COMPENDIUM
ON

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&
CORPORATE LAWS

ICWAI - FINAL
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PAPER – 11

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PORTFOLIO MANAGEMENT

Question 1

As an investment manager you are given the following information:

	Investment in equity shares of	Initial price	Dividends	Market price at the end of the year	Beta risk factor
		Rs.	Rs.	Rs.	Rs.
A.	Cement Ltd.	25	2	50	0.8
	Steel Ltd.	35	2	60	0.7
	Liquor Ltd.	45	2	135	0.5
B.	Government of India Bonds	1,000	140	1,005	0.99
	Risk free return may be taken at 14%				

You are required to calculate:

(i) Expected rate of returns of portfolio in each using Capital Asset Pricing Model (CAPM).

(ii) Average return of portfolio.

Answer

(i) Let us first calculate the Expected return on Market portfolio which is not provided.

		Total Investment	Dividends	Capital gains
		Rs.	Rs.	Rs.
A.	Cement Ltd.	25	2	25
	Steel Ltd.	35	2	25
	Liquor Ltd.	45	2	90
B.	Government of India Bonds	1,000	140	5
	Total	1,105	146	145

$$\text{Expected return on market portfolio} = \text{Rs.}\frac{146+145}{1,105} = \text{Rs. } 26.33\%$$

Capital Asset Pricing Model:

E(Rp) = Rf + Bp [E (RM – Rf]

Where,

E(Rp) = Expected return of the portfolio

Rf = Risk free rate of return

Bp = Portfolio beta i.e. market sensivity index

E (RM) = Expected return on market portfolio.

[E (RM – Rf] = Market risk premium.

By substituting the figures in the above equation we can calculate expected rate of returns of portfolio in each using Capital Assets Pricing Model (CAPM) as under:

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) Average return of the portfolio

$$= \frac{23.86 + 22.63 + 20.17 + 26.21}{4} = 23.22\%$$

OR

Average of Betas

= (0.8 + 0.7 + 0.5 + 0.99)/4 = 0.7475

Average return = 14 + 0.7475 (26.33 – 14) = 23.22%

Question 2

An investor is seeking the price to pay for a security, whose standard deviation is 4.00 per cent. The correlation coefficient for the security with the market is 0.8 and the market standard deviation is 2.2 per cent. The return from government securities is 5.2 per cent and from the market portfolio is 9.8 per cent. The investor knows that, by calculating the required return, he can then determine the price to pay for the security. What is the required return on the security?

Answer

$$\text{Beta coefficient} = \frac{\text{Correlation coefficient between the security and the market} \times \text{Std. deviation of the security return}}{\text{Std. deviation of the market return}}$$

$$= \frac{(.8) \times (.04)}{(.022)} = 1.454$$

Now, required return on the security: Rate of return on risk free security + beta coefficient (required return on market portfolio – rate of return on risk free security)

= 5.2 + 1.454 (9.8 – 5.2) = 5.2 + 6.688 = 11.89%

Question 3

Hari inherited the following securities on his uncle's death:

Types 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.

Answer

Computation of current value of John's portfolio

(i) 10 Nos. Bond A, Rs. 1,000 par value, 9% Bonds maturity 3 years:

		Rs.
Current value of interest on bond A		
1-3 years: Rs. 900 × Cumulative P.V. @ 12% (1-3 years)		
= Rs. 900 × 2.402	2,162	
Add: Current value of amount received on maturity of Bond A		
End of 3rd year: Rs. 1,000 × 10 × P.V. @ 12% (3rd year)		
= Rs. 10,000 × 0.712	7,120	9,282

(ii) 10 Nos. Bond B, Rs. 1,000 par value, 10% Bonds maturity 5 years:

Current value of interest on bond B		
1-5 years: Rs. 1,000 × Cumulative P.V. @ 12% (1-5 years)		
= Rs. 1,000 × 3.605	3,605	
Add: Current value of amount received on maturity of Bond B		
End of 5th year: Rs. 1,000 × 10 × P.V. @ 12% (5^{th} year)		
= Rs. 10,000 × 0.567	5,670	9,275

(iii) 100 Preference shares C, Rs. 100 par value, 11% coupon

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

(iv) 100 Preference shares D, Rs. 100 par value, 12% coupon

$$\frac{12\% \times 100\text{Nos.} \times \text{Rs.}100}{13\%} = \frac{1,200}{0.13}$$ 9,231 17,693

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

Question 4

Z Ltd. has an expected return of 22% and Standard deviation of 40%. Y Ltd. has an expected return of 24% and Standard deviation of 38%. Z Ltd. has a beta of 0.86 and Y Ltd. a beta of 1.24. The correlation coefficient between the return of Z Ltd. and Y Ltd. is 0.72. The Standard deviation of the market return is 20%. Suggest:

(i) Is investing in Y Ltd. better than investing in Z Ltd.?

(ii) If you invest 30% in Y Ltd. and 70% in Z Ltd., what is your expected rate of return and portfolio Standard deviation?

(iii) What is the market portfolios expected rate of return and how much is the risk-free rate?

(iv) What is the beta of Portfolio if Z Ltd.'s weight is 70% and Y Ltd.'s weight is 30%?

Answer

(i) Z Ltd. has lower return and higher risk than Y Ltd. investing in Y Ltd. is better than in Z Ltd. because the returns are higher and the risk, lower. However, investing in both will yield diversification advantage.

(ii) Let , r_A = Return for Z Ltd. & r_B = Return for Y Ltd.

$r_{AB} = .22 \times 0.7 + .24 \times 0.3 = 22.6\%$

$$\sigma_{AB}^2 = \sqrt{.40^2 \times 0.7^2 + .38^2 \times 0.3^2 + 2 \times 0.7 \times 0.3 \times 0.72 \times .40 \times .38} = .1374$$

$$\sigma_{AB} = \sqrt{\sigma_{AB}^2}$$

$$= \sqrt{.1374} = .37 = 37\%*$$

* Answer = 37.06% is also correct and variation may occur due to approximation.

(iii) This risk-free rate will be the same for Z and Y Ltd. Their rates of return are given as follows:

$r_A = 22 = r_f + (r_m - r_f)\ 0.86$ [r_A = Return for Z Ltd. & r_B = Return for Y Ltd.]

$r_B = 24 = r_f + (r_m - r_f)\ 1.24$

$r_A - r_B = -2 = (r_m - r_f)\ (-0.38)$

$r_m - r_f = -2/-0.38 = 5.26\%$

$r_A = 22 = r_f + (5.26)\ 0.86$

$r_f = 17.5\%*$

$r_B = 24 = r_f + (5.26)\ 1.24$

$r_f = 17.5\%*$

$r_m - 17.5 = 5.26$

$r_m = 22.76\%**$

*Answer = 17.47% might occur due to variation in approximation.

**Answer may show small variation due to approximation. Exact answer is 22.736%.

(iv) $\beta_{AB} = \beta_A \times W_A + \beta_B \times W_B$

$= 0.86 \times 0.7 + 1.24 \times 0.3 = 0.974$

Question 5

Following is the data regarding six securities:

	A	B	C	D	E	F
Return (%)	8	8	12	4	9	8
Risk (Standard deviation)	4	5	12	4	5	6

(i) Assuming three will have to be selected, state which ones will be picked.

(ii) Assuming perfect correlation, show whether it is preferable to invest 75% in A and 25% in C or to invest 100% in E.

Answer

(i) Security A has a return of 8% for a risk of 4, whereas B and F have a higher risk for the same return. Hence, among them A dominates.

For the same degree of risk 4, security D has only a return of 4%. Hence, D is also dominated by A.

Securities C and E remain in reckoning as they have a higher return though with higher degree of risk.

Hence, the ones to be selected are A, C & E.

(ii) The average values for A and C for a proportion of 3: 1 will be :

$$\text{Risk} = \frac{(3\times 4)+(1\times 12)}{4} = 6\%$$

$$\text{Return} = \frac{(3\times 8)+(1\times 12)}{4} = 9\%$$

Therefore:	75% A	E
	25% C	_
Risk	6	5
Return	9%	9%

For the same 9% return the risk is lower in E. Hence, E will be preferable.

Question 6

An investor is holding 1,000 shares of a Company. Presently the rate of dividend being paid by the company is Rs. 2 per share and the share is being sold at Rs. 25 per share in the market. However, several factors are likely to change during the course of the year as indicated below:

	Existing	Revised
Risk free rate	12%	10%
Market risk premium	6%	4%
Beta value	1.4	1.25
Expected growth rate	5%	9%

In view of the above factors whether the investor should buy, hold or sell the shares? Also explain why?

Answer

On the basis of existing and revised factors, rate of return and price of share is to be calculated.

Existing rate of return

$= R_f + \text{Beta} (R_m - R_f)$

$= 12\% + 1.4 (6\%) = 20.4\%$

Revised rate of return

$= 10\% + 1.25 (4\%) = 15\%$

Price of share (original)

$$P_o = \frac{D(1+g)}{K_e - g} = \frac{2(1.05)}{.204 - .05} = \frac{2.10}{.154} = \text{Rs.}13.63$$

Price of share (Revised)

$$P_o = \frac{2(1.09)}{.15 - .09} = \frac{2.18}{.06} = \text{Rs.}36.33$$

In case of existing market price of Rs. 25 per share, rate of return (20.4%) and possible equilibrium price of share at Rs. 13.63, this share needs to be sold because the share is overpriced (Rs. 25 – 13.63) by Rs. 11.37. However, under the changed scenario where growth of dividend has been revised at 9% and the return though decreased at 15% but the possible price of share is to be at Rs. 36.33 and therefore, in order to expect price appreciation to Rs. 36.33 the investor should hold the shares, if other things remain the same.

Question 7

An investor is holding the following securities:

Particulars of Securities	Cost	Dividends	Market Price	BETA
	Rs.	Rs.	Rs.	
Equity Shares:				

Co. A	8,000	800	8,200	0.8
Co. B	10,000	800	10,500	0.7
Co. C	16,000	800	22,000	0.5
PSU Bonds	34,000	3,400	32,300	1.0

Assuming a Risk-free rate of 15%, calculate:

– Expected rate of return in each, using the Capital Asset Pricing Model (CAPM).

– Average return of the portfolio.

