate , iSS Building Laxmi Nagar

Kolkata : Law Point , 6C,R N Mukherjee Road , Kolkata 700001.Phone : 033 22101821, 22483934

Write a short note on “ Currency Futures” [Important for Nov 08 /May 09]

Meaning : A **currency future** is a futures contract to exchange one currency for another at a specified date in the future at a price (exchange rate) that is fixed on the contract date..

Currency futures were first created at the Chicago Mercantile Exchange (CME) in 1972

Currency Futures Market exist for the major currencies of the world - like the Australian dollar, the Canadian Dollar, the British pound, the French franc, the Swiss franc, the Japanese yen etc.

Exchange Traded : Contracts are traded on an exchange, & the clearing house of the exchange interacts itself between the buyer and the seller. This means that all transactions are with the clearing house, and not directly between the purchaser and the seller.

Settlement : In practice very few contracts involve actual delivery at the specified day. Rather, buyers & sellers of a contract independently take opposite positions to settle down a contract. The seller cancels a contract by buying another contract, the buyer by selling another contract.

Mark To Market : Each day, the future contract is marked to market in the sense that it is valued at the closing price. Everyday, there is a winner and loser, depending on the fluctuations in prices. The loser must come up with more margins, while the winner can draw off excess margin.

Contract Size/Lot Size : Contract Size is standardized. i.e Number of units of Foreign Currency per Futures Contract is fixed. If a USD Futures Contract size is 10,000 Units, and a Company wants to sell USD 55,000, it should either sell 5 USD Futures or 6 USD Futures. It cannot sell 5.5 USD Futures.

Indian Scenario : Currency Future Now In India Currency Futures are now available in India from 29th August 2008 at the National Stock Exchange (NSE). The much-hyped currency futures debuted with a turnover of nearly Rs 291 crore. The dollar-rupee futures received an overwhelming response from market participants with nearly 70,000 contracts trading on Day 1. The first trade on the exchange was executed by East India Securities Ltd. East India Securities struck the first futures deal buying 50 November contracts at Rs 44.15 a dollar for its client Budge Refineries. HDFC Bank was the first bank to carry out the currency futures transaction. Banks contributed 40% of the total volume. The largest deal of 15,000 contracts which was transacted by Standard Chartered Bank. The most active contract was the September 2008 expiry, trading around 43,000 contracts. The trading limit for individuals is \$5 million and for trading members is \$25 million. Foreign institutional investors are excluded from the market at present. The 12 serial month contracts were available for trading i.e., September 2008 to August 2009

The Guideline on Currency Future [only if question ask to write the recent guideline on currency future]

The Reserve Bank of India on Wednesday issued a set of directions and guidelines for the launch of the much-awaited currency futures trading in India.

Following are the guidelines issued under the Reserve Bank of India Act, 1934 that have come into force with effect from August 6, 2008.

Definitions

(i) Currency Futures means a standardised foreign exchange derivative contract traded on a recognized stock exchange to buy or sell one currency against another on a specified future date, at a price specified on the date of contract, but does not include a forward contract.

(ii) Currency Futures market means the market in which currency futures are traded.

Permission

(i) Currency futures are permitted in US Dollar - Indian Rupee or any other currency pairs, as may be approved by the Reserve Bank from time to time.

(ii) Only 'persons resident in India' may purchase or sell currency futures to hedge an exposure to foreign exchange rate risk or otherwise.

Features of Currency Futures : Standardized currency futures shall have the following features:

- Only USD-INR contracts are allowed to be traded.
- The size of each contract shall be USD 1000.
- The contracts shall be quoted and settled in Indian Rupees.
- The maturity of the contracts shall not exceed 12 months.
- The settlement price shall be the Reserve Bank's Reference Rate on the last trading day.

Participants

(i) No person other than 'a person resident in India' as defined in section 2(v) of the Foreign Exchange Management Act, 1999 (Act 42 of 1999) shall participate in the currency futures market.

(ii) Notwithstanding sub-paragraph (i), no scheduled bank or such other agency falling under the regulatory purview of the

Reserve Bank under the Reserve Bank of India Act, 1934, the Banking Regulation Act, 1949 or any other Act or instrument having the force of law shall participate in the currency futures market without the permission from the respective regulatory Departments of the Reserve Bank. Similarly, for participation by other regulated entities, concurrence from their respective regulators should be obtained.

Membership

i. The membership of the currency futures market of a recognised stock exchange shall be separate from the membership of the equity derivative segment or the cash segment. Membership for both trading and clearing, in the currency futures market shall be subject to the guidelines issued by the SEBI.

ii. Banks authorized by the Reserve Bank of India under section 10 of the Foreign Exchange Management Act, 1999 as 'AD Category - I bank' are permitted to become trading and clearing members of the currency futures market of the recognized stock exchanges, on their own account and on behalf of their clients, subject to fulfilling the following minimum prudential requirements:

a) Minimum net worth of Rs. 500 crores. b) Minimum CRAR of 10 per cent. c) Net NPA should not exceed 3 per cent. d) Made net profit for last 3 years.

The AD Category - I banks which fulfill the prudential requirements should lay down detailed guidelines with the approval of their Boards for trading and clearing of currency futures contracts and management of risks.

(iii) AD Category - I banks which do not meet the above minimum prudential requirements and AD Category - I banks which are Urban Co-operative banks or State Co-operative banks can participate in the currency futures market only as clients, subject to approval therefor from the respective regulatory Departments of the Reserve Bank.

Position Limits

i. The position limits for various classes of participants in the currency futures market shall be subject to the guidelines issued by the SEBI.

ii. The AD Category - I banks, shall operate within prudential limits, such as Net Open Position (NOP) and Aggregate Gap (AG) limits. The exposure of the banks, on their own account, in the currency futures market shall form part of their NOP and AG limits.

Risk Management Measures

The trading of currency futures shall be subject to maintaining initial, extreme loss and calendar spread margins and the Clearing Corporations / Clearing Houses of the exchanges should ensure maintenance of such margins by the participants on the basis of the guidelines issued by the SEBI from time to time.

Surveillance and Disclosures

The surveillance and disclosures of transactions in the currency futures market shall be carried out in accordance with the guidelines issued by the SEBI.

Authorisation to Currency Futures Exchanges / Clearing Corporations

Recognized stock exchanges and their respective Clearing Corporations / Clearing Houses shall not deal in or otherwise undertake the business relating to currency futures unless they hold an authorization issued by the Reserve Bank under section 10 (1) of the Foreign Exchange Management Act, 1999.

Powers of Reserve Bank

The Reserve Bank may from time to time modify the eligibility criteria for the participants, modify participant-wise position limits, prescribe margins and or impose specific margins for identified participants, fix or modify any other prudential limits, or take such other actions as deemed necessary in public interest, in the interest of financial stability and orderly development and maintenance of foreign exchange market in India.

Write a short note on EXTERNAL COMMERCIAL BORROWINGS

?

➤ The foreign currency borrowings raised by the Indian corporates from confirmed banking sources outside India are called "External Commercial Borrowings" (ECBs).

➤ These Foreign Currency borrowings can be raised within ECB Policy guidelines of Govt. of India/ Reserve Bank of India applicable from time to time.

➤ External Commercial Borrowings (ECB) are defined to include

1. commercial bank loans 2. buyer's credit 3. supplier's credit 4. securitised instruments such as floating rate notes, fixed rate bonds 5. credit from official export credit agencies etc

➤ Multilateral financial institutions like IFC, ADB, AFIC, CDC are providing such facilities.

➤ **Benefits :** The ECBs route is beneficial to the Indian corporates on account of following :-

1. It provides the foreign currency funds which may not be available in India.

2. The cost of funds at times works out to be cheaper as compared to the cost of rupee funds.

3. The availability of the funds from the International market is huge as compared to domestic market and corporates can raise large amount of funds depending on the risk perception of the International market.
 4. ECBs provided an additional source of funds to the Indian companies, allowing them to supplement domestically available resources and to take advantage of lower international interest rates.
 5. While the ECB policy provides flexibility in borrowing consistent with maintenance of prudential limits for total external borrowings, its guiding principles are to keep borrowing maturities long, costs low and encourage infrastructure/core and export sector financing which are crucial for overall growth of the economy.
- ➔ **ECB cap** : With a view to manage the country's external debt prudently, the Finance Ministry sets an annual cap on the total ECBs that Indian corporates can access in a year. There have been reports that the Government plans to hike the cap on ECB currently fixed at \$18 billion to about \$22 billion.
- ➔ The government has been streamlining/liberalising ECB procedures from time to time to enable Indian corporates have greater access to international financial markets.
- ➔ **Recent Example** : About 812 companies have raised about \$20.24 billion through ECBs in the April 2006-February 2007 period. That would be equivalent to about Rs 88,000 crore. The top fundraiser was Reliance Industries, which raised \$700 million, followed by Reliance Communication, which raised \$500 million. Units in SEZ are permitted to use ECBs under a special window.

External Commercial Borrowings Policy - Liberalisation- September 2008 [Only If question asks To Write Recent Guidelines]
September 22, 2008: Reserve Bank of India has advised modification in some aspects of the ECB policy as indicated below:

1. At present, borrowers in the infrastructure sector are allowed to avail ECB up to USD 100 million per financial year for Rupee expenditure for permissible end-uses under the Approval Route. Considering the huge funding requirements of the sector, particularly for meeting Rupee expenditure, the existing limit of USD 100 million has been raised to USD 500 million per financial year for the borrowers in the infrastructure sector for Rupee expenditure under the Approval Route. ECBs in excess of USD 100 million for Rupee expenditure should have a minimum average maturity period of 7 years.
2. In view of widening of credit spreads in the international financial markets, the all-in-cost ceilings Over 6 Months LIBOR for ECBs are modified as follows:

Average Maturity Period	All-in-Cost ceilings over 6 Months LIBOR*	
	Existing	Revised
Three years and up to five years	200 bps	200 bps
More than five years and up to seven years	350 bps	350 bps
More than seven years	350 bps	450 bps

* for the respective currency of borrowing or applicable benchmark

3. The amendments to the ECB guidelines will come into force with immediate effect. All other aspects of the ECB policy such as USD 500 million limit per borrower per financial year under the Automatic Route, eligible borrower, recognised lender, end-use of foreign currency expenditure for import of capital goods and overseas investments, average maturity period, prepayment, refinancing of existing ECB and reporting arrangements remain unchanged.

The existing limit of USD 50 million for Rupee expenditure under the Approval Route for borrowers other than those in the infrastructure sector also remains unchanged.

4. Necessary amendments to the Foreign Exchange Management (Borrowing or Lending in Foreign Exchange) Regulations, 2000 dated May 3, 2000 are being issued separately.
5. AD Category - I banks may bring the contents of this circular to the notice of their constituents and customers concerned.
6. The directions contained in this circular have been issued under sections 10(4) and 11 (1) of the Foreign Exchange Management Act, 1999 (42 of 1999) and is without prejudice to permissions/approvals, if any, required under any other law

Write short note on Foreign Currency Exchangeable Bond ?

➔ In February this year, the Government (Ministry of Finance) had issued a notification introducing Foreign Currency Exchange Bonds (FCEBs) that offered Indian companies an additional avenue to raise finances from overseas.

➔ "Foreign Currency Exchangeable Bond" means a bond expressed in foreign currency, the principal and interest in respect of which is payable in foreign currency.

FCEB is a foreign currency bond, issued by an Indian issuing company (IC) and subscribed to by a person who is a resident outside India. FCEBs are exchangeable into equity shares of an offered company (OC).

FCEBs are financial instruments similar to Foreign Currency Convertible Bonds (FCCBs) in nature and allow corporate to raise

money by issuing bonds.

➤ Recently notified by the Finance Ministry, the FCEB Scheme, 2008, enables Indian promoters to unlock value in their group companies, without immediate dilution of voting power or control in such companies

➤ “The unique and flexible nature of FCEB has generated a lot of interest among large Indian corporate houses looking to raise funds overseas, for acquisitions or greenfield projects

➤ Clearly the introduction of FCEBs is a very laudable initiative and provides an additional avenue for Indian promoters to raise funds from foreign investors to fund new projects or acquisitions

➤ The RBI is likely to come out with guidelines on Foreign Currency Exchangeable Bonds (FCEBs) a move that would give corporate more options to raise money from overseas markets.

➤ The ease of norms by RBI would prove useful for companies to raise funds from international market.

➤ Feature Of The Scheme :

The companies can issue FCEB with a maturity period of five years, in order to raise funds from foreign market.

FCEB help companies to meet their financing requirements in foreign currency.

FCEBs will permit Indian firms to unlock a part of holding in group firms investments to comply with FDI and ECB policy.

The bond would be in foreign currency, and the principal and interest will also have to be paid in foreign currency.

Foreign Currency Exchangeable Bonds Scheme, 2008 [Only If Question Ask Us To write Recent Guideline]

The Central Government hereby notifies the following scheme for facilitating issue of Foreign Currency Exchangeable Bonds by Indian Companies, namely :—

1. Short title and commencement.—

(1) This scheme may be called the Issue of Foreign Currency Exchangeable Bonds Scheme, 2008.

(2) It shall come into force on the date of notification in the Official Gazette.

2. Definitions.—In this scheme, unless the context otherwise requires,—

(a) “Foreign Currency Exchangeable Bond” means a bond expressed in foreign currency, the principal and interest in respect of which is payable in foreign currency, issued by an Issuing Company and subscribed to by a person who is a resident outside India in foreign currency and exchangeable into equity share of another company, to be called the Offered Company, in any manner, either wholly, or partly or on the basis of any equity related warrants attached to debt instruments.

(b) “Issuing Company” means an Indian company as defined in the Companies Act, 1956 (1 of 1956), which is eligible to issue Foreign Currency Exchangeable Bond.

(c) “Offered Company” means an Indian company as defined in the Companies Act, 1956 (1 of 1956) whose equity share/s shall be offered in exchange of the Foreign Currency Exchangeable Bond.

(d) “Promoter Group” has the same meaning as defined in the Securities and Exchange Board of India (Disclosure and Investor Protection) Guidelines, 2000.

3. Eligibility Conditions and subscription of Foreign Currency Exchangeable Bonds.—

(1) The Issuing Company shall be part of the promoter group of the Offered Company and shall hold the equity share/s being offered at the time of issuance of Foreign Currency Exchangeable Bond.

(2) The Offered Company shall be a listed company which is engaged in a sector eligible to receive Foreign Direct Investment and eligible to issue or avail of Foreign Currency Convertible Bond or External Commercial Borrowings.

(3) An Indian Company, which is not eligible to raise funds from the Indian securities market, including a company which has been restrained from accessing the securities market by the Securities and Exchange Board of India shall not be eligible to issue Foreign Currency Exchangeable Bond.

(4) The subscriber to the Foreign Currency Exchangeable Bond shall comply with the Foreign Direct Investment policy and adhere to the sectoral caps at the time of issuance of Foreign Currency Exchangeable Bond. Prior approval of Foreign Investment Promotion Board, wherever required under the Foreign Direct Investment policy, should be obtained. Entities prohibited to buy, sell or deal in securities by Securities and Exchange Board of India will not be eligible to subscribe to Foreign Currency Exchangeable Bond.

4. End-use requirements.—

(1) The proceeds of Foreign Currency Exchangeable Bond may be invested by the issuing company in the promoter group companies. The promoter group company receiving such investments shall be required to use the proceeds in accordance with end uses prescribed under the External Commercial Borrowings policy. The promoter group company receiving such investments will not be permitted to utilize the proceeds for investments in the capital market or in real estate in India.

(2) The proceeds of Foreign Currency Exchangeable Bond may be invested by the issuing company overseas by way of direct investment including in Joint Ventures or Wholly Owned Subsidiaries subject to the existing guidelines on Indian Direct Investment in Joint Ventures or Wholly Owned Subsidiaries abroad.

5. Operational Procedure.—

(1) Prior approval of the Reserve Bank of India shall be required for issuance of Foreign Currency Exchangeable Bond.

(2) The Foreign Currency Exchangeable Bond may be denominated in any freely convertible foreign currency.

6. Pricing and Maturity.—

(1) The rate of interest payable on Foreign Currency Exchangeable Bond and the issue expenses incurred in foreign currency shall be within the all in cost ceiling as specified by Reserve Bank of India under the External Commercial Borrowings policy.

(2) At the time of issuance of Foreign Currency Exchangeable Bond the exchange price of the offered listed equity shares shall not be less than the higher of the following two :

(i) The average of the weekly high and low of the closing prices of the shares of the offered company quoted on the stock exchange during the six months preceding the relevant date; and

(ii) The average of the weekly high and low of the closing prices of the shares of the offered company quoted on a stock exchange during the two week preceding the relevant date.

Explanation :—For the purpose of this sub-scheme, “relevant date” means, the date on when the Board of the issuing company passes the resolution authorizing the issue of Foreign Currency Exchangeable Bond.

(3) The minimum maturity of the Foreign Currency Exchangeable Bond shall be five years for purposes of redemption. The exchange option can be exercised at any time before redemption. While exercising the exchange option, the holder of the Foreign Currency Exchangeable Bond shall take delivery of the offered shares. Cash (Net) settlement of Foreign Currency Exchangeable Bonds shall not be permissible.

7. Mandatory Requirements.—

(1) The Issuing Company shall comply with the provisions of the Companies Act, 1956 (1 of 1956) and obtain necessary approvals of its Board of Directors and shareholders if applicable. The Offered Company shall also obtain the approval of its Board of Directors in favour of the Foreign Currency Exchangeable Bond proposal of the issuing company.

(2) The Issuing Company intending to offer shares of the offered company under Foreign Currency Exchangeable Bond shall comply with all the applicable provisions of the Securities and Exchange Board of India Act, Rules, Regulations or Guidelines with respect to disclosures of their shareholding in the Offered Company.

(3) The Issuing Company shall not transfer, mortgage or offer as collateral or trade in the offered shares under Foreign Currency Exchangeable Bond from the date of issuance of the Foreign Currency Exchangeable Bond till the date of exchange or redemption. Further, the Issuing Company shall keep the offered shares under Foreign Currency Exchangeable Bond free from all encumbrances from the date of issuance of the Foreign Currency Exchangeable Bond till the date of exchange or redemption.

8. Retention and deployment of proceeds of Foreign currency exchangeable Bond.— The proceeds of the Foreign Currency exchangeable Bond shall be retained and/or deployed overseas in accordance with the policy for the proceeds of External Commercial Borrowings.

9. Taxation on Exchangeable Bonds.—

(1) Interest payments on the bonds, until the exchange option is exercised, shall be subject to deduction of tax at source as per the provisions of sub-section (1) of section 115 AC of the Income-tax Act, 1961 (43 of 1961). (2) Tax on dividend on the exchanged portion of the bond shall be in accordance with the provisions of sub-section (1) of section 115 AC of the Income-tax Act, 1961 (43 of 1961). (3) Exchange of Foreign Currency Exchangeable Bonds into shares shall not give rise to any capital gains liable to income-tax in India. (4) Transfers of Foreign Currency Exchangeable Bonds made outside India by an investor who is a person resident outside India to another investor who is a person resident outside India shall not give rise to any capital gains liable to tax in India.

Note : Student may ignore the guidelines part . Just Read the guidelines and develop a common understanding of the topic .

Important Practical Questions

Dividend :

QUESTION NO.1 Mr. A is contemplating purchase of 1,000 equity shares of a Company. His expectation of return is 10% before tax by way of dividend with an annual growth of 5%. Company's last dividend was Rs. 2 per share. Even as he is contemplating, Mr. A suddenly finds, due to a budget announcement dividends have been exempted from tax in hands of the recipients. But the imposition of dividend Distribution tax on the Company is likely to lead to a fall in dividend of 20 paise per share. A's marginal tax rate is 30%. Calculate what should be Mr. A's estimates of price per share before and after Budget announcement?

Solution :

As per Dividend Growth Model : $P_o = \frac{D_o(1+g)}{K_e - g}$

Now Market Price Per Share (P_o) before Budget announcement as per Mr. A's estimates. $P_o = \frac{2 \times (1 + .05)}{.10 - .05} = \text{Rs. } 42$

and Market Price Per Share (P_o) after Budget announcement as per Mr. A's estimates. $P_o = \frac{1.80 \times (1 + .05)}{.07 - .05} = \text{Rs. } 94.50$

Bond Valuation :

QUESTION NO. 2 John inherited the following securities on his uncle's death:

Type of Security	Nos.	Annual Coupon	Maturity Years	Yield
Bond A (Rs. 1,000)	10	9	3	12
Bond B (Rs. 1,000)	10	10	5	12
Preference Shares C (Rs. 100)	100	11	*	13*
Preference Shares D (Rs. 100)	100	12	*	13*

*likelihood of being called at a premium over par. Compute the current value of his uncle's portfolio.

Solution :

Computation of Current Value of John's Portfolio.

