

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 :

$$\text{As per Dividend Growth Model : } P_0 = \frac{D_0(1+g)}{K_e - g}$$

$$\text{Now Market Price Per Share (Po) before Budget announcement as per Mr. A's estimates. } P_0 = \frac{2 \times (1 + .05)}{.10 - .05} = \text{Rs. 42}$$

$$\text{and Market Price Per Share (Po) after Budget announcement as per Mr. A's estimates. } P_0 = \frac{1.80 \times (1 + .05)}{.07 - .05} = \text{Rs. 94.50}$$

QUESTION NO. 2 Nihar Ltd. is contemplating conversion of 8% convertible debentures of Rs. 1,000 each. At present, it has 500 such debentures outstanding. The market price of the debenture is Rs. 1,080. The debenture indenture provides that one debenture will be converted for 10 shares. The price earning ratio before redemption is 20:1 and anticipated price earning ratio after redemption is 25:1. The number of shares outstanding prior to redemption was 10,000. Earning before interest and taxes amounted to Rs. 2,00,000. The company is in the 50% tax bracket. Should the company convert its debentures into shares?

Solution : Calculation of EPS before and after conversion of Debentures :

<u>Particulars</u>	<u>Before</u>	<u>After</u>
EBIT	2,00,000	2,00,000
Less : Interest	<u>40,000</u>	<u>-</u>
EBT	1,60,000	2,00,000
Less : Tax @ 50%	<u>80,000</u>	<u>1,00,000</u>
EAT (available to Equity shareholders)	80,000	1,00,000
No. of Equity shares	<u>10,000</u>	<u>15,000</u>
EPS	8.00	6.67
Market price per share (EPS × P/E ratio)	160.00	166.75

Recommendation : For Debentureholders : After the conversion of debentures into shares, the convertible debenture holder can increase his wealth by Rs. 587.50 (i.e. Market price of 10 shares Rs. 1667.50 - Market price of one debenture Rs. 1,080).

For the Company : With the conversion of debentures, the market value of shares will also increase from Rs. 160 to Rs. 166.75. Hence, in the interest of the company & in the interest of debentureholders, the company should convert its debenture into equity shares.

QUESTION NO. 3 The following data are available for a bond

Face Value	Rs. 1,000	Redemption value	Rs. 1,000
Coupon Rate	16%	Yield to maturity	17%
Years of Maturity	6		

What is the current market price, duration and volatility of this bond? Calculate the expected market price, if increase in required yield is by 75 basis points.

Solution :

1. Calculation of Current Market Price :

$$160 \times \text{PVAF}(17\%, 6 \text{ Years}) + 1,000 \times \text{PVF}(17\%, 6 \text{ Years}) = 160 \times 3.589 + 1000 \times .390 = 574.24 + 390 = 964.24$$

He who asks is a fool for five minutes, but he who does not ask remains a fool forever

Additional Analysis: Since YTM is more than coupon rate, the bond will be selling at a discount i.e., market price will be less than Face value .Hence by such analysis we can cross check our answer .

2. Duration Of Bond :

$$\begin{aligned} \text{Duration of the Bond} &= \frac{1}{964.24} \left[\frac{160 \times 1}{(1+.17)^1} + \frac{160 \times 2}{(1+.17)^2} + \frac{160 \times 3}{(1+.17)^3} + \frac{160 \times 4}{(1+.17)^4} + \frac{160 \times 5}{(1+.17)^5} + \frac{160 \times 6}{(1+.17)^6} + \frac{1000}{(1+.17)^6} \right] \\ &= \frac{1}{964.24} [160 \times .855 + 3.20 \times .731 + 480 \times .624 + .640 \times .534 + 800 \times .456 + 960 \times .390 + 6000 \times .390] \\ &= \frac{1}{964.24} [136.8 + 233.92 + 299.52 + 341.76 + 364.8 + 374.4 + 2340] = \frac{1}{964.24} \times 4091.2 = 4.243 \text{ years} \end{aligned}$$

$$\text{3. Volatility of Bond : } = \frac{\text{Duration}}{1 + \text{Yield}} = \frac{4.242}{1 + .17} = 3.626$$

4. Change In Market Price If Yield increases to .75 :

New Market Price can be found with the help of Modified Duration as follows :

Change in Market Price = - Modified Duration $\times$ Change in Yield = - 3.626 $\times$.75 = - 2.719 %

Therefor New Market Price = 964.40 - 2.719 % of Rs. 964.40 = 938.18

OR

Revised Yield or New Yield = 17 + .75 = 17.75

Expected Market Price :

$$= 160 \times \text{PVA} (17.75\%, 6 \text{ Yrs.}) + 1000 \times \text{PVF} (17.75\%, 6 \text{ years}) = 160 \times 3.52 + 1000 \times .375 = 563.2 + 375 = 938$$

QUESTION NO.4 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?

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

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

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 :

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

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

QUESTION NO. 5 A Mutual Fund having 300 units has shown in NAV of Rs. 8.75 and Rs. 9.45 at the beginning and at the end of the year respectively. The Mutual Fund has given two options :

- (i) Pay Rs. 0.75 per unit as dividend and Rs. 0.60 per unit as a capital gain, or
- (ii) These distributions are to be reinvested at an average NAV of Rs. 8.65 per unit.

What difference it would make in terms of return available and which option is preferable ?

Solution :

$$(i) \% \text{ Return} = \frac{(\text{Closing NAV} - \text{Opening NAV}) + \text{Capital Gain Received} + \text{Dividend Income Received}}{\text{Opening NAV}}$$

$$= \frac{(9.45 - 8.75) + .75 + .60}{8.75} = 23.45 \%$$

(ii) Option 1 : When all dividends and capital gains distributions are re-invested into additional units of the fund @ (Rs.8.65/unit)

Dividend + Capital Gains per unit = Re. 0.75 + Re. 0.60 = Rs. 1.35

Total received from 300 units = Rs. 1.35 x 300 = Rs. 405/-.

$$\text{Additional Units Acquired} = \frac{405}{8.65} = 46.82 \text{ units}$$

Total number of units = 300 units + 46.82 units = 346.82 units

Value of 346.82 units held at the end of the year = 346.82 units x Rs. 9.45 = Rs. 3277.45

Price Paid for 300 Units at the beginning of the year = 300 units x Rs. 8.75 = Rs. 2,625.00

Holding Period Reward or Return (in Rs) = (3277.45-2625.00) = Rs. 652.45

$$\text{Holding Period Reward (in \%)} = \frac{\text{Rs.652.45}}{\text{Rs.2625.00}} \times 100 = 24.85\%$$

Conclusion : Since the holding period reward is more in terms of percentage in **option-two** i.e. reinvestment of distributions at an average NAV of Rs. 8.65 per unit, this option is preferable.

QUESTION NO. 6 X Limited pays no taxes and is entirely financed by equity shares. The company's equity has a beta of 0.6 and is expected to earn 20%. The company has now decided to buy back half of the equity shares by borrowing an equal amount. If the debt yields a risk-free return of 10%. **Calculate:**

- (i) The beta of the equity shares after the buyback.
- (ii) The risk premium on the equity shares before the buyback.
- (iii) The required return and risk premium on equity shares after the buyback
- (iv) The required return on debt.
- (v) The percentage increase in expected earnings per share.
- (vi) The new price-earning multiple.

Solution :

(i) Beta of the Equity Shares After the Buyback : The company was unlevered before buyback, Leverage after buyback is 50 : 50. Now we know that overall beta never change with the change in capital structure. Therefore overall beta after the buy back

will also be .6 since Overall Beta before Buyback was .6 [Remember for all equity firm Equity Beta = Overall Beta]

$$\text{Now, } .6 = \text{Equity Beta} \times \frac{.50}{.50 + .50} + \text{Nil} \Rightarrow \text{Equity Beta (After the buyback)} = 1.2$$

(ii) Risk Premium on the Equity Shares Before the Buyback :

$$\text{Required Return before buyback} = 20\% \Rightarrow R_f + \text{Beta} (R_m - R_f) = .20 \Rightarrow .10 + .6 (R_m - .10) = .20 \Rightarrow R_m = 26.67\%$$

$$\text{Market Risk Premium} = R_m - R_f = 26.67\% - 10.00\% = 16.67\% \text{ and}$$

$$\text{Security Risk Premium} = \text{Beta} (R_m - R_f) = .6 (26.67 - 10.00) = 20.00\%$$

(iii) Required Return After Buyback := $R_f + \beta \text{eta} (R_m - R_f) = 10\% + 1.20 \times (26.67\% - 10\%) = 30\%$

$$\text{Now Market Risk Premium} = R_m - R_f = 26.67\% - 10.00\% = 16.67\% \text{ [will always be same] and}$$

$$\text{Security Risk Premium (After buyback)} = \text{Beta} (R_m - R_f) = 1.2 (26.67 - 10.00) = 20.00\% \text{ [Security Risk Premium may change due to change in Security Beta]}$$

(iv) Required Rate of return on Debt = $R_f = 10\%$

Additional Analysis: Question has specified that debt yields a risk free rate of 10%. Hence Return on debt is equal to risk free rate.