Answer

Calculation of expected return on market portfolio (R_m)

Investment	Cost (Rs.)	Dividends (Rs.)	Capital Gains (Rs.)
Shares A	8,000	800	200
Shares B	10,000	800	500
Shares C	16,000	800	6,000
PSU Bonds	34,000	3,400	–1,700
	68,000	5,800	5,000

$$R_m = \frac{5,800 + 5,000}{68,000} \times 100 = 15.88\%$$

Calculation of expected rate of return on individual security:

Security:

Shares A :	15 + 0.8 (15.88 – 15.0)	= 15.70%
Shares B :	15 + 0.7 (15.88 – 15.0)	= 15.62%
Shares C :	15 + 0.5 (15.88 – 15.0)	= 15.44%
PSU Bonds :	15 + 1.0 (15.88 – 15.0)	= 15.88%

Calculation of the Average Return of the Portfolio:

$$= \frac{15.70 + 15.62 + 15.44 + 15.88}{4}$$

= 15.66%.

Question 8

The rates of return on the security of Company X and market portfolio for 10 periods are given below:

Period	Return of Security X (%)	Return on Market Portfolio (%)
1	20	22
2	22	20
3	25	18
4	21	16
5	18	20
6	–5	8
7	17	–6

8	19	5
9	–7	6
10	20	11

(i) What is the beta of Security X?

(ii) What is the characteristic line for Security X?

Answer

(i)

Period	R_X	R_M	$R_X - \bar{R}_X$	$R_M - \bar{R}_M$	$(R_X - \bar{R}_X)(R_M - \bar{R}_M)$	$(R_M - \bar{R}_M)^2$
1	20	22	5	10	50	100
2	22	20	7	8	56	64
3	25	18	10	6	60	36
4	21	16	6	4	24	16
5	18	20	3	8	24	64
6	-5	8	-20	-4	80	16
7	17	-6	2	-18	-36	324
8	19	5	4	-7	-28	49
9	-7	6	-22	-6	132	36
10	20	11	5	-1	-5	1
	150	120			357	706
	ΣR_X	ΣR_M			$\sum (R_X - \bar{R}_X)(R_M - \bar{R}_M)$	$\sum (R_M - \bar{R}_M)^2$

$\bar{R}_X = 15 \quad \bar{R}_M = 12$

$$\sigma^2_M = \frac{\Sigma (R_M - \bar{R}_M)^2}{n-1} = \frac{706}{9} = 78.44$$

$$Cov_{X,M} = \frac{\Sigma (R_X - \bar{R}_X)(R_M - \bar{R}_M)}{n-1} = \frac{357}{9} = 39.66$$

$$Beta_x = \frac{Cov_{X,M}}{\sigma^2_M} = \frac{39.66}{78.44} = .505$$

(ii) $\bar{R}_X = 15 \quad \bar{R}_M = 12$

$y = \alpha + \beta x$

$15 = \alpha + 0.505 \times 12$

Alpha $(\alpha) = 15 - (0.505 \times 12)$

$= 8.94\%$

Characteristic line for security X = $\alpha + \beta \times R_M$

where, R_M = Expected return on Market Index

$\therefore$ Characteristic line for security X = $8.94 + 0.505\ R_M$

Question 9

Following is the data regarding six securities:

	U	V	W	X	Y	Z
Return (%)	10	10	15	5	11	10
Risk (%) (Standard deviation)	5	6	13	5	6	7

(i) Which of three securities will be selected?

(ii) Assuming perfect correlation, analyse whether it is preferable to invest 80% in security U and 20% in security W or to invest 100% in Y.

Answer

(i) When we make risk-return analysis of different securities from U to Z, we can observe that security U gives a return of 10% at risk level of 5%. Simultaneously securities V and Z give the same return of 10% as of security U, but their risk levels are 6% and 7% respectively. Security X is giving only 5% return for the risk rate of 5%. Hence, security U dominates securities V, X and Z.

Securities W and Y offer more return but it carries higher level of risk.

Hence securities U, W and Y can be selected based on individual preferences.

(ii) In a situation where the perfect positive correlation exists between two securities, their risk and return can be averaged with the proportion.

Assuming the perfect correlation exists between the securities U and W, average risk and return of U and W together for proportion 4 : 1 is calculated as follows:

Risk = $(4 \times .05 + 1 \times .13) \div 5 = 6.6\%$

Return = $(4 \times .10 + 1 \times .15) \div 5 = 11\%$

When we compare risk of 6.6% and return of 11% with security Y with 6% risk and 11% return, security Y is preferable over the portfolio of securities U and W in proportion of 4 : 1

Question 10

Given below is information of market rates of Returns and Data from two Companies A and B:

	Year 2009	Year 2010	Year 2011
Market (%)	12.0	11.0	9.0
Company A (%)	13.0	11.5	9.8
Company B (%)	11.0	10.5	9.5

Required:

Determine the beta coefficients of the Shares of Company A and Company B.

Answer

Company A:

Year	Return % (Ra)	Market return % (Rm)	Deviation R(a)	Deviation Rm	D Ra × DRm	Rm^2
1	13.0	12.0	1.57	1.33	2.09	1.77
2	11.5	11.0	0.07	0.33	0.02	0.11
3	9.8	9.0	–1.63	–1.67	2.72	2.79
	34.3	32.0			4.83	4.67

Average Ra = 11.43

Average Rm = 10.67

Covariance = $\frac{4.83}{2} = 2.42$

$$\beta = \frac{2.42}{2.34} = 1.03$$

Company B:

Year	Return % (Ra)	Market return % (Rm)	Deviation R(a)	Deviation Rm	D Ra × D Rm	Rm^2
1	11.0	12.0	0.67	1.33	0.89	1.77
2	10.5	11.0	0.17	0.33	0.06	0.11
3	9.5	9.0	–0.83	–1.67	1.39	2.79
	31.0	32.0			2.34	4.67

Average Ra = 10.33

Average Rm = 10.67

Covariance = $\frac{2.34}{2} = 1.17$

$$\beta = \frac{1.17}{2.34} = 0.50$$

Question 11

The Investment portfolio of a bank is as follows:

Government Bond	Coupon Rate	Purchase rate (F.V. Rs. 100 per Bond)	Duration (Years)
G.O.I. 2006	11.68	106.50	3.50
G.O.I. 2010	7.55	105.00	6.50
G.O.I. 2015	7.38	105.00	7.50

G.O.I. 2022	8.35	110.00	8.75
G.O.I. 2032	7.95	101.00	13.00

Face value of total Investment is Rs. 5 crores in each Government Bond.
Calculate actual Investment in portfolio.
What is a suitable action to churn out investment portfolio in the following scenario?
1. Interest rates are expected to lower by 25 basis points.
2. Interest rates are expected to raise by 75 basis points.

Also calculate the revised duration of investment portfolio in each scenario.

Answer

Calculation of Actual investment of Portfolio

Security	Purchase price	Investment (Rs. in lakhs)
GOI 2006	106.50	532.50*
GOI 2010	105.00	525.00
GOI 2015	105.00	525.00
GOI 2022	110.00	550.00
GOI 2032	101.00	505.00
	Total	**2,637.50**

$$* \frac{\text{Rs. 5 crores}}{\text{Rs. 100} \times \text{1,00,000}} \times \text{Rs. 106.50}$$

$$\text{Average Duration} = \frac{3.5 + 6.5 + 7.5 + 8.75 + 13.00}{5}$$

$$= \frac{39.25}{5} = 7.85$$

Suitable action to churn out investment portfolio in following scenario.To reduce risk and to maximize profit or minimize losses.

(1) Interest rates are expected to be lower by 25 basis points in such case increase the average duration by purchasing GOI 2032 and Disposing of GOI 2006.

$$\text{Revised average duration shall be} = \frac{39.25 - 3.5 + 13}{5}$$

$$= \frac{48.75}{5} = 9.75 \text{ years}$$

(2) Interest rates are expected to rise by 75 basis points in such case reduce the average duration by (*) Purchasing GOI 2010 and disposing of GOI 2032.

$$\text{Revised average duration shall be} = \frac{39.25 - 13 + 6.5}{5}$$

$$= \frac{32.75}{5} = 6.55 \text{ years}$$

(*) Purchasing of GOI 2006 is not beneficial as maturity period is very short and 75 basis points is comparatively higher change.

Question 12

Your client is holding the following securities:

Particulars of Securities	Cost Rs.	Dividends/Interest Rs.	Market price Rs.	Beta
Equity Shares:				
Gold Ltd.	10,000	1,725	9,800	0.6
Silver Ltd.	15,000	1,000	16,200	0.8
Bronze Ltd.	14,000	700	20,000	0.6
GOI Bonds	36,000	3,600	34,500	1.0

Average return of the portfolio is 15.7%, calculate:

(i) Expected rate of return in each, using the Capital Asset Pricing Model (CAPM).

(ii) Risk free rate of return.

Answer

Particulars of Securities	Cost Rs.	Dividend	Capital gain
Gold Ltd.	10,000	1,725	–200
Silver Ltd.	15,000	1,000	1,200
Bronz Ltd.	14,000	700	6,000
GOI Bonds	36,000	3,600	–1,500
Total	75,000	7,025	5,500

Expected rate of return on market portfolio

$$\frac{\text{Dividend Earned} + \text{Capital appreciation} * 100}{\text{Initial investment}}$$

$$= \frac{\text{Rs. } 7{,}025 + \text{Rs. } 5{,}500 \ * 100}{75{,}000}$$

= 16.7%

Risk free return

$$\text{Average of Betas} = \frac{0.6 + 0.8 + 0.6 + 1.0}{4}$$

Average of Betas = 0.75

Average return = Risk free return + Average Betas (Expected return – Risk free return)

15.7 = Risk free return + 0.75 (16.7 – Risk free return)

Risk free return = 12.7%

Expected Rate of Return for each security is

Rate of Return = Rf + B (Rm – Rf)

Gold Ltd.	= 12.7 + .6 (16.7 – 12.7)	= 15.10%
Silver Ltd.	= 12.7 + .8 (16.7 – 12.7)	= 15.90%
Bronz Ltd.	= 12.7 + .6 (16.7 – 12.7)	= 15.10%
GOI Bonds	= 12.7 + 1.0 (16.7 – 12.7)	= 16.70%

Question 13

The distribution of return of security 'F' and the market portfolio 'P' is given below:

Probability	Return %	
	F	P
0.30	30	-10
0.40	20	20
0.30	0	30

You are required to calculate the expected return of security 'F' and the market portfolio 'P', the covariance between the market portfolio and security and beta for the security.