(i) No. of Bond : 10 Name of Bond : Bond A, Face Value : Rs. 1,000 par value, Coupon Rate : 9%, Maturity 3 yrs : Yield : 12 %
Value Of Bond : $10 \times [900 \times \text{PVAF} (12\%, 3 \text{ Years}) + 1000 \times \text{PVF} (12\%, 3 \text{ Years})] = \text{Rs. } 9282$

(ii) No. of Bond : 10 Name of Bond : Bond B, Face Value : Rs. 1,000 par value, Coupon Rate : 10 %, Maturity 5 yrs : Yield : 12 %
Value Of Bond : $10 \times [100 \times \text{PVAF} (10\%, 3 \text{ Years}) + 1000 \times \text{PVF} (10\%, 3 \text{ Years})] = \text{Rs. } 9275$

(iii) No. of Bond : 100 Preference shares C, Face Value : Rs. 100 par value, Coupon Rate : 11%, Yield : 13 %

$$\frac{11\% \times 100 \text{ Nos.} \times \text{Rs. } 100}{13\%} = \frac{1,100}{0.13} = 8,462$$

(iv) No. of Bond : 100 Preference shares D, Face Value : Rs. 100 par value, Coupon Rate : 12%, Yield : 13 %

$$\frac{12\% \times 100 \text{ Nos.} \times \text{Rs. } 100}{13\%} = \frac{1,200}{0.13} = 9,231$$

Therefore Total current value of his portfolio [(i) + (ii) + (iii) + (iv)] = 36,250

Note : Preference shares are assumed to be irredeemable (i.e. having no maturity period) in the absence of any information.

Mutual Fund :

QUESTION NO. 3 Kiran has invested in three mutual fund schemes as per details given below:

Mutual Fund	A	B	C
Date of investment	1.12.03	1.1.04	1.3.04
Amount of investment	Rs. 50000	Rs. 1 lakh	Rs. 50000
NAV at entry date	Rs. 10.50	Rs. 10.00	Rs. 10.00
Dividend received upto 31.3.04	Rs. 950	Rs. 1500	Nil
NAV as on 31.3.2004	Rs. 10.40	Rs. 10.10	Rs. 9.80

Required : What is the effective yield on per annum basis in respect of each of the three schemes to Miss Kiran upto 31.3.04?

Solution :

$$\text{Return for MF A (Period 1-12-03 to Period 31-03-04)} = \frac{(10.40 - 10.50) + .20}{10.50} = .95\% \text{ for 4 months .}$$

$$\text{Return for MF-A for per annum basis (Yield per annum)} = \text{Yield} \times \frac{12}{\text{Months of Investment}} = .95 \times \frac{12}{4} = 2.85\%$$

Working Notes :

$$\text{(a) No. of Units} = \frac{\text{Total Investment}}{\text{NPV at entry date}} = \frac{50,000}{10.50} = 4762 \quad \text{(b) Dividend Per Unit} = \frac{\text{Total Dividend}}{\text{No. of Units}} = \frac{950}{4762} = .20$$

$$\text{Return for MF B (Period 1 - 04 to 31 - 3 - 04)} = \frac{(10.10 - 10.00) + .15}{10} = 2.5\% \text{ for 3 months .}$$

$$\text{Return for MF-B for per annum basis (Yield per annum)} = 2.5 \times \frac{12}{3} = 10\%$$

Working Notes:

$$\text{(a) No. of Units} = \frac{\text{Total Investment}}{\text{NPV at entry date}} = \frac{1,00,000}{10} = 10,000 \quad \text{(b) Dividend Per Unit} = \frac{\text{Total Dividend}}{\text{No. of Units}} = \frac{1500}{10,000} = .15$$

$$\text{Return for MF C : (Period 01 - 03-04 to 31 - 03 - 04)} = \frac{(9.80 - 10.00) + \text{NIL}}{100} = -2\% \text{ for 1 months .}$$

$$\text{Return for MF-C for per annum basis (Yield per annum)} = -2\% \times \frac{12}{1} = -24\%$$

Working Notes :

$$\text{(a) No. of Units} = \frac{\text{Total Investment}}{\text{NPV at entry date}} = \frac{50,000}{10} = 5000 \text{ units ; Dividend Per Unit} = \frac{\text{Nil}}{\text{No. of Units}} = \frac{\text{Nil}}{5000} = \text{Nil}$$

or no required to calculate as Dividend is NIL as given in question .

Portfolio Management :

QUESTION NO. 4 The total market value of the equity share of O.R.E. Company is Rs. 60,00,000 & total value of the debt is Rs. 40,00,000. The treasurer estimate that the beta of the stock (Additional Analysis : Stock means Equity) is currently 1.5 & that the expected risk premium on the market is 10%. The industry bill rate is 8%. **Required:**

- What is the beta of the Company's exiting portfolio of assets?
- Estimate the Company's Cost of capital and the discount rate for an expansion of the company's present business.

Solution :**(i) Firm Beta or Beta of Company's existing Portfolio of Assets :**

$$B_A = \left[B_E \times \frac{E}{D + E} \right] + \left[B_D \times \frac{D}{D + E} \right] = \left[1.5 \times \frac{60}{60 + 40} \right] + \left[0 \times \frac{40}{60 + 40} \right] = .9$$

Estimation of Company's Cost of Capital : = Risk Free Return + Beta_{Overall} (R_m - R_f) = 8% + .90 × 10% = 17%

In case of expansion plan, 17% can be used as Discount Rate. Therefore Discount Rate = 17 %

Note : Debt Beta is assumed to be Nil in the absense of any information.

Derivatives :**QUESTION NO. 5** The following data related to ABC Ltd. share prices :

Current Market Price Per Share Rs. 180

Price in Futures Market for 6 month Rs. 195

It is possible to borrow money for securities transactions at the rate of 12% p.a. **Required :**

(i) Calculate the Fair/Theoretical minimum price of a 6 month forward contract. (ii) Explain, if any, arbitrage opportunities exist.

Solution :

6 months forward price may be found as follows :

$$\text{Fair Future Value} = \text{Spot Price} \times e^{rt} = \text{Rs. } 180 \times e^{.12 \times .5} = \text{Rs. } 180 \times 1.06184 = \text{Rs. } 191.12$$

Decision :

Actual Future Price = Rs.195 ; Fair Future Price = Rs.191.12

Since Fair Future Price is less than Actual Future Price, Arbitrage Opportunity is possible.

Stock is Overvalued in Future Market.

For Arbitrage Gain :

(i) Buy the Stock in the Spot / Cash Market (ii) For this Borrow the necessary amount (iii) Then Sell the Stock in the Future Market upon maturity .

Gain or Loss on Expiration :

Repayment including interest @ 12% c.c taken for borrowing and buying stock in the spot market.

$$[180 \times e^{.12 \times 6/12} \Rightarrow 180 \times e^{.06} \Rightarrow 180 \times 1.06189] \quad 191.1312$$

Sell the Stock in the future market as per contract and collect 195

Net Gain 3.8688

The arbitrage opportunity will continue to exist. So long as the actual market price is more than Rs. 191.12 [Which was our Fair Future Price]

QUESTION NO. 6 Ram buys 10,000 shares of X Ltd. at Rs. 22 and obtains a complete hedge shorting [selling] 400 Nifties at Rs. 1100 each. He closes out his position at the closing price of the next day at which point, the share of X Ltd. has dropped 2% and the Nifty future has dropped 1.5%. What is the overall profit/loss of this set of transaction?

Solution :

Step 1 Computation of Profit/Loss on Share of X Ltd

Purchase Price : 10,000 × 22	– 220000
Sale Price : 10,000 × (22 – 22 × 2%)	+ 215600
Loss	4400

Step 2 Computation of Profit/Loss on Nifty

Sale Price : 400 × 1100	+ 440000
Purchase Price : 400 × (1100 – 1000 × 1.5%)	– 433400
Profit	6600

Step 3 Computation of Overall Profit and Loss in

Profit on Nifty	6600
Loss on X Ltd. Share	4400
Overall Net gain in the set of transaction	2200

QUESTION NO. 7 Which position on the index futures gives a speculator a complete hedge against the following transactions.

(i) The share of Right Ltd. is going to rise. He has a long position on the cash market of Rs. 50 lacs on the Right Ltd. The beta of the Right Ltd. is 1.25.

(ii) The share of Wrong Ltd. is going to depreciate. He has a short position on the cash market of Rs. 25 lacs on the Wrong Ltd. The beta of the Wrong Ltd. is 0.9.

(iii) The share of Fair Ltd. is going to stagnate. He has a short position on the cash market of Rs. 20 lacs of Fair Ltd. The beta of the Fair Ltd. is 0.75.

Solution :

Hedging is taking an equal and opposite position in another market so that loss that may arise in one market would be compensated by a gain in another market. The extent of hedging (sometimes referred to as hedge ratio) is determined by the beta of a security. If the beta is greater than one (i.e. hedge ratio is greater than one) then the position hedged would be higher than the underlying position and vice versa.

(i) Since he has a Long position on the Cash Market and the expectation is that Price is going to Rise

For complete hedge he should take Short Position in the Future Market i.e. he should sell Index in the future market to the tune

of 50 lacs $\times 1.25 = 62.5$ lacs

(ii) Since he has a Short Position on the Cash Market and the expectation is that Price is going to Fall For complete hedge, he should take Long Position in the Future Market i.e. he should buy Index in the future market to the tune of $25 \text{ lacs} \times .90 = 22.5$ lacs.

(iii) Since he has Short Position on the Cash Market and the expectation is that price is going to remain stagnate . In this case the speculator may remain un-hedged. However For complete hedge, he should take Long Position in the Future Market i.e. he should buy Index futures market equivalent to $0.75 \times \text{Rs. } 20 \text{ lacs} = \text{Rs. } 15 \text{ lacs}$. It would protect him from unanticipated losses.

Additional Analysis : The above action would give a speculator a complete hedge whether the price is expected to rise , fall or remain stagnate .

Merger & Acquisition :

QUESTION NO. 8 The following information is provided related to the acquiring Firm Mark Limited and the target Firm Mask Limited:

	Firm Mark Limited	Firm Mask Limited
Earning after tax (Rs.)	2,000 lakhs	400 lakhs
Number of shares outstanding	200 lakhs	100 lakhs
P/E ratio (times)	10	5

Required:(i) What is the Swap Ratio based on current market prices?(ii) What is the EPS of Mark Limited after acquisition?(iii) What is the expected market price per share of Mark Limited after acquisition, assuming P/E ratio of Mark Limited remains unchanged?(iv) Determine the market value of the merged firm(v) Calculate gain/ loss for shareholders of the two independent companies after acquisition.

Solution :

(i) Swap Ratio based on Current Market Price :

	Mark	Mask
Earning After Tax	2000Lakhs	400 Lakhs
No. of Equity Shares	200Lakhs	100 Lakhs
EPS	10	4
P/E Ratio	10	5
MPS	100	20

$$\text{Swap Ratio} = \frac{20}{100} = .2$$

$$\text{(ii) } \text{EPS}_{A+B} = \frac{(2000 + 400)L}{200L + 100L \times .2} = 10.91$$

(iii) Expected MPS of Mark Ltd. after acquisition, assuming P/E Ratio of Mark Ltd. remains unchanged :

$$\text{MPS}_{A+B} = \text{P/E Ratio}_{A+B} \times \text{EPS}_{A+B} = \text{Rs. } 10 \times 10.91 = \text{Rs. } 109.10$$

(iv) Market Value of Merged firm = MPS After Merger $\times$ Total No. Of Equity Shares After Merger = Rs. 109.10×220 Lakhs = 24002 Lakhs.

(v) Gain/Loss from Merger :

Post Merger Market Value of the Merged firm =	Rs. 24002 Lakhs.
Less : Pre-Merger Market Value :	
Mark Ltd : $200L \times 100 =$	Rs. 20000 Lakhs.
Mask Ltd. $100L \times 20 = 20$ Crores =	Rs. 2000 Lakhs.
Gain from Merger	Rs. 2002 Lakhs.

Appropriation of Gains from the merger among shareholders :

	Mark Ltd.	Mask Ltd.
Post Merger Value	21820 Lakhs.	2182 Lakhs.
	$[200 L \times 109.10] =$	$[100 L \times .2 \times 109.10] =$
Loss : Pre-Merger Market Value	20000 Lakhs.	2000 Lakhs.
Gain to Shareholders	1820 Lakhs.	182 Lakhs.

Leasing :

QUESTION NO. 9 Agrani Ltd. is in the business of manufacturing bearings. Some more product lines are being planned to be added to the existing system. The machinery required may be brought or may be taken on lease. The cost of machine is Rs. 40,00,000 having a useful life of 5 years with the salvage value of Rs. 8,00,000. The full purchase value of machine can be financed by 20% loan repayable in five equal instalments falling due at the end of each year. Alternatively, the machine can be procured on a 5 years lease, year-end lease rentals being Rs. 12,00,000 per annum. The Company follows the written down value method of depreciation at the rate of 25%. Company's tax rate is 35 per cent and cost of capital is 16 per cent.

(i) Advise the company which option it should choose - lease or borrow.

(ii) Assess the proposal from the lessor's point of view examining whether leasing the machine is financially viable at 14% cost of capital (Detailed working notes should be given. Calculations can be rounded off to Rs. lakhs).

Solution :**(i) Present Value of Cash outflow under Lease Option**

Year	Lease Rental After tax	PVAF @ 13%	(in Rs.) Total Present Value
1-5	12,00,000 (I - T) = 7,80,000	20% (I-T) 3.517	27,43,260

Present Value Cash Outflow under Borrowing Option

5 equal instalments

Rs. 40,00,000 ÷ PVAF (20%, 5 Years) = Rs. 40,00,000 ÷ 2.991 = 13,37,345

Tax Advantage

Year	Loan Instalments	On Interest	On Depreciation	Net Cash Outflow	PVF 13%	Total PV
1	13,37,345	2,80,000	3,50,000	7,07,345	.885	6,26,000
2	13,37,345	2,48,386	2,62,500	8,26,459	.783	6,47,117
3	13,37,345	1,97,249	1,96,875	9,43,221	.693	6,53,652
4	13,37,345	1,43,085	1,47,656	10,46,604	.613	6,41,568
5	13,37,345	78,087	1,10,742	11,48,516	.543	6,23,644
						31,91,981

Total PV 31,91,981

Less : PV of Salvage Value adjusted for Tax savings

on loss of sale of machinery (Rs. 8,00,000 + 52226.5) × .543 4,62,759

Total Present Value of Cash Outflow

27,29,222

Decision PV of Cash Outflow of Lease Option is greater than borrow option and hence borrow option is recommended.

Working Notes ;**1. Debt and Interest payments :**

Year	Loan at the beginning of the year	Loan Installment	Interest Component	Principal Component	Balance at the end of year
1	40,00,000	1337345	8,00,000	5,37,345	34,62,655
2	34,62,655	1337345	6,92,531	6,44,814	28,17,841
3	28,17,841	1337345	5,63,568	7,73,777	20,44,064
4	20,44,064	1337345	4,08,813	9,28,532	11,15,532
5	11,15,532	1337345	2,23,106	11,14,239	NIL

2. Depreciation Schedule :

Year	Depreciation	Balance
1	40,00,000 × .25 = 10,00,000	30,00,000

2	$30,00,000 \times .25 = 7,50,000$	2250000
3	$22,50,000 \times .25 = 5,62,500$	1687500
4	$16,87,500 \times .25 = 4,21,875$	12165625
5	$12,65,625 \times .25 = 3,16,406$	949215

Therefore Book Value of Machine at the end of Year 5 = 9,49,219

3. Loss on Sale of Machinery:

Sale Value	8,00,000
Less: Book Value	9,49,219
Loss	149219
Tax Saving @ 35 %	52226.65

(ii) Proposal From the View Point of Lessor

Lessor's Cash Flow

	1	2	3	4	5
Lease Rentals	12,00,000	12,00,000	12,00,000	12,00,000	12,00,000
Less : Dep.	10,00,000	7,50,000	5,62,500	4,21,875	3,16,406
EBT	2,00,000	4,50,000	6,37,500	7,78,125	8,83,594
Less : Tax @ 35%	70,000	1,57,500	2,23,125	2,72,344	3,09,258
EAT	1,30,000	2,92,500	4,14,375	5,05,781	5,74,336
CFAT	11,30,000	10,42,500	9,76,875	9,27,656	8,90,742
PVF @ 14%	.877	.769	.675	.592	.519
PV	9,91,010	8,01,683	6,59,391	5,49,172	4,62,295
Total P.V. =			34,63,551		

Add : PV of Sale Value+Tax Saving on sale of asset 442305 (852226.5 $\times$.519)

Total Present Value of Cash Inflow

3905856

Cost of Machine

40,00,000

NPV

-94144

Decision ; Leasing from the point of view of Lessor is not financially viable. Hence, not recommended.

Capital Budgeting :

QUESTION NO. 10 A company is considering two mutually exclusive projects X and Y. Project X costs Rs. 30,000 and Project Y Rs. 36,000. You have been given below the net present value, probability distribution for each project:

Project X		Project Y	
NPV Estimate	Probability	NPV Estimate	Probability
3,000	0.1	3,000	0.2
6,000	0.4	6,000	0.3
12,000	0.4	12,000	0.3
15,000	0.1	15,000	0.2

(i) Compute the Expected Net Present Value of Projects X and Y. (ii) Compute the risk attached to each project i.e., Standard Deviation of each probability distribution. (iii) Which project do you consider more risky and why? (iv) Compute the Profitability Index of each project.

Solution :

		Project X			
NPV Estimate	Probability	NPV Estimate	Deviation	Square of the	Square of the
		$\times$ Probability	from Expected NPV	deviation	deviation $\times$ Probability
3,000	0.1	300	6,000	3,60,00,000	36,00,000
6,000	0.4	2,400	3,000	90,00,000	36,00,000
12,000	0.4	4,800	-3,000	90,00,000	36,00,000
15,000	0.1	1,500	-6,000	3,60,00,000	36,00,000
Expected NPV		9,000			1,44,00,000

		Project Y			
NPV Estimate	Probability	NPV Estimate × Probability	Deviation from Expected NPV i.e. Rs.	Square of the deviation	Square of the deviation × Probability
3,000	0.2	600	6,000	3,60,00,000	72,00,000
6,000	0.3	1,800	3,000	90,00,000	27,00,000
12,000	0.3	3,600	-3,000	90,00,000	27,00,000
15,000	0.2	3,000	-6,000	3,60,00,000	72,00,000
Expected NPV		9,000			1,98,00,000

(i) The Expected Net Present Value of Project X and Y is Rs. 9,000 each.

(ii) Standard Deviation :

$$\text{In case of Project X : Standard Deviation} = \sqrt{\text{Rs. } 1,44,00,000} = 3,795.$$

$$\text{In case of Project Y : Standard Deviation} = \sqrt{\text{Rs. } 1,98,00,000} = 4,450$$

	X	Y
Expected NPV	9,000	9,000
Standard Deviation	3795	4450

Project Y seems to be more riskier than Project X .As Expected NPV of both Project X and Project Y are same .But Standard Deviation of Project Y is more than Project X.It means Project Y is more riskier .or

We can also take decision by calculating Coefficient Of Variation (As per Suggested) :

$$\text{Coefficient of Variation} = \frac{\text{Standard Deviation}}{\text{Expected Present Value}}$$

$$\text{In case of Project X : Coefficient of Variation} = \frac{3,795}{9,000} = 0.42;$$

$$\text{In case of Project Y : Coefficient of Variation} = \frac{4,450}{9,000} = 0.49 \text{ or } 0.50$$

Project Y is riskier since it has a higher coefficient of variation.

$$\text{(iv) Profitability Index} = \frac{\text{Present Value of Cash Inflow}}{\text{Present Value of Cash Outflow}}$$

$$\text{In case of Project X : Profitability Index} = \frac{9,000 + 30,000}{30,000} = 1.30$$

$$\text{In case of Project Y : Profitability Index} = \frac{9,000 + 36,000}{36,000} = 1.25$$

Foreign Exchange :

QUESTION NO. 11 Ram Pharma Ltd. an Indian based MNC, is evaluating an overseas investment proposal. Ram Pharma's exports of pharmaceuticals products have increased to such an extent that it is considering a project to build a plant in the U.S. The project will entail an initial outlay of \$100 million and is expected to generate the following cash flows over its four year life.

Year	1	2	3	4
Cash Flows (in \$ in million)	30	40	50	60

The current exchange rate is Rs. 45 per US \$, the risk free rate in India 11% and the risk free rate in US is 6%. Ram Pharma's rupee return on a project of this kind is 15%. Should Ram Pharma undertake this project? Solve by both Foreign Currency Approach & Home Currency Approach ?

Solution :

Home Currency Approach :

Based on the Interest Rate Parity Relationships we have

$$\frac{\text{Forward Rate}}{\text{Spot Rate}} = \frac{(1 + r_H)^T}{(1 + r_F)^T} \quad r_H = \text{risk free rate in home country; } r_F = \text{risk free rate in foreign country}$$

We have been given Spot rate 1 \$ = Rs. 45, $r_H = 11\%$ $r_F = 6\%$, Hence forecasted spot exchange rates or Forward Rate for Year 1 to 4 are as follows :

Year Forecasted Spot Exchange rate

1	Rs. 45 (1.11/1.06) ¹	=	Rs. 47.12
2	Rs. 45 (1.11/1.06) ²	=	Rs. 49.35
3	Rs. 45 (1.11/1.06) ³	=	Rs. 51.67
4	Rs. 45 (1.11/1.06) ⁴	=	Rs. 54.11

First we will convert the foreign currency cash flows into home currency cash flows i.e the dollar cash flows into rupees cash flows.