(v) Percentage Increase in EPS

$$\text{Expected Return on Equity before buyback} = 20\% \text{ [Given] \&}$$

$$\text{Expected Return on Equity after buyback} = 30\% \text{ [calculated in (iii)]}$$

$$\text{Hence Percentage increase in EPS} = \frac{30\% - 20\%}{20\%} = 50\%$$

$$\text{(vi) Price-Earning Multiple (P/E Ratio) After Buyback} = \frac{1}{K_e} = \frac{1}{.3} = 3.33$$

QUESTION NO.7 The market portfolio has a historically based expected return of 0.095 and a S.D. of 0.035 during a period when risk-free assets yielded 0.025. The 0.06 risk premium is thought to be constant through time. Riskless investments may now be purchased to yield 0.08. A security has a S.D. of 0.07 and a 0.75 correlation with the market portfolio. The market portfolio is now expected to have a S.D. of 0.035.

(i) Find the market's return-risk trade-off [Hint : using historical data] **(ii)** Find the security beta, **(iii)** Find the equilibrium required expected return of the security [Hint : using risk premium .06 and risk free return of .08]

Solution :

(i) Calculation of Market's Return-Risk trade off :

$$\text{The Return Risk Trade off is given by the following relation: } \frac{R_m - R_f}{\sigma_m} = \frac{.095 - .025}{.035} = 2$$

Where : R_m = Market Rate of Return ; R_f = Risk Free Rate ; σ = Standard Deviation

(ii) Calculation of Security Beta:

$$\beta = \frac{\text{Covariance}(\text{Security, Market})}{\sigma_m^2} = \frac{r_{s,m} \times \sigma_s \times \sigma_m}{\sigma_m^2} = \frac{.75 \times .07}{.035} = 1.5$$

(iii) Calculation of equilibrium return required for the security:

$$ER = R_f + \beta(R_m - R_f) = .08 + 1.5 \times .06 = .08 + .09 = 17\% \text{ or } .08 + 1.5 (.14 - .08) = 17\%$$

$$\text{Working Notes : } R_m - R_f = .06 \Rightarrow R_m - .08 = .06 \Rightarrow R_m = 14\%$$

QUESTION NO.8 A portfolio manager owns a portfolio of three stocks. The portfolio beta is 1.19 and the current market value of the portfolio is Rs. 1,300 lakh. The portfolio manager wishes to change the portfolio beta by using Nifty Index.

The Spot Nifty Index is at 1350 & Futures is 1352. Find out the no. of contracts to be bought or sold of stock index futures to

They say that time changes things but you actually have to change them yourself.

decrease the portfolio beta to 0.8. Assume that Nifty is traded in multiples of 100.

Solution : Since we are Long on the Spot Market, you have to go hort in the Future Market for Reducing Risk. Hence, we have to Sell NIFTY. Therefore, Future Contract to be Sold

$$\text{Existing Portfolio Beta} \times \frac{\text{Value of spot position requiring hedging}}{\text{Value of underlying one futures contract}} = 1.19 \times \frac{42605042.09}{1352 \times 100} = 375 \text{ contracts}$$

QUESTION NO. 9 We have been given the following information about XYZ company's shares and call options : Current Share price = Rs. 165, Option Exercise Price = Rs. 150, Risk Free Interest Rate = 6% (continuous compounded), Time to Option Expiry = 2 years, Volatility of Share Price (Standard Deviation) = 15% . Calculate Value of the Option.

Solution : As per BSM Model : Value of Call Option = Spot Price $\times N(d_1)$ – Exercise Price $\times e^{-rt} \times N(d_2)$

$$= 165 \times .8688 - 150 \times e^{-.06 \times 2} \times .8182 = 143.352 - \frac{150 \times .8182}{1.127497} = 143.352 - 108.8517 = \text{Rs. } 34.50$$

Where

$$d_1 = \frac{\ln \left[\frac{\text{Current Market Price}}{\text{Exercise Price}} \right] + [r + .50\sigma^2] \times t}{\sigma \times \sqrt{t}} = \frac{\ln \left(\frac{165}{150} \right) + \left[.06 + \frac{1}{2} (.15)^2 \right] 2}{.15\sqrt{2}} = \frac{.095310 + .1425}{.212132} = 1.12104$$

$$d_2 = \frac{\ln \left[\frac{\text{Current Market Price}}{\text{Exercise Price}} \right] + [r - .50\sigma^2] \times t}{\sigma \times \sqrt{t}} = \frac{\ln \left(\frac{165}{150} \right) + \left[.06 - \frac{1}{2} (.15)^2 \right] 2}{.15\sqrt{2}} = \frac{.095310 + .0975}{.212132} = .9089 \text{ Or}$$

$$d_2 = d_1 - \sigma\sqrt{t} = 1.12104 - .15\sqrt{2} = .9089$$

$$N(d_1) = N(1.12104) = .8688$$

$$N(d_2) = N(.9089) = .8182$$

[The value of $N(d_1)$ and $N(d_2)$ have been taken from d_1 and d_2 table. This value may also be sometimes given in question as hint.]

QUESTION NO. 10 Following data is available to you.

	BM. Ltd.	WA. Ltd.
Expected Earning Per Share	Rs. 10	Rs.3
Expected Dividend Per Share	Rs. 6	Rs.1.60
Number of Shares	20,00,000	12,00,000:
Current Market Price	Rs. 180	Rs. 40

As Finance Director of BM Ltd. you are analysing the planned acquisition of WA Ltd. Your estimate indicate expected steady growth of earnings and dividend of WA Ltd. is to the tune of six percent per year. However, under the new Management the growth rate is likely to go up to 8 percent per year without additional investment. **Calculate :**

(i) The cost of acquisition by BM Ltd. if Rs. 50 is paid for each share of WA Ltd.

(ii) The cost of acquisition if one share of BM Ltd. for every three shares of WA Ltd. is the agreed exchange ratio.

(iii) Compute gain from acquisition.

(iv) If the expected growth rate continues to be 6% calculate the new share price as well as cost and state whether it will be different.

Solution:

Additional Analysis : " Your estimate indicate expected steady growth of earnings and dividend of WA Ltd. is to the tune of six percent per year ". It means that WA Ltd. by its own has a potential to grow at the rate of six percent per year .

" However, under the new Management the growth rate is likely to go up to 8 percent per year without additional investment It means that if WA Ltd. is acquired by BM Ltd. i.e under a new management the growth rate of WA Ltd. will likely to go up by 8 % per year "

*Happiness always looks small if you hold in your hands.
But learn to share it, you will realize how big and precious it is .*

(i) Cost of Acquisition by BM Ltd. (Acquirer's Co.) if Rs. 50 is paid for each share for WA Ltd." :-

Net Cost = Cash Paid – Value Of B Received = Rs. 50 × 12,00,000 – 12,00,000 × 40 = 1,20,00,000

(ii) Cost to BM Ltd. if consideration is paid by issue of shares :

$$\alpha \text{ MVAB} - \text{MVB} = \left[\frac{4,00,000}{24,00,000} \right] \times 45,60,00,000 - 12,00,000 \times 40 = 2,80,00,000.$$

Where Market Value of Merged Company (MVAB) = Market Value Of A + Market Value Of B + Synergy

$$= 180 \times 20,00,000 + 12,00,000 \times \frac{1.60}{.10 - .08} + 0 = 45,60,00,000$$

Note : Under the new management growth rate will be 8 % , hence its Po will change in WA Ltd. after merger .