Answer

Security F

Prob(P)	R_f	PxR_f	Deviations of F ($R_f - ER_f$)	(Deviation)^2 of F	(Deviations)^2 $\times$ P
0.3	30	9	13	169	50.7
0.4	20	8	3	9	3.6
0.3	0	0	-17	289	86.7
		ER_f=17			Var_f =141

STDEV σ f = $\sqrt{141}$ = 11.87

Market Portfolio, P

R_M %	P_M	Exp. Return R_M x P_M	Deviation of P (R_M- ER_M)	(Deviation of P)^2	(Deviation)^2 P_M	(Deviation of F) x (Deviation of P)	Deviation of F x (Deviation of P) x P
-10	0.3	-3	-24	576	172.8	-312	-93.6
20	0.4	8	6	36	14.4	18	7.2

30	0.3	9	16	256	76.8	-272	-81.6
		ER_M=14			Var $_M$=264 σ_M=16.25		=Co Var P_M =- 168

Beta $\frac{\text{Co Var } P_M}{\sigma_M^2} = \frac{-168}{264} = -.636$

Question 14

X Co., Ltd., invested on 1.4.2009 in certain equity shares as below:

Name of Co.	No. of shares	Cost (Rs.)
A Ltd.	1,000 (Rs.100 each)	2,00,000
B Ltd.	500 (Rs.10 each)	1,50,000

In September, 2009, 10% dividend was paid out by A Ltd. and in October, 2009, 30% dividend paid out by B Ltd. On 31.3.2010 market quotations showed a value of Rs.220 and Rs.290 per share for A Ltd. and B Ltd. respectively.

On 1.4.2010, investment advisors indicate (a) that the dividends from A Ltd. and B Ltd. for the year ending 31.3.2011 are likely to be 20% and 35%, respectively and (b) that the probabilities of market quotations on 31.3.2011 are as below:

Probability factor	Price/share of A Ltd.	Price/share of B 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 ended 31.3.2010;

(ii) Calculate the expected average return from the portfolio for the year 2010-11; and

(iii) Advise X Co. Ltd., of the comparative risk in the two investments by calculating the standard deviation in each case.

Answer

Calculation of return on portfolio for 2009-10 (Calculation in Rs./share)

	A	B
Dividend received during the year	10	3
Capital gain/loss by 31.03.10		
Market value by 31.03.10	220	290
Cost of investment	200	300

Gain/loss	20	(-)10	
Yield	30	(-)7	
Cost	200	300	
% return	15%	(-)2.33%	
Weight in the portfolio	57	43	
Weighted average return			7.55%
Calculation of estimated return for 2010-11			
Expected dividend	20	3.5	
Capital gain by 31.03.11			
(220x0.2)+ (250x0.5)+(280x0.3) – 220=(253-220)	33		
(290x0.2)+(310x0.5)+(330x0.3) – 290= (312 – 290)		22	
Yield	53	25.5	
*Market Value 01.04.10	220	290	
% return	24.09%	8.79%	
*Weight in portfolio (1,000x220): (500x290)	60.3	39.7	
Weighted average (Expected) return			18.02%

(*The market value on 31.03.10 is used as the base for calculating yield for 2010-11)

Calculation of Standard Deviation.

A Ltd.

Expected market value	Expected gain	Expected dividend	Expected yield	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						**21**	

B 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
							196.00

Standard deviation **14**

Share of company A Ltd. is more risky as the S.D. is more than company B Ltd.

Question 15

Expected returns on two stocks for particular market returns are given in the following table:

Market Return	Aggressive	Defensive
7%	4%	9%
25%	40%	18%

You are required to calculate:

(a) The Betas of the two stocks.

(b) Expected return of each stock, if the market return is equally likely to be 7% or 25%.

(c) The Security Market Line (SML), if the risk free rate is 7.5% and market return is equally likely to be 7% or 25%.

(d) The Alphas of the two stocks.

Answer

(a) The Betas of two stocks:

Aggressive stock - 40% - 4%/25% - 7% = 2

Defensive stock - 18% - 9%/25% - 7% = 0.50

(b) Expected returns of the two stocks:-

Aggressive stock - 0.5 x 4% + 0.5 x 40% = 22%

Defensive stock - 0.5 x 9% + 0.5 x 18% = 13.5%

(c) Expected return of market portfolio = 0.5 x 7% + 0.5% x 25% = 16%

∴ Market risk prem. = 16% - 7.5% = 8.5%

∴ SML is, required return = 7.5% + βi 8.5%

(d) Alpha for stock A = 0.22 – (0.075 + 2 x 0.085) = -2.5%

Alpha for stock B = 0.135 – (0.075 + 0.5 x 0.085) = 1.75%

Question 16

The historical rates of return of two securities over the past ten years are given. Calculate the Covariance and the Correlation coefficient of the two securities:

Years:	1	2	3	4	5	6	7	8	9	10
Security 1: (Return per cent)	12	8	7	14	16	15	18	20	16	22

Security 2: (Return per cent)	20	22	24	18	15	20	24	25	22	20

Answer

Calculation of Covariance

Year	R_1	Deviation $(R_1 - \overline{R_1})$	R_2	Deviation $(R_2 - \overline{R_2}$	Product of deviations
1	12	-2.8	20	-1	2.8
2	8	-6.8	22	1	-6.8
3	7	-7.8	24	3	-23.4
4	14	-0.8	18	-3	2.4
5	16	1.2	15	-6	-7.2
6	15	0.2	20	-1	-0.2
7	18	3.2	24	3	9.6
8	20	5.2	25	4	20.8
9	16	1.2	22	1	1.2
10	22	7.2	20	-1	-7.2
					-8.00

$R_1 = \frac{148}{10} = 14.8$ $\quad R_2 = \frac{210}{10} = 21$

$$\text{Covariance} = \frac{\sum_{i=1}^{N} [R_1 - \overline{R_1}][R_2 - \overline{R_2}]}{N}$$

= -8/10 = -0.8

For calculation of correlation, the standard deviation of the two securities are also required.

Calculation of Standard Deviation

Year	R_1	R_1^2	R_2	R_2^2
1	12	144	20	400
2	8	64	22	484
3	7	49	24	576
4	14	196	18	324
5	16	256	15	225
6	15	225	20	400
7	18	324	24	576
8	20	400	25	625
9	16	256	22	484
10	22	484	20	400
	148	2398	210	4494

Standard deviation of Security 1:

$$\sigma_1 \sqrt{\frac{N\sum R_1^2 - (\sum R_1)^2}{N^2}}$$

$$= \sqrt{\frac{(10 \times 2398) - (148)^2}{10 \times 10}} = \sqrt{\frac{23980 - 21904}{100}}$$

$$= \sqrt{20.76} = 4.56$$

Standard deviation of Security 2:

$$\sigma_2 = \sqrt{\frac{N\sum R_2^2 - (\sum R_2)^2}{N^2}}$$

$$= \sqrt{\frac{(10 \times 4494) - (210)^2}{10 \times 10}} = \sqrt{\frac{44940 - 44100}{100}}$$

$$= \sqrt{\frac{840}{100}} = \sqrt{8.4} = 2.90$$

Correlation Coefficient

$$r_{12} = \frac{Cov}{\sigma_1 \sigma_2}$$

$$= \frac{-0.8}{4.56 \times 2.90} = \frac{-0.8}{13.22}$$

= -0.0605

Question 17

XYZ Ltd. has substantial cash flow and until the surplus funds are utilised to meet the future capital expenditure, likely to happen after several months, are invested in a portfolio of short-term equity investments, details for which are given below:

Investment	No. of shares	Beta	Market price per share Rs.	Expected dividend yield
I	60,000	1.16	4.29	19.50%
II	80,000	2.28	2.92	24.00%
III	1,00,000	0.90	2.17	17.50%
IV	1,25,000	1.50	3.14	26.00%

The current market return is 19% and the risk free rate is 11%.
Required to:

(i) Calculate the risk of XYZ's short-term investment portfolio relative to that of the market;
(ii) Whether XYZ should change the composition of its portfolio.

Answer

(i) **Computation of Beta of Portfolio**

Investment	No. of shares	Market Price	Market Value	Div. Yield	Dividend	Composition	β	Weighted β
I.	60,000	4.29	2,57,400	19.50 %	50,193	0.2339	1.16	0.27
II.	80,000	2.92	2,33,600	24.00 %	56,064	0.2123	2.28	0.48
III.	1,00,000	2.17	2,17,000	17.50 %	37,975	0.1972	0.90	0.18
IV.	1,25,000	3.14	3,92,500	26.00 %	1,02,050	0.3566	1.50	0.53
			11,00,500		2,46,282	1.0000		1.46

Return of the Port Folio $\frac{2,46,282}{11,00,500} = 0.2238$

Beta of Port Folio 1.46

Market Risk implicit

$0.2238 = 0.11 + \beta \times (0.19 - 0.11)$

Or, $0.08\ \beta + 0.11 = 0.2238$

$\beta = \frac{0.2238 - 0.11}{0.08} = 1.42$

Market β implicit is 1.42 while the port folio β is 1.46. Thus the portfolio is marginally risky compared to the market.

(ii) The decision regarding change of composition may be taken by comparing the dividend yield (given) and the expected return as per CAPM as follows:

Expected return R_s as per CAPM is:

$R_s = I_{RF} + (R_M - I_{RF})\ \beta$

For investment I $R_s = I_{RF} + (R_M - I_{RF})\ \beta$

$= .11 + (.19 - .11)\ 1.16$

= 20.28%

For investment II, R_s = .11 + (.19 - .11) 2.28 = 29.24%

For investment III, R_s = .11 + (.19 - .11) .90

= 18.20%

For investment IV, R_s = .11 + (.19 - .11) 1.50

= 23%

Comparison of dividend yield with the expected return R_s shows that the dividend yields of investment I, II and III are less than the corresponding $R_{s,}$. So, these investment are over-priced and should be sold by the investor. However, in case of investment IV, the dividend yield is more than the corresponding $R_{s,}$ so, XYZ Ltd. should increase its proportion..

Question 18

P Ltd. invested on 1.4.2009 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, 2009, M Ltd. paid 10% dividend and in October, 2009, N Ltd. paid 30% dividend.
On 31.3.2010, 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 ended 31.3.2011 are likely to be 20% and 35% respectively.
(ii) Probabilities of market quotations on 31.3.2011 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 ended 31.3.2010.

(ii) Calculate the expected average return from the portfolio for the year 2010 – 11.

(iii) Advise P Ltd. of the comparative risk of two investments by calculating the Standard deviation in each case.