Year	Cash flows in \$ (million)	Expected Exchange Rate (Rs.)	Cash flows in Rs.(million.)
	(1)	(2)	(1) × (2)
0	-100	45.00	-4500.00
1	30	47.12	1413.60
2	40	49.35	1974.00
3	50	51.67	2583.50
4	60	54.11	3246.60

Now given a rupee discount rate of 15%, the NPV in rupees will be :

$$\text{NPV} = -4500 + \frac{1413.60}{(1.15)^1} + \frac{1974.00}{(1.15)^2} + \frac{2583.50}{(1.15)^3} + \frac{3246.60}{(1.15)^4} = \text{Rs. } 1776.80 \text{ million.}$$

Decision: As the NPV is positive the project should be accepted. **OR**

Foreign Currency Approach

For this approach we will first find the **risk adjusted dollar discount rate** corresponding to the risk adjusted rupee rate of 15%.

Calculation Of Risk Premium :

$$(1 + \text{Risk Free Rupee Rate}) (1 + \text{Risk Premium}) = (1 + \text{Risk Adjusted Rupee Rate})$$

$$\Rightarrow (1 + 0.11) (1 + \text{Risk Premium}) = (1 + 0.15) \Rightarrow \text{Risk Premium} = 0.036 = 3.6\%$$

Calculation Of Dollar Discount Rate :

$$(1 + \text{Risk Free Dollar Rate}) (1 + \text{Risk Premium}) = (1 + \text{Risk Adjusted Dollar Rate})$$

$$\Rightarrow (1 + 0.06) (1 + 0.036) = (1 + \text{Risk Adjusted Dollar Rate})$$

Therefore Risk Adjusted Dollar Rate = 0.0982 = 9.82%

Now using the dollar discount rate of 9.82% and the dollar cash flows, the NPV in dollars is :

$$\text{NPV} = -4500 + \frac{30}{(1.0982)^1} + \frac{40}{(1.0982)^2} + \frac{50}{(1.0982)^3} + \frac{60}{(1.0982)^4} = \$39.484 \text{ million.}$$

Since the spot exchange rate for \$ is Rs. 45, we can get NPV = 45 × 39.484 = **Rs. 1776.80 million.**

[Note : Answers under both options must tally]

QUESTION NO. 12 On the same date when the DM spot rate was quoted at \$0.40 in New York, the price of the Pound Sterling was quoted at \$1.80:

(i) What would you expect the price of the Pound to be in Germany?

(ii) If Pound was quoted in Frankfurt at DM 4.40/Pound, what procedure you will follow to do to profit from the situation?

[Additional Analysis : Frankfurt is the capital of Germany]

Solution :

Given, New York 1 DM = \$.40 and New York 1 £ = \$ 1.80

(i) Price of the Pound in Germany :

$$\frac{\text{DM}}{\text{£}} = \frac{\text{DM}}{\text{\$}} \times \frac{\text{\$}}{\text{£}} = \frac{1}{.40} \times 1.80 = 4.5 \quad \therefore 1\text{£} = \text{DM } 4.5$$

(ii) Actual Exchange Rate of Pound in Frankfurt is : 1 £ = DM 4.40.

Cross Currency Exchange Rate of Pound is : 1£ = DM 4.50

Since both rates are not same "Arbitrage Opportunity" is possible. The Rule is "Buy Low and Sell High".

Action : An arbitrageur will take the following action :

Buy 1 Pound in Frankfurt for DM 4.40

Sell 1 Pound in New York and Buy 1.80 Dollar.

With 1.80 Dollar in New York, Buy 4.5 DM $\left(\frac{1.80}{.40}\right)$

Hence the above action by the arbitrageur gives him a risk less gain of DM $(4.50 - 4.40) = \text{DM } .10$ Since he invested 4.40DM initially and is getting 4.50 DM at the end

$$\text{Total \% Profit} = \frac{\text{Return}}{\text{Investment}} \times 100 = \frac{.1}{4.4} \times 100 = 2.27\%$$

QUESTION NO. 13 The spot rate - \$ 0.3197/KR , 3 month forward rate - \$.3180/KR , Rate of interest are \$ = 6.25% p.a. & KR = 7.5% p.a. Is there an arbitrage opportunity here? How would you exploit?

Solution :

If there is no arbitrage opportunity, then the following equation will hold true.

$$\frac{\text{FR } (\$/\text{KR})}{\text{SR } (\$/\text{KR})} = \frac{1 + \$ \text{ Interest Rate}}{1 + \text{KR Interest Rate}} \Rightarrow \frac{.3180}{.3197} = \frac{1 + .0625/4}{1 + .075/4} \Rightarrow .9947 = .9969$$

Since the above equation do not hold true arbitrage opportunities is possible.

Since $.9947 < .9969$ i.e LHS < RHS ,It is better to invest in home country which in our case is USA **OR**

The Theoretical Interest Rate in USA Market can be found by using the following relation :

$$\frac{\text{Forward Rate } (\$/\text{KR})}{\text{Spot Rate } (\$/\text{KR})} = \frac{1 + \$ \text{ Interest Rate}}{1 + \text{KR Interest Rate}} \Rightarrow \frac{.3180}{.3197} = \frac{1 + \$ \text{ Interest Rate}}{1 + \frac{.075}{4}} \Rightarrow \$ \text{ Interest Rate} = 1.33328\%$$

$$\text{Annual Interest Rate : } \frac{1.3328}{3} \times 12 = 5.33\%$$

Since the Theoretical Interest Rate (5.33%) is less than Actual Interest Rate (6.25%) : Money will flow into the home country.

Hence in the given case KR is not an investment market and the investor should invest in domestic (\$) market.

He should rather borrow KR, invest in \$ market and make gain in the arbitrage process.

Action to be taken by the arbitrageur :

He should borrow 1000 KR (assumed) at the interest rate of 7.5% p.a. for 3 months.

$$\text{After 3 month he should pay a total amount of } 1000 \text{ KR} + \text{KR} \left(1000 \times \frac{7.5}{100} \times \frac{3}{12} \right) = \text{KR } 1018.75$$

Now 1000 KR which has been borrowed should be first be converted in US \$ by using Spot Rate and then invested in US at the rate of 6.25 p.a. for 3 month.

Amount of \$ received by conversion = $1000 \times .3197 = \$ 319.7$

Now \$ 319.70 will be invested for 3 month @ 6.25 % p.a

$$\text{After 3 months he will get a total of : } \$ 319.7 + \$ \left(319.7 \times \frac{6.25}{100} \times \frac{3}{12} \right) = \$ 324.6253125$$

$$\text{An amount of } \$ 324.6253125 \text{ will again be converted back into KR at 3 months forward rate : i.e., } \frac{324.6253125}{.3180} = \text{KR } 1021.05$$

Hence by the above action arbitrage has made a riskless gain of $\text{KR } (1021.05 - 1018.75) = \text{KR } 2.3$.

Right Shares :

QUESTION NO. 14 Pragya Limited has issued 75,000 equity shares of Rs. 10 each. The current market price per share is Rs. 24. The company has a plan to make a rights issue of one new equity share at a price of Rs. 16 for every four share held. You are required to :

- (i) Calculate the theoretical post-rights price per share;
- (ii) Calculate the theoretical value of the right alone;
- (iii) Show the effect of the rights issue on the wealth of a shareholder, who has 1,000 shares assuming he sells the entire rights;
- (iv) Show the effect, if the same shareholder does not take any action and ignores the issue.

Solution :

(i) Calculation of Theoretical Post-Rights (ex-right) price per share :

$$\text{MPS Cum Right} \times \text{Existing Number Of Equity Share} + \text{Right Share Price} \times \text{Number of Right Shares Issued}$$

$$\text{Existing Number Of Equity Share} + \text{New Number Of Right Share Issued}$$

$$= \frac{24 \times 75000 + 16 \times 18750}{75000 + 18750} = \text{Rs. } 22.40$$

Working Notes : Number of Right share to be issued = $\frac{75,000}{4} = 18750$

(ii) Calculation of Theoretical Value of the Rights Alone: = Ex-right price – Cost of rights share = Rs. 22.40 – Rs. 16 = Rs. 6.40

(iii) Calculation of effect of the rights issue on the wealth of a shareholder who has 1,000 shares assuming he sells the entire rights :

(a) Value of shares before right issue (1,000 shares × Rs. 24)	24,000
(b) Value of shares after right issue (1,000 shares × Rs. 22.40)	22,400
Add : Sale proceeds of rights renunciation (250 shares × Rs. 6.40)	1,600
	24,000

There is no change in the wealth of the shareholder if he sells the entire rights .

(iv) Calculation of effect if the shareholder does not take any action and ignores the issue :

Value of shares before right issue (1,000 shares × Rs. 24)	24,000
Less : Value of shares after right issue (1,000 shares × Rs. 22.40)	22,400
Loss of wealth to shareholders, if rights ignored	1,600

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Question No. 15 Neale Tech Plc proposes to launch a new product. The company appointed Kachy Consultants to conduct market study. The consultants suggested that the price of product can be set £36 or £38 or £40 per unit. The company intends to hire a machinery

to manufacture the product at £400 000 per annum. However, if annual production exceeds 60 000 units, additional cost of £160 000 per annum will be incurred for hire of machinery. The following data is related to the estimated sale and possible selling prices.

Table I

Selling Price	£36	£38	£40
Units			
Pessimistic	70 000 0.3	60 000 0.1	30 000 0.4
Most likely	80 000 0.5	70 000 0.7	60 000 0.5
Optimistic	90 000 0.2	90 000 0.2	70 000 0.1

Table - II

Variable Cost	Prob.
£10	0.6
£12	0.4

1.00

The company has committed publicity expenditure of £80 000 per annum. You are required to analyse and advise which selling price shall lead to maximization of profit.

Solution :

In the given case, the selling price may be 36 or 38 or 40, and the variable cost of the production may be 10 or 12. This would affect the contribution per unit. The entire informations can be presented as follows :

If Variable Cost = 10, then contribution is 26 or 28 or 30

If Variable Cost = 12, then contribution is 24 or 26 or 28.

The total expenses are : $4,00,000 + 80,000 = 4,80,000$

or, $4,00,000 + 1,60,000 + 80,000 = 6,40,000$.

Units	Contribution per unit	Total Contribution	Expenses	Net Income	Probability	Expected Value Contribution
Selling Price 36 :						
70,000	26	18,20,000	6,40,000	11,80,000	$0.3 \times 0.6 = 0.18$	2,12,400
	24	16,80,000	6,40,000	10,40,000	$0.3 \times 0.4 = 0.12$	1,24,800
80,000	26	20,80,000	6,40,000	14,40,000	$0.5 \times 0.6 = 0.30$	4,32,000
	24	19,20,000	6,40,000	12,80,000	$0.5 \times 0.4 = 0.20$	2,56,000
90,000	26	23,40,000	6,40,000	17,00,000	$0.2 \times 0.6 = 0.12$	2,04,000
	24	21,60,000	6,40,000	15,20,000	$0.2 \times 0.4 = 0.08$	1,21,600_
						13,50,800
Selling Price 38 :						
60,000	28	16,80,000	4,80,000	12,00,000	$0.1 \times 0.6 = 0.06$	72,000
	26	15,60,000	4,80,000	10,80,000	$0.1 \times 0.4 = 0.04$	43,200
80,000	28	19,60,000	6,40,000	13,20,000	$0.7 \times 0.6 = 0.42$	5,54,400
	26	18,20,000	6,40,000	11,80,000	$0.7 \times 0.4 = 0.28$	3,30,400
90,000	28	25,20,000	6,40,000	18,80,000	$0.2 \times 0.6 = 0.12$	2,25,600
	26	23,40,000	6,40,000	17,00,000	$0.2 \times 0.4 = 0.08$	1,36,000_
						13,61,600
Selling Price 40 :						
30,000	30	9,00,000	4,80,000	4,20,000	$0.4 \times 0.6 = 0.24$	1,00,800
	28	8,40,000	4,80,000	3,60,000	$0.4 \times 0.4 = 0.16$	57,600
60,000	30	18,00,000	4,80,000	13,20,000	$0.5 \times 0.6 = 0.30$	3,96,000
	28	16,80,000	4,80,000	12,00,000	$0.5 \times 0.4 = 0.20$	2,40,000
70,000	30	21,00,000	6,40,000	14,60,000	$0.1 \times 0.6 = 0.06$	87,600
	28	19,60,000	6,40,000	13,20,000	$0.1 \times 0.4 = 0.04$	52,800_
						9,34,800

The expected value of profit is maximum at the selling price of £ 38. So the firm should fix up the price at £ 38.

Question No. 16 There is a proposal before Hyper Leasing (P) Ltd. The facts of the proposal are as follows :

The cost of machinery to be leased out is Rs.30 lakhs on which there is 10% of CST would be levied. At the end of the lease term after 5 years, the salvage value is estimated to be Rs.3,30,000. The other initial cost (Revenue item) associated with the proposal payable in the end of the year amounted to Rs.80,000. The cost of capital for Hyper Leasing (P) Ltd. Is 14% and tax rate

is 35%. What is Break Even Lease Rental (BELR) assuming that depreciation rate is 25% on WDV basis and ignore tax gain/loss S.T.C. Gain/Loss.

Solution :

STATEMENT OF COMPUTATION OF BREAK EVEN LEASE RENTAL

Cost of Machine (inclusive of CST)	33,00,000
Less : Present Value of tax benefit on Depreciation (1)	(6,48,937)
Less : Present Value of tax benefit on Initial Expenses (2)	(24,556)
Less : Present Value of Salvage	(1,71,270)
Add : Present Value of Revenue Cost incurred at the end	
$80,000 \times PVF (14\%, 1 \text{ Years}) = 80,000 \times .877$	70175
Total Present Value of Outflow	2525412

Now Let the Annual Lease Rental to be charged by the company be X .

Therefore, we have

PV of Outflow = PV of Inflow

$\Rightarrow 2525412 = X \times (1-.35) \times PVAF (14\%, 5 \text{ years}) \Rightarrow 2525412 = X \times (1-.35) \times 3.433 \Rightarrow X = 1131736 \text{ p.a.}$

Therefore, Company should charge 1131736 p.a. as Annual Lease Rent so that it can recover its outflow of 2525412. Hence at this break even lease rental company will be at break even position.

Working Notes :

(1) Calculation of Present Value of Tax Shield/Saving on Depreciation :

Period	WDV	Depreciation	PVF @14%	Present Value
1	33,00,000	8,25,000	0.877	7,23,525
2.	24,75,000	6,18,750	0.769	4,75,819
3.	18,56,250	4,64,063	0.675	3,13,242
4.	13,92,187	3,48,047	0.592	2,06,044
5.	10,44,140	2,61,035	0.519	1,35,477
				18,54,107

Tax Shield/Saving = Rs. 18,54,107 x Tax Rate = Rs. 18,54,107 x 35% = Rs. 6,48,937

(2) Present Value of Tax Benefits on Initial Expenditure (Revenue)

= Rs. $80,000 \times PVF (14\%, 1) \times \text{Tax Rate} = 80,000 \times 0.877 \times 35\% = 24,556$

(3) Present Value of Salvage Value = Salvage Value x PVF(14%, 5) = Rs. 3,30,000 x 0.519 = Rs. 1,71,270

Question No. 17 ABC Ltd., presently leasing computers on a yearly basis rental amounting Rs.10,00,000 per year. These computers can also be purchased by the company for Rs.50,00,000. This purchase can be financed by 16% loan repayable in 4 equal annual instalments. The economic life of the computer is that of 4 years. It is estimated that the computers would be sold for Rs.20,00,000 at the end of 4 years. The company uses the straight line method of depreciation. Corporate tax rate is 50%.

(a) Whether computer should be acquired or leased?

(b) Analyse the financial viability from the point of view of lessor, assuming 14% cost of capital.

(c) Determine the minimum rent which will yield an IRR of 16% to the lessor.

Solution : (a)

(i) Present Value of Cash Outflows under Leasing Alternative :

Year	After Tax Lease Payment	PVAF (14 %, 4)	Total Present Value
1-4	Rs. 5,00,000	2.913	Rs. 14,56,500

Present Value of Cash Outflow under Buying Alternatives :

Year	Loan Instalment	Tax Saving on interest	Net outflow	Salvage Value	PVF (14%)	Present Value
------	-----------------	------------------------	-------------	---------------	-----------	---------------

		and Depreciation				
1.	17,86,990	7,75,0000	10,11,990	-	0.877	8,87,515
2.	17,86,990	6,96,041	10,90,949	-	0.769	8,38,940
3.	17,86,990	6,04,448	11,82,542	-	0.675	7,98,216
4.	17,86,990	4,48,491	12,88,499	-	0.592	7,62,791
5.	-	-	(20,00,000)	0.592		(11,84,000)
						21,03,462_

Recommendation : The Lease Option is financially better

Additional Analysis : Why no treatment on Sale Of Machine / Salvage Value ? Since Company is following Straight Line Method Of depreciation , profit and loss on Sale Of machine will be Nil .

Working Notes :

(i) Calculation of Instalment Payable under Buying Option :

Present Value Annuity Factor at 16% for 4 years. 2.798

$$\text{Value of instalment} = \frac{\text{Rs. } 50,00,000}{2.798} = \text{Rs. } 17,86,990$$

(ii) Calculation of Interest Component and Principal Component :

Period	Loan in beginning	Loan Instalment	Interest @ 16%	Principal Repayment	Principal Outstanding
1.	50,00,000	17,86,990	8,00,000	9,86,990	40,13,010
2.	40,13,010	17,86,990	6,42,082	11,44,908	28,68,102
3.	28,68,102	17,86,990	4,58,896	13,28,094	15,40,008
4.	15,40,008	17,86,990	2,46,982	15,40,008	Nil

(Balancing Figure)

(iii) Calculation of Tax Benefits on Interest and Depreciation :

Period	Interest	Depreciation	Total	Tax Benefit
1.	8,00,000	7,50,000	15,50,000	7,75,000
2.	6,42,082	7,50,000	13,92,082	6,96,041
3.	4,58,896	7,50,000	12,08,896	6,04,448
4.	2,46,982	7,50,000	9,96,982	4,98,49

(b) Determination of NPV for Lessor :

Particulars	Year	Cash Flows	PVF @ 14%	Present Value
Purchase of computer	0	(50,00,000)	1.00	(50,00,000)
Annual Cash inflow	1-4	8,75,000	2.914	25,49,750
Salvage Value	4	20,00,000	0.592	11,84,000_
				(12,66,250)

Recommendation : The proposal is not financially viable.

Working Notes :

(i) Determination of Cash Flow After Tax For Lessor: Rs.

Lease Rent Receivable	10,00,000
Less : Depreciation	7,50,000_
EBIT	2,50,000
Less : Tax @ 50%	1,25,000
EAT	1,25,000
Add : Depreciation	7,50,000
	8,75,000

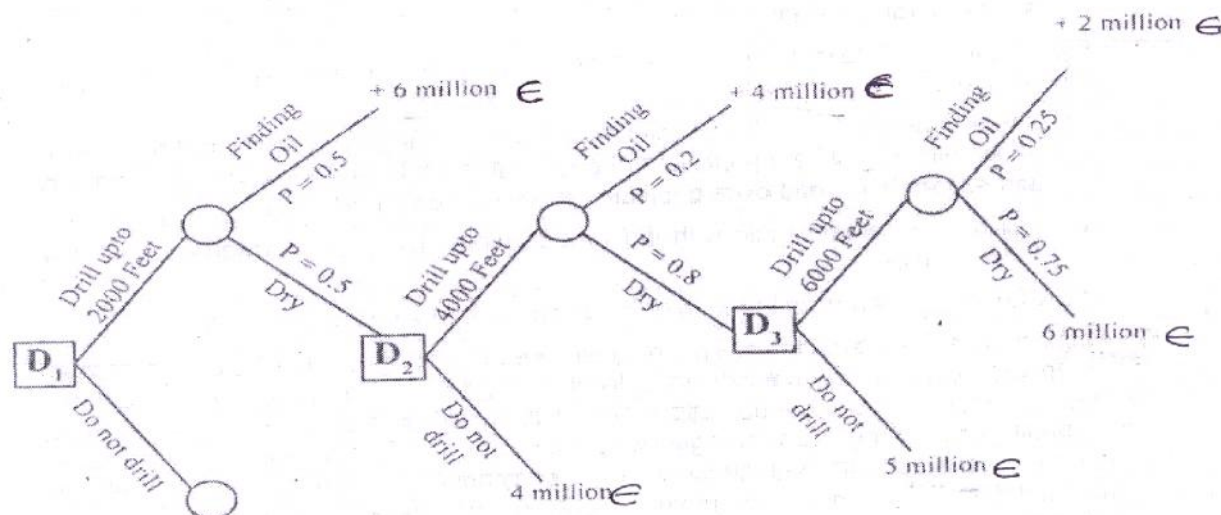
Question No. 18 Small Oil is wondering whether to drill for oil in chemsfield Basin. The prospectuses are as follows:

Depth of Probability of well in feet	Total cost (Million)	Finding oil	Not Finding oil	PV of Oil (if found)(Million)
2000	4	0.5	0.5	10
4000	5	0.2	0.8	9
6000	6	0.25	0.75	8

Draw a decision tree showing the successive drilling decisions to be made by Small Oil.