Note : It is assumed that expected dividend per share of Rs. 1.60 will be maintained.

and Ke can be calculated as follows :- $40 = \frac{1.60}{K_e - .06} \Rightarrow 40K_e - 2.4 = 1.60 \Rightarrow K_e = 10\%$

Note: Ke before and after merger is assumed to remain same

Additional Analysis : Why dividend growth valuation model has been applied only in case of WA Ltd.. Since under the new management growth rate of WA is changing and nothing has been said about BM Ltd. and hence its current Market Price before and After Merger is assumed to be same. Under new management growth rate will be 8 % hence its Market Price of WA Ltd. will change .

(iii) Gain from acquisition can be calculated as under :—

Value of Merged Company – (Present Value of BM as separate Entity + Present Value of WA as Separate Entity)

$$= 45,60,00,000 - [20,00,000 \times 180 + 12,00,000 \times 40] = 4,80,00,000.$$

(iv) Change in Cost if the growth rate continues to be 6 % :

If acquisition is for cash. Cost of acquisition will remain same i.e Cash Paid – Value Of B Received = 6,00,00,000 – 4,80,00,000 = 1,20,00,000 .Therefore , If the growth rate continues to be 6 % then cost will remain same.

If acquisition is for Stock then Variation will occur in cost of acquisition as under

The value of new merged company can be calculated as under to find out the variation :

$$\text{New Share Price} = \frac{180 \times 20L + 40 \times 12L}{20L + 4L} = \text{Rs. } 170.$$

$$\therefore \text{Cost} = \alpha \text{ MVAB} - \text{MVB} = \left(\frac{4 \text{ Lakhs}}{24 \text{ Lakhs}} \right) \times 408000000 - 48000000 = 2,00,00,000$$

Working Notes: Total Market Value After Merger = Rs. 180 × 20,00,000 + Rs. 40 × 12,00,000 = Rs. 4,08,00,000. (Since the given figure in the table must have been based on the estimation of 6 %)

QUESTION NO. 11 The following data relate to the TATA Leasing Ltd.:

(i) Investment Outlay / Cost of Asset = 100 lakh.

(ii) Lessor's pre tax required rate of return = 20%

(iii) Lease term = 5 years.

(iv) Residual value (after primary period) = Nil

Compute Annual Lease Rentals (or Ballooned Payment in case of c) under the following alternatives:

(a) Equal Annual Plan

(b) Stepped up Plan (15% increase per annum)

(c) Ballooned Plan (annual rental of Rs. 10 lakh for year 1-4) (d) Deferred Plan (deferment period of 2 years)

Solution : Let the required Annual Lease rent be X.

(i) **Equal Annual Plan :**

Present Value of Outflows = Present Value of Inflows.

$$\Rightarrow \text{PV of Outflows} = \text{Annual Rent} \times \text{PVA} (20\%, 5) \Rightarrow 100 = x \times 2.991 \Rightarrow x = \frac{100 \text{ Lakhs}}{2.991} = \text{Rs. } 33.43 \text{ Lakhs}$$

(ii) **Stepped Up Plan :**

There's only one difference between Dream and Aim. Dreams requires sound sleep to see .Where as Aim requires sleepless efforts to fulfill .

If lease rent per year is growing by 15% then we have :

PV of Outflows = PV of Inflows

$$\Rightarrow 100 \text{ lakhs} = \frac{x}{(1+.20)^1} + \frac{x(1+.15)^1}{(1+.20)^2} + \frac{x(1+.15)^2}{(1+.20)^3} + \frac{x(1+.15)^3}{(1+.20)^4} + \frac{x(1+.15)^4}{(1+.20)^5}$$

$$\Rightarrow 100 \text{ lakhs} = .833x + 1.15x \times .694 + 1.3225x \times .579 + 1.12x \times .482 + 1.749x \times .402 \Rightarrow x = 26.09 \text{ lakhs}$$

Therefore, Required lease rent for year 1, 2, 3, 4, 5, will be,

26.09 lakhs, 30.0035 lakhs, 34.504025 lakh, 39.6796lakhs, 45.63 lakhs respectively.

(iii) Balloned Plan :

PV of Outflows = PV of Inflows

$\Rightarrow$ PV of Outflows = [Annual Inflows for 4 year $\times$ Sum of PVF for 4 year] + [Balloned Receipt in 5th year $\times$ 5th year PVF]

$\Rightarrow 100 \text{ lakhs} = [10 \text{ lakhs} \times 2.589] + [\text{Balloned Receipt} \times .402]$

$\Rightarrow$ Balloned Receipt = 184.35 lakhs at the end of 5th year.

(iv) Deferred Plan :

In such plan, for the first two years, there will be NIL receipts and thereafter there will be equal receipts each year.

Therefore, we have :

$$\text{PV of Outflows} = \text{PV of Inflows} \Rightarrow 100 \text{ lakhs} = \frac{\text{NIL}}{(1+.20)^1} + \frac{\text{NIL}}{(1+.20)^2} + \frac{x}{(1+.20)^3} + \frac{x}{(1+.20)^4} + \frac{x}{(1+.20)^5}$$

$$\Rightarrow 100 \text{ Lakhs} = x \times 1.463 \Rightarrow x = \frac{100}{1.463} = 68.35 \text{ lakhs p.a.}$$

Therefore Lease rent at the end of year 3, 4, and 5 will be 68.35 lakhs p.a.

QUESTION NO. 12 Sanathana Ltd. is evaluating a project costing Rs.20 lacs. The project generates savings of Rs.2.95 lacs per annum perpetuity. The business risk of the project warrants a rate of return of 15%.

(a) Calculate Base case NPV of the project assuming no tax,

(b) Assuming tax rate of 30% with 12% cost of debt constituting 30% of the cost of the project determine Adjusted Present Value

(c) Find out minimum acceptable (annual income) to keep APV Nil ?

Solution :

(a) **Base Case NPV** = Present Value Of Inflows - Present Value Of Outflows

$$= \frac{2,95,000}{.15} - \text{Rs. } 20 \text{ Lacs} = - \text{Rs. } 33,333. \quad [\text{Remember Perpetuity Formula}]$$

The project cannot be accepted as Base Case NPV is negative.

Note : We have assumed K_e to be 15%

(b) **Adjusted Present Value** = Base case NPV + Present Value of Tax Shield/ Saving = $-33333 + 180000 = \text{Rs. } 146667$

Now the project is acceptable

$$\text{Working Note: Present Value of Tax Shield/Saving} = \frac{\text{Debt} \times \text{Interest Rate} \times \text{Tax Rate}}{K_d} = \frac{(30\% \times 20 \text{ Lakhs}) \times 12\% \times .30}{.12} = \text{Rs. } 180000$$

Additional Analysis : Since nothing has been said about prepayment of loan it has been assumed that loan /debt amount will be available with the company upto perpetuity .It means tax saving will also be available upto perpetuity .

(c) **Minimum Acceptable (Annual Income) to keep APV Nil**

$$\text{Adjusted Present Value} = \text{Base case NPV} + \text{PV of tax shield} \Rightarrow 0 = \left(\frac{\text{Annual Income}}{.15} - 20 \text{ Lakhs} \right) + 1,80,000 \Rightarrow$$

Annual Income = 273000 Hence if Annual Income will be 273000, APV will be Nil.

QUESTION NO. 13A A firm has an investment proposal, requiring an outlay of Rs. 40,000. The investment proposal is expected to have 2 years economic life with no salvage value. In year 1, there is a 0.4 probability that cash inflow after tax will be Rs. 25,000 and 0.6 probability that cash inflow after tax will be Rs. 30,000. The probabilities assigned to cash inflows after tax for the year 1 are as follows:

The Cash inflow year I	Rs. 25,000		Rs. 30,000	
The Cash inflow year II		Probability		Probability
	Rs. 12,000	0.2	Rs. 20,000	.4
	Rs. 16,000	0.3	Rs. 25,000	.5
	Rs. 22,000	0.5	Rs.30,000	.1

The firm uses a 10% discount rate for this type of investment. **Required:**

(a) Construct a decision tree for the proposed investment project.

(b) What net present value will the project yield if worst outcome is realized? What is the probability of occurrence of this NPV?

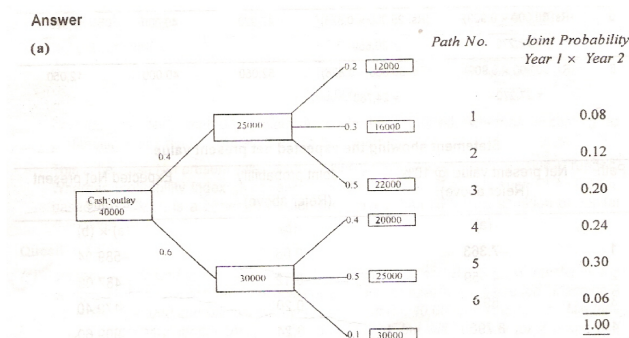
(c) What will be the best and the probability of that occurrence?