Answer: (i) Calculation of average return from portfolio for the year ended 31.03.2010

	Rs./Share	
	M Ltd.	N Ltd.
Dividend received during the year	10	3
Capital Gain/Loss to 31.03.2010		
Market Value	220	290

Cost of Investment	200	300
Gain (Loss)	20	(10)
Yield	30	(7)
Cost	200	300
% Return	15	(2.33)
Weight in the portfolio	57	43
Weighted average return (0.57 × 0.15) + (0.43 × -0.0233) = 0.0755	7.55%	
Expected average Return for 2010-11		
Expected Dividend	20	3.5
Capital Gain (Loss) to 31.03.2011		
(220 × 0.2) + (250 × 0.5) + (280 × 0.3) [253-220]	33	
(290 × 0.2) + (310 × 0.5) + (330 × 0.3) [312 – 290]		22
Yield	53	25.5
Market Value	220	290
% Return	24.09	8.79
Weighted Average (expected) Return (0.57 × 0.2409) + (0.43 × 0.0879) =	17.51%	

(iii) Calculation of Standard Deviation

	Expected Market Value	Expected Gain	Expected Dividend	Expected Yield	Devia-tions (D)	Square of D	Probab factor (p)	D2 x p
M Ltd.	220	-	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
				SD 21				**441.00**
N Ltd	290	-	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
				SD 14				**196.00**

Share of M Ltd. is more risky as the SD is more than that of N Ltd.

Question 19

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	0.7

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?

Answer

With 20% investment in each MF Portfolio Beta is the weighted average of the Betas of various securities calculated as below:

(i)

Investment	BETA	Investment (Rs. Lacs)	Weighted Investment
A	1.6	20	32
B	1	20	20
C	0.9	20	18
D	2	20	40
E	0.7	20	14
		100	124

Weighted BETA = 1.24;

Expected Return = 1.24*12 = 14.88%

(ii) With varied percentages of investments portfolio beta is calculated as follows:

	BETA	Investment (Rs. Lacs)	Weighted Investment
A	1.6	15	24
B	1	30	30
C	0.9	15	13.5
D	2	30	60
E	0.6	10	6
		100	133.5

Weighted BETA = 1.335

Expected Return – 1.335*12 = 16.02%

(iii) Expected return of the portfolio with pattern of investment as in case (i)= 12% x 1.24=14.88%

Expected Return with pattern of investment as in case (ii) = 12% × 1.335 i.e., 16.02%.

Question 20

Mr. D is interested to invest Rs.5,00,000 in the securities market. He selected two securities B and D for this purpose. The risk return profile of these securities are as follows :

Security	Risk (σ)	Expected Return (ER)
X	10%	12%
Y	18%	20%

Co-efficient of correlation between X and Y is 0.15.

You are required to calculate the portfolio return of the following portfolios of X and Y to be considered by D for his investment.

(i) 100 percent investment in X only;

(ii) 50 percent of the fund in X and the rest 25 percent in Y;

(iii) 75 percent of the fund in X and the rest 25 percent in Y; and

(iv) 100 percent investment in Y only.

Also indicate that which portfolio is best for him from risk as well as return point of view?

Answer

We have $E_p = W_1E_1 + W_3E_3 + \ldots\ldots\ldots W_nE_n$

and for standard deviation $\bar{o}_p = \left[\sum_{i=l}^{n} \quad \sum_{j=l}^{n} \times i \times j \ \rho ij \ \hat{o}i \ \hat{o}j\right]^{1/2}$

Substituting the respective values we get,

(a) All funds invested in X

Ep = 12%

$\bar{o}_p$ = 10%

(b) 50% of funds in each of X & Y

Ep = 16%

$\bar{o}_p$ = 10.9%

(c) 75% in X and 25% in Y

Ep = 14%

$\bar{o}_p$ = 9.4%

(d) 25% in X and 75% in Y

Ep = 18%

$\bar{o}_p$ = 14.15%

(e) All funds in Y

Ep = 20%

$\bar{o}_p$ = 18.0%

In the terms of return, we see that portfolio (e) is the best portfolio. In terms of risk we see that portfolio (c) is the best portfolio.

2
MUTUAL FUNDS

Question 1

A mutual fund that had a net asset value of Rs. 20 at the beginning of month - made income and capital gain distribution of Re. 0.0375 and Re. 0.03 per share respectively during the month, and then ended the month with a net asset value of Rs. 20.06. Calculate monthly return

Answer

Calculation of monthly return on the mutual funds:

$$r = \left[\frac{(NAV_t - NAV_{t-1}) + I_t + G_t}{NAV_{t-1}} \right]$$

Where,

r = Return on the mutual fund

NAV_t = Net assets value at time period t

NAV_{t-1} = Net assets value at time period t – 1

I_t = Income at time period t

G_t = Capital gain distribution at time period t

$$r = \left[\frac{(\text{Rs. } 20.06 - \text{Rs.} 20.00) + (\text{Re.} 0.0375 + \text{Re.} 0.03)}{20} \right]$$

$$= \frac{0.06 + 0.0675}{20}$$

$$= \frac{0.1275}{20} = 0.006375$$

or r = 0.6375% p.m.

or say = 7.65% p.a.

Question 2

Mr. A can earn a return of 16 per cent by investing in equity shares on his own. Now he is considering a recently announced equity based mutual fund scheme in which initial expenses are 5.5 per cent and annual recurring expenses are 1.5 per cent. How much should the mutual fund earn to provide Mr. A a return of 16 per cent?

Answer

Personal earnings of Mr. A = R_1

Mutual Fund earnings = R_2

$$R_2 = \frac{1}{1 - \text{Initial expenses (\%)}} R_1 + \text{Recurring expenses (\%)}$$

$$= \frac{1}{1-0.055} \times 16\% + 1.5\%$$

$$= 18.43\%$$

Mutual Fund earnings = 18.43%

Question 3

A has invested in three Mutual Fund Schemes as per details below:

	MF A	MF B	MF C
Date of investment	01.12.2010	01.01.2011	01.03.2011
Amount of investment	Rs. 50,000	Rs. 1,00,000	Rs. 50,000
Net Asset Value (NAV) at entry date	Rs. 10.50	Rs. 10	Rs. 10
Dividend received upto 31.03.2011	Rs. 950	Rs. 1,500	Nil
NAV as at 31.03.2011	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 Mr. A upto 31.03.2011?

Answer

Scheme	Investment	Unit Nos.	Unit NAV 31.3.2011	Total NAV 31.3.2011
	Rs.		Rs.	Rs.
MFA	50,000	4761.905	10.40	49,523.812
MFB	1,00,000	10,000	10.10	1,01,000
MFC	50,000	5,000	9.80	49,000

Scheme	NAV (+) / (–)	Dividend Received	Total Yield	Number of days	Effective Yield (% P.A.)
	Rs.	Rs.	Rs.		
MFA	(–)476.188	950	473.812	122	2.835%
MFB	(+)1,000	1,500	2,500	91	10.027%
MFC	(–)1,000	Nil	(–)1,000	31	(–)24%

Question 4

Sun Moon Mutual Fund (Approved Mutual Fund) sponsored open-ended equity oriented scheme "Chanakya Opportunity Fund". There were three plans viz. 'A' – Dividend Re-investment Plan, 'B' – Bonus Plan & 'C' – Growth Plan.

At the time of Initial Public Offer on 1.4.2000, Mr. Anand, Mr. Bacchan & Mrs. Charu, three investors invested Rs. 1,00,000 each & chosen 'B', 'C' & 'A' Plan respectively.

The History of the Fund is as follows:

Date	Dividend %	**Bonus Ratio**	Net Asset Value per Unit (F.V. Rs. 10)		
			Plan A	Plan B	Plan C
28.07.2004	20		30.70	31.40	33.42
31.03.2005	70	5 : 4	58.42	31.05	70.05
31.10.2008	40		42.18	25.02	56.15
15.03.2009	25		46.45	29.10	64.28
31.03.2009		1 : 3	42.18	20.05	60.12
24.03.2010	40	1 : 4	48.10	19.95	72.40
31.07.2010			53.75	22.98	82.07

On 31st July all three investors redeemed all the balance units.
Calculate annual rate of return to each of the investors.
Consider:

1. Long-term Capital Gain is exempt from Income tax.
2. Short-term Capital Gain is subject to 10% Income tax.
3. Security Transaction Tax 0.2 per cent only on sale/redemption of units.
4. Ignore Education Cess

Answer

(a) Mrs. Charu Plan A Dividend Reinvestment

(Amount in Rs.)

Date	Investment	Rate	Units	Balance
01.04.2000	1,00,000.00	10.00	10,000.00	10,000.00
28.07.2004	20,000.00	30.70	651.47	10,651.47
31.03.2005	74,560.29	58.42	1,276.28	11,927.75
30.10.2008	47,711.00	42.18	1,131.13	13,058.88

15.03.2009	32,647.20	46.45	702.85	13,761.73
31.03.2009	N.A.	N.A.	N.A.	13,761.73
24.03.2010	55,046.92	48.10	1,144.43	14,906.16

Redemption value 14,906.16 × 53.75		8,01,206.10
Less: Security Transaction Tax (S.T.T) is .2%		1,602.41
Net amount received		7,99,603.69
Less: Short term capital gain tax @ 10%		
1,144.43 (53.64 – 48.10)	6,340	
i.e. 53.75 – S.T.T. .2%		634
Net of tax		7,98,969.69
Less: Investment		1,00,000.00
		6,98,969.69

Annual average return (%) $\frac{6,98,969}{1,00,000} \times \frac{12}{124} \times 100 = 67.64$

Mr. Anand **Plan B – Bonus**

(Amount in Rs.)

Date	Units	Balance	NAV per unit
01.04.2000	10,000	10,000	10
31.03.2005	12,500	22,500	31.05
31.03.2009	7,500	30,000	20.05
24.03.2010	7,500	37,500	19.95

Redemption value 37,500 × 22.98		8,61,750.00
Less: Security Transaction Tax (S.T.T) is .2%		1,723.50
Net amount received		8,60,026.50
Less: Short term capital gain tax @ 10%		
7,500 × (22.93 – 19.95)	22,350	
i.e. 22.98 – S.T.T. .2%		2,235.00
Net of tax		8,57,791.50
Less: Investment		1,00,000.00
Net gain		7,57,791.50

Annual average return (%) $\frac{7,57,791}{1,00,000} \times \frac{12}{124} \times 100 = 73.33$

Mr. Bacchan **Plan C – Growth**

	(Amount in Rs.)
Redemption value 10,000 × 82.07	8,20,700.00
Less: Security Transaction Tax (S.T.T) is .2%	1,641.40
Net amount received	8,19,058.60
Less: Short term capital gain tax @ 10%	0.00
Net of tax	8,19,058.60
Less: Investment	1,00,000.00
Net gain	7,19,058.60

Annual average return (%) $\frac{7,19,058}{1,00,000} \times \frac{12}{124} \times 100 = 69.59$

Question 5

A Mutual Fund having 300 units has shown its 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?