How deep should it be prepared to drill?

Solution : The given data can be easily represented by the following decision tree diagram



There are three decision points indicated by D_1 , D_2 and D_3 .

Using rolling back technique, we shall take the decision at decision point D_3 first and then used it to arrive decision at a decision point D_2 and then use it to arrive decision at a point D_1 .

Statement Showing Evaluation of Decision at D_3 Point

Decision	Event	Prob.	PV Of Oil (if found) (in Million)	Expected PV of Oil (if found)(in Million)
1.	Drill upto 6000 feet	Finding oil	0.25	+ 2
		Dry	0.75	- 6
2.	Do not Drill			-4.00
				-5.00

Since the expected PV of oil (if found) on drilling upto 6000 feet 4 million Euro is greater than the cost of not drilling 5 million. Therefore, small oil should drill upto 6000 feet.

Statement showing the evaluation of decision at point D_2 Point

Decision	Event	Prob.	PV Of Oil (if found) (in Million)	Expected PV of Oil (if found)(in Million)
1.	Drill upto 4000 feet.	Find oil	0.2	4
		Dry	0.8	-4*
2.	Do not Drill			-2.4
				-4.00

Since the expected P.V. of oil (if found) on drilling upto 4000 feet is 2.4 million which is greater than the cost of not drilling -4.00 million. Therefore, small oil should drill upto 4000 feet.

Statement showing the evaluation of decision D_1 Point

Decision	Event	Prob.	PV Of Oil (if found) (in Million)	Expected PV of Oil (if found)(in Million)
1.	Drill upto 2000 feet.	Finding oil	0.50	6
		Dry	0.50	-2.4 **
2.	Do not Drill			1.80
				Nil

Since the expected Present Value of oil (if found) on drilling upto 2000 feet is 1.8 million . Small oil should drill upto 2000 feet.

Additional Analysis :

*Because when we are drilling upto 4000 feet and the event is dry we go to node D3 . And at D3 our expected value is - 4 million (as taken from above)

** Because when we are drilling upto 2000 feet and the event is dry we go to node D2 and at D 2 our expected value is - 2.4.(as taken from above) .

Question No. 19 [REFER COSTING MATERIAL] A company manufactures 3000 units of 'Product P' per day. The sale of this product depends upon demand which has the following distribution.

Sales(Units)	2700	2800	2900	3000	3100	3200
Prob.	0.10	0.15	0.20	0.35	0.15	0.05

The production cost and sale price of each unit are Rs.4 and Rs.5 respectively. Any unsold product is to be disposed off at a loss of Rs.1.50 per unit. There is a penalty of Rs.0.50 per unit if demand is not met.

Using the following random numbers estimate total profits/loss for the company for next 10 days: 11,98,66,97,95, 01, 79,12,17,21.

If the company decides to produce 2900 items per day, what is profit/loss position of the company.

Solution :

Assignment of Random Number

Sales (Units)	Probability	Cumulative Probability	Random Number Assigned
2700	0.10	0.10	00-09
2800	0.15	0.25	10-24
2900	0.20	0.45	25-44
3000	0.35	0.80	45-79
3100	0.15	0.95	80-94
3200	0.05	1.00	95-99

Statement showing Profit/Loss position on producing 3000 items and 2900 items per day

Day	Random Number	Estimated Sales	Profit/Loss today when production = 3000	Profit/loss per day when production = 2900
1.	11	2800	$2800 \times 1 - 200 \times 1.50 = 2500$	$2800 \times 1 - 100 \times 1.50 = 2650$
2.	98	3200	$3000 \times 1 - 200 \times 0.50 = 2900$	$2900 \times 1 - 300 \times 0.50 = 2750$
3.	66	3000	$3000 \times 1 = 3000$	$2900 \times 1 - 100 \times 0.50 = 2850$
4.	97	3200	$3000 \times 1 - 200 \times 0.50 = 2900$	$2900 \times 1 - 300 \times 0.50 = 2750$
5.	95	3200	$3000 \times 1 - 200 \times 0.50 = 2900$	$2900 \times 1 - 100 \times 0.50 = 2750$
6.	01	2700	$2700 \times 1 - 300 \times 1.50 = 2250$	$2700 \times 1 - 200 \times 1.50 = 2400$
7.	79	3000	$3000 \times 10 = 3000$	$2900 \times 1 - 100 \times 0.50 = 2850$
8.	12	2800	$2800 \times 1 - 200 \times 1.50 = 2500$	$2800 \times 1 - 100 \times 1.50 = 2650$
9.	17	2800	$2800 \times 1 - 200 \times 1.50 = 2500$	$2800 \times 1 - 100 \times 1.50 = 2650$
10.	21	2800	$2800 \times 1 - 200 \times 1.50 = 2500$	$2800 \times 1 - 100 \times 1.50 = 2650$
			26,950	26,950

The total profit for next 10 days will be Rs. 26,950, if company manufactures 3000 items per day. In case company decides to produce 2900 items per day profit shall remain unchanged.

Question No. 20 Tabsum plc engaged in manufacturing business are summarized below :

Income Statement for current year ended March 31, 2008.	(\$ Million)
Sales	93.50
EBIT	18.00
Less: Interest on loan	1.80_
Earning before tax	16.20
Less: Corporate Tax @ 35%	5.67_
Earning after taxes	10.53

Balance Sheet as at March 31, 2008

Liabilities	Amount	Assets	Amount
-------------	--------	--------	--------

Equity Share Capital of \$ 100 per share	10.00	Freehold land & building (Net)	20.00
Reserve/ Surplus	32.50	Plant and Machinery (Net)	29.50
10% Loan	18.00	Current Assets :	
Creditor and other liabilities	18.00	Stock	10.00
		Debtors	15.00
		Bank & Cash Balance	4.00__
	78.50		78.50

The company's weighted average cost of capital is 12%.

(a) Determine Economic Value Added (EVA).

(b) If the company's share are currently quoted at \$500 per share. Determine the amount of market value added.

Solution :

(a) Determination of Economic Value Added (EVA) :

	(\$ in Million)
Net Operating profit before taxes/ NOPAT	18.00
Less : Corporate Taxes (0.35)	6.30__
Net Operating Profit After Tax	11.70
Less : Cost of capital Employed (\$ 60.5 million x 0.120)	7.26
Economic Value Added	4.44

(b) Determination of Market Value Added (MVA) :

Market Value Per Share	\$500
Number of Equity Shares Outstanding	1,00,000
Total Market Value (\$ Million)	50.00
Equity Funds (\$ 10 Million + 32.5 Millions)	42.50
Market value added (\$50 - \$42.50) millions	\$ 7.50 millions

Question No. 21 Om Tech Ltd., engaged in the manufacturing of engineering goods, expects a moderate growth in coming years. Dividend for the last year has just been paid and the company is contemplating to pay a dividend of Rs.18 after one year. The equity shares are currently traded at Rs.200 per share. If MM assumptions are met and the equity capitalization rate is 14% then what would be

the market price of the share after one year. Assume that Capital gains tax rate applicable to an investor is 20%. He buys one share today and sell after one year after dividend receipt. What is his after tax rate of return.

Solution :

Market Price Per Share After One Year :

$$P_0 = \frac{P_1 + D_1}{(1 + K_e)} \Rightarrow 200 = \frac{P_1 + 18}{(1 + .14)} \Rightarrow P_1 = \text{Rs.}210$$

After Tax rate of Return :

$$\text{Capital Gain} = (210 - 200) = 10$$

$$\text{After Tax Capital Gain} = 10 (1 - .20) = 8$$

$$\text{Dividend Income} = \text{Rs. } 18$$

$$\text{Total Return} = 26$$

$$\text{Return (\%)} = \frac{26}{200} \times 100 = 13\%$$

Question No. 22 A 7% Bond was issued several years ago when the market interest rate was also 7%. Now the bond has a remaining life of 3 years when it would be redeemed at par value of Rs.1,000. The market rate of interest has increased to 8%. Find out the current market price, price after 1 year and price after 2 years from today.

Solution :

$$\text{Current Price (B}_0\text{)} = \text{Interest} \times \text{PVAF}_{(8\%,2)} + \text{MV} \times \text{PVF}_{(8\%,3)} = \text{Rs. } 70 \times 2.577 + \text{Rs. } 1,000 \times 0.794 = 974.39$$

After one year (B_1) = Interest $\times$ PVAF_(8%,2) MV $\times$ PVF_(8%,3) = Rs. 70 $\times$ 1.783 + Rs. 1,000 $\times$ 0.857 = Rs. 981.81

After one year (B_2) = (Interest + MV) $\times$ PVF_(8%,2) = (70 + 1,000) $\times$ 0.926 = Rs. 990.82

Question No. 23 The ¥den, a dealer in foreign exchange have the following positions in US\$ on 31st March, 2008.

	US\$
Balance in the Nostro A/c (Credit)	1,00,000
Opening position over bought	50,000
Purchased a bill on New York	80,000
Sold forward TT	60,000
Forward purchase contract cancelled	30,000
Remitted by TT	75,000
Draft on New York cancelled.	30,000

What steps would be taken by ¥den, if it is required to maintain a Credit Balance of US\$ 30,000 in the Nostro A/c and keep as overbought position on US \$10,000?

Solution :

Exchangin Position/Currency Position :

Particulars	Purchase US\$	Sale US \$
Opening Balance over bought	50,000	---
Bill on New York	80,000	---
Forward Sales - TT	---	60,000
Cancellation of Forward Contract	---	30,000
T.T. Sales	---	75,000
Draft on New York Cancelled	30,000	---
	1,60,000	1,65,000
Closing Balance Oversold	5,000	---
	1,65,000	1,65,000
Cash Position (Nostro A/c)	Credit	Debit
Opening balance credit	1,00,000	---
TT Sales	---	75,000
	1,00,000	75,000
Closing Balance Credit	---	25,000
	1,00,000	1,00,000

The dealer has to buy spot TT \$ 5000 to increase the balance in Nostro account to \$ 30000.

This would bring down the oversold position on US \$ as Nil.

Since the dealer requires an over brought situation of US \$ 10000, it has to buy forward US \$ 10,000.

Question No. 24 At the end of August, 2008, an Indian company, an exporter has an export exposure of 5,00,000 H.K.\$ due at the end of September, 2008. HK \$ is not directly quoted against India rupee. The current spot rates are INR/USD = Rs.46 and HK\$/USD = HK\$2.3. It is estimated that HK\$ will depreciate to HK \$2.5 level and Indian Rupee to appreciate against US\$ to Rs.47. One month forward rate at the end of August are HD\$/USD= HK\$ 2.45 and INR/USD = Rs.47.04.

(i) Calculate expected loss if hedging is not done. How the position will change with the company taking a forward cover?

(ii) If spot rate on 30th September, 2008 are eventually HK\$/USD = HK\$ 2.52 and INR/USD = 47.88 is the decision to take forward cover justified.

Solution :

Working Notes :

Current Spot Rates [at the end of August]

1USD = 1NR 46

1USD = HK\$ 2.3

1 Month Forward Rate [for September end]

1USD = 1NR 47.04

1USD = HK\$ 2.45

Expected Rate [at the end of September]

1USD = 1NR 47

1USD = HK\$ 2.5

Cross Rates for HK\$ & INR :

Current Rate : 1 HK\$ = 20

1 Month Forward Rate : 1 HK \$ = INR 19.20

Expected Rate : 1 HK \$ = INR 18.80

(i) Profit & Loss if No Hedging is Done :

Loss = 5,00,000 x (Rs 20 - Rs. 18.80) = Rs. 6,00,000

Profit & Loss if Forward Cover is taken

Loss = 5,00,000 x (Rs. 20 - Rs. 19.20) = Rs. 4,00,000

(ii) Actual Rate [at the end of Septembers]

1USD = HK\$ 2.52

1USD = 1NR 47.88

∴ 1 HK \$ = INR 19

Expected Loss without Forward Cover = 5,00,000 (Rs. 20- Rs. 19)= 5,00,000

Expected Loss with Forward Cover = 4,00,000

Decision : Since expected loss without forward cover is less, decision of forward cover is justified.

Question No. 25 Electrometic Limited enjoys a high rating in Indian money market due to its strong financials and track record. Tim software Ltd., is a new but a growing company. Electrometic and Tim Software Ltd., can obtain loans at the rate given below :

	CD (Company Deposit) with Fixed Rate	Mumbai Inter-bank Money Market with Variable Rate
Electronic Ltd.	T*+ 0.50	MIBOR + 0.10
Tim Software Ltd.	T* + 2.10	MIBOR + 0.60

*Here T means the risk free 15 years Government Bonds.

Electrometic Ltd., wants to take a loan at variable rate, while Tim Software wants to take loan at fixed rate. The two companies approached a bank to design a suitable Swaps.

(a) If the bank wants to have a profit of 0.20% to be contributed from Tim Software's (out of total profits of Swap) share of Swap benefit, what would be the two agreements that the bank will enter with these two companies.

(b) What are the likely costs of debts to the two companies.

Solution :

Electrometics Ltd., has a comparative advantage in the fixed rate market of 1.6% per annum but wants to take loan at variable rates. In variable rate (floating rate) market the comparative advantage is of 0.50%. So, under swap arrangement there will be a total benefit of 1.6% - 0.5% = 1.1%. **OR**

Total Interest Cost as per their Own Choice :

Electronic Ltd. MIBOR + 0.10

Tim Software Ltd. T* + 2.10

Total Cost without Swap Mibor + T + 2.20

Total Interest Cost as per Swap Agreement :

Electronic Ltd. T+ 0.50

Tim Software Ltd. MIBOR + 0.60

Total Cost with Swap Mibor + T + 1.10

Saving Due To Swap = [Mibor + T + 2.20] - [Mibor + T + 1.10] = 1.10

(a) Electrometics will raise money from the fixed rate market and Tim Software will raise money from the floating rate market. The bank will make an agreement with :

Electrometics, under which bank will borrow fixed rate money and will lend floating rate money.

Similarly, bank will make an arrangements with Tim Software for borrowing at floating rate and lending at fixed rate.

(b)

Distribution Of Saving : As the total swap benefit is 1.1%, 0.55% benefit belongs to each party.[Assuming that saving is distributed equally]

Saving Of Tim Software Ltd. : The bank's share is 0.20% of Tim Software's share of benefit. As a result, Tim Software's share of profit will decrease to 0.35% per annum;

Saving Of Electronic Ltd. : Electrometetics is gaining 0.55% per annum.

Cost Of Debt To Each Party : Cost Under Own Choice - Saving

For Electronic Ltd. : $[MIBOR + 0.10] - .55 = MIBOR - 0.45\%$ per annum

For Tim Software Ltd. : $[T + 2.10] - .35 = (T + 1.75)\%$ per annum.

Question No. 26 An Indian company is planning to set up a subsidiary in US. The initial project cost is estimated to be US \$40 million; Working Capital required is estimated to be \$4 million. The finance manager of company estimated the data as follows:

Variable Cost of Production (Per Unit Sold)	\$2.50
Fixed cost per annum	\$ 3 Million
Selling Price	\$ 10
Production capacity	5 million units
Expected life of Plant	5 years
Method of Depreciation	Straight Line Method (SLM)
Salvage Value at the end of 5 years	NIL

The subsidiary of the Indian company is subject to 40% corporate tax rate in the US and the required rate of return of such types of project is 12%. The current exchange rate is Rs.48/US\$ and the rupee is expected to depreciate by 3% per annum for next five years. The subsidiary company shall be allowed to repatriate 70% of the CFAT every year along with the accumulated arrears of blocked funds at the end of 5 years, the withholding taxes are 10%. The blocked fund will be invested in the USA money market by the subsidiary, earning 4% (free of taxes) per year.

Determine the feasibility of having a subsidiary company in the USA, assuming no tax liability in India on earnings received by the parent company from the US subsidiary.

Solution : Working Notes :

(1) Cash Outflow (Initial)	(Figures in Million)
Cost of Plant & Machinery	\$ 40
Working Capital Requirement	\$ 4_
	\$ 44
Cash outflow in Rs [in million]	2112

(2) Annual Cash Inflow	(Figures in Million)
Sales Revenue (5 Million x \$ 10)	50.00
Less : Costs	
Variable cost (5 million units x \$ 2.5)	\$12.5
Fixed Cost	\$ 3
Depreciation (\$ 40 Million/ 5 years)	\$ 8_ 23.50
Earning before tax	26.50
Less : Taxes (40%)	10.60
Earning after tax	15.90
Add: Back Depreciation	08.00
	23.90

(3) Terminal Year Cash Flows	
Release Of Working Capital	\$ 4 Million
Salvage Value	Nil_____
	\$ 4 Million

(4) Calculation of Repatriable/Accessible Funds

Period	Particulars	Millions \$
1-4 years	Operating Cash flow After Tax	23.90
	Less : Retention	7.17

	Repatriable amount	16.73
	Less : Withholding Tax	1.673_
	Accessable Funds	15.057
5 years	Operating Cash Flow After TAX	23.90
	Less : Withholding Tax	2.39_
		21.51
	Add : Repatriation of Blocked Funds	28.50 [see working notes]
		50.00

(5) Repatriation of Blocked Funds

Future Value of Blocked Funds of \$ 7.17 Million shall be computed as follows :

Value of Funds blocked from year 1-4	7.17 Million\$
FVAF (4%, 4)	4.416
Value of Funds at end	31.66272 Million\$
Without Tax	3.0444 Million\$
	28.50 Million\$

Additional Analysis : FVAF can be directly calculated from the table or it can be calculated in the following manner :

$$(1+0.04)^4 = 1.16985856$$

$$(1+0.04)^3 = 1.124864$$

$$(1+0.04)^2 = 1.0816$$

$$(1+0.04)^1 = 1.04$$

$$4.416$$

Statement showing Net Present Value of the Project

Period	Particulars	US\$	Exchange Rate	Cash Flow Rs.	PVF @ 12%	PV
0	Initial outflow	44	48	(2112)	1	(2112)
1	Annual cash flow	15.057	49.44	744.42	0.893	664.77
2	„	15.057	50.9232	766.75	0.797	611.10
3	„	15.057	52.4509	789.75	0.797	562.30
4	„	15.057	54.0244	813.45	0.797	517.35
5	„	50.00	55.6451	2782.255	0.797	1577.54
5	Release of WC	4.00	55.6451	222.58	0.797	126.20
						1947.26

Decision : Since NPV of the project is positive, the Indian Company should go for its decision of subsidiary in US.

Question No. 27 Moon Engineering Ltd. Has a Cost of Equity (ke) of 17%, Cost of Debt (kd) 12% and debt ratio of 40%. A new investment is under consideration. The project will need a cash outlay of 120 crore. It is expected that an annual operating profit of Rs.35 crore shall be generated for 8 years. In addition to this, project shall require Rs. 3 crore each year for net working capital and capital expenditure. The company will be able to borrow 50% of the project's cost from a financial institutions. The interest rate is 12% p.a. and the loan will be repaid in five equal instalments after 3 years at end of year. The tax rate applicable is 30%. Assuming that SLM of depreciation and with no salvage value.

(a) What will be NPV of the project. **(b)** Should Moon Engineering Ltd. accept the project.

Solution :

Calculation Of Base Case NPV :

The base NPV of the project shall be as follows = $-120 + 26 \times \text{PVAf}(15\%, 8) = -120 + 26 \times 4.487$ Crore = - Rs. 3.34 Crore. Without considering the financing effect, the project is unattractive as it has negative base NPV

Calculation Of Issue Cost : Nil

Calculation Of Present Value of Interest Tax Shield/Saving

Year	Loan outstanding Rs. in Crores.	Interest at 12% (Rs. in Crores)	Interest Tax Shield (Rs. in Crores.)	PVF @ 12%	Present Value Rs. in Crores.
1	60	7.20	2.16	0.893	1.93
2	60	7.20	2.16	0.797	1.72
3	60	7.20	2.16	0.712	1.54
4	48	7.20	2.16	0.636	1.37
5	36	5.76	1.73	0.567	0.98
6	24	4.32	1.30	0.506	0.66
7	12	2.88	0.80	0.452	0.39
8	0	1.44	0.43	0.404	0.17
Present Value of Tax Shield/Saving					8.76

Calculation Of Adjusted Present Value :

The Adjusted Present Value of the Project

= Base NPV - Issue Cost + PV of Interest Tax Benefit (Shield) = 3.34 - Nil + 8.76 = Rs. 5.42 crores.

Decision : Thus project has positive APV, hence should be accepted.

Working Notes :**(a) Calculation Cost of Capital :**

$K_o = 0.17 \times 0.60 + 0.12 \times 0.40 = 0.15$ i.e. 15%

(b) Calculation Of Free Cash Flow For Base case NPV :

FCF = (EBIT - Depreciation) (1-Tax) + Depreciation - (NWC + Capital Expenditure) = (35 - 15) (1-0.30) + 15-3 = 26 Crores.

Question No. 28 Templan Mutual Fund had Rs. 10,00,00,000 as on Jan. 1, 2007. The fund had issued 1,00,00,000 units of Rs.10 each. It made following investments.