(d) Will the project be accepted?

(10% Discount factor 1 year 0.909 2 year 0.826)

Solution :

(a) **Construction Of Decision Trees :**



The decision tree given above shows that there are six possible outcomes each represented by a path. The net present value of each path at 10% discount rate is given below :

Path	(Cash inflow year 1 × discount factor year 1) (a)	(Cash inflow year 2 × discount factor year 2) (b)	Total Cash inflow (c) = (a) + (b) Rs.	Cash outflow d Rs.	Net present value (e) = (c) – (d) Rs.
1.	(Rs. 25,000 × 0.909) = 22,725	(Rs. 12,000 × 0.826) = 9,912	32,637	40,000	-7,363
2.	(Rs. 25,000 × 0.909) = 22,725	(Rs. 16,000 × 0.826) = 13,216	35,941	40,000	-4,059
3.	(Rs. 25,000 × 0.909) = 22,725	(Rs. 22,000 × 0.826) = 18,172	40,897	40,000	897
4.	(Rs. 30,000 × 0.909) = 27,270	(Rs. 20,000 × 0.826) = 16,520	43,790	40,000	3,790
5.	(Rs. 30,000 × 0.909) = 27,270	(Rs. 25,000 × 0.826) = 20,650	47,920	40,000	7,920
6.	(Rs. 30,000 × 0.909) = 27,270	(Rs. 30,000 × 0.826) = 24,780	52,050	40,000	12,050

Statement showing the Expected Net Present Value

Path	Net Present Value @ 10% (Refer above) (a)	Joint probability (Refer above) (b)	Expected Net Present Value (a) × (b)
1	-7,363	0.08	-589.04
2	-4,059	0.12	-487.08

Sometimes the road travelled turns out to be more beautiful than the destination reached. Enjoy leading your life no matter what it turns out to beLive Life

3	897	0.20	179.40
4	3,790	0.24	909.60
5	7,920	0.30	2,376.00
6	12,050	0.06	<u>723.00</u>
			<u>3,111.88</u>

- (b) If the **worst outcome** is realized the net present value which the project will yield is Rs. 7,363 (negative). The probability of occurrence of this Net Present Value is **8%** and an expected loss Rs. 589.04.
- (c) The **best outcome** will be path 6 when Net present value is higher i.e. Rs. 12,050 (positive). the probability of occurrence of this Net present value is **6%** and an expected profit of Rs.723.00
- (d) **Yes**, the project will be accepted since the Expected Net present value $\times$ probability sum total is positive i.e Overall Position of Expected NPV is positive .

QUESTION NO. 14 From the following information compute the Net Present Value (NPVs) of the two projects for each of the possible cash flows, using Sensitivity Analysis:

	<u>Project X (000 Rs.)</u>	<u>Project Y (000 Rs.)</u>
Initial Cash Outflows (t=0)	30	30
Cash Inflows estimates (t=1-10)		
Worst	5	8
Most likely	8	10
Best	15	20
Required Rate of Return	14%	14%
Economic Life (years)	10	10

Solution : The Net Present Value of each project using a 14% Required Rate of Return, can be calculated for each of the possible cash flows. The Present Value Interest Factor Annuity (PVAIF) of Re. 1 for 10 years at 14 per cent discount is 5.216. Multiplying each possible cash inflows by PVAIF, we get Present Value of Cash Inflow under each case .Subtracting from it Present Value of Cash Outflows we get Net Present Value of Project .

Determination of Net Present Value under each Possible Outcome

	<u>Project X</u>		<u>Project Y</u>
Outcome	Net Present Value	(000'Rs)	Net Present Value (000'Rs.)
Worst	$5 \times 5.216 - 30 =$	(-3.92)	$8 \times 5.216 - 30 =$ 11.73
Most Likely	$8 \times 5.216 - 30 =$	11.73	$10 \times 5.216 - 30 =$ 22.16
Best	$15 \times 5.216 - 30 =$	48.24	$20 \times 5.216 - 30 =$ 74.32

Conclusion :

In case of Project X : Under worst circumstances there is negative NPV whereas in case of most likely and best circumstances there is positive NPV.

In case of Project Y : There is positive NPV under all the circumstances, at the same time cash inflows are more than project X. Hence, Project Y is more profitable and hence be accepted.

Additional Analysis: This is not a clear cut case of Sensitivity Analysis .Sensitivity Analysis is already done in the question and we are given cash flows under all possible circumstances i.e Best ,Worst and Most Likely .We are now only required to calculate NPV under each circumstances.

QUESTION NO.15 A customer with whom the Bank had entered into 3 months forward purchase contract for Swiss Francs 10,000 at the rate of Rs. 27.25 comes to the bank after 2 months and requests cancellation of the contract. On this date, the rates, prevailing are:

Spot CHF 1 = Rs. 27.30 27.35 One month forward Rs. 27.45 27.52

What is the loss/gain to the customer on cancellation?

Solution: The contract would be cancelled at the one month forward Sale/Ask Rate of Rs. 27.52.

Francs to be bought from customer by the bank under original forward contract at : $27.25 \times 10,000 =$ – Rs. 272500

When God takes away something from your hands , dont think that he is punishing you . He is just leaving you empty handed to receive something better.Think of it.

It is sold to him on cancellation by the Bank at forward rate to square the contract at : $27.52 \times 10,000 =$ +Rs. 27,5200.
 Net amount payable by the customer +Rs. 2700.

Note : The exchange commission and other service charges like interest rate are ignored.

QUESTION NO. 16 On Jan 28, 2005 an importer customer requested a bank to remit Signapore Dollar SGD 25,00,000 under an irrevocable LC. However due to bank strikes, the bank could effect the remittance only on February 4, 2005. The interbank market rates were as follows:

	28th January	4th February
Bombay US 1/INR	45.85/45.90	45.91/45.97
London Pound 1/USD	1.7840/1.7850	1.7765/1.7775
London Pound 1/SGD	3.1573/3.1590	3.1380/3.1390

The bank wishes to retain an exchange margin of 0.125%. How much does the customer stand to gain or lose due to the delay? (Calculate rate in multiples of 0.001)

Solution :

Given :

	<u>January 28th</u>	<u>February 4</u>
Bombay US \$ 1	= Rs. 45.85 /Rs. 45.90	Rs.45.91 /Rs. 45.97
London Pound 1	= US\$ 1.7840 /US\$1.7850	US\$1.7765/US\$1.7775
London Pound 1	= SGD 3.1575/SGD3.1590	SGD3.1380 / SGD3.1390

We need to find Ask Rate or Selling Rate of Rs. / SGD, since the importer customer wants to buy SGD, it means Bank will sell SGD.

Now since direct quote of Rs./SGD is not available we will find the required rate with the help of cross rate concept. That is :

$$\frac{\text{Rs}}{\text{SGD}} \text{ (Ask Rate On 28th Jan.)} = \frac{\text{Rs}}{\$} \times \frac{\$}{\text{£}} \times \frac{\text{£}}{\text{SGD}} = 45.90 \times 1.7850 \times \frac{1}{3.1575} = 25.9482$$

$$\frac{\text{Rs}}{\text{SGD}} \text{ (Ask Rate On 4th Feb.)} = \frac{\text{Rs}}{\$} \times \frac{\$}{\text{£}} \times \frac{\text{£}}{\text{SGP}} = 45.97 \times 1.7775 \times \frac{1}{3.1380} = 26.0394$$

Now effective exchange rate after margin.

$$\frac{\text{Rs}}{\text{SGD}} \text{ (On January 28)} = 25.9482 (1 + .00125) = \text{Rs. 25.9806}$$

$$\frac{\text{Rs}}{\text{SGD}} \text{ (On February 4)} = 26.0394 (1 + .00125) = \text{Rs. 26.0719}$$

Hence, loss because of delay to the importer. = Rs. $(26.0719 - 25.9806) \times 25,00,000$. = Rs. 2,28,250.

QUESTION NO. 17 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?

Solution :

Home Currency Approach :

Based on the Interest Rate Parity Relationships we have

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

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

Life is tough, and if you have the ability to laugh at it you have the ability to enjoy it.