Answer

(i) Returns for the year:
(All changes on a Per -Unit Basis)

Change in Price:	Rs.9.45 – Rs.8.75 = Re.0.70
Dividends received:	Re. 0.75
Capital gains distribution	Re. 0.60
Total reward	Rs. 2.05

Holding period reward : $\frac{Rs.2.05}{Rs.8.75} = 23.43\%$

(ii) 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/-.

Additional Units Acquired

= Rs.405/Rs.8.65 = 46.82 Units.

Total No. 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

Rs.(3277.45 – 2625.00) = Rs.652.45

% of Holding Period Reward

$$\frac{Rs.652.45}{Rs.2625.00} = 24.85\%$$

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 6

Mr. X on 1.7.2008, during the initial offer of some Mutual Fund invested in 10,000 units having face value of Rs.10 for each unit. On 31.3.2009 the dividend operated by the M.F. was 10% and Mr. X found that his annualized yield was 153.33%. On 31.12.2010, 20% dividend was given. On 31.3.2011 Mr. X redeemed all his balance of 11,296.11 units when his annualized yield was 73.52%. What are the NAVs as on 31.3.2009, 31.12.2010 and 31.3.2011?

Answer

Yield for 9 months = (153.33 x 9/12) = 115%

Amount receivable as on 31.03.2009 = 1,00,000/- + (1,00,000x 115%)

= Rs.2,15,000/-

Therefore, NAV as on 31.03.2009 = (2,15,000-10,000)/10,000= Rs.20.50

Therefore, units as on 31.03.2009 = 10487.80 i.e., (2,15,000/20.50)

Dividend as on 31.03.2010 = 10,487.80 x 10x0.2 = Rs.20,975.60

Therefore, NAV as on 31.03.2010 = 20,795.6/(11,296.11- 10,487.80)

= Rs.25.95

NAV as on 31.03.2011 = 1,00,000 (1+0.7352x33/12)/11296.11

= Rs.26.75

3

INDIAN STOCK MARKET

Question 1

Following information is available in respect of dividend, market price and market condition after one year.

Market condition	Probability	Market Price	Dividend per share
		Rs.	Rs.
Good	0.25	115	9
Normal	0.50	107	5
Bad	0.25	97	3

The existing market price of an equity share is Rs. 106 (F.V. Re. 1), which is cum 10% bonus debenture of Rs. 6 each, per share. M/s. X Finance Company Ltd. had offered the buy-back of debentures at face value.

Find out the expected return and variability of returns of the equity shares.

And also advise-Whether to accept buy back after?

Answer

The Expected Return of the equity share may be found as follows:

Market Condition	Probability	Total Return	Cost (*)	Net Return
Good	0.25	Rs. 124	Rs. 100	Rs. 24
Normal	0.50	Rs. 112	Rs. 100	Rs. 12
Bad	0.25	Rs. 100	Rs. 100	Rs. 0

Expected Return = $(24 \times 0.25) + (12 \times .050) + (0 \times 0.25)$

$$= \left(\frac{12}{100}\right) \times 100 = 12\%$$

The variability of return can be calculated in terms of standard deviation.

$$V\,SD = 0.25\,(24 - 12)^2 + 0.50\,(12 - 12)^2 + 0.25\,(0 - 12)^2$$

$$= 0.25\,(12)^2 + 0.50\,(0)^2 + 0.25\,(-12)^2$$

$$= 36 + 0 + 36$$

$$SD = \sqrt{72}$$

SD = 8.485 or say 8.49

(*) The present market price of the share is Rs. 106 cum bonus 10% debenture of Rs. 6 each; hence the net cost is Rs. 100 (There is no cash loss or any waiting for refund of debenture amount).

M/s X Finance company has offered the buy back of debenture at face value. There is reasonable 10% rate of interest compared to expected return 12% from the market. Considering the dividend rate and market price the creditworthiness of the company seems to be very good. The decision regarding buy-back should be taken considering the maturity period and opportunity in the market. Normally, if the maturity period is low say up to 1 year better to wait otherwise to opt buy back option.

Question 2

The market received rumour about ABC corporation's tie-up with a multinational company. This has induced the market price to move up. If the rumour is false, the ABC corporation stock price will probably fall dramatically. To protect from this an investor has bought the call and put options.

He purchased one 3 months call with a striking price of Rs.42 for Rs.2 premium, and paid Re.1 per share premium for a 3 months put with a striking price of Rs.40.

(i) Determine the Investor's position if the tie up offer bids the price of ABC Corporation's stock up to Rs.43 in 3 months.

(ii) Determine the Investor's ending position, if the tie up programme fails and the price of the stocks falls to Rs.36 in 3 months.

Answer

Cost of call and put options

= (Rs.2 per share) x (100 share call) + (Re.1 per share) x (100 share put)

= Rs.2 x 100 + 1 x 100

= Rs.300

(i) Price increases to Rs.43. Since the market price is higher than the strike price of the put, the investor will exercise it.

Ending position=(—Rs.300 cost of option)+(Re.1 per share gain on call) x 100

= — Rs.300 + 100

Net Loss = Rs.200

(ii) The price of the stock falls to Rs.36. Since the market price is lower than the strike price, the investor may not exercise the call option.

Ending Position: = (— Rs.300 cost of 2 option)+(Rs.4 per stock gain on put)x100

= — Rs.300 + 400

Gain = Rs.100

Question 3

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.

You are required to determine:

(a) The price at which the shares can be repurchased, if the market capitalization 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.

Answer

(a) Let P be the buyback price decided by Abhishek Ltd.

Market Capitalisation After Buyback:

1.1 P (Original Shares – Shares Bought back)

$$= \left[1.1P\,(10\text{Lakhs} - \frac{30\%\text{ of }90\text{lakhs}}{P}\right]$$

= 11 Lakhs x P – 27 lakhs x 1.1

= 11 lakhs x P – 29.7 lakhs

Market capitalization rate after buyback is 200 lakhs.

Thus, we have:

11 Lakhs x P – 29.7 lakhs = Rs.200 lakhs

OR 11P = 200 + 29.7

$$\text{OR } P = \frac{229.7}{11} = \text{Rs.}20.88$$

(b) Number of shares to be bought back:

$$= \frac{27\text{Lakhs}}{20.88} = 1.29 \text{ lakhs (Approximately)}$$

(c) New Equity Shares

= (10 – 1.29) lakhs = 8.71 lakhs

$$\text{EPS} = \frac{3 \times 10\text{lakhs}}{8.71\text{lakhs}} = \frac{30\text{L}}{8.71\text{L}} = \text{Rs.}3.44$$

Thus EPS of Abhishek Ltd., increases to Rs.3.44

Question 4

From the following data for certain stock, find the value of a call option:

Price of stock now	=	Rs.80
Exercise price	=	Rs.75
Standard deviation of continuously compounded annual return	=	0.40

Maturity period = 6 months

Annual interest rate = 12%

Given

Number of S.D. from Mean, (z)	Area of the left or right (one tail)
0.25	0.4013
0.30	0.3821
0.55	0.2912
0.60	0.2578

$e^{0.12x0.05}$ = 1.0060

In 1.0667 = 0.0645

Answer

Applying the Black Scholes Formula,

Value of the Call option now:

The Formula $C = SN(d_1) - K_e^{(-rt)} N(d_2)$

$d_1 = \ln (S/K) + \left(r + \sigma^2 / 2\right)t$

$d_2 = d_1 - \sigma\sqrt{t}$

Where,

C = Theoretical call premium

S = Current stock price

t = time until option expiration

K = option striking price

r = risk-free interest rate

N = Cumulative standard normal distribution

e = exponential term

σ = Standard deviation of continuously compounded annual return.

In = natural logarithim

$$d_1 = \frac{\ln(1.0667) + (12\% + (0.08)^{0.5}}{.40\sqrt{0.5}}$$

$$= \frac{0.0645 + (0.2)^{0.5}}{0.40 \times 0.7071}$$

$$= \frac{0.1645}{0.2828}$$

= 0.5817

d_2 = 0.5817 – 0.2828

= 0.2989

Nd_1 = N (0.5817)

Nd_2 = N (0.2989)

$$\text{Price} = S_o N(d_1) - \frac{E}{e^{rt} \times N(d_2)}$$

= (80 x Nd_1) – 75/[1.0060 x N[d_2]

Value of option

$$= 80\ Nd_1 - \frac{75}{1.0060 \times Nd_2}$$

Nd_1 = N (0.5817)

= 0.7190 + 0.000578

= 0.7195

Nd_2 = N(0.2989)

= 0.6141 + 0.003382

= 0.6175

$$\text{Price} = 80 \times 0.7195 - \frac{75}{1.0060 \times 0.6175}$$

= 57.56 – 74.55 x 0.6175

= 57.56 – 46.04

= Rs.11.52

Question 5

The 6-months forward price of a security is Rs.208.18. The borrowing rate is 8% per annum payable with monthly rests. What should be the spot price?

Answer

Calculation of spot price

The formula for calculating forward price is:

A = P (1+r/n) raised to nt Where A = Forward price
P = Spot Price
r = rate of interest
n = no. of compoundings
t = time

Using the above formula,

208.18 = P (1 + 0.08/12) raised to 6

Or 208.18 = P x 1.0409

P = 208.18/1.0409 = 200

Hence, the spot price should be Rs.200.

Question 6

(a) XYZ Ltd. a US firm will need £ 3,00,000 in 180 days. In this connection, the following information is available:

Spot rate 1 £ = $ 2.00

180 days forward rate of £ as of today = $1.96

Interest rates are as follows:

	U.K.	US
180 days deposit rate	4.5%	5%
180 days borrowing rate	5%	5.5%

A call option on £ that expires in 180 days has an exercise price of $ 1.97 and a premium of $ 0.04.

XYZ Ltd. has forecasted the spot rates 180 days hence as below:

Future rate	Probability
$ 1.91	25%
$ 1.95	60%
$ 2.05	15%

Which of the following strategies would be most preferable to XYZ Ltd.?