5,00,000 Equity Shares of Rs.100 each @ Rs.160/-	8,00,00,000
8% Central Government Securities	80,00,000
9% Debentures (unlisted)	50,00,000
10% Debentures (Listed)	50,00,000__
Total	9,80,00,000

During the year, dividends of Rs.120,00,000 were received on equity shares. Interest on all types of debt securities was received as and when due. At the end of the year, the equity shares and 10% debentures are quoted at Rs. 175 and Rs. 90 respectively. Find out the NPV per unit given that operating expenses incurred during the year amounted to Rs.50,00,000. Also find out the NPV, if the mutual fund had distributed a dividend of Rs.0.80 per unit during the year to the unit holders.

Assume that no load was charged.

Solution :

In order to find out the NAV, the cash balance at the end of the year is calculated as follows :

	(Amt. in Rs.)
Cash balance in the beginning (Rs. 10 Crores - Rs. 980 Crore)	20,00,000
Dividend Received	1,20,00,000
Interest on 8% on Government Securities	6,40,000
Interest on 9% on Debentures	4,50,000
Interest on 10% on Debentures	__5,00,000
	1,55,90,000
Less: Operating Expenses	__50,00,000
	1,05,90,000

Calculation of Net Asset Value [NAV] :

Cash Balance	1,05,90,000
8% Government Securities (at par)	80,00,000
5,00,000 Equity Shares @ Rs. 175	875,00,000
9% Debentures (Unlisted at Cost)	50,00,000
10% Debenture @ Rs. 90	45,00,000__
	11,55,90,000
No. of units	1,00,00,000
NAV per unit	11.559

Calculation of Net Asset Value [NAV] , if dividend of Rs. 0.80 is paid

Net Asset (Rs. 11,55,90,000 - 80,00,000)	10,75,90,000	
Number of Units	1,00,00,000	
NAV	10.759	84

Question No.29 Naryanii Ltd. is in the business of manufacturing bearings. Some more product lines are being planned to be added to the existing system. The machinery required may be bought or may be taken on lease. The cost of machine is Rs. 50,00,000 having a useful life of 5 years with the salvage value of Rs. 10,00,000. The full purchase value of machine can be financed by 20% loan repayable in five equal instalments falling due at the end of each year. Alternatively, the machine can be procured on a 5 years lease, year-end lease rentals being Rs. 14,00,000 per annum. The Company follows the written down value method of depreciation at the rate of 25%. Company's tax rate is 35 per cent.

Advise the company which option it should choose – lease or borrow.

Solution :**Present Value of Cash Outflow under Lease Option :**

Year	Lease Rental after tax	PVAF @ 13%	Total Present Value
1-5	14,00,000 (I-T) = 9,10,000	3.517	32,00,470

Cash Outflow Under Borrowing Option :

Tax Advantage					
Year	Loan Instalments	On Interest	On Depreciation	Net Cash Outflow	PVAF @ 13% Present Value
1	16,71,681	(3,50,000)	(4,37,500)	8,84,181	.885% 7,82,500
2.	16,71,681	(3,02,982)	(3,28,125)	10,40,574	.783% 8,14,769
3.	16,71,681	(2,46,561)	(2,46,094)	11,79,026	.693% 8,17,065
4.	16,71,681	(1,78,856)	(1,84,570)	13,08,255	.613% 8,01,960
5.	16,71,681	(97,609)	(1,38,428)	14,35,644	.543% 7,79,555_
					39,95,850

Total Present Value	39,95,850
Less : Present Value Salvage Value Adjusted for Tax Savings on Loss of Sale of Machinery (Rs. 10,00,000 +) x .543	5,78,449
Total Present Value of Cash Outflow	<u>34,17,401</u>

Decision : Present Value of Cash outflow of lease option is less than the borrowing option and hence lease option is recommended.

Working Notes :**Calculation Of Tax Saving On Loss :**

Loss On Sale = 11,86,523 - 10,00,000 = 1,86,523

Tax Saving On Loss = 1,86,523 x .35 = 65,283

Calculation Of Equal Annual Installation :

5 equal installments = Rs. 50,00,000 ÷ PVAF(20%,5 Years) = Rs. 50,00,000 ÷ 2.991 = 16,71,681

Calculation Of Interest & Principal Amount :

Year	Loan Instalments	Loan at the beginning of the year	Interest	Principal	Balance at the end of year
1	16,71,681	50,00,000	10,00,000	671,681	43,28,319
2.	16,71,681	43,28,319	865,664	806,017	35,22,302
3.	16,71,681	35,22,302	704,460	967,221	25,5,081
4.	16,71,681	25,55,081	511,016	11,60,665	13,94,416
5.	16,71,681	13,94,416	278,883	13,92,798	Nil

Calculation Of Depreciation :

Year	Depreciation
------	--------------

1.	50,00,000 x .25	12,50,000
2.	37,50,000 x .25	9,37,500
3.	28,12,500 x .25	7,03,500
4.	21,09,375 x .25	5,27,344
5.	15,82,031 x .25	3,95,508

Book Value of Machine at the end of year 5 = 15,82,031 - 3,95,508 = 11,86,523.

Question No.30 X Ltd. has a total sales of Rs. 4 crores and its average collection period is 90 days. The past experience indicates that bad-debt losses are 1.5% on Sales. The expenditure incurred by the firm in administering its receivable collection efforts are Rs. 6,00,000. A factor is prepared to buy the firm's receivables by charging 2% Commission. The factor will pay advance on receivables to the firm at an interest rate of 18% p.a. after withholding 10% as reserve. Calculate the effective cost of factoring to the Firm.

Solution :

Working Notes :

	Rs.
(a) Average level of Receivables = 4,00,00,000 x 90/360	10,000
(b) Factoring commission = 1,00,00,000 x 2/100	200
(c) Factoring reserve = 1,00,00,000 x 10/100	1,000
(d) Amount available for advance = Rs. 1,00,00,000 - (2,00,000 + 10,00,000) [(a)- (b)- (c)]	8,800
(e) Factor will deduct his interest @ 18% :- Interest = $\frac{\text{Rs. } 88,00,000 \times 18 \times 90}{100 \times 360}$ =	396
(f) ∴ Advance to be paid = Rs. 88,00,000 - Rs. 3,96,000	8,404

Annual Cost of Factoring to the Firm :

	Rs.
Factoring commission (Rs. 2,00,000 x 360/90)	8,00,000
Factoring reserve = 1,00,00,000 x 360/90	15,84,000
Total	23,84,000

Firm's Saving on taking Factoring Service :

	Rs.
Cost of credit administration saved	6,00,000
Cost of Bad Debts (Rs. 4,00,00,000 x 1.5/100) avoided	6,00,000
Total	12,00,000
Net cost to the Firm (Rs. 23,84,000 - Rs. 12,00,000)	11,84,000

Effective rate of interest to the firm = $\frac{\text{Rs. } 11,84,000 \times 100}{84,04,000}$	14.09%
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Note : The number of days in a year have been assumed to be 360 days.

Question No.31 Methoex developed original specification of a product and founded Methoex Manufacturing Ltd. In 2007 the firm manufactured 980 Nos. at an average price of Rs.900 each. In 2008 due to continuous price rise of the inputs, he raised his prices at an average of 12%, since he knew he could sell plant's full capacity of 980 Nos. per year. In spite of price rise for the product, which sold for over Rs. 1,000 for the first time, Methoex was surprised to learn in late 2008 (as may be seen from the financial statements) that Methoex Manufacturing Ltd. show a decline in earnings and still worse, decline in cash flow. His accountant has brought the following :

(i) We are following FIFO system for the purpose of issues.

(ii) Costs are going up faster than 12% and they will go up further in 2009.

(iii) We are not setting aside enough to replace the machinery; we need to set aside Rs.1,65,000, not Rs. 1,50,000 so as to be able to buy new machinery.

(iv) It is still not late to switch to LIFO for 2008. This will reduce closing inventory to Rs. 3,30,000 and raise cost of goods sold.

Methoex Manufacturing Ltd.

Income Statement (Rs. .000)

	2008	2007
Sales	1,008	900
Cost of goods sold		
Opening inventory	320	250
Raw Material	500	400
Labour	200	174
Depreciation	150	150
End inventory	(-) 390	(-) 320
	<u>780</u>	654
Gross margin	228	246
Administration expenses	100	92
EBIT	128	154
Interest	<u>50</u>	50
	78	104
Income Tax	<u>39</u>	52
Profit after tax	39	52
Add : Non- Cash expenses	150	150
Inventory change	(-) 70	(-) 70
Cash flow	119	132

Required :

- (1) What is the weighted average inflation factor for the firm using LIFO?
 (2) If the firm desires a 15 per cent profit margin on sales, how much should the firm charge for the product per unit?

Solution :

(Rs. 000)

	2008 Expenses	2007 Expenses
Raw material		
Opening inventory	320	250
Add : Purchases	500	400
	820	650
Less : Closing inventory based on LIFO*	330	320
Add : Labour	200	174
Add : Depreciation	165	150
Add : Cost of goods sold	855	654
Add : Administration expenses	100	92
	955	746

Hence, weighted average inflation factor for the firm in 2008 = $\frac{955}{746} = 1.28$ i.e 28 % over 2007 or

$$= \frac{955 - 746}{746} \times 100 = 28\% [\text{approx}]$$

Additional Analysis :

(i) Why Interest Cost has been excluded ?

Logic No. 1 : Since question is unclear about interest cost, we have assumed tht Interest is not an operating cost .

Logic No. 2 : It can also be seen that cost of interest for year 1 & year 2 is same, hence it can be said that there is no inflation on Interest cost .

Logic No. 3 : Interest Cost is never effected by Inflation. Raw Material , Administrative expenses are the items which may be effected by Inflation but Interest Cost can never be increased due to inflation unless rates are revised due to Inflation.

(ii) Why sales item has been excluded ?

We are required here to calculate Inflation on Cost and not sales figure.

(iii) Students are still doubtful about this question ?

Since question is not clear on many points , students should not be in doubt. We are just required to calculate cost in 2007 and in 2008 and calculate Inflation. The question is very simple & easy. We are just required to calculate cost in 07-08 as per the information given in question.

(2) If the firm desires a 15 per cent profit margin on sales the price which the firm should charge for the product per unit can be identified in following ways :-

Total Cost in 1998, for 980 Nos. of Units is Rs. 9,55,000. Hence, for each No. of Units cost will be Rs. 974.50

In order to earn 15% profit margin on sales, the sales price per product should be Rs. $\frac{974.50}{0.85} = \text{Rs. } 1146.50$

Hence, the firm should charge Rs. 1146.50 per product

Total Sales will be (Rs. 1,146.50 x 980 Nos.) = Rs. 11,23,570.

Note : Figures have been rounded off.

Additional Analysis : Proof for point (2)

Sales 1146.50 x 980 =	1123570
Less : Cost	= 955000
Profit	168570

Therefore, Profit On Sale (%) = $\frac{168570}{1123570} \times 100 = 15\%$

Some Tough But Important Question On Finance

A Must Attempt Question For Students Appearing on Nov 2008/May 2009/Nov 2009

Question No. 32 Burse Co wishes to calculate its weighted average cost of capital and the following information relates to the company at the current time:

Number of ordinary shares	20 million
Book value of 7% convertible debt	\$29 million
Book value of 8% bank loan	\$2 million
Market price of ordinary shares	\$5.50 per share
Market value of convertible debt	\$107.11 per \$100 bond
Equity beta of Burse Co	1.2
Risk-free rate of return	4.7%
Equity risk premium	6.5%
Rate of taxation	30%

Burse Co expects share prices to rise in the future at an average rate of 6% per year. The convertible debt can be redeemed at par in eight years' time, or converted in six years' time into 15 shares of Burse Co per \$100 bond.

Required :

- Calculate the market value weighted average cost of capital of Burse Co. State clearly any assumptions that you make.
- Discuss the circumstances under which the weighted average cost of capital can be used in investment appraisal.
- Discuss whether the dividend growth model or the capital asset pricing model offers the better estimate of the cost of equity of a company.

Solution :

(a) Calculation of Weighted Average Cost of Capital (WACC) :

Cost of Equity :

Cost of Equity using Capital Asset Pricing Model = $4.7 + (1.2 \times 6.5) = 12.5\%$

Cost of Convertible Debt :

Annual after-tax interest payment = $7 \times (1 - 0.3) = \$4.90$ per bond

Share price in six years' time = $5.50 \times (1 + 0.06)^6 = \7.80

Conversion Value = $7.80 \times 15 = \$117.00$ per bond

Conversion appears likely, since the conversion value is much greater than par value.

The future cash flows to be discounted are therefore six years of after-tax interest payments and the conversion value received in year 6:

Year	Cash flow	\$	PVF@10%	PV (\$)	PVF@5%	PV (\$)
0	Market value	(107.11)	1.000	(107.11)	1.000	(107.11)
1-6	Interest	4.9	4.355	21.34	5.076	24.87
6	Conversion	117.00	0.564	66.00	0.746	87.28
				(19.77)		5.04

Using linear interpolation, after-tax cost of debt :

$$K_d = \text{Lower Rate} + \frac{\text{Lower Rate NPV}}{\text{Lower Rate NPV} - \text{Higher Rate NPV}} \times \text{Difference in Rates} = 5 + [(5 \times 5.04)/(5.04 + 19.77)] = 6.0\%$$

Cost of Bank Loan :

After-tax interest rate = $8 \times (1 - 0.3) = 5.6\%$

This can be used as the cost of debt for the bank loan.

Market Values :

Market Value of Equity = $20\text{m} \times 5.50 = \110 million

Market Value of Convertible Debt = $29\text{m} \times 107.11/100 = \31.06 million

Book Value of Bank Loan = $\$2\text{m}$

Total Market Value = $110 + 31.06 + 2 = \$143.06 \text{ million}$

WACC = $[(12.5 \times 110) + (6.0 \times 31.06) + (5.6 \times 2)] / 143.06 = 11.0\%$

(b) [Theoretical Part , Just Read & Develop an Understanding] The weighted average cost of capital (WACC) can be used as a discount rate in investment appraisal provided that the risks of the investment project being evaluated are similar to the current risks of the investing company. The WACC would then reflect these risks and represent the average return required as compensation for these risks.

WACC can be used in investment appraisal provided that the business risk of the proposed investment is similar to the business risk of existing operations. Essentially this means that WACC can be used to evaluate an expansion of existing business. If the business risk of the investment project is different from the business risk of existing operations, a projectspecific discount rate that reflects the business risk of the investment project should be considered. The capital asset pricing model (CAPM) can be used to derive such a project-specific discount rate.

WACC can be used in investment appraisal provided that the financial risk of the proposed investment is similar to the financial risk of existing operations. This means that financing for the project should be raised in proportions that broadly preserve the capital structure of the investing company. If this is not the case, an investment appraisal method called adjusted present value (APV) should be used. Alternatively, the CAPM-derived project-specific cost of capital can be adjusted to reflect the financial risk of the project financing.

A third constraint on using WACC in investment appraisal is that the proposed investment should be small in comparison with the size of the company. If this were not the case, the scale of the investment project could cause a change to occur in the perceived risk of the investing company, making the existing WACC an inappropriate discount rate.

(c) [Theoretical Part , Just Read & Develop an Understanding] The dividend growth model has several difficulties attendant on its use as a way of estimating the cost of equity. For example, the model assumes that the future dividend growth rate is constant in perpetuity, an assumption that is not supported by the way that dividends change in practice. Each dividend paid by a company is the result of a dividend decision by managers, who will consider, but not be bound by, the dividends paid in previous periods. Estimating the future dividend growth rate is also very difficult. Historical dividend trends are usually analysed and on the somewhat risky assumption that the future will repeat the past, the historic dividend growth rate is used as a substitute for the future dividend growth rate. The model also assumes that business risk, and hence business operations and the cost of equity, are constant in future periods, but reality shows us that companies, their business operations and their economic environment are subject to constant change. Perhaps the one certain thing about the future is its uncertainty.

It is sometimes said that the dividend growth model does not consider risk, but risk is implicit in the share price used by the model to calculate the cost of equity. A moment's thought will indicate that share prices fall as risk increases, indicating that increasing risk will lead to an increasing cost of equity. What is certainly true is that the dividend growth model does not consider risk explicitly in the same way as the capital asset pricing model (CAPM). Here, all investors are assumed to hold diversified portfolios and as a result only seek compensation (return) for the systematic risk of an investment. The CAPM represent the

required rate of return (i.e. the cost of equity) as the sum of the risk-free rate of return and a risk premium reflecting the systematic risk of an individual company relative to the systematic risk of the stock market as a whole. This risk premium is the product of the company's equity beta and the equity risk premium. The CAPM therefore tells us what the cost of equity should be, given an individual company's level of systematic risk.

The individual components of the CAPM (the risk-free rate of return, the equity risk premium and the equity beta) are found by empirical research and so the CAPM gives rise to a much smaller degree of uncertainty than that attached to the future dividend growth rate in the dividend growth model. For this reason, it is usually suggested that the CAPM offers a better estimate of the cost of equity than the dividend growth model.

Question No. 33 THP Co is planning to buy CRX Co, a company in the same business sector, and is considering paying cash for the shares of the company. The cash would be raised by THP Co through a 1 for 3 rights issue at a 20% discount to its current share price. The purchase price of the 1 million issued shares of CRX Co would be equal to the rights issue funds raised, less issue costs of \$320,000. Earnings per share of CRX Co at the time of acquisition would be 44.8c per share. As a result of acquiring CRX Co, THP Co expects to gain annual after-tax savings of \$96,000. THP Co maintains a payout ratio of 50% and earnings per share are currently 64c per share. Dividend growth of 5% per year is expected for the foreseeable future and the company has a cost of equity of 12% per year.

Information from THP Co's statement of financial position :

Equity and liabilities	\$000
Shares (\$1 par value)	3,000
Reserves	4,300
	7,300
Non-current liabilities	
8% loan notes	5,000
Current liabilities	2,200
Total equity and liabilities	14,500

Required :

(a) Calculate the current ex dividend share price of THP Co and the current market capitalisation of THP Co using the dividend growth model.

(b) Assuming the rights issue takes place and ignoring the proposed use of the funds raised, calculate :

(i) the rights issue price per share;

(ii) the cash raised;

(iii) the theoretical ex rights price per share; and

(iv) the market capitalisation of THP Co.

(c) Using the price/earnings ratio method, calculate the share price and market capitalisation of CRX Co before the acquisition.

(d) Assuming a semi-strong form efficient capital market, calculate and comment on the post acquisition market capitalisation of THP Co in the following circumstances:

(i) THP Co does not announce the expected annual after-tax savings; and (ii) the expected after-tax savings are made public.

(e) Discuss the factors that THP Co should consider, in its circumstances, in choosing between equity finance and debt finance as a source of finance from which to make a cash offer for CRX Co.

Solution :

(a) Current Ex Dividend MPS \$ Current Market Capitalization :

$$\text{Current Ex Dividend MPS } [P_0] = \frac{D_0(1+g)}{(k_e - g)} = \frac{[.64 \times 50\%](1+.05)}{.12-.05} = \$ 4.80$$

$$\text{Current Market Capitalization} = \$ 4.80 \times 30,00,000 = \$ 144,00,000$$

(b)

Right Issue Price Per Share :-

As given in the question this will be at a 20% discount to the Current share Price = $4.80 \times 80\% = 3.84$ per share

Number Of Right Shares Issued :

$$\text{Number Of Right Shares Issued} = \frac{3\text{million}}{3} = 1\text{million}$$

Cash Raised :-

Cash Raised = 1 million x 3.84 = \$ 3.84 million = \$ 38,40,000

Theoretical Ex Right Price Per Share :

$$\frac{\text{MPS Cum Right} \times \text{Existing Number Of Equity Share} + \text{Right Share Price} \times \text{Number of Right Shares Issued}}{\text{Existing Number Of Equity Share} + \text{New Number Of Right Share Issued}}$$

$$= \frac{30,00,000 \times 4.80 + 10,00,000 \times 3.84}{30,00,000 + 10,00,000} = \$ 4.56 \text{ per share}$$

The Market Capitalisation of THP Co. :

The Market Capitalisation of THP Co. = Market Cap Before Right + Increase in Market Cap After Right - Issue Cost
 = 14.4 million + 3.84 million - .32 million = \$ 17.92 million

(c) Price Earning Valuation Method :

$$\text{P/E Ratio of THP Co.} = \frac{4.80}{.64} = 7.5$$

EPS of CRX Co. = .448 per share

Using P/E Ratio of THP Co. , we can calculate MPS of CRX Co. = .448 x 7.5 = 3.36

Market Capitalization of CRX Co. = 3.36 x 1 million = 33,60,000

Note : Since it given in the question that THP Co. & CRX co. are in the same business sector, we have used P/E Ratio of THP Co. to be equal to P/E Ratio of Crx. Co.

(d) In a semi-strong form efficient capital market, share prices reflect past and public information. If the expected annual after-tax savings are not announced, this information will not therefore be reflected in the share price of THP Co.

In this case, the post acquisition market capitalisation of THP Co will be the market capitalisation after the rights issue, plus the market capitalisation of the acquired company (CRX Co), less the price paid for the shares of CRX Co.