- Salma Hayek

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.

<u>Year</u>	<u>Cash flows in \$ (million)</u>	<u>Expected Exchange Rate (Rs.)</u>	<u>Cash flows in Rs.(million.)</u>
	(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 :

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

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 :

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

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

$$\text{Therefore Risk Adjusted Dollar Rate} = 0.0982 = 9.82\%$$

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

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

Since the spot exchange rate for \$ is Rs. 45, we can get $NPV = 45 \times 39.484 = \text{Rs. } 1776.80 \text{ million.}$

[Note : Answers under both options must tally]

QUESTION NO. 18 In 1992 a Transistor cost \$22.84 in New York, S\$69 in Singapore, and 3240 rubles in Moscow.

(a) If the law of one price held, what was the exchange rate between US dollars & Singapore dollar? Between US dollars & rubles? (b) The actual exchange rates in 1992 were S\$1.63 = US\$1 and 250 rubles = US\$1. Where would you prefer to buy your Transistor?

Solution:

(a) If the law of one price holds, then the transistor will cost the same anywhere, which implies that

$$\begin{array}{lclclcl} \text{Cost of transistor} = & \text{US } \$22.84 & = & \text{S\$ } 69 & = & \text{Rubble } 3240 & \text{i.e} \\ & \text{US\$22.84} & = & \text{S\$69} & \Rightarrow & \text{US\$1} & = \text{S\$3.02} \\ & \text{US\$22.84} & = & \text{Rubles } 3240 & \Rightarrow & \text{US\$1} & = 141.9 \text{ Rubles} \end{array}$$

(b) Using the actual exchange rates, the transistor costs :

$$\text{In US (New York)} = \$22.84 ; \text{In Singapore} = \frac{69}{1.63} = \$42.33 ; \text{In Moscow} = \frac{3240}{250} = \$12.96$$

Decision : We should therefore prefer to buy the transistor in Moscow.

Additional Analysis : In case of (a) when law of one price holds true i.e PPPT is applicable we were indifferent whether we buy

Never blame a day in your life. Good days give you " Happiness ". Bad days give you Experience .Both are essential in life. Start everyday with a smile.

transistor in New York, Singapore or Moscow because in that case they all would have costed the same. But in case of (b) when actual price are different then PPPT price, then costs of transistor will be different in different country and we will purchase the transistor in the country where it cost least i.e in Moscow.

QUESTION NO. 19 On 1st April, 3 months interest rate in the US and Germany are 6.5% and 4.5% per annum respectively. The \$/DM spot rate is 0.6560. What would be the forward rate for DM for delivery on 30th June?

As per Interest Rate Parity Theory, we have :
$$\frac{\text{Forward Rate (\$/DM)}}{\text{Spot Rate (\$/DM)}} = \frac{1 + \$ \text{ Interest Rate}}{1 + \text{DM Interest Rate}}$$

$$\text{or } \frac{\text{Forward Rate}}{0.6560} = \frac{\left\{1 + \left(0.065 \times \frac{91}{365}\right)\right\}}{\left\{1 + \left(0.045 \times \frac{91}{365}\right)\right\}} \quad \text{or Forward Rate} = \frac{0.6560 \times \left\{1 + \left(0.065 \times \frac{91}{365}\right)\right\}}{\left\{1 + \left(0.045 \times \frac{91}{365}\right)\right\}} = .6592$$

Therefore forward rate for DM for delivery on 30th June will be: 1 US \$ = DM .6592

QUESTION NO. 20 Shoe company sells to a wholesaler in Germany. The purchase price of a shipment is 50,000 deutsche marks with term of 90 days. Upon payment, Shoe Company will convert the DM to dollars. The present spot rate for DM per dollar is 1.71, whereas the 90-day forward rate is 1.70. You are required to calculate and explain:

- (i) If Shoe Company were to hedge its foreign-exchange risk, what would it do? What transactions are necessary?
- (ii) Is the deutsche mark at a forward premium or at a forward discount?
- (iii) What is the implied differential in interest rates between the two countries?
(Use interest-rate parity assumption).

Solution :

Given : Seller : Shoe Company ; Purchaser : Wholesaler in Germany ; Purchase Price : 50,000 DM ; Credit Period: 90 Days ; Spot Rate 1\$ = 1.71 DM ; 90 Days FR 1\$ = 1.70 DM

(i) If the Shoe Company were to hedge its foreign exchange risk, it would enter into forward contract of selling deutsche marks 90 days forward. Since the customer will receive 50,000 DM from wholesaler in Germany .

By doing this, it would receive : $\frac{50,000}{1.70} = \text{US\$ } 29,412$ under forward contract .

If it were to receive US \$ payment today it would have received : $\frac{50,000}{1.71} = \text{US\$ } 29,240$.

Hence Shoes Company will be better off by \$ 172 if it hedges its foreign exchange risk by using forward contract .

(ii) Spot Rate : 1\$ = 1.71 DM and 90 day forward Rate : 1\$ = 1.70 DM

It can be clearly seen that Since dollar is at Forward discount, the Deutsche Mark will be at a forward premium. This is because the 90 day forward rate of Deutsche Marks per dollar is less than the current spot rate of Deutsche Marks per dollar.

(iii) Implied differential in interest rates is just another name of premium or discount of one currency in relation to another

currency. i.e., Implied Differential in Interest Rate =
$$\frac{\text{Forward Rate (DM/US\$)} - \text{Spot Rate (DM/US\$)}}{\text{Spot Rate (DM/US\$)}} \times \frac{365}{90} \times 100$$

$$\Rightarrow \text{Interest Rate of DM} - \text{Interest Rate of US} = \frac{1.70 - 1.71}{1.71} \times \frac{365}{90} \times 100 \Rightarrow r_{\text{DM}} - r_{\text{US\$}} = -.0237$$

Therefore, the difference in interest rate is -2.37%, which means if interest rate parity holds, interest rate in the US should be 2.37% higher than that in Germany.

Additional Analysis : It can be clearly seen from the above that US is at a discount. As per IRPT it means US \$ Interest Rate will be higher than DM Interest Rate .

I have learned that you can't have everything and do everything at the same time.

- Oprah

QUESTION NO. 21 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 : $\frac{\text{DM}}{\text{£}} = \frac{\text{DM}}{\text{\$}} \times \frac{\text{\$}}{\text{£}} = \frac{1}{.40} \times 1.80 = 4.5 \therefore 1\text{£} = \text{DM } 4.5$

(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) = DM .10 Since he invested 4.40DM initially and is getting 4.50 DM at the end . Total % Profit

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

QUESTION NO.22 Spot Rate 1US \$ = Rs. 48.0123 ; 180 days Forward Rate for 1 US \$ = Rs. 48.8190

Annualised Interest Rate for 6 months - Rupee = 12% ; Annualised Interest Rate for 6 months - US \$ = 8%

Is there any arbitrage possibility ? If yes how an arbitrageur can take advantage of the situation, if he is willing to borrow Rs. 40,00,000 or US \$ 83,312

Solution : Checking Whether Any Arbitrage Opportunity Exist or Not :

Calculation of Theoretical Home Currency Interest Rate :

$$\frac{\text{FR}[\text{Rs./\$}]}{\text{SR}[\text{Rs./\$}]} = \frac{1 + \text{Rupee Interest Rate}}{1 + \$ \text{ Interest Rate}} \Rightarrow \frac{48.8190}{48.0123} = \frac{[1 + x]}{1 + \frac{.08}{12} \times 6} \Rightarrow 1.016802 = \frac{1 + x}{[1 + .04]} \Rightarrow 1.05747408 = 1 + x \Rightarrow x = 5.747408$$

Therefore Theoretical Interest Rate p.a. = $\frac{5.747408}{6} \times 12 = 11.50\%$ p.a and Actual Interest Rate = 12 % p.a.

Since Actual Interest Rate > Theoretical Interest Rate. Arbitrageur Opportunity is possible.