(i) a forward contract

(ii) a money market hedge

(iii) an option contract

(iv) no hedging

Show calculations in each case

Answer

(i) Forward contract: Dollar needed in 180 days = £3,00,000 x $ 1.96 = $5,88,000/-

(ii) Money market hedge: - Borrow $, convert to £, invest £, repay $ loan in 180 days

Amount in £ to be invested = 3,00,000/1.045 = £ 287081

Amount of $ needed to convert into £ = 2,87,081 x 2 = $ 5,74,162

Interest and principal on $ loan after 180 days = $5,74,162 x 1.055 = $ 6,05,741

(iii) Call option:

Expected Spot rate in 180 days	Prem./ unit	Exercise Option	Total price per unit	Total price for £3,00,000 xi	Prob. Pi	pixi
1.91	0.04	No	1.95	5,85,000	0.25	1,46,250
1.95	0.04	No	1.99	5,97,000	0.60	3,58,200
2.05	0.04	Yes	2.01	6,03,000	0.15	90,450
						5,94,900

(iv) No hedge option:

Expected Future spot rate	Dollar needed Xi	Prob. Pi	Pi xi
1.91	5,73,000	0.25	1,43,250
1.95	5,85,000	0.60	3,51,000
2.05	6,15,000	0.15	92,250
			5,86,500

The probability distribution of outcomes for no hedge strategy appears to be most preferable because least number of $ are needed under this option to arrange £3,00,000.

Question 7

BSE	500
Value of portfolio	Rs.10,10,000
Risk free interest rate	9% p.a.
Dividend yield on Index	6% p.a.
Beta of portfolio	1.5

We assume that a future contract on the BSE index with four months maturity is used to hedge the value of portfolio over next three months. One future contract is for delivery of 50 times the index.

Based on the above information calculate:

(i) Price of future contract.

(ii) The gain on short futures position if index turns out to be 4,500 in three months.

Answer

(i) Current future price of the index = $5000 + 5000\ (0.09-0.06)\ \frac{4}{12}$

$= 5000 + 50 = 5,050$

$\therefore$ Price of the future contract = Rs.50 x 5,050 = Rs.2,52,500

(ii) Hedge ratio = $\frac{1010000}{252500} \times 1.5$ = 6 contracts

Index after there months turns out to be 4500

Future price will be = 4500 + 4500 (0.09-0.06) $\times \frac{1}{3}$ =4,545

Therefore, Gain from the short futures position is = 6 x (5050 – 4545) x 50

= Rs.1,51,500

Alternative solution when BSE index is considered to be as 500

(i) Current future price of index = 500 + 500 (0.09 – 0.6) $\frac{4}{12}$ = 500 + 5 = 505

∴ Price of the future contract = Rs.50 x 505 = Rs.25,250.

(ii) Hedge Ratio = $\frac{10,10,000,}{25,250} \times 1.5 = 60 \text{contracts}$

Index after three months turn out to be 4,500.

Future Price will be

= 4,500 + 4,500 (0.09 – 0.06) $\frac{1}{3}$ = 4,545

Therefore, gain from the short future position is

= 60 x (505 – 4545) x 50

= -12,12,00,00.

Question 8

From the following data for Government securities, calculate the forward rates:

Face value (Rs.)	Interest rate	Maturity (Year)	Current price (Rs.)
1,00,000	0%	1	91,500
1,00,000	10%	2	98,500
1,00,000	10.5%	3	99,000

Answer

Consider one year treasury bill.

$91,500 = \frac{1,00,000}{1+r1}$

1+r1 = $\frac{100,000}{91500}$ = 1.092896

r1 = 0.0929 or 0.093

Consider two year Government Security

$$98{,}500 = \frac{10{,}000}{1.093} + \frac{1{,}10{,}000}{(1.093(1+r2)}$$

$$98500 = 9149.131 + \frac{1{,}10{,}000}{1.093(1+r2)}$$

$$\Rightarrow \quad 89350.87 = \frac{100640.4}{1+r2}$$

$$\Rightarrow \quad 1 + r2 = \quad 1.126351$$

r2 = 0.12635

= > r2 = 0.1263

Consider three year Government Securities:

$$99{,}000 = \frac{10{,}500}{1.093} + \frac{10{,}500}{1.093 \times 1.1263} + \frac{1{,}10{,}500}{1.093 \times 1.1263(1+r3)}$$

$$\Rightarrow \quad 99000 = 9606.587 + 8529.65 + \frac{89764.42}{1+r3}$$

$$\Rightarrow \quad 80863.763 = \frac{89764.42}{1+r3}$$

$$\Rightarrow \quad 1+r3 = 1.1100697$$

$$\Rightarrow \quad r3 = .1100697$$

Question 9

Given below is the Balance Sheet of S Ltd. as on 31.3.2011 :

Liabilities	Rs. (in lakh)	Assets	Rs. (in lakh)
Share capital		Land and building	40
(share of Rs. 10)	100	Plant and machinery	80
Reserves and surplus		Investments	10
Creditors	40	Stock	20
	30	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%.

Answer

	Rs. lakhs
Net Assets Method	
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

(a) Number of shares $\frac{1,00,00,000}{10} = 10,00,000$

(b) Net Assets Rs.2,16,00,000

$$\frac{Rs.2,16,00,000}{10,00,000} = Rs.21.6$$

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)		33.60
Value of business		
Capitalisation factor	$\frac{33.60}{0.15}=$	224
Less: External Liabilities (creditors)		30
		194

Value per share

$= \frac{1,94,00,000}{10,00,000} = Rs.19.4$

Fair Price of share	Rs.
Value as per Net Assets Method	21.6
Value as per Profit earning capacity (Capitalisation) method	19.4

Fair Price= $\frac{21.6+19.4}{2}=\frac{41}{2}=Rs.20.5$

Question 10

Calculate the price of 3 months PQR futures, if PQR (FV Rs.10) quotes Rs.220 on NSE and the three months future price quotes at Rs.230 and the one month borrowing rate is given as 15 percent and the expected annual dividend yield is 25 percent per annum payable before expiry. Also examine arbitrage opportunities.

Answer

Future's Price = Spot + cost of carry – Dividend

F = 220 + 220 × 0.15 × 0.25 – 0.025** × 10

= 225.75

** Entire 25% dividend is payable before expiry, which is Rs.2.50.

Thus we see that futures price by calculation is Rs.225.75 which is quoted at Rs.230 in the exchange.

Analysis:

Fair value of Futures less than Actual futures Price:

Futures Overvalued Hence it is advised to sell. Also do Arbitraging by buying stock in the cash market.

Step I

He will buy PQR Stock at Rs.220 by borrowing at 15% for 3 months. Therefore his outflows are :

Cost of Stock	220

Add: Interest @ 15 % for 3 months i.e. 0.25 years	8.25
(220 × 0.15 × 0.025)	
Total Outflows (A)	228.25

Step II

He will sell March 2000 futures at Rs.230. Meanwhile he would receive dividend for his stock.

Hence his inflows are	230
Sale proceeds of March 2000 futures	2.50
Total inflows (B)	232.5

Inflow – Outflow = Profit earned by Arbitrageur

= 232.5 – 228.25

= 4.25

4

FOREX

Question 1

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?

Answer

The contract would be cancelled at the one month forward sale rate of Rs. 27.52.

	Rs.
Francs bought from customer under original forward contract at:	27.25
It is sold to him on cancellation at:	27.52
Net amount payable by customer per Franc	0.27

At Rs. 0.27 per Franc, exchange difference for CHF 10,000 is Rs. 2,700.

Loss to the Customer:

Exchange difference (Loss) Rs. 2,700

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

Question 2

(a) On 1st April, 3 months interest rate in the US and Germany are 6.5 per cent and 4.5 per cent per annum respectively. The $/DM spot rate is 0.6560. What would be the forward rate for DM for delivery on 30th June ?

(b) In International Monetary Market an international forward bid for December, 15 on pound sterling is $ 1.2816 at the same time that the price of IMM sterling future for delivery on December, 15 is $ 1.2806. The contract size of pound sterling is £ 62,500. How could the dealer use arbitrage in profit from this situation and how much profit is earned?

Answer

(a)

	USD	**DM**
Spot	0.6560	1.000
Interest rate p.a.	6.5%	4.5%
Interest for 91 days	0.0106	0.0112
Amount after 91 days	0.6666	1.0112
Hence forward rate	0.6666	0.6592
	1.0112	

OR

$$= \frac{0.50 \times \left\{1 + \left(0.05 \times \frac{1}{5}\right)\right\}}{\left\{1 + \left(0.045 \times \frac{1}{5}\right)\right\}}$$

= 0.6592

(b) Buy £ 62500 × 1.2806 = $ 80037.50
Sell £ 62500 × 1.2816 = $ 80100.00
Profit $ 62.50

Alternatively if the market comes back together before December 15, the dealer could unwind his position (by simultaneously buying £ 62,500 forward and selling a futures contract. Both for delivery on December 15) and earn the same profit of $ 62.5.

Question 3

In March, 2010, the Multinational Industries makes the following assessment of dollar rates per British pound to prevail as on 1.9.2010:

$/Pound	Probability
1.60	0.15
1.70	0.20
1.80	0.25
1.90	0.20
2.00	0.20

(i) What is the expected spot rate for 1.9.2010?

(ii) If, as of March, 2010, the 6-month forward rate is $ 1.80, should the firm sell forward its pound receivables due in September, 2010?

Answer

(i) Calculation of expected spot rate for September, 2010:

$ for £	Probability	Expected $/£
(1)	(2)	(1) × (2) = (3)
1.60	0.15	0.24
1.70	0.20	0.34
1.80	0.25	0.45
1.90	0.20	0.38
2.00	0.20	0.40
	1.00	EV = 1.81

Therefore, the expected spot value of $ for £ for September, 2010 would be $ 1.81.

(ii) If the six-months forward rate is $ 1.80, the expected profits of the firm can be maximised by retaining its pounds receivable.

Question 4

(a) ABC Co. have taken a 6 month loan from their foreign collaborators for US Dollars 2 millions. Interest payable on maturity is at LIBOR plus 1.0%. Current 6-month LIBOR is 2%.

Enquiries regarding exchange rates with their bank elicit the following information:

Spot USD 1	Rs. 48.5275
6 months forward	Rs. 48.4575

(i) What would be their total commitment in Rupees, if they enter into a forward contract?

(ii) Will you advise them to do so? Explain giving reasons.

(b) 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 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.

Answer

(a) Firstly, the interest is calculated at 3% p.a. for 6 months. That is:

USD 20,00,000 × 3/100 × 6/12 = USD 30,000

From the forward points quoted, it is seen that the second figure is less than the first, this means that the currency is quoted at a discount.

(i) The value of the total commitment in Indian rupees is calculated as below:

Principal Amount of loan	USD 20,00,000
Add: Interest	USD 30,000
Amount due	USD 20,30,000
Spot rate	Rs. 48.5275
Forward Points (6 months)	(–) 0.0700
Forward Rate	Rs. 48.4575
Value of Commitment	Rs. 9,83,68,725

(ii) It is seen from the forward rates that the market expectation is that the dollar will depreciate. If the firm's own expectation is that the dollar will depreciate more than what the bank has quoted, it may be worthwhile not to cover forward and keep the exposure open.