Price paid for CRX Co = 3.84m – 0.32m = \$3.52m

Market Capitalisation = 17.92m + 3.36m – 3.52m = \$17.76m

This is equivalent to a share price of 17.76/4 = \$4.44 per share **or**

$$\text{MPS After Merger} = \frac{17.92 + 3.36 - 3.52}{4}$$

The market capitalisation has decreased from the value following the rights issue because THP Co has paid \$3.52m for a company apparently worth \$3.36m.

If the annual after-tax savings are announced, this information will be reflected quickly and accurately in the share price of THP Co since the capital market is semi-strong form efficient. The savings can be valued using the price/earnings ratio method as having a present value of \$720,000 (7.5 x 96,000). The revised market capitalisation of THP Co is therefore \$18.48m (17.76m + 0.72m), equivalent to a share price of \$4.62 per share (18.48/4) **or**

$$\text{MPS After Merger} = \frac{17.92 + 3.36 - 3.52 + .72}{4}$$

This makes the acquisition of CRX Co attractive to the shareholders of THP Co, since it offers a higher market capitalisation than the one following the rights issue.

Each shareholder of THP Co would experience a capital gain of 14c per share (4.62 – 4.48).

In practice, the capital market is likely to anticipate the annual after-tax savings before they are announced by THP Co.

(e) There are a number of factors that should be considered by THP Co, including the following.

(i) Gearing and Financial Risk

(ii) Target Capital Structure

(iii) Availability of Security

(iv) Economic Expectations

(v) Control Issues

Question No. 34 Phobis Co is considering a bid for Danoca Co. Both companies are stock-market listed and are in the same business sector. Financial information on Danoca Co, which is shortly to pay its annual dividend, is as follows :

Number of ordinary shares	5 million
Ordinary share price (ex div basis)	\$3.30
Earnings per share	40.0c
Proposed payout ratio	60%
Dividend per share one year ago	23.3c
Dividend per share two years ago	22.0c
Equity beta	1.4
Other relevant financial information	
Average sector price/earnings ratio	10
Risk-free rate of return	4.6%
Return on the market	10.6%

Required : Calculate the value of Danoca Co using the following methods:

(i) price/earnings ratio method; (ii) dividend growth model; and discuss the significance, to Phobis Co, of the values you have calculated, in comparison to the current market value of Danoca Co.

Solution :

(a)(i) Price/Earnings Ratio Method Valuation :

Earnings per share of Danoca Co	= 40c
Average sector price/earnings ratio	= 10
Implied value of ordinary share of Danoca Co	= $40 \times 10 = \$4.00$
Number of ordinary shares	= 5 million
Value of Danoca Co as per P/E ratio Method	= $4.00 \times 5m = \$20 \text{ million}$

(ii) Dividend Growth Model :

Earnings Per Share of Danoca Co	= 40c
Dividend Payout Ratio	= 60%
Dividend of Danoca Co is therefore	= $40 \times 0.6 = 24c \text{ per share}$
Cost of Equity of Danoca Co using the Capital Asset Pricing Model (CAPM)	= $4.6 + 1.4 \times (10.6 - 4.6) = 4.6 + (1.4 \times 6) = 13\%$
Value of Ordinary Share from Dividend Growth Model formula	= $(24 \times 1 + 0.045) / (0.13 - 0.045) = \2.95
Value of Danoca Co	= $2.95 \times 5m = \$14.75 \text{ million}$

The value as per **current market capitalisation** of Danoca Co is \$16.5m (\$3.30 x 5m).

The price/earnings ratio value of Danoca Co is higher than this at \$20m, using the average price/earnings ratio used for the

sector. Danoca's own price/earnings ratio is $8.25 \left[\frac{3.30}{40.0} \right]$

The difference between the two price/earnings ratios may indicate that there is scope for improving the financial performance of Danoca Co following the acquisition. If Phobis Co has the managerial skills to effect this improvement, the company and its shareholders may be able to benefit as a result of the acquisition.

The dividend growth model value is lower than the current market capitalisation at \$14.75m. This represents a minimum value that Danoca shareholders will accept if Phobis Co makes an offer to buy their shares. In reality they would want more than this as an inducement to sell. The current market capitalisation of Danoca Co of \$16m may reflect the belief of the stock market that a takeover bid for the company is imminent and, depending on its efficiency, may indicate a fair price for Danoca's shares, at least on a marginal trading basis. Alternatively, either the cost of equity or the expected dividend growth rate used in the dividend growth model calculation could be inaccurate, or the difference between the two values may be due to a degree of inefficiency in the stock market.

Working Notes : Calculation Of Growth Rate :

Year 0	D_0	22	Year 1	D_1	23.3	Year 2	D_2	24
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$$24 = 22(1 + g)^2 \Rightarrow g = 4.5\%$$

Question No. 35 Phobis Co has in issue 9% bonds which are redeemable at their par value of \$100 in five years' time. Alternatively, each bond may be converted on that date into 20 ordinary shares of the company. The current ordinary share price of Phobis Co is \$4.45 and this is expected to grow at a rate of 6.5% per year for the foreseeable future. Phobis Co has a cost of debt of 7% per year. **Required :** Calculate the following current values for each \$100 convertible bond :

(i) market value; (ii) floor value; (iii) conversion premium.

Solution :

Calculation of Market Value of each Convertible Bond :

Expected Share price in five years' time $\dots\dots\dots^5 = \$6.10$

Conversion Value $= 6.10 \times 20 = \$122$

Compared with redemption at par value of \$100, conversion will be preferred.

The current market value will be the present value of future interest payments, plus the present value of the conversion value, discounted at the cost of debt of 7% per year.

Market value of each convertible bond $= (9 \times 4.100) + (122 \times 0.713) = \123.89

Calculation of Floor Value of each Convertible Bond :

The current floor value will be the present value of future interest payments, plus the present value of the redemption value, discounted at the cost of debt of 7% per year.

Floor value of each convertible bond $= (9 \times 4.100) + (100 \times 0.713) = \108.20

Calculation of Conversion Premium of each Convertible Bond :

Current conversion value $= 4.45 \times 20 = \$89.00$

Conversion premium $= \$123.89 - 89.00 = \34.89

This is often expressed on a per share basis, i.e. $34.89/20 = \$1.75$ per share

Question No. 36 PKA Co is a European company that sells goods solely within Europe. The recently-appointed financial manager of PKA Co has been investigating the working capital management of the company and has gathered the following information :

Accounts payable management : PKA Co has used a foreign supplier for the first time and must pay \$250,000 to the supplier in six months' time. The financial manager is concerned that the cost of these supplies may rise in euro terms and has decided to hedge the currency risk of this account payable. The following information has been provided by the company's bank :

Spot rate (\$ per €): 1.998 ± 0.002

Six months forward rate (\$ per €): 1.979 ± 0.004

Money market rates available to PKA Co :

	Borrowing	Deposit
One year euro interest rates:	6.1%	5.4%
One year dollar interest rates:	4.0%	3.5%

Assume that it is now 1 December and that PKA Co has no surplus cash at the present time.

Required : Discuss ways in which PKA Co could improve the management of domestic accounts receivable. Evaluate whether a money market hedge, a forward market hedge or a lead payment should be used to hedge the foreign account payable.

Solution :

Money Market Hedge :

PKA Co should place sufficient dollars on deposit now so that, with accumulated interest, the six-month liability of \$250,000 can be met. Since the company has no surplus cash at the present time, the cost of these dollars must be met by a short-term euro loan.

Six-month dollar deposit rate	$= 3.5/2$	$= 1.75\%$
Current spot selling rate	$= 1.998 - 0.002$	$= \$1.996$ per euro
Six-month euro borrowing rate	$= 6.1/2$	$= 3.05\%$
Dollars deposited now	$= 250,000/1.0175$	$= \$245,700$
Cost of these dollars at spot	$= 245,700/1.996$	$= 123,096$ euros
Euro value of loan in six months' time	$= 123,096 \times 1.0305$	$= 126,850$ euros

Forward Market Hedge :

Six months forward selling rate	$= 1.979 - 0.004$	$= \$1.975$ per euro
Euro cost using forward market hedge	$= 250,000/1.975$	$= 126,582$ euros

Lead Payment :

Since the dollar is appreciating against the euro, a lead payment may be worthwhile.

Euro cost now = $250,000/1.996 = 125,251$ euros

This cost must be met by a short-term loan at a six-month interest rate of 3.05%

Euro value of loan in six months' time = $125,251 \times 1.0305 = 129,071$ euros

Evaluation of Hedges :

The relative costs of the three hedges can be compared since they have been referenced to the same point in time, i.e. six months in the future. The **most expensive** hedge is the **lead payment**, while the **cheapest** is the **forward market hedge**. Using the forward market to hedge the account payable currency risk can therefore be recommended.

Additional Analysis : Why Current spot selling rate = $1.998 - 0.002 = \$1.996$ per euro. why we have subtracted .002 from 1.998, why not we have not added it. Since it is said in the question that cost of euro is rising it means euro is depreciating.

Question No. 37 Assume that it is now 1 June.

Trenter plc has invested in the ordinary shares of each of five companies which it has identified as potential future take-over targets. Trenter's managers are concerned that the recent rise in the share price index might not last, and share prices could fall during the next three or four months. Trenter does not want to sell any of the shares, but wishes to gain some protection against possible falls in share price. The company's financial advisers have suggested three alternatives:

(i) Stock index futures (ii) Options on stock index futures (iii) A synthetic short position in the index, using both call and put options at the same exercise price.

Market Data :

Investment	Shares held (000)	Share price (pence)	Equity beta
Fangle	250	740	1.35
Knoten	400	510	1.26
Dupple	120	1,140	1.15
Wraiter	310	365	0.82
Plesenn	1,435	98	1.65

The FTSE 100 index is currently 5930, and the face value of an index contract is £10 per point.

FTSE 100 Stock Index Futures :

June 5936

September 5950

Options on FTSE 100 Stock Index Futures

Exercise Price	September	
	Call	Put (pence)
5625	331.0	35.5
5925	140.0	108.0

Required :

(a) Illustrate how each alternative might be used to hedge against falling share prices. The type of hedge, number of contracts and hedge cost should be shown wherever relevant.

(b) If, in September, the actual market prices had moved as shown below, calculate and comment upon the outcomes of each of the hedges.

Investment	Share price (pence)
Fangle	680
Knoten	479
Dupple	1,026
Wraiter	370
Plesenn	78

FTSE 100 stock index futures price: 5585

Solution :**(a) Stock Index Futures**

In order to protect against possible falling share prices **September stock index futures should be sold**.

[**Additional Analysis :** (Not Req'd. Just Read) If actual share prices fall, the value of the futures contracts will also fall. The futures contracts may be closed out at a lower price than they were sold for, resulting in a futures market gain to offset the loss

from actual share price movements. If the futures contract is held to maturity the hedge will lock into the futures price of 5950.] The number of contracts will depend upon the portfolio beta, which is estimated below.

Investment	Shares held(000)	Share price (pence)	Market value(£)	MV x Beta
Fangle	250	740	1,850,000	2,497,500
Knoten	400	510	2,040,000	2,570,400
Dupple	120	1,140	1,368,000	1,573,200
Wraiter	310	365	1,131,500	927,830
Plesenn	1,435	98	1,406,300	2,320,395
			7,795,800	9,889,325

9,889,325

The portfolio beta is: $\frac{9,889,325}{7,795,800} = 1.269$

7,795,800

The contract size is the current index value of 5930 x £10 = £59,300. (NB In some futures markets the contract size could be the futures price of 5,950 x £10 = £59,500. This is an acceptable answer.)

Hedge:

7,795,800

Sell $\frac{7,795,800}{59,300} \times 1.269 = 166.83$ or **167 contracts**

59,300

Options on Stock Index Futures :

[**Additional Analysis :** (Not Reqd. Just Read)Futures have the disadvantage of locking into an expected outcome, no matter how the associated cash market has performed. Options on futures allow the buyer of the option to either exercise the option and fix a worst case outcome, or, if market prices move in favour of the investor, to let the option lapse. In this case if the stock index was to rise above the relevant exercise price the option would not be exercised.]

September put options should be purchased.

If Trenter wishes to protect current share prices, the closest option to the current index price of 5930 should be selected, which is 5925.

As with futures **167 contracts should be purchased.**

If the stock index value falls to below 5925 by the time of expiry of the option, the option would be exercised

If the index value moved above 5925 the contract would not be exercised.

The disadvantage of the option is that a premium of 108, or $108 \times £10 = £1,080$ per contract has to be paid to purchase the option. For 167 contracts this is £180,360, or approximately 2.3% of the portfolio value. This is a relatively expensive form of hedge.

Synthetic Short Position :

Synthetic Short Position involve buying a put option and simultaneously selling a call option at the same exercise price.

The cost of an option hedge may be reduced by creating a synthetic short position. This would involve buying a put option with an exercise price of 5925 as above, but simultaneously selling a call option at the same exercise price. This would result in net premium paid of $(108.0 - 140.0) \times 10 \times 167 = (£53,440)$, i.e. a net receipt.

(b) Outcomes of the Hedges :

Stock Index Futures :

Investment	Market value(£)
Fangle	1,700,000
Knoten	1,916,000
Dupple	1,231,200
Wraiter	1,147,000
Plesenn	1,119,300
	7,113,500

The market value of the shares has fallen by £682,300

The futures market gain is $167 \times (5950 - 5585) \times £10 = £609,550$.

Overall there is a loss of £72,750, which would mean the hedge efficiency had been $\frac{609550}{682300} \times 100\% = 89\%$

Options on Stock Index Futures :

The option would be exercised to yield a futures gain of $167 \times (5925 - 5585) \times £10 = £567,800$.

The net result including the cost of the option is $£567,800 - £682,300 - £180,360 = £294,860$, a much larger loss than the futures hedge.

However, it must be remembered that if the FTSE 100 futures price had moved to above 5925, the option would not have been exercised, and Trenter would have benefited from the increase in market prices.

Synthetic Short Position :

The profit from the put option would be £567,800 as above.

The call option would expire worthless meaning that Trenter would retain the entire premium from selling the calls.

Overall the loss is $£567,800 + £53,440$ (net premium received) $- £682,300$, or £61,060.

The creation of the synthetic short future provides a better outcome than the actual futures contract.

Question No. 38 Doubler plc is considering a takeover bid for Fader plc.

Doubler's board of directors has issued the following statement : 'Our superior PE ratio and synergistic effects of the acquisition will lead to a post-acquisition increase in earnings per share and in the combined market value of the companies'.

Sumarised Financial Data for the Companies :

	£ million	
	Doubler	Fader
Sales	48.30	35.30
Profit before tax	6.30	4.10
Tax	(1.89)	(1.23)
Profit after tax	4.41	2.87
Dividends	(2.00)	(1.10)
Retained Earning	2.41_	1.77_
Fixed assets (net)	28.40	26.50
Current Assets	22.64	17.30
Less: Current Liabilities	(17.32)	(10.20)
	33.72_	33.60_

Financed by :

Medium and Long Term Borrowing	8.60	11.40
Ordinary Shares (10 pence par value)	4.00	3.00
Reserves	21.12	19.20
	33.72	33.60

Notes :

(i) After tax saving in cash operating costs of £750,000 per year indefinitely are expected as a result of the acquisition.

(ii) Initial redundancy costs will be £1million before tax.

(iii) Doubler's cost of capital is 12%.

(iv) Current shares prices are: Doubler 290 pence, Fader 180 pence.

(v) The proposed terms of the takeover are payment of 2 Doubler shares for every 3 Fader shares.

Required :

(a) Calculate the current PE ratios of Doubler and Fader

(b) Estimate the expected post acquisition earnings per share and comment upon the importance of increasing the earnings per share. (4 marks)

(c) Estimate the effect on the combined market value as a result of the takeover using:

(i) PE based valuation; (ii) Cash flow based valuation. State clearly any assumptions that you make. (5 marks)

(d) Discuss the limitations of your estimates in (c) above. (4 marks)(15 marks)

Solution :

(a) Doubler currently has 40 million ordinary shares, and Fader 30 million.

Earnings Per Share :

Doubler	Fader
$\frac{4.41}{40} = 11.025 \text{ pence}$	$\frac{2.87}{30} = 9.567 \text{ pence}$

PE Ratios :**Doubler**

$$\frac{290 \text{ pence}}{11.025 \text{ pence}} = 26.30$$

Fader

$$\frac{180 \text{ pence}}{9.567 \text{ pence}} = 18.81$$

(b) A 2-for-3 share exchange will result in the issue of 30 million x 2/3 new shares, or 20 million shares, giving a total of 60 million shares.

	£ million
Current combined earnings after tax	7.28 [4.41 + 2.87]
Additional earnings from operating savings	0.75
	8.03

Ignoring the one-off redundancy payments the expected earnings per share is: $\frac{8.03}{60} = 13.38 \text{ pence}$ OR

$$\text{EPS After Merger} = \frac{4.41 + 2.87 + .75}{\left(40 + 30 \times \frac{2}{3}\right)} = 13.38 \text{ pence}$$

[**Additional Analysis :** Not Req'd. Increasing earnings per share alone is not enough. The effect on the market value is the crucial factor. When a relatively high PE company acquires a company with a lower PE, the expected earnings per share will increase, but not necessarily the total market value of the companies.]

Note : We have ignored one off redundancy payment since it is not likely to incur in future .

(c) (i) The current combined value of the two companies is: 40m shares x 290 pence + 30m shares x 180 pence or £170 million.

P/E based Valuation :

New P/E Ratio after merger can be find out by using weighted average P/E of individual company before merger , weights being the total earning figure of two individual company .

$$\text{P/E After Merger} = \frac{26.30 \times 4.41 + 18.81 \times 2.87}{7.28} = 23.35$$

Now MPS After Merger will be : $23.35 \times 13.38 = 312 \text{ pence}$

Total Market Value After Merger will be = 312 pence x 60 million shares = £187.2 million.

However, this ignores the impact of the redundancy costs, £700,000 after tax. When this is included the combined value of the companies is still expected to be higher than current combined value .

(ii) Changes in expected cash flows as a result of the takeover are as follows:

	£750,000
Present value of operating savings (to infinity)	$\frac{\text{£750,000}}{0.12} = \text{£6,250,000}$
Redundancy costs, after tax relief	(£700,000)
Net effect on NPV	£5,550,000

If the market is efficient the market value of the combined company should increase by £5,550,000 as a result of the expected increase in NPV, much less than the estimate using PE based valuation.

(d)[Theoretical Part , Just Read & Develop an Understanding] Both estimates are likely to be inaccurate. Many other factors are likely to affect the post acquisition share price. For example:

(i) The effect of the acquisition on corporate growth rates.

(ii) There may be problems integrating the operations and workforce of the two companies.

(iii) Doubler's managers may be able to apply enhanced management skills to Fader's operations.

(iv) The effect of the change in risk and capital structure is not known.

With respect to the PE estimate :

- (i) PE ratios use accounting data rather than cash flow data.
(ii) Accurate estimates of future earnings are very difficult, and earnings can rapidly change.
With respect to cash flows :
(i) The value of all expected cash flows pre and post acquisition should be compared, not just the changes in a few cash flows. However, post acquisition cash flows are very difficult to determine.
(ii) Cash flows savings of £750,000 per year forever are unrealistic.
(iii) The cost of capital of Doubler is likely to change as a result of the acquisition of Fader.

Question No. 39 Tertial plc has recently commenced exports to Blundonia, a developing country. A payment of 100 million pesos is due from a customer in Blundonia in three months' time. The Blundonian government sometimes restricts the movement of funds from the country, but has indicated that payment to Tertial has a good chance of receiving approval. No forward market or derivatives markets exist for the Blundonian peso.

The Blundonian peso is currently linked to the US dollar.

Exchange rates:	B peso/£	\$/£
Spot rate	126.4 – 128.2	1.775 – 1.782
3 month forward rate	Not available	1.781 – 1.789

Tertial can borrow at 6% per annum or invest at 4% per annum in the UK, can borrow at 7% and invest at 4.5% in the USA, and at 14% and 10% respectively in Blundonia. Tertial currently has a £800,000 overdraft in the UK.

Inflation rates:

UK	3%
USA	4%
Blundonia	14%

Tertial's Blundonian customer has indicated that it might be willing to make a lead payment in return for a 1.5% discount on the sale price.

Required :

- (a) Discuss the advantages and disadvantages of the alternative currency hedges (including relevant crosshedges) that are available to Tertial. Calculate the expected outcome of each hedge, and recommend which hedge should be selected.
(b) Evaluate whether or not Tertial should agree to its Blundonian customer receiving the 1.5% discount.
(c) Suggest possible action that Tertial might take if the government decides not to allow the transfer of money out of Blundonia.

Solution :

(a) [**Additional Analysis :** (Not Required Just Read & Develop an Understanding) Money market hedges are available, either directly in the Blundonian peso or as a cross hedge in \$US. A forward market cross hedge is also possible. Money market hedges lock in the expected cash flow from a foreign exchange transaction by utilising both interest rates and exchange rates. They do not however allow the hedger to benefit from favourable movements in the spot rate. The peso hedge also runs the risk that the government will block the outflow of funds from Blundonia.]

Money Market Hedge :

Immediately, borrow B pesos 96,618,357 at 14% per year (100m/1.035)

Convert at the spot rate of P128.2/£ into £753,653

Use the funds to reduce the UK overdraft at 6% per annum, £753,653 x 1.015 = **£764,958**.

This is the effective £ receipt in three months' time.