Action to be taken by Arbitrageur: Arbitrageur should invest in home country(India) & Borrow from foreign country (USA)

Calculation Of Arbitrage Gain :

1. Borrow US \$ 83312 for 6 months : Amount to be repaid after 6 months = US \$ 83312 (1 + 0.08 x 6/12) = **US\$86644.48**

2. Convert US \$ 83312 into Rupee by using Spot Rate 1 US \$ = Rs. 48.0123 and get the principal i.e. Rs. 40,00,000 and invest this amount for 6 months . Interest on Investments for 6 months : Rs. 40,00,000 x 12/100 x 6/12 = Rs. 2400000

Total amount to be received at the end of 6 months = Principal + Interest = Rs. (40,00,000 + 240000) = Rs. 4240000

Converting this rupee amount into dollar by using at the forward rate we get= Rs. 4240000 / Rs. 48.8190 = **US\$ 86851.43**

Hence the gain

= Amount Received - Amount Paid = US \$ (86851.43-86644.48) = US \$ 206.950 OR Rs.10103 i.e., (\$206.95 x Rs. 48.8190)

QUESTION NO. 23 A company operating in Japan has today effected sales to an Indian company, the payment being due 3 months from the date of invoice. The invoice amount is 108 lakhs yen. At today's spot rate, it is equivalent to Rs. 30 lakhs. It is anticipated that the exchange rate will decline by 10% over the 3 months period and in order to protect the yen payments, the

" When things get bad, pray they get worse and overcome them. Challenge yourself and push yourself to your limits. This is the only way to truly become great. "

importer proposes to take appropriate action in the foreign exchange market. The 3 months forward rate is presently quoted as 3.3 yen per rupee. You are required to calculate the expected loss and to show how it can be hedged by a forward contract.

Solution : Spot Rate : Rs. 30 Lakhs = 108 lakh Yen $\Rightarrow$ 1 Re = 3.6 Yen

Additional Analysis : It is given in the question that "The invoice amount is 108 lakhs yen. At today's spot rate, it is equivalent to Rs. 30 lakhs". It means that 108 Lakhs Yen = Rs. 30 Lakhs

Forward Rate : 1 Re = 3.3 Yen

Expected Rate : 1 Re = $(3.6 \times 90\%)$ Yen = 3.24 Yen.

Additional Analysis : How to find out which currency is declining whether Yen or Rupee ? The given customer is Importer based in India. It means he is required to pay Yen. Now Importer gains when Rupee Appreciates because in such case they end up paying less Rupee. Importer incur loss when rupee depreciates because in such case they end up paying more Rupee. Here question has said that exchange rate is declining by 10 %, not indicating clearly that which currency is declining. But by further analysis we can find out that it must be Rupee which is depreciating, and this is the reason why Importer is worried as given in question and hence will want to hedge his Risk and enter into Forward Contract or since quotation is given in term of per rupee it is safe to assume that rupee is declining by 10 %.

Calculation of Expected Loss if no Forward Cover is Undertaken :

Present cost of 108 lakhs Yen	Rs. (in lakhs) 30
Cost after 3 months : $\frac{108}{3.24}$	<u>33.33</u>
Expected Exchange Loss	<u>3.33</u>

Calculation of Expected Loss if Forward Cover is under taken

Present Cost of 108 lakhs Yen	Rs. (in lakhs) 30
Cost after 3 months if forward contract is undertaken $\left(\frac{108}{3.3}\right)$	<u>32.73</u>
Expected Loss	<u>2.73</u>

Suggestion : If the exchange rate is not covered with forward contract, the expected exchange loss is Rs. 3.33 lakhs. This could be reduced to Rs. 2.73 lakhs if it is covered with forward contract. Hence, taking forward contract is suggested.

QUESTION NO. 24 McDonnouns Hamburgers Co. wishes to lend \$5,00,000 to its Japanese subsidiary. At the same time, Yasufuku Heavy Industries is interested in making a medium-term loan of approximately the same amount to its U.S. subsidiary. The two parties are brought together by an investment bank for purpose of making parallel loans. McDonnouns will lend \$500,000 to the U.S. subsidiary of Yasufuku for 4 years at 13%. Principal and interest are payable only at the end of the fourth year with interest compounding annually. Yasufuku will lend the Japanese subsidiary of McDonnouns 70 million yen for 4 years at 10%. Again the principal and interest (annual compounding) are payable at the end. The current exchange rate is 140 yen to the \$. However, the dollar is expected to decline by 5 yen to the dollar per year over the next 4 years.

(a) If these expectations prove to be correct, what will be the dollar equivalent of principal and interest payments to Yasufuku at the end of 4 years?

(b) What total dollars will McDonnouns receive at the end of 4 years from the payment of principal and interest on its loan by the U.S. subsidiary of Yasufuku?

(c) Which party is better off with the parallel loan arrangement? What would happen if the yen did not change in value?

[Note: Printing mistake \$5,00,000 should be \$ 5,00,000]

Solution :

(a) Payment by McDonald Hamburgers Co. to Yasufuku :

Principal and interest payment due in yen with annual compounding at 10 percent interest.

$$\text{Yen } 70 \text{ million} \times (1 + .10)^4 = \text{Yen } 102,487,000$$

Value of Yen at the end of four years is 120 Yen to the dollar. Dollar equivalent of payment = Yen 102,487,000 / 120 = \$854,058.

Working Notes : Spot Rate 1 \$ = 140 Yen . The dollar is expected to decline by 5 Yen to the dollar per year over the next 4 Year

Every king was once a crying baby and every great building was once a blueprint. Its not where you are today but where you will reach tomorrow that counts.

then exchange rate for different year will be : After 1 Year 1 \$ = 135 Yen , After 2 Year 1 \$ = 130 Yen , After 3 Year 1 \$ = 125 Yen , After 4 Year 1 \$ = 120 Yen

(b) Payment by Yasufuku to McDonald Hamburger Co.

Principal and interest payment due in dollars with annual compounding at 13 percent interest:

$$\$ 500,000 \times (1 + .13)^4 = \$ 815,237$$

(c) Yasufuku will be better off, as it makes a dollar equivalent loan of \$500,000 and received the dollar equivalent of 8,54,058 whereas M/cDonnonalds receives only \$815,237.

If Expected Rate remains same :

If the exchange rate stays at 140 yen to the dollar, the dollar equivalent payment of Yasufuku is Yen 102,487,000/140 = \$732,050.

Payment by McDonald Hamburger Co. to Yasufuku : \$ 7,32,050

Payment by Yasufuku to McDonald Hamburger Co. : \$ 8,15,237

McDonnough would be better off. The analysis above does not take account of any difference in credit risk.

Additional Analysis : Even if Spot Rate would not have given in question we could have calculated the Spot Rate by using the relation : \$ 5,00,000 = 70 Million Yen $\Rightarrow$ 1 \$ = 140 Yen . Since it is clearly written in the question that : "Yasufuku Heavy Industries is interested in making a medium-term loan of approximately the same amount to its U.S. subsidiary" . It means today \$ 5,00,000 is equivalent to 70 Million Yen

QUESTION NO. 25 Exporter is a UK based company. Invoice amount \$ 3,50,000/- to be received . Credit period three months.

Exchange rates in London

\$/£	Spot	1.5865 - 1.5905
3 months	Forward	1.6100 - 1.6140

Money Market rates

	<u>Deposit</u>	<u>Loan</u>
\$	7%	9%
£	5%	8%

(a) Compute and show how a money market hedge can be put in place.

(b) Identify whether it would have been advantageous to take forward cover instead?

Solution :

(a) When foreign currency is to be received in future the following steps are undertaken.

(i) Borrow in Foreign Currency. The amount of borrowing should be such that " Amount borrowed + Interest on it " should be equal to foreign currency to be received.

$$\text{Let the borrowed amount be } x. \text{ Then } x + \left[x \times \frac{9}{100} \times \frac{3}{12} \right] = 3,50,000 \Rightarrow 1.0225 x = 3,50,000 \Rightarrow x = 342298.29$$

$\therefore$ \$ 342298.29 should be borrowed or we can simply take present value of \$ 3,50,000 which is equal to :

$$\frac{3,50,000}{\left(1 + \frac{.09}{12} \times 3\right)} = \frac{3,50,000}{1.0225} = 342298.28$$

(ii) Convert the borrowed amount into home currency :

The applicable exchange rate in such case will be spot rate. 1£ = \$ 1.5865 – 1.5905

Now since we will be selling \$ and buying £, it means bank is selling £.