If the firm has no specific view regarding future dollar price movements, it would be better to cover the exposure. This would freeze the total commitment and insulate the firm from undue market fluctuations. In other words, it will be advisable to cut the losses at this point of time.

Given the interest rate differentials and inflation rates between India and USA, it would be unwise to expect continuous depreciation of the dollar. The US Dollar is a stronger currency than the Indian Rupee based on past trends and it would be advisable to cover the exposure.

(b) Spot rate of Re. 1 against yen = 108 lakhs yen/Rs. 30 lakhs = 3.6 yen

3 months forward rate of Re. 1 against yen = 3.3 yen

Anticipated decline in Exchange rate = 10%.

Expected spot rate after 3 months

= 3.6 yen – 10% of 3.6

= 3.6 – 0.36 = 3.24 yen per rupee

Rs. (in lakhs)

Present cost of 108 lakhs yen	30
Cost after 3 months: 108 lakhs yen/ 3.24 yen	33.33
Expected exchange loss	3.33
If the expected exchange rate risk is hedged by a Forward contract:	
Present cost	30
Cost after 3 months if forward contract is taken 108 lakhs yen/ 3.3 yen	32.73
Expected loss	**2.73**

Suggestion: If the exchange rate risk 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 5

The United States Dollar is selling in India at Rs. 45.50. If the interest rate for a 6-months borrowing in India is 8% per annum and the corresponding rate in USA is 2%.

(i) do you expect United States Dollar to be at a premium or at discount in the Indian forward market;

(ii) what is the expected 6-months forward rate for United States Dollar in India; and

(iii) what is the rate of forward premium or discount?

Answer

(i) Under the given circumstances, the USD is expected to quote at a premium in India as the interest rate is higher in India.

(ii) Calculation of the forward rate:

$$\frac{1+R_h}{1+R_f} = \frac{F_1}{E_o}$$

Where: R_h is home currency interest rate, R_f is foreign currency interest rate, F_1 is end of

the period forward rate, and E_o is the spot rate.

$$\text{Therefore } \frac{1 + (0.08/2)}{1 + (0.02/2)} = \frac{F_1}{45.50}$$

$$\frac{1 + 0.04}{1 + 0.01} = \frac{F_1}{45.50}$$

$$\text{or } \frac{(1.04)}{1.01} \times 45.50 = F_1$$

$$\text{or } \frac{47.32}{1.01} = F_1$$

$$\text{or } F_1 = 46.85$$

(iii) Rate of premium:

$$\frac{46.85 - 45.50}{45.50} \times \frac{12}{6} \times 100 = 5.93\%$$

Question 6

Which position on the index future gives a speculator, a complete hedge against the following transactions:

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

(ii) The share of Wrong Limited is going to depreciate. He has a short position on the cash market of Rs. 25 lakhs on the Wrong Limited. The beta of the Wrong Limited is 0.90.

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

Answer

Sl. No.	Company Name	Trend	Amount (Rs.)	Beta	Index Value (Rs.)	Position
(i)	Right Ltd.	Rise	50 lakh	1.25	62,50,000	Short
(ii)	Wrong Ltd.	Depreciate	25 lakh	0.90	22,50,000	Long
(iii)	Fair Ltd.	Stagnant	20 lakh	0.75	15,00,000	Long
					25,00,000	Short

Question 7

Excel Exporters are holding an Export bill in United States Dollar (USD) 1,00,000 due 60 days hence. They are worried about the falling USD value which is currently at Rs. 45.60 per USD. The concerned Export Consignment has been priced on an Exchange rate of Rs. 45.50 per USD. The Firm's Bankers have quoted a 60-day forward rate of Rs. 45.20.

Calculate:

(i) Rate of discount quoted by the Bank

(ii) The probable loss of operating profit if the forward sale is agreed to.

Answer

(i) Rate of discount quoted by the bank

$$= \frac{(45.20 - 45.60) \times 365 \times 100}{45.20 \times 60} = 5.38\%$$

(ii) Probable loss of operating profit:

(45.20 – 45.50) × 1,00,000 = Rs. 30,000

Question 8

A customer with whom the Bank had entered into 3 months forward purchase contract for Swiss Franks 1,00,000 at the rate of Rs. 36.25 comes to the bank after two months and requests cancellation of the contract. On this date, the rates are:

Spot	CHF 1 = Rs. 36.30	36.35
One month forward	36.45	36.52

Determine the amount of Profit or Loss to the customer due to cancellation of the contract.

Answer

Original contract for Swiss Francs 1,00,000 @ 36.25 – amount receivable by the customer.To cancel the purchase contract 1 month before the due date – The contract will be cancelled at 1 month forward sale rate i.e. Swiss Francs 1 = 36.52 payable by the customer.

Hence, Swap profit / loss to the customer:

Rs. 36.52	payable by the customer
Rs. 36.25	receivable by the customer
Rs. 0.27	Net payable by the customer i.e. loss

Therefore, total loss to the customer is

Swiss Francs 1,00,000 × Rs. 0.27 = Rs. 27,000

Question 9

On January 28, 2011 an importer customer requested a bank to remit Singapore Dollar (SGD) 25,00,000 under an irrevocable LC. However, due to bank strikes, the bank could effect the remittance only on February 4, 2011. The interbank market rates were as follows:

	January, 28	February 4
Bombay US$1	= Rs. 45.85/45.90	45.91/45.97
London Pound 1	= US$ 1.7840/1.7850	1.7765/1.7775
Pound 1	= SGD 3.1575/3.1590	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 .0001)

Answer

On January 28, 2011 the importer customer requested to remit SGD 25 lakhs.

To consider sell rate for the bank:

US $ = Rs. 45.90

Pound 1 = US$ 1.7850

Pound 1 = SGD 3.1575

Therefore, SGD 1 = $\frac{Rs.45.90*1.7850}{SGD3.1575}$

SGD 1 =	Rs. 25.9482
Add: Exchange margin (0.125%)	Rs. 0.0324
	Rs. 25.9806

On February 4, 2011 the rates are

US $ = Rs. 45.97

Pound 1 = US$ 1.7775

Pound 1 = SGD 3.1380

Therefore, SGD 1 = $\frac{Rs.45.97*1.7775}{SGD3.1380}$

SGD 1 =	Rs. 26.0394
Add: Exchange margin (0.125%)	Rs. 0.0325
	Rs. 26.0719

Hence, loss to the importer

= SGD 25,00,000 (Rs.26.0719 – Rs.25.9806)

= Rs. 2,28,250

Question 10

You as a dealer in foreign exchange have the following position in Swiss Francs on 31st October, 2010:

	Swiss Francs
Balance in the Nostro A/c Credit	1,00,000
Opening Position Overbought	50,000
Purchased a bill on Zurich	80,000
Sold forward TT	60,000
Forward purchase contract cancelled	30,000
Remitted by TT	75,000
Draft on Zurich cancelled	30,000

What steps would you take, if you are required to maintain a credit Balance of Swiss Francs 30,000 in the Nostro A/c and keep as overbought position on Swiss Francs 10,000?

Answer

Exchange Position/Currency Position:

Particulars	Purchase Sw. Fcs.	Sale Sw. Fcs.
Opening Balance Overbought	50,000	
Bill on Zurich	80,000	
Forward Sales – TT		60,000
Cancellation of Forward Contract		30,000
TT Sales		75,000
Draft on Zurich 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 Bank has to buy spot TT Sw. Fcs. 5,000 to increase the balance in Nostro account to Sw. Fcs. 30,000.

This would bring down the oversold position on Sw. Fcs. As Nil.

Since the bank requires an overbought position of Sw. Fcs. 10,000, it has to buy forward Sw. Fcs. 10,000.

Question 11

You sold Hong Kong Dollar 1,00,00,000 value spot to your customer at Rs. 5.70 & covered yourself in London market on the same day, when the exchange rates were

US$ 1 = H.K.$ 7.5880 7.5920

Local inter bank market rates for US$ were

Spot US$ 1 = Rs. 42.70 42.85

Calculate cover rate & ascertain the profit or loss in the transaction ignore brokerage.

Answer

The bank (Dealer) covers itself by buying from the market at market selling rate.

Rupee – Dollar selling rate = Rs. 42.85

Dollar – Hong Kong Dollar = HK $ 7.5880

Rupee – Hong Kong cross rate = Rs. 42.85 / 7.5880

= Rs. 5.6471

Profit / Loss to the Bank

Amount received from customer (1 crore × 5.70)	Rs. 5,70,00,000
Amount paid on cover deal (1 crore × 5.6471)	Rs. 5,64,71,000
Profit to Bank	Rs. 5,29,000

Question 12

Given the following information:
Exchange rate – Canadian dollar 0.665 per DM (spot)
Canadian dollar 0.670 per DM (3 months)
Interest rates – DM 7% p.a.
Canadian Dollar 9% p.a.
What operations would be carried out to take the possible arbitrage gains?

Answer

In this case, DM is at a premium against the Can$.
Premium = [(0.67 – 0.665) /0.665] x (12/3) x 100 = 3.01 per cent
Interest rate differential = 9-7 = 2 per cent.
Since the interest rate differential is smaller than the premium, it will be profitable to place money in Deutschmarks the currency whose 3-months interest is lower.
The following operations are carried out:

(i) Borrow Can$ 1000 at 9 per cent for 3- months;

(ii) Change this sum into DM at the spot rate to obtain DM

= (1000/0.665) = **1503.7**

(iii) Place DM 1503.7 in the money market for 3 months to obtain a sum of DM

Principal: 1503.70

Add: Interest @ 7% for 3 months = 26.30

Total **1530.00**

(iv) Sell DM at 3-months forward to obtain Can$= (1530x0.67) = **1025.1**

(v) Refund the debt taken in Can$ with the interest due on it, i.e.,

	Can$
Principal	1000.00
Add: Interest @9% for 3 months	22.50
Total	**1022.50**

Net arbitrage gain = 1025.1 – 1022.5 = **Can$ 2.6**

Question 13

XYZ Ltd. is an export oriented business house based in Mumbai. The Company invoices in customers' currency. Its receipt of US $ 1,00,000 is due on September 1, 2010.

Market information as at June 1, 2010.

Exchange Rates		Currency Futures		
US $/Rs.		US $/Rs.	Contract size	Rs.4,72,000
Spot	0.02140	June	0.02126	
1 Month Forward	0.02136	September	0.02118	
3 Months Forward	0.02127			

	Initial Margin	Interest Rates in India
June	Rs.10,000	7.50%
September	Rs.15,000	8.00%

On September 1, 2010 the spot rate US $Re. is 0.02133 and currency future rate is 0.2134. Comment which of the following methods would be most advantageous for XYZ Ltd.