Assuming the funds are not needed for other purposes it is better for them to be used to repay some of the overdraft rather than invest in the UK money market.

Cross Forward Hedge :

Cross hedges via the dollar are risky. Although the peso is fixed against the \$US, the much higher inflation rate in Blundonia suggests that there will be pressure on the Blundonian government to devalue the peso from its current fixed rate. If a devaluation was to occur during the next three months cross hedges would not be effective. Additionally funds still have to be remitted from Blundonia to the USA in order to fulfil the hedges.

The spot cross rates between the B peso and the \$ are P70.93 – 72.23/\$

$$\frac{100\text{m pesos}}{72.23} = \$1,384,466$$

Sell \$1,384,466 3 months forward at \$1.789/£ = **£773,877**

(The \$1,384,466 would be bought using the 100 million pesos at the spot rate of P72.23/\$, assuming the fixed rate between the peso and dollar does not change.)

Forward hedges are easy to arrange via banks, lock in the expected future cash flow, but, in common with money market hedges, do not allow the hedger to take advantage of favourable currency movements.

Cross Money Market Hedge :

Immediately borrow \$1,360,655 at 7% per year (\$1,384,466/1.0175)

Convert at the spot rate of \$1.782 into £763,555.

Use the £ to reduce the overdraft, £763,555 x 1.015 = **£775,008**.

The cross money market hedge provides better expected receipts but is more risky than the direct money market hedge. The cross hedge is recommended, as long as Tercial is willing to risk the devaluation of the peso against the \$US.

(b) After a 1.5% discount the expected receipts are 98.5 million pesos

Converted at spot of P128.2/£ this yields £768,331

Use to repay part of the overdraft. £768,331 x 1.015 = **£779,856**.

This is more beneficial for Tercial and should be agreed.

(c) Action to be taken if the Government decides not to allow the transfer of money out of Blundonia

Tercial could use the 100m pesos to invest in Blundonia, but as the company has only just commenced exports this is unlikely to be a favoured alternative. A counter-trade deal is possible, where the 100m pesos are used to purchase goods in Blundonia. The goods might be sold to a third party outside Blundonia. The third party would pay Tercial an agreed equivalent sum in sterling or another acceptable 'hard' currency. This form of transaction should be acceptable to the Blundonian government as it does not involve cash leaving the country.

Question No. 40 : Ewade plc has recently issued £100 million par value of £100 zero coupon convertible debentures 2013 at a price of £71.10 per debenture. The debentures are redeemable at their par value of £100. Conversion may take place at any time after three years from the issue date. The conversion terms are 12 ordinary shares of Ewade for each debenture. The current redemption yield on Ewade's 8% coupon straight debt with seven years until maturity, and redeemable at the par value of £100, is 6%. The straight debt pays semi-annual interest.

Required :

(a) Estimate the redemption yield on the zero coupon convertible debentures, and the difference between the market price of the seven year straight debt and the seven year zero coupon convertible debt. Explain the reasons for the different market prices and yields.

(b) Assume that in three years' time the redemption yield of the zero coupon debt is 6% and the price of an ordinary share of Ewade is: (i) 550 pence (ii) 710 pence

Required : For each share price, estimate the minimum price of the zero coupon convertible debentures.

(c) If Ewade held a portfolio including bonds with attached warrants and wished to protect the value of the warrants, explain how the knowledge of the delta value and theta value might assist in this.

Solution :

(a) The redemption yield on the convertible zero coupon debt may be found by solving :

$$100 = \frac{71.10}{(1+r)^7} \Rightarrow (1+r)^7 = 1.4065, r = \text{approximately } 5\%$$

The current annual yield on straight debt is 6% [Given] This yield will comprise the present value of the semi-annual interest payments, and of any capital gain or loss on redemption in seven years' time. The market price may be found by solving :

$$\text{Market Price [} B_0 \text{]} = \frac{4}{(1+.03)^1} + \frac{4}{(1+.03)^2} + \dots + \frac{4}{(1+.03)^{14}} + \frac{100}{(1+.03)^{14}} = \text{Rs. } 111.30$$

Comparison : Zero Coupon Bonds Straight Coupon Bonds

Yield	5%	6%
Bond Value	71.10	111.30

The yield on a zero coupon bond and coupon bearing bond of the same maturity might differ slightly according to the preferences

of investors for regular interest payments (coupon bearing), or a definite capital sum at the end of a period (zero coupon). Zero coupon bonds are not subject to reinvestment risk, but are subject to significant price risk if not held to maturity. Because of the existence of the conversion option, the 5% redemption yield on the zero coupon bond is less than would be expected for a zero coupon bond without the conversion option. This lower yield affects the price of the bond. The main reasons for the £40·20 difference between the prices of the bonds are that the zero coupon is issued at a significant discount to the par value, and the coupon bearing bond has a coupon interest rate higher than the current redemption yield, meaning that its market price will be above the par value.

(b) The minimum price of the zero coupon bond will be the greater of its value if converted immediately, and its value as a bond with four years until maturity.

The value of a bond is [after 3 years] = $\frac{100}{(1+.06)^4} = £79·21$

If converted :

At a price of 550 pence, the value is 12 x 550 pence = £66·00

At a price of 710 pence, the value is 12 x 710 pence = £85·20

With a share price of 550 pence the minimum value will be the bond value of £79·21

With a share price of 710 pence the minimum value will be the value if converted of £85·20

(c) [Theoretical Part , Just Read & Develop an Understanding] A warrant is an option to purchase additional securities, at a specified price and time. If warrants are held as part of a portfolio, the delta and theta values are useful in developing hedging strategies.

The delta value shows the change in the price of the option (warrant) relative to the change in the price of the underlying share. It is possible to use the delta value to devise a delta neutral hedge which means that the total value of the options and underlying shares held is not expected to change as the price of the underlying share changes.

The theta value shows how the price of an option (warrant) changes over time.

Change in option price
Theta = $\frac{\text{Change in option price}}{\text{Change in time}}$

The nearer to the maturity date of the warrant, the lower will be the time value associated with the warrant.

Question No. 41 : Arnbrook plc is considering a £50 million three year interest rate swap. The company wishes to have use of floating rate funds, but because of its AA credit rating has a comparative advantage over lower rated companies when borrowing in the domestic fixed rate market. Arnbrook can borrow fixed rate at 6·25% or floating rate at LIBOR plus 0·75%. LIBOR is currently 5·25%, but parliamentary elections are due in six months' time and future interest rates are uncertain. A swap could be arranged using a bank as an intermediary. The bank would offset the swap risk with a counterparty BBB rated company that could borrow fixed rate at 7·25% and floating rate at LIBOR plus 1·25%. The bank would charge a fee of £120,000 per year to each party in the swap. Arnbrook would require 60% of any arbitrage savings (before the payment of fees) from the swap because of its higher credit rating. Any fees paid to the bank are tax allowable. The corporate tax rate is 30%.

Required :

(a) Discuss the risks that Arnbrook and a participating bank might face when undertaking an interest rate swap.

(b) Evaluate whether or not the proposed swap might be beneficial to all parties. (6 marks)

(c) If LIBOR was to increase immediately after the forthcoming election to 5·75% and then stay constant for the period of the swap, estimate the present value of the savings from the swap for Arnbrook plc. Interest payments are made semi-annually in arrears. Comment upon whether the swap would have been beneficial to Arnbrook plc. The money market may be assumed to be an efficient market.

Solution :

(a) The risks faced by Arnbrook and the bank include :

(i) Default risk by the counterparty to the swap. If the counterparty is a bank this risk will normally be very small. A bank would face larger counterparty default risk, especially from counterparties such as the BBB company with a relatively low credit rating.

(ii) Market or position risk. This is the risk that market interest rate will change such that the company undertaking the swap would have been better off, with hindsight, if it had not undertaken the swap.

(iii) Banks often undertake a 'warehousing' function in swap transactions. The size and/or maturity of the transactions desired

by each counterparty to the bank often do not match. In such cases the bank faces gap or mismatch risk which it will normally hedge in the futures or other markets.

(b)	Fixed Rate	Floating Rate
Arnbroom	6.25%	LIBOR + 0.75%
BBB company	7.25%	LIBOR + 1.25%

Difference	1.00%	0.50%
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There is a potential 0.50% arbitrage saving from undertaking the swap. **OR**

Total Interest Cost in Current Scenario :

AA Rated Company	L+.75
BBB Rated Company	7.25%
Total Cost	L+8%

Total Interest Cost under Swap :

AA Rated Company	6.25
BBB Rated Company	L+1.25
Total Cost under Swap	L+7.5%

Total Saving Due To Swap [%] = $[L+8\%] - [L + 7.5\%] = .50\%$

Total Saving Due To Swap [Amount] = £50 million x . £250,000 per year.

Distribution Of Saving :

Arnbroom would require 60% of any saving, or £150,000 annually (£105,000 after tax).

The **BBB** company would receive 40 % of any saving or £100,000 annually (£70,000 after tax).

Bank Charges : The bank would charge each party £120,000 per year. After tax this is a cost of £84,000 each.

Gain or Loss :

Arnbroom : £105,000 after tax - £84,000 each. = net profit of £21,000

BBB Rated company : £70,000 after tax - £84,000 each. = net loss of £14,000

Decision : The swap is not potentially beneficial to all parties, unless the savings are shared equally.

(c) Arnbroom will pay floating rate interest as a result of the swap.

If Arnbroom receives 60% of the arbitrage savings, it will save 0.5% (0.60) on its interest rates relative to borrowing directly in the floating rate market, and

effectively pay LIBOR + 0.45%, or 5.70% at current interest rates.

If LIBOR moves to 5.75% in six months' time, Arnbroom will then pay 6.20% floating rate interest for the remaining period of the swap.

Interest savings in each six month periods are £50 million x 0.30% x 0.5 = £75,000

If the money market is efficient, the relevant discount rate will be the prevailing interest rate paid by Arnbroom.

Period:	Savings £	Discount factor	Present value (£)
0-6 months	75,000	0.972 (5.7%)	72,900
6 months-1 year	75,000	0.942 (6.2%)	70,650
1 year-18 months	75,000	0.913 (6.2%)	68,475
18 months-2 years	75,000	0.887 (6.2%)	66,525
2 years-30 months	75,000	0.860 (6.2%)	64,500
30 months-3 years	75,000	0.835 (6.2%)	62,625

Total Present Values 405,675

The interest rate swap is estimated to produce interest rate savings with a present value of £405,675 relative to borrowing floating rate directly. The swap would be beneficial, even after deducting the fee of £120,000 per year.

With hindsight lower interest costs would have been available by borrowing at 6.25% in the fixed rate market.

Question No. 42 : The financial management team of Tampem plc is discussing how the company should appraise new investments. There is a difference of opinion between two managers.

Manager A believes that net present value should be used as positive NPV investments are quickly reflected in increases in the company's share price.

Manager B states that NPV is not good enough as it is only valid in potentially restrictive conditions, and should be replaced by APV (adjusted present value).

Tampem has produced estimates of relevant cash flows and other financial information associated with a new investment. These are shown below :

Year	1	2	3	4
Investment pre-tax operating cash flows [£000]	1,250	1,400	1,600	1,800

Notes :

- (i) The investment will cost £5,400,000 payable immediately, including £600,000 for working capital and £400,000 for issue costs. £300,000 of issue costs is for equity, and £100,000 for debt. Issue costs are not tax allowable.
- (ii) The investment will be financed 50% equity, 50% debt which is believed to reflect its debt capacity.
- (iii) Expected company gearing after the investment will change to 60% equity, 40% debt by market values.
- (iv) The investment equity beta is 1.5.
- (v) Debt finance for the investment will be an 8% fixed rate debenture.
- (vi) Capital allowances are at 25% per year on a reducing balance basis.
- (vii) The corporate tax rate is 30%. Tax is payable in the year that the taxable cash flow arises.
- (viii) The risk free rate is 4% and the market return 10%.
- (ix) The after tax realisable value of the investment as a continuing operation is estimated to be £1.5 million (including working capital) at the end of year 4.
- (x) Working capital may be assumed to be constant during the four years.

Required :

- (a) Calculate the expected NPV and APV of the proposed investment. (10 marks)
- (b) Discuss briefly the validity of the views of the two managers. Use your calculations in (a) to illustrate and support the discussion.

Solution :**Calculation Of NPV (Net Present Value) :**

Year	0	1	2	3	4
Operating cash flows		1,250	1,400	1,600	1,800
Taxation (30%)		(375)	(420)	(480)	(540)
Tax saving on Depreciation		330	248	186	139
Investment cost	(5,400)				
Realisable value					1,500
Net Cash Flows	(5,400)	1,205	1,228	1,306	2,899
PVF @ 10%		0.909	0.826	0.751	0.683
Present Values	(5,400)	1,095	1,014	981	1,980

The expected NPV is £(330,000)

Decision : Since NPV is negative the investment does not appear to be financially viable

Working Notes :

(i) The tax saving from capital allowances is:

Year	Written down value	Capital allowance (25%)	Tax saving (30%)
1	4,400	1,100	330
2	3,300	825	248
3	2,475	619	186
4	1,856	464	139

(ii) The weighted average cost of capital is : $WACC = 13\% (0.6) + 8\% (1 - 0.3)(0.4) = 10.04\%$

Where , $K_e = 4\% + (10\% - 4\%) 1.5 = 13\%$

Calculation Of APV (Adjusted Present Value) :**Step 1 : Calculate Base case NPV :**

Year	0	1	2	3	4
Net Cash Flows	(5,000)	1,205	1,228	1,306	2,899
PVF @ 9%	0.917	0.842	0.772	0.708	
Present Values	(5,000)	1,105	1,034	1,008	2,052

Expected base case NPV is £199,000

Step 2 : Calculate Issue Cost : Rs. 4,00,000

Step 3 : Calculate Present Value Of Tax Saving on Interest [Financing Side Effects] :

Annual tax saving on interest payments on £2.7 million debt $£2,700,000 \times 8\% \times 0.3 = £64,800$

The present value of tax saving over four years discounted at the pre tax cost of debt of 8 % is: $£64,800 \times 3.312 = £214,618$

Step 4 : Calculate Adjusted Present Value :

Base case NPV	199,000
Tax savings	214,618
Issue costs	(400,000)
	13,618

Decision : Since APV is positive the investment appears to be marginally viable based upon the APV method.

Working Notes :

(i) The discount rate for the base case NPV is the ungeared cost of equity.

$K_e = 4\% + (10\% - 4\%) 0.882 = 9.29\%$ or 9 % approx.

(ii) Calculation of Ungeared Equity Beta : Overall Beta or Project Beta

$$= \text{Equity Beta} \times \frac{E}{E + D} + \text{Debt Beta} \times \frac{D}{E + D} = 1.15 \times \frac{2700}{2700 + 2700(1 - .30)} + \text{Nil} = .882$$

* In case of all equity firm Overall Beta = Equity Beta

8 Since Debt Beta is not given in question it is assumed to be Nil .

(b)[Theoretical Part , Just Read & Develop an Understanding] Manager A advocates the use of NPV which is used by many companies worldwide. In an efficient market a positive NPV, in theory, should lead to a commensurate increase in the value of the company and share price. However, the use of the weighted average cost of capital (WACC) in NPV is only appropriate if there is no significant change in gearing as a result of the investment, the investment is marginal in size, and the operating risk of the company does not change. If WACC is estimated using the capital asset pricing model, it also relies upon the accuracy of this model which has many unrealistic assumptions.

The adjusted present value model, advocated by manager B, treats the investment as being initially all equity financed and then directly adjusts for the present value of any cash flow effects associated with financing. As gearing is expected to change as a result of the investment, APV might be better suited to the evaluation of this investment. However, it is not always easy to identify all of the relevant financing side effects, or the discount rate that used be used on each of the financing side effects.

APV also relies upon unrealistic assumptions with respect to ungearing beta and the existence of perpetual risk free debt. Both NPV and APV do not consider the potential value of real options (e.g. the abandonment option and the option to undertake further investments) that might exist as a result of undertaking the initial investment.

Question No. 43 : You have been asked to investigate the dividend policy of two companies, Forthmate plc and Herander plc. Selected financial information on the two companies is shown below.

Forthmate plc

	Earnings after Tax (£000)	Issued ordinary shares (m)	Free cash flow to equity (£000)	Dividend per share (pence)
2001	24,050	100	11,400	4.8
2002	22,345	100	12,200	4.5
2003	26,460	100	(3,500)	5.3
2004	32,450	130	(2,600)	5.0
2005	35,890	130	9,200	5.5

Herander plc

	Earnings after Tax (£000)	Issued ordinary shares (m)	Free cash flow to equity (£000)	Dividend per share (pence)
2001	8,250	50	6,100	10.0
2002	5,920	50	(4,250)	10.0
2003	9,140	50	10,300	10.3
2004	10,350	50	4,400	10.5
2005	8,220	50	3,140	10.5

A colleague has suggested that companies should try to pay dividends that are a constant percentage of a company's free cash

flow to equity.

Required :

(a) Analyse and contrast the dividend policies of Forthmate plc and Herander plc. Include in your analysis estimates of dividends as a percentage of free cash flow, and any other relevant calculations. Discuss possible reasons why the companies' dividend policies differ.

(b) Discuss whether or not a company should pay dividends that are equal to the free cash flow to equity.

(c) In both of the last two years Herander plc has had more potential investments with positive NPV than it actually undertook.

Required : Discuss the implications of your findings in (a) above for the financial strategy of Herander plc.

Solution :

(a) Forthmate

	Payout ratio (%)	Dividends/FCFE (%)
2001	20.0	42
2002	20.1	37
2003	20.0	-151
2004	20.0	-250
2005	19.9	78

Herander

	Payout ratio (%)	Dividends/FCFE (%)
2001	60.6	82
2002	84.4	-118
2003	56.3	50
2004	50.7	119
2005	63.9	167

Forthmate has adopted a policy of paying dividends that are a constant percentage of after tax earnings. This is not normally recommended as it might lead to fluctuating levels of dividend per share (DPS) if earnings are volatile. If investors seek a minimum cash flow from dividend payments wide fluctuations would not be welcome. In this case, however, there are only two small reductions in DPS over the period.

The payout ratio of 20% is also relatively low. This might be because investors have a preference for most of their income in the form of capital gains rather than dividends, as the tax treatment of capital gains is more favourable in some countries.

Herander plc appears to maintain a constant dividend per share, possibly increasing with inflation. Its payout ratio is much higher than that of Forthmate, perhaps to satisfy its own investment clientele.

Both companies act as if they believe that dividend policy is important to their investors, and potentially their share price, in contrast to the theories of Modigliani and Miller and others.

Both companies appear to relate their dividend policy to earnings. It might be better to link dividend policy to available cash flow.

(b) [Theoretical Part , Just Read & Develop an Understanding] Free cash flow to equity is the funds that remain after the company has undertaken all capital investment expenditure, any changes in non-cash working capital and debt issues and redemptions. It is effectively the amount left for investors after the company has met all other needs, and could be paid to shareholders as dividends.

A strategy of paying all of free cash flow as dividends might appear sensible, as the amount being paid is what the company can afford from its annual cash flow.

However, there may be reasons why a company might wish to pay dividends of less than the FCFE.

Payments of less than free cash flow may be because :

(i) The company has a strategy of increasing cash reserves for a specific purpose, perhaps an acquisition

(ii) Earnings and cash flows are volatile, and the cash is to be used to smooth out dividends

(iii) There might be legal constraints such as covenants that prevent the return of cash to shareholders

(iv) The company wishes to maintain a precautionary cash balance to meet unanticipated needs.

If the dividends to FCFE percentage are more than 100%, the company is paying out more than it can afford from annual cash flows and must be issuing new securities or reducing existing cash balances. It might do this to maintain an existing dividend per share, but as a result it will have to use relatively expensive external financing to meet its investment needs.

(c) Herander plc has paid dividends well in excess of its FCFE in the last two years, and has had more potential positive NPV projects than it has undertaken. An implication is that the high dividend payment might be constraining Herander's ability to undertake viable investments that would increase shareholder wealth. The company is likely to be losing value because of its dividend policy.

MAY 2008 EXAMINATION QUESTION SOLVED - [Not Required For Students Appearing For Nov 2008]

Question No.44 DL Services is in the business of providing home Services like plumbing, sewerage line cleaning etc. There is a proposal before the company to purchase a mechanized sewerage cleaning line for a sum of Rs. 20 lacs. The life of the machine is 10 years. The present system of the company is to use manual labour for the job. You are provided the following information:

Cost of machine	Rs. 20 lacs
Depreciation	20% p.a. straight line
Operating cost	Rs. 5 lacs per annum

Present System

Manual labour	200 persons
Cost of Manual labour	Rs. 10,000 (ten thousand) per person per annum

The company has an after tax cost of funds of 10% per annum. The applicable rate of tax inclusive of surcharge and cess is 35%.

Based on the above you are required to :

(i) State whether it is advisable to purchase the machine.