Bank Selling Rate of pounds is : \$ 1.5905.

$$\text{Therefore Amount of pounds to be recieved on conversion is : } \frac{342298.29}{1.5905} = \text{£ } 2,15,214.27.$$

(iii) Now we will invest the above amount in home country for the period during which foreign currency receipt is outstanding.

$$\therefore \text{£ } 2,15,214.27 \text{ will be invested at 5\% for 3 months to get : } \text{£ } \left[2,15,214.27 + 2,15,214.27 \times \frac{5}{100} \times \frac{3}{12} \right] = \text{£ } 2,17,904.45$$

(iv) Now we will use the foreign currency receipt to repay "amount borrowed + interest on it" in foreign currency.

$$\text{Therefore, the loan liability of \$ } 3,42,298 \text{ after 3 month with interest matures to } \left[\$ 3,42,298 \times \frac{9}{100} \times \frac{3}{12} \right] = \$ 3,50,000.$$

What is "Faith" ? Once all the people of a village decided to pray for rain and assembled in a temple. On the day of prayer all the people gathered but only one boy came with umnbrella. Thats Faith .

This will be settled with the amount of \$ 3,50,000 to be received from customer after 3 months .

(b) If forward contract is used :

Applicable rate for a 3 month forward is 1.6140.

Amount of £ that will be received by UK Company at the end of three months will be $\frac{\text{£ } 3,50,000}{1.6140} = \text{£ } 216852.54$

Comparing the two hedges :—

Under Money Market Hedge the amount received is £ 2,17,904.45

Under Forward Cover Hedge, the amount received is £ 2,16,852.54

Decision : It is seen that receipts under forward contract are lower than future value of receipts under money market operations. Therefore, the better strategy for the company is to opt for money market hedging.

QUESTION NO. 26 Consider two companies rated AAA and BBB. AAA has higher credit rating than BBB. Hence they are rated differently by the market and are offered loans at following rates:

	Fixed Rate	Floating Rate
AAA	10%	LIBOR + .50
BBB	11%	LIBOR+.75

Both are planning to raise loan of \$1 million. AAA is interested in raising loan under floating rate. BBB is interested in raising loan under fixed rate. An intermediary brings them on table and interest swap is arranged. The benefit of interest swap is to be shared equally by the three parties. Find out net interest burden (%) for AAA and BBB?

Solution :

If no Swap is arranged, total interest cost to both the parties if they borrow as per their plan :

AAA: LIBOR + .50
 BBB: 11%
 Total (A) LIBOR + 11.50%

If Swap is arranged, AAA should borrow on fixed basis and BBB on floating basis, total interest cost in this situation is :

AAA 10%
 BBB LIBOR + .75
 Total (B) LIBOR + 10.75%

Saving on Interest Cost : A – B = (LIBOR + 11.50%) – (LIBOR + 10.75%) = .75

Since Savings is to be distributed equally as per the requirement of the question we have

Saving for AAA = .25; Saving for BBB = .25; Commission for intermediary = .25.

∴ Net Interest Burden = Cost under own choice – Share in saving.

For AAA : (LIBOR + .50) – .25 = LIBOR + .25 **For BBB :** 11% – .25 = 10.75 %

Note : AAA has a comparative advantage in fixed rate market but wants to borrow at floating rate. This provides the basis for the swap.

QUESTION NO. 27 U.S. Imports Co., purchased 1 Lacs Mark's worth of machines from a firm in Dortmund, Germany. The value of the dollar in terms of the mark has been decreasing. The firm in dortmund offers 2/10, net 90 terms. The spot rate for the mark is dollar . 55; the 90 days forward rate is dollar . 56

(a) Compute the \$ cost of paying the account within 10 days.

(b) Compute the \$ cost of buying a forward contract to liquidate the account in 10 days.[It should be 90 days]

(c) The differential between part (a) and part (b) is the result of the time value of money (the discount for prepayment) and protection from currency value fluctuation. Determine the magnitude of each of these components.

Solution :

Given : 1DM = .55\$; 90 Days FR 1 DM = .56 \$; Purchaser :US Import Co. ;Purchase Price : 1 Lakh Mark or 1,00,000DM

(a) Cost of paying the account within 10 Days = 98,000 × 0.55 = \$53,900

(b) Cost of liquidating the account in 90 days = 100,000 × 0.56 = \$56,000

(c) Differences due to time value & currency fluctuation = \$56000 – \$53900 = \$2100

Beautiful pictures are developed by negatives in a dark room so if you see darkness in ur life assume that God is making a beautiful picture for you.

Saving on Account of Time Value of Money : $(1,00,000 - 98,000) \times .56 = \$ 1120$

Saving on Account of Currency Value Fluctuation : $98,000 \times (.56 - .55) = \$ 980$

Additional Analysis : It has been assumed that Spot Rate given in the question will prevail upto 10 days in the absense of any specific information .

Additional Analysis : Meaning Of the term "2/10 net 90". This means, 2% cash discount will be allowed if paid within 10 days, otherwise total credit period is 90 days)

Additional Analysis : The currency of Germany is known as DM or Deutsche Mark or simply Mark .

QUESTION NO. 28 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 :

$$\frac{24 \times 75,000 + 16 \times 18,750}{75,000 + 18,750} = \text{Rs. } 22.40$$

Working Notes : Number of Right share to be issued = $\frac{75,000}{4} = 18,750$

- (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 :

	Rs.
(a) Value of shares before right issue (1,000 shares × Rs. 24)	<u>24,000</u>
(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)	<u>1,600</u>
	<u>24,000</u>

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)	<u>22,400</u>
Loss of wealth to shareholders, if rights ignored	<u>1,600</u>

QUESTION NO. 29 (CA Final May 2006 ,8 Marks) Abhishek Ltd. has a surplus cash of Rs. 90 lakhs and wants to distribute 30% of it to the shareholders. The Company decides to buyback shares. The Finance Manager of the Company estimates that its share price after re-purchase is likely to be 10% above the buyback price; if the buyback route is taken. The number of shares outstanding at present is 10 lakhs and the current EPS is Rs. 3.

(a) The price at which the shares can be repurchased, if the market capitalisation of the company should be Rs. 200 lakhs after buyback.

(b) The number of shares that can be re-purchased.

(c) The impact of share re-purchase on the EPS, assuming the net income is same.

No Dreamer is ever too small and no Dream is ever too big. The future belongs to those who Dare to Dream and are ready to work for it

Solution :**(a) Price At Which the Shares Can Be Repurchased :**

Let P be the buyback price decided by Abhishek Ltd.

MPS After Buyback x No. of shares After Buyback = 200,00,000.

$$\Rightarrow 1.1 \times P \times [\text{Existing Number of Share} - \text{Buy Back Share}] = 200,00,000$$

$$\Rightarrow 1.1 \times P \times \left[10,00,000 - \frac{\text{Total Amount Available For Buyback}}{\text{Buyback Price}} \right] = 200,00,000.$$

$$\Rightarrow 1.1 \times P \times \left[10,00,000 - \frac{30\% \text{ of } 90,00,000}{P} \right] = 200,00,000.$$

$$\Rightarrow 1.1P \left[10,00,000 - \frac{27,00,000}{P} \right] = 200,00,000$$

$$\Rightarrow 11,00,000P - 2,970,000 = 200,00,000$$

$$\Rightarrow P = 20.88.$$

(b) Numbers of shares to be bought back :

$$\text{Numbers of shares to be bought back} = \frac{27 \text{ Lakhs}}{20.88} = 1.29 \text{ Lakhs (approximately)}$$

(c) EPS After Buyback :

New Equity Shares i.e Equity Share After Buy back = (10 - 1.29) lakhs = 8.71 lakhs

$$\text{EPS After Buyback} = \frac{\text{Total Earning After Buyback}}{\text{Total Number Of Equity Share After Buyback}} = \frac{3 \times 10 \text{ Lakhs}}{8.71 \text{ Lakhs}} = \frac{30 \text{ Lakhs}}{8.71 \text{ Lakhs}} = \text{Rs.} 3.44$$

Additional Analysis : Why total earnings after buyback is same. Since it is clearly given in question that net income or earning after buyback will assumed to be same.

QUESTION NO. 30 A company is considering to engage a factor, the following information is available

(i) The current average collection period for the Company's debtors is 80 days and 1/2% of debtors default. The factor has agreed to pay money due after 60 days and will take the responsibility of any loss on account of bad debts.

(ii) The annual charge for the factoring is 2% of turnover payable annually in arrears. Administration cost saving is likely to be Rs. 1,00,000 per annum.

(iii) Annual sales, all on credit, are Rs. 1,00,00,000. Variable Cost is 80% of sales price. The Company's cost of borrowing is 15% per annum. Assume the year is consisting of 365 days.

Should the Company enter into a factoring agreement?

Solution :

The annual change in cash flows through entering into a factoring agreement is : (Amount in Rs.)

Savings

Add : Administration cost saved		1,00,000
Existing Average debtors	21,91,781	
[Rs.1,00,00,000/365 x 80 days]		
New Average Debtors		
[(Rs.100,00,000/365)] x 60 days]	16,43,836	
Reduction in Debtors	5,47,945	
Cost thereof @ 80%	4,38,356	
Add: Interest saving @ 15% p.a on Rs. 4,38,356		65,753
Add: Bad Debts saved @ 1/2% of Rs.1,00,00,000		50,000
Less: Annual charges @2% of Rs.1,00,00,000		<u>2,00,000</u>
Net Annual Benefits of Factoring		<u>15,753</u>

Do not count what you have lost. Just see what you have now because past never comes back but sometimes future can give us back our lost things.

Decision : Since Net Annual Benefits of Factoring is positive the factoring agreements is worthwhile and should be undertaken.

QUESTION NO. 31 A firm has a sales of Rs. 6 Crores, Variable Cost Rs. 3.5 crores and Fixed Cost of Rs. 0.65 crores. The firm has debt and equity resources worth of Rs. 7 crores and 10 crores respectively. With the data given show :

(i) The firm's ROI [Return On Investment]

(ii) EBIT if sales decline to Rs. 4 crores.

(iii) If the industry's assets turnover is 4 times, does the firm has high or low asset turnover? The cost of debt is 10%, Ignore taxation.

Solution :

	Rs.Crore
Sales	6.0
Less Variable Cost	<u>3.5</u>
Contribution	2.5
Less Fixed Cost	<u>0.65</u>
EBIT	1.85
Less : Interest	<u>.70</u>
EBT	<u>1.15</u>

Total Investment = Debt + Capital = 7+10 = 17 Crores

(i) Return On Investment [ROI] = $\frac{\text{EBIT}}{\text{Total Investment}} = \frac{1.85}{17} = 10.88\%$

(ii) If Sales declines to 4 crores

Sales	4.0
Variable Cost [33% as Sales decline by 33% or See Additional Analysis]	<u>2.33</u>
Contribution	1.67
Less : Fixed Cost	<u>.65</u>
EBIT	1.02
Less: Interest	<u>.70</u>
EBT	<u>0.32</u>

(iii) Asset turnover = $\frac{\text{Sales}}{\text{Total Asset}} = \frac{6}{17} = .3529$; The firm has a lower Asset turnover as compared to that of the industry.

Additional Analysis : When Sale is Rs. 6 , Variable Cost is 3.5 . When Sale is Rs. 1 , Variable Cost will be $\frac{3.5}{6}$; When Sale is 4

, Variable Cost will be $\frac{3.5}{6} \times 4 = 2.33$ or $\frac{6-4}{6} = 33.33\%$

QUESTION NO. 32 XYZ Ltd. requires Rs. 8,00,000 for an unit. Useful life of project – 4 years. Salvage Value – Nil. Depreciation Charge Rs. 2,00,000 p.a. Expected Revenues & Costs (excluding depreciation) ignoring inflation.

Year	1	2	3	4
Revenues	Rs. 6,00,000	Rs. 7,00,000	Rs. 8,00,000	Rs. 8,00,000
Cost	Rs. 3,00,000	Rs. 4,00,000	Rs. 4,00,000	Rs. 4,00,000

Tax Rate 60%; Cost of Capital 10%. Calculate NPV of the project if inflation rates for revenues & costs are :

Year	Revenues	Costs
1	10%	12%
2	9%	10%
3	8%	9%
4	7%	8%

Solution :

If you have built castles in the air, your work need not be lost; there is where they should be. Now put foundations under them.-Henry David Thoreau

$$\begin{aligned}
 \text{N.P.V.} &= [\{6,00,000 (1.10) - 3,00,000 (1.12)\} (1-0.6) + 2,00,000 \times 0.6] / (1.10)^1 + \\
 &[\{7,00,000 (1.10) (1.09) - 4,00,000 (1.12) (1.10)\} (1-0.6) + 2,00,000 \times 0.6] / (1.10)^2 + \\
 &[\{8,00,000 (1.10) (1.09) (1.08) - 4,00,000 (1.12) (1.10) (1.09)\} (1-0.6) + 2,00,000 \times 0.6] / (1.10)^3 + \\
 &[\{8,00,000 (1.10) (1.09) (1.08) (1.07) - 4,00,000 (1.12) (1.10) (1.09) (1.08)\} (1-0.6) + 2,00,000 \times 0.6] / (1.10)^4 \\
 &- 8,00,000 \\
 &= 2,26,909 + 2,13,719 + 2,40,055 + 2,26,303 - 8,00,000 = \text{Rs. } 1,06,986
 \end{aligned}$$

QUESTION NO. 33 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. Rs.

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)	<u>50,00,000</u>
Total	<u>9,80,00,000</u>

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	<u>5,00,000</u>
	1,55,90,000
Less: Operating Expenses	<u>50,00,000</u>
	<u>1,05,90,000</u>

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	<u>45,00,000</u>
	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

QUESTION NO. 34 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,

Every night before you go to sleep, look at the good you have accomplished during the day, measure your progress and make plans for taking advantage of whatever opportunity the mornings brings your way.

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	<u>0.4</u>
	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
<u>Selling Price 36 :</u>						
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	$0.2 \times 0.4 = 0.08$	<u>1,21,600</u>
					<u>1.00</u>	<u>13,50,800</u>
<u>Selling Price 38 :</u>						
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
70,000	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	$0.2 \times 0.4 = 0.08$	<u>1,36,000</u>
					<u>1.00</u>	<u>13,61,600</u>
<u>Selling Price 40 :</u>						
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

"Great change dominates the world and unless we move with change, we will become its victims"

	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
					<u>1.00</u>	<u>9,34,800</u>

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.35 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 :

Variable Rate

Electronic Ltd. $T^* + 0.50$

Tim Software Ltd. $T^* + 2.10$

MIBOR + 0.10

MIBOR + 060

*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. : Electrometics 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.

Everything is always okay in the end. If it is not okay, then it is not the end

" I have only one option in life and that is Success. FAILURE is not an Option."

**" You may have beaten me once; you may have beaten me twice,
But if you beat me a third time, I will be back for a fourth try!"**

Touching life story.....

A young man was getting ready to graduate college. For many months he had admired a beautiful sports car in a dealer's showroom, and knowing his father could well afford it, he told him that was all he wanted.

As Graduation Day approached, the young man awaited signs that his father had purchased the car. Finally, on the morning of his graduation his father called him into his private study. His father told him how proud he was to have such a fine son, and told him how much he loved him. He handed his son a beautiful wrapped gift box.

Curious, but somewhat disappointed the young man opened the box and found a lovely, leather-bound Bible.

Angrily,

he raised his voice at his father and said, "With all your money you give me a Bible?" and stormed out of the house, leaving the holy book.

Many years passed and the young man was very successful in business.

He had a beautiful home and wonderful family, but realized his father was very old, and thought perhaps he should go to him. He had not seen him since that graduation day. Before he could make arrangements, he received a telegram telling him his father had passed away, and willed all of his possessions to his son. He needed to come home immediately and take care things.

When he arrived at his father's house, sudden sadness and regret filled his heart.

He began to search his father's important papers and saw the still new Bible, just as he had left it years ago. With tears, he opened the Bible and began to turn the pages. As he read those words, a car key dropped from an envelope taped behind the Bible. It had a tag with the dealer's name, the same dealer who had the sports car he had desired. On the tag was the date of his graduation, and the words...PAID IN FULL.

How many times do we miss God's blessings because they are not packaged as we expected? God and our parents blessings are always with us, but we never recognize this at the right time. only when the time passes away we recognize how much they love us.

"This is not the beginning of the end, Neither is the end of the beginning . As your journey through Corporate Finance in the big bad world of business you will find that Finance is an evolving & never ending subject.

**" Winning isn't everything, neither is losing,
but the only thing is doing your best."**

Wishing You All The Best

*Remember You Can Do Wonders , Nobody Can Stop You From Achieving Success Except You
Get Up and Keep Going , World Is Waiting For You*

- Aaditya Jain

Don't go through life, grow through life.

We make our own fortunes and call them fate.
Ninety-nine percent of the failures come from people who have the habit of making excuses.