(a) Using forward contract
(b) Using currency futures
(c) Not hedging currency risks.

It may be assumed that variation in margin would be settled on the maturity of the futures contract.

Answer

Receipts using a forward contract = 1,00,000/0.02127 = Rs.47,01,457

Receipts using currency futures

The number of contracts needed is (1,00,000/0.02118)/4,72,000 = 10

Initial margin payable is 10 x Rs.15,000 = Rs.1,50,000

On September 1 Close at 0.02133

Receipts = US$1,00,000/0.02133 = 46,88,233

Variation Margin = [(0.02134 – 0.02118) x 10 x 472000/-]/0.02133

OR (0.00016x10x472000)/.02133 = 755.2/0.02133 35,406

47,23,639

Less: Interest Cost – 1,50,000 x 0.08 x 3/12	Rs.3,000
Net Receipts	Rs.47,20,639
Receipts under different methods of hedging	
Forward contract	Rs.47,01,457
Futures	Rs.47,20,639
No hedge	
US$ 1,00,000/0.02133	Rs.46,88,233

The most advantageous option would have been to hedge with futures.

Question 14

Spot rat 1 US $ = 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.

Answer

Spot Rate = Rs.4000000/- /83312 = 48.0123
Forward Premium on US$ = [(48.8190 – 48.0123)/48.0123] x 12/6 x 100
= 3.36%
Interest rate differential = 12% - 8%
= 4% (Negative Interest rate differential)
Since the negative Interest rate differential is greater than forward premium there is a possibility of arbitrage inflow into India.

The advantage of this situation can be taken in the following manner:

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 and get the principal i.e. Rs.40,00,000

   Interest on Investments for 6 months – Rs.4000000/- x 0.06

   = Rs.240000/-

   Total amount at the end of 6 months = Rs.(4000000 + 240000/-)

   = Rs.4240000/-

   Converting the same at the forward rate

   = Rs.4240000/- / Rs.48.8190=

   = US$ 86851.43

Hence the gain is US $ (86851.43 – 86644.48) = US$ 206.95 OR

Rs.10103 i.e., ($206.95 x Rs.48.8190)

Question 15

Following are the details of cash inflows and outflows in foreign currency denominations of MNP Co. an Indian export firm, which have no foreign subsidiaries:

Currency	Inflow	Outflow	Spot rate	Forward rate
US $	4,00,00,000	2,00,00,000	48.01	48.82
French Franc (FFr)	2,00,00,000	80,00,000	7.45	8.12
U.K. £	3,00,00,000	2,00,00,000	75.57	75.98
Japanese Yen	1,50,00,000	2,50,00,000	3.20	2.40

(i) Determine the net exposure of each foreign currency in terms of Rupees.

(ii) Are any of the exposure positions offsetting to some extent?

Answer

(i) Net exposure of each foreign currency in Rupees

	Inflow (Millions)	Outflow (Millions)	Net Inflow (Millions)	Spread	Net Exposure (Millions)
US$	40	20	20	0.81	16.20
FFr	20	8	12	0.67	8.04
UK£	30	20	10	0.41	4.10
Japan Yen	15	25	-10	-0.80	8.00

(ii) The exposure of Japanese yen position is being offset by a better forward rate

Question 16

AMK Ltd. an Indian based company has subsidiaries in U.S. and U.K.

Forecasts of surplus funds for the next 30 days from two subsidiaries are as below:

U.S.	$12.5 million
U.K.	£ 6 million

Following exchange rate informations are obtained:

	$/Rs.	£/Rs.
Spot	0.0215	0.0149
30 days forward	0.0217	0.0150

Annual borrowing/deposit rates (Simple) are available.

Rs.	6.4%/6.2%
$	1.6%/1.5%
£	3.9%/3.7%

The Indian operation is forecasting a cash deficit of Rs.500 million.

It is assumed that interest rates are based on a year of 360 days.

(i) Calculate the cash balance at the end of 30 days period in Rs. for each company under each of the following scenarios ignoring transaction costs and taxes:

(a) Each company invests/finances its own cash balances/deficits in local currency independently.

(b) Cash balances are pooled immediately in India and the net balances are invested/borrowed for the 30 days period.

(ii) Which method do you think is preferable from the parent company's point of view?

Answer

Cash Balances:

Acting independently

	Capital	Interest	Rs. in 30 days
India	-5,00,000	-2,666.67	-5,02,667
U.S.	12,500	15.63	5,76,757
U.K.	6,000	18.50	4,01,233
			4,75,323

Cash Balances:-

Immediate Cash pooling

		Rs.
India	–	5,00,000
U.S. $\frac{12,500}{0.0215}$	=	5,81,395
U.K. $\frac{6,000}{0.0149}$	=	4,02,685
		4,84,080

Immediate cash pooling is preferable as it maximizes interest earnings

Note: If the company decides to invest pooled amount of Rs.4,84,080/- @ 6.2% p.a. for 30 days an interest of Rs.2,501/- will accrue.

Question 17

Following information relates to AKC Ltd. which manufactures some parts of an electronics device which are exported to USA, Japan and Europe on 90 days credit terms.

Cost and Sales information:

	Japan	USA	Europe
Variable cost per unit	Rs.225	Rs.395	Rs.510
Export sale price per unit	Yen 650	US$10.23	Euro 11.99

Receipts from sale due in 90 days	Yen 78,00,000	US$1,02,300	Euro 95,920
Foreign exchange rate information:			
	Yen/Rs.	US$/Rs.	Euro/Rs.
Spot market	2.417-2.437	0.0214-0.0217	0.0177-0.0180
3 months forward	2.397-2.427	0.0213-0.0216	0.0176-0.0178
3 months spot	2.423-2.459	0.02144-0.02156	0.0177-0.0179

Advice AKC Ltd. by calculating average contribution to sales ratio whether it should hedge it's foreign currency risk or not.

Answer

If foreign exchange risk is hedged.

				Total (Rs.)
Sum due	Yen 78,00,000	US$1,02,300	Euro 95,920	
Unit input price	Yen 650	US$10.23	Euro11.99	
Unit sold	12000	10000	8000	
Variable cost per unit	Rs.225/-	395	510	
Variable cost	Rs.27,00,000	Rs.39,50,000	Rs.40,80,000	Rs.1,07,30,000
Three months forward rate for selling	2.427	0.0216	0.0178	
Rupee value of receipts	Rs.32,13,844	Rs.47,36,111	Rs.53,88,764	Rs.1,33,38,719
Contribution	Rs.5,13,844	Rs.7,86,111	Rs.13,08,764	Rs.26,08,719
Average contribution to sale ratio				19.56%
If risk is not hedged				
Rupee value of receipt	Rs.31,72,021	Rs.47,44,898	Rs.53,58,659	Rs.1,32,75,578
Total contribution				Rs.25,45,578
Average contribution to sale ratio				19.17%

AKC Ltd. Is advised to hedge its foreign currency exchange risk.

Question 18

A company is considering hedging its foreign exchange risk. It has made a purchase on 1st. January, 2010 for which it has to make a payment of US $ 50,000 on September 30, 2010. 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, 2010 is Rs. 42 per US $.

(ii) If the exchange rate on September 30, 2010 is Rs. 38 per US $.

Answer	(Rs.)
Present Exchange Rate Rs.40 = 1 USD	
If company purchases USD 50000 forward premium is	
50000 × 39 × 2%	39,000
Interest on Rs.39,000 for 9 months at 10%	2,925
Total hedging cost	41,925
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
If USD = Rs.38	
Then loss (39 – 38) for USD 50000	50,000
Add: Hedging Cost	41,925
Total Loss	91,925

Question No. 19

Sun Ltd. in planning to import an equipment from Japan at a cost of 3,400 lakh yen. The company may avail loans at 18 percent per annum with quarterly rests with which it can import the equipment. The company has also an offer from Osaka branch of an India based bank extending credit of 180 days at 2 percent per annum against opening of an irrecoverable letter of credit.

Additional information :

Present exchange rate	Rs.100 = 340 yen
180 day's forward rate	Rs.100 = 345 yen

Commission charges for letter of credit at 2 per cent per 12 months.

Advice the company whether the offer from the foreign branch should be accepted.

Answer

Option I (to finance the purchases by availing loan at 18% per annum):

Cost of equipment		**Rs. in lakhs**
3400 lakh yen at Rs.100 = 340 yen	=	1000
Add: Interest at 4.5% I Quarter	=	45
Add: Interest at 4.5% II Quarter	=	47.03
(on Rs.1045 lakhs)		
Total outflow in Rupees	=	1092.03

Alternatively, interest may also be calculated on compounded basis, i.e.,

Rs.1000 × $[1.045]^2$ = Rs.1092.03

Option II (To accept the offer from foreign branch):

Cost of letter of credit		**Rs. in lakhs**
At 1 % on 3400 lakhs yen at Rs.100 = 340 yen	=	10.00
Add: Interest I Quarter	=	0.45
Add: Interest II Quarter	=	0.47
(A)	=	10.92

Payment at the end of 180 days:

Cost	3400.00 lakhs yen	
Interest at 2% p.a. [3400 × 2/100 × 180/365]		33.53 lakhs yen
	3433.53 lakhs yen	

Conversion at Rs.100 = 345 yen [3433.53 / 345 × 100] (B) = Rs.995.23
Total Cost: A + B = 1006.15 lakhs

Comments: Option no.2 is cheaper by (1092.03 – 1006.15) lakh or 85.88 lakh
Hence, the offer may be accepted.

Question 20

Followings are the spot exchange rates quoted at three different forex markets :

USD/INR	48.30 in Mumbai
GBP/INR	77.52 in London
GBP/USD	1.6231 in New York

The arbitrageur has USD 1,00,00,000. Assuming that there are no transaction costs, explain whether there is any arbitrage gain possible from the quoted spot exchange rates.

Answer

The arbitrageur can proceed as stated below to realize arbitrage gains.

(i) Buy I. Rs. from USD 10,000,000

At Mumbai	48.3 × 10,000,000
	Rs.483,000,000

(ii) Convert I. Rs. to GBP at London $\frac{483,000,000}{77.52}$

GBP = 6,230,650.155

(iii) Convert GBP to USD at New York 6,230,650.155 × 1.6231

USD = 10,112,968.26

There is net gain of USD = 10,112968.26 less 10,000,000

i.e USD = 112,968.26

5

MERGERS AND ACQUISITIONS

Question 1

Company X is contemplating the purchase of Company Y. Company X