(ii) Compute the savings/additional cost as applicable, if the machine is purchased.(12 Marks)

Solution :**Q1****(i) Present System**

Year	Particular	Amount	PVAF@10%	PV
1-10	Labour Cost Net of Tax	13,00,000	6.1446	7987980
	Total Present Value of Outflow under Present System			7987980

Working Notes :

Total labour cost	200 x 10,000	=	20,00,000
Less : Tax Saving on above @ 35%			_7,00,000
Net Labour Cost			13,00,000

New System :

Year	Particular	Amount	PVAF@10%	Present Value
0	Cost of Machine	20,00,000	1	20,00,000
1-10	Operating Cost Net of Tax	325000	6.1446	1996995
1-5	Tax Saving on Depreciation	(1,40,000)	3.79	(530710)
	Total Present Value of Outflow under New System			3466285

Decision : Yes, It is advisable to purchase the machine as it involves least outflow.

(ii) Saving due to purchase of machine = 7987980 - 3466285 = 4521695

Question No.45 A company has a choice of investments between several different equity oriented mutual funds. The company has an amount of Rs.1 crore to invest. The details of the mutual funds are as follows:

Mutual Fund	Beta
A	1.6
B	1.0
C	0.9
D	2.0
E	0.6

Required :

(i) If the company invests 20% of its investment in the first two mutual funds and an equal amount in the mutual funds C, D and E, what is the beta of the portfolio?

(ii) If the company invests 15% of its investment in C, 15% in A, 10% in E and the balance in equal amount in the other two mutual funds, what is the beta of the portfolio?

(iii) If the expected return of market portfolio is 12% at a beta factor of 1.0, what will be the portfolios expected return in both

the situations given above?

Solution : (a)

(i) Portfolio Beta : -

Mutual Fund	Amt (in Lakhs)	Weight	Beta	Weight x Beta
A	20	.20	1.6	.32
B	20	.20	1.0	.2
C	20	.20	0.9	.18
D	20	.20	2.0	.4
E	20_	.20	0.6	.12_
	100	1_		1.22

(ii) Portfolio Beta : -

Mutual Fund	Amt (in Lakhs)	Weight	Beta	Weight x Beta
A	15	.15	1.6	.24
B	30	.30	1.0	.3
C	15	.15	0.9	.135
D	30	.30	2.0	.6
E	10_	.10	0.6	.06_
	100	1_		1.335

(iii) Portfolio Expected Return :-

In case of (i) : $12\% \times 1.22 = 14.64\%$

In case of (ii) : $12\% \times 1.335 = 16.02\%$

Additional Analysis

in case of (i)

When Beta is 1, Market Return is 12

When Beta is 1.22, Security Return is $12 \times 1.22 = 14.64\%$

Accordingly for case (ii) Security Expected Return can be calculated.

Question No.46 The following is the Balance Sheet of a Private Limited Company as at 31st March, 2008.

Capital & Liabilities	Rs.	Property & Assets	Rs.
Share Capital :		Fixed Assets :	
Authorized : 8,000 equity		Cost	6,00,000
Shares of Rs. 100 each	8,00,000	Less : Depreciation	2,00,000
10,000 11% Cumulative		Stock in trade	2,00,000
Preference shares of		Sundry debtors	4,00,000
Rs. 100 each	1,00,000	Cash and bank balance	1,00,000
Issued, subscribed and paid up :			7,00,000
4,000 Equity shares of Rs. 100			
each fully paid up	4,00,000		
Reserve	1,00,000		
15% Unsecured			
debentures	2,00,000		
Trade creditors and creditors for expenses	4,00,000		
	Rs. 11,00,000		Rs. 11,00,000

The company finds that a very profitable market exists for its products and with a little expansion; it could generate more sales at the present selling prices. The expansion calls for an investment of Rs. 8,00,000 in Fixed assets and Rs. 2,00,000 in Current assets. It is ascertained that the current annual profits in the region of Rs. 3,00,000 will be enhanced by 50% due to the expansion.

The debt-equity ratio applicable generally to the industry in which the Company is engaged is 2 : 1.

Please advise the management on the various methods available to it to meet the cost of financing the expansion, keeping in mind

the interest of the equity shareholders.

Solution :

Resources needed for expansion :

Fixed assets	Rs. 8,00,000
Current assets	Rs. 2,00,000
	Rs. 10,00,000
Less: Resources available	Rs. 1,00,000
Resource Required	Rs. 9,00,000

The question asks for the interest of the equity shareholders to be kept in mind. Hence, EPS has to be the maximum in the circumstances.

The debt-equity ratio applicable to the industry is 2:1. The equity as on 31st March, 2008 is Rs.5,00,000 and the debt Rs.2,00,000. Some gearing is thus possible on the debt front.

It is also to be remembered that cost of servicing debt is an allowable set-off against profits while cost of servicing capital is not.

The various alternatives available are considered below:-

(i) To raise the equity to the level authorized by the memorandum and to raise the balance by issue of preference capital.

Resources needed	9,00,000
Equity capital to the extent unissued to be issued at par	4,00,000
Balance needed	5,00,000
To be met by the issue of 5,000 11% cumulative preference share	5,00,000
EPS then will be	$\text{Rs.} 3,00,000 + \text{Rs.} 1,50,000 - 55,000 \div 8,000 \text{ viz. Rs.} 49.38$

(ii) To raise the entire requirements by issue of Preference Capital.

In this situation, EPS will be $\text{Rs.} 4,50,000 - 99,000 = \text{Rs.} 87.75$

(iii) To raise the resources by part issue of equity and balance by way of 15% debentures.

Resources needed	Rs.9,00,000
Unissued capital	4,00,000
Issue of debentures	5,00,000
EPS in this case will be	$\text{Rs.} 4,50,000 - 75,000 = 3,75,000 \div 8,000 = \text{Rs.} 46.88$

(iv) The company's debt equity ratio is 0.4:1. The acceptable limit is 2:1. The company can therefore raise a debt, on the present level of equity base to the extent of Rs.10,00,000. The existing debt being Rs.2,00,000, balance of Rs.8,00,000 could be raised. Thus there will be a short cover of Rs.1,00,000. To use the debt cover to the fullest extent, the company can issue additional equity shares of 500 making the equity base of Rs.4,50,000.

Resources needed	9,00,000 to be raised through
Issue of new shares	50,000
Issue of debt	8,50,000

The rate at which debt can be raised cannot be lower than what the company is paying to the debentureholders i.e., (15%). Assuming the cost of loan at 17%, the position of EPS will be as under:

New profits	4,50,000
Less: Interest on borrowings 17% on Rs.8,50,000	1,44,500
Profit available to equity holders	Rs.3,05,500
No. of equity shares	4,500
EPS	Rs.68 (rounded off)

Additional Analysis : It may be noted that in case of (iii) and (iv) , Company is unable to maintain its debt Equity Ratio .

(v) A yet another method could be to issue the unissued equity shares assuming at a premium, say of 20% and for the balance raise preference share capital which is the least costly amongst the various alternatives.

Resources needed	Rs.9,00,000
Issue of 4000 equity shares at Rs.120 per share	4,80,000
Balance needed	4,20,000

Issue 4200 11% cum Preference shares at par.

EPS in this situation will be $\frac{4,50,000 - 46,200}{8,000} = \text{Rs } 50.48$

Tabled below are the various results :

EPS at present $\frac{\text{Rs.}3,00,000}{\text{Rs.}4,000} = \text{Rs } 75$

(i) By Combination of issue of equity and preference at par 49.38

(ii) By Raising preference shares only 87.75

(iii) By part issue of equity and part debentures 46.88

(iv) By Predominant resort to borrowings 68.00

(v) Issue of part equity at a premium and the balance preference shares 50.48

The suggested plan, per se, will be to meet the entire costs of expansion by issuing 11% cumulative preference shares.

Additional Analysis : The above solution to this question is strictly given as per Suggested answer. Student may come up with alternative solution accordingly.

Question No.47

Liabilities	Rs. in Lakhs	Assets	Rs. in Lakhs
Share Capital (Rs. 10 FV)	100	Land & Building	40
Reserve & Surplus	40	Plant & Machinery	80
Creditors	30	Investment	10
		Stock	20
		Debtors	15
		Cash At Bank	5
	170		170

You are required to work out the value of the Company's, shares on the basis of Net Assets method and Profit-earning capacity (capitalization) method and arrive at the fair price of the shares, by considering the following information:

(i) Profit for the current year Rs. 64 lakhs includes Rs. 4 lakhs extraordinary income and Rs. 1 lakh income from investments of surplus funds; such surplus funds are unlikely to recur.

(ii) In subsequent years, additional advertisement expenses of Rs. 5 lakhs are expected to be incurred each year.

(iii) Market value of Land and Building and Plant and Machinery have been ascertained at Rs. 96 lakhs and Rs. 100 lakhs respectively. This will entail additional depreciation of Rs. 6 lakhs each year.

(iv) Effective Income-tax rate is 30%.

(v) The capitalization rate applicable to similar businesses is 15%.

Solution :

Net Assets Method	Rs. lakhs
Assets:	
Land & Buildings	96
Plant & Machinery	100
Investments	10
Stocks	20
Debtors	15
Cash & Bank	5
Total Assets	246
Less: Creditors	30
Net Assets	216

Value per share as per Net Asset Value = $\frac{\text{Rs.}216,00,000}{10,00,000} = \text{Rs } 21.6$

Additional Analysis : There may be some confusion in the minds of students for inclusion of Investment in Net Assets but let

us clear this point that investment is also a part of asset and hence it must form part of our assets.

Profit-Earning Capacity Method :

Profit before tax		64.00
Less: Extraordinary income	4.00	
Investment income (not likely to recur)	1.00	5.00
		59.00
Less: Additional expenses in forthcoming years		
Advertisement	5.00	
Depreciation	6.00	11.00
Expected earnings before taxes		48.00
Less: Income-tax @ 30%		14.40
Future maintainable profits (after taxes)/Earning		33.60

Additional Analysis : Why we have not added Depreciation in the above case ? Since we are required to use Profit earning Method & not Cash Flow Method. Hence we have calculate value on the basis of earning/Profit and not Cash Inflow.

Value of business as per Profit-Earning Capacity Method :

Present Value Of Earnings = $\frac{33.60}{.15}$	=	224
Less: External Liabilities (creditors)	30	
Net Value		194

$$\text{Value Per Share} = \frac{194,00,000}{10,00,000} = \text{Rs } 19.4$$

Fair Price of Share

$$= \frac{\text{Value as per Net Asset Value} + \text{Value as per Profit Earning Capacity Method}}{2} = \frac{21.6 + 19.4}{2} = \text{Rs. } 20.5$$

Question No. 48 A company is considering hedging its foreign exchange risk. It has made a purchase on 1st. January, 2008 for which it has to make a payment of US \$ 50,000 on September 30, 2008. The present exchange rate is 1 US \$ = Rs. 40. It can purchase forward 1 US \$ at Rs. 39. The company will have to make a upfront premium of 2% of the forward amount purchased. The cost of funds to the company is 10% per annum and the rate of Corporate tax is 50%. Ignore taxation. Consider the following situations and compute the Profit/Loss the company will make if it hedges its foreign exchange risk:

(i) If the exchange rate on September 30, 2008 is Rs. 42 per US \$.

(ii) If the exchange rate on September 30, 2008 is Rs. 38 per US \$. (8 Marks)

Solution :

	(Rs.)
If company purchases USD 50000 forward premium is $50000 \times 39 \times 2\%$	39,000
Interest on Rs.39,000 for 9 months at 10%	2,925
Total hedging cost	41,925

(i) If exchange rate is Rs.42

Then gain (Rs.42 – 39) for USD 50000	1,50,000
Less: Hedging cost	41,925
Net Gain	1,08,075

(ii) If exchange rate is Rs.38

Then loss (39 – 38) for USD 50000	50,000
Add: Hedging Cost	41,925
Total Loss	91,925

Additional Analysis : Tax Rate is given 50 % .But the question has asked us to ignore taxation. Hence we have ignored tax for calculating Gain or Loss in the above situation .

QUESTION No. 49 P Ltd. invested on 1.4.2006 in Equity Shares as below :

Company	Number of Shares	Cost (Rs.)
M Ltd.	1,000 (Rs. 100 each)	2,00,000
N Ltd.	500 (Rs. 10 each)	1,50,000

In September, 2006, M Ltd. paid 10% dividend and in October, 2006, N Ltd. paid 30% dividend.

On 31.3.2007, market price of shares of M Ltd. and N. Ltd. were Rs. 220 and Rs. 290 respectively.

P Ltd. have been informed by their investment advisers that :

(i) Dividends from M Ltd. and N Ltd. for the year ending 31.3.2008 are likely to be 20% and 35% respectively.

(ii) Probabilities of market quotations on 31.3.2008 are :

Probability Factor	Price of Share of M Ltd.	Price of Share Of N Ltd.
0.2	220	290
0.5	250	310
0.3	280	330

You are required to :

(i) Calculate the average return from the portfolio for the year 31.3.2007.

(ii) Calculate the expected average return from the portfolio for the year 2007-08.

(iii) Advise P Ltd. of the comparative risk of two investments by calculating the Standard deviation in each case.

Solution :

Calculation of Return on portfolio for 2005-2006

(Calculation in Rs./share)

	M	N
Dividend received during the year (Rate Of Dividend × Face Value)	10	3
Capital gain/loss by 31.03.06		
Market Value by 31.03.06 (P_1)	220	290
Cost of investment (P_0)	200	300
Capital Gain/loss	20	(-)10
Total Yield (Capital Gain + Dividend)	30	(-)7
Initial Investment	200	300
% Return or % Yeild $\frac{(P_1 - P_0) + D_1}{P_0}$	15%	(-)2.33%
Weight in the portfolio	57%	43%
Weighted Average Return		7.55%

Calculation Of Weights : $M : \frac{2,00,000}{3,50,000} = 57\%$ and $N : \frac{1,50,000}{3,50,000} = 43\%$

Calculation of estimated return for 2006-2007

Expected dividend (Rate Of Dividend × Face Value)	20	3.5
Capital gain by 31.03.07 ($P_1 - P_0$)		
$(220 \times 0.2) + (250 \times 0.5) + (280 \times 0.3) - 220 = (253 - 220)$	33	
$(290 \times 0.2) + (310 \times 0.5) + (330 \times 0.3) - 290 = (312 - 290)$	—	22
Yield (Expected Return) [$P_1 - P_0 + D_1$]	53	25.5
Market Value 01.04.06 (Initial Investment) [P_0]	220	290
% Return $\frac{(P_1 - P_0) + D_1}{P_0}$	24.09%	8.79%
Weight in portfolio	60.3	39.7
Weighted Average (Expected) Return		18.02%

(The Market Value on 31.03.06 is used as the base for calculating yield for 06-07)

Calculation Of Weights : M : $\frac{220 \times 1000}{220 \times 1000 + 500 \times 290} = 60.3\%$; N : $\frac{500 \times 290}{220 \times 1000 + 500 \times 290} = 39.72\%$

Calculation of Standard Deviation :

M Ltd.

Expected Market Value	Expected Capital Gain	Expected Dividend	Expected Yield/Return	Deviations	Square of deviations	Probability factor	Sq of d x prob.
220	0	20	20	-33	1089	0.2	217.80
250	30	20	50	-3	9	0.5	4.50
280	60	20	80	27	729	0.3	218.70
							441.00

Standard deviation : $\sqrt{441} = 21$

Expected Return : M Ltd : $20 \times .2 + 50 \times .5 + 80 \times .30 = 53$

N Ltd.

Expected Market Value	Expected Gain	Expected Dividend	Expected Yield	Deviations	Square of deviations	Probability factor	Sq of d x prob.
290	0	3.5	3.5	-22	484	0.2	96.80
310	20	3.5	23.5	-2	4	0.5	2.00
330	40	3.5	43.5	18	324	0.3	97.20
							196.0

Standard deviation : $\sqrt{196} = 14\%$

Expected Return : N Ltd : $3.5 \times .2 + 23.5 \times .5 + 43.5 \times .3 = 25.5$

Decision : Share of company M Ltd. is more risky as the S.D. is more than company N Ltd.

QUESTION No. 50 A hold the following portfolio :

Share/Bond	Beta	Initial Price Rs.	Dividends Rs.	Market Price at end of year Rs.
Epsilon Ltd.	0.8	25	2	50
Sigma Ltd.	0.7	35	2	60
Omega Ltd.	0.5	45	2	135
GOI Ltd.	0.99	1,000	140	1,005

Calculate:(i) The expected rate of return on his portfolio using CAPM (ii) The average return of his portfolio.

Solution

(i) As per CAPM, Expected Rate of Return = $R_f + \text{Beta} (R_m - R_f)$. Now, Let us first calculate the Expected Return on Market

portfolio which is not specifically given in the question by using the following relation : $\frac{(P_1 - P_0) + D_1}{P_0}$

		P ₁ Rs.	P ₀ Rs.	Dividends Rs.
A.	Cement Ltd.	50	25	2
	Steel Ltd.	60	35	2
	Liquor Ltd.	135	45	2
B.	Government of India Bonds	1005	1,000	140
	Total	1250	1,105	146

Therefore, Expected Return on Market Portfolio = $\frac{(1250 - 1105) + 146}{1105} = 26.33\%$

Calculation of Expected Rate of Returns of Security using CAPM : $R_f + \text{Beta} (R_m - R_f)$

Cement Ltd. = $14 + 0.8 (26.33 - 14) = 23.86\%$

Steel Ltd.	= 14 + 0.7 (26.33 – 14)	= 22.63%
Liquor Ltd.	= 14 + 0.5 (26.33 – 14)	= 20.17%
Government of India Bonds	= 14 + 0.99 (26.33 – 14)	= 26.21%

$$(ii) \text{ Average Return of the portfolio} = \frac{23.86 + 22.63 + 20.17 + 26.21}{4} = 23.22 \%$$

QUESTION No. 51 (C.A. Final May 2008 8 Marks) M Ltd. belongs to a risk class for which the capitalisation rate is 10%. It has 25,000 outstanding shares and the current market price is Rs.100. It expects a net profit of Rs.2,50,000 for the year and the Board is considering dividend of Rs.5 per share. M Ltd. requires to raise Rs. 5,00,000 for an approved investment expenditure. Show how does the MM approach affect the value of M Ltd., if dividends are paid or not paid.

Solution :

When Dividend are Paid :

$$\text{Value of the Firm : } n P_o = \frac{(n + m) P_1 + E_1 - I_1}{(1 + K_e)^1} = \frac{(25,000 + 3571.43) \times 105 + 2,50,000 - 5,00,000}{(1 + .10)^1} = 25,00,000 \text{ (approx)}$$

$$\text{WN: } P_o = \frac{D_1 + P_1}{(1 + K_e)^1} \quad 100 = \frac{5 + P_1}{(1 + .10)^1} \quad P_1 = \text{Rs.}105 ; m = \frac{I_1 [E_1 - n D_1]}{P_1} = \frac{5,00,000 [2,50,000 - 25,000 \times 5]}{105} = 3571.43 \text{ (appx)}$$

When Dividend is not Paid :

$$\text{Value of the Firm : } n P_o = \frac{(n + m) P_1 + E_1 - I_1}{(1 + K_e)^1} = \frac{(25,000 + 2272.73) \times 110 + 2,50,000 - 5,00,000}{(1 + .10)^1} = 25,00,000 \text{ (approx)}$$

$$\text{WN: } P_o = \frac{D_1 + P_1}{(1 + K_e)^1} \quad 100 = \frac{\text{Nil} + P_1}{(1 + .10)^1} \quad P_1 = \text{Rs.}110 ; m = \frac{I_1 [E_1 - n D_1]}{P_1} = \frac{5,00,000 - [2,50,000 - 25,000 \times \text{Nil}]}{110} = 2272.73 \text{ (apx)}$$

Conclusion : Value of the firm under MM Approach will be same whether dividend is declared or not declared .

"All your life you are told the things you cannot do. All your life they will say you're not good enough or strong enough or talented enough; they will say you're the wrong height or the wrong weight or the wrong type to play this or be this or achieve this. THEY WILL TELL YOU NO, a thousand times no, until all the no's become meaningless. All your life they will tell you no, quite firmly and very quickly.
AND YOU WILL TELL THEM YES."

Wishing You All The Best
May You All Come Up With Flying Colors in Your Career
and Become a Successful Chartered Accountant
Rise , Awake & Stop Not Until The Goal Is Achieved
- Aaditya Jain

Positive Thought- A Strong Tool Of Success

Once upon a time there was bunch of tiny frogs that arranged a running competition. The goal was to reach the top of very high tower. A big crowd had gathered around the tower to see the race and cheer on the contestants.

The race began. Honestly, no one in the crowd really believed that the tiny frogs would reach the top of tower. You heard statements such as, "They will NEVER make it to the top. Or: Not a chance that they will succeed. The tower is too high!"

The tiny frogs began collapsing, one by one, except for those, who in fresh tempo were climbing higher and higher.

The crowd continued to yell, "Its too difficult!!! No one will make it!"

More tiny frogs got tired and gave up, but one continued higher and higher and higher. This one wouldn't give up!

At the end, everyone else had given up climbing the tower, except for one tiny frog. After a big effort, he was the only one who reached the top! THEN all the other tiny frogs naturally wanted to know how this one frog managed to do it?

A contestant asked the tiny frog how he had found the strength to succeed and reach the goal. It turned out.... that the winner was deaf!!!!

Never listen to other people tendencies to be negative or pessimistic.... because they take your most wonderful dreams and wishes away from you- the ones you have in your heart!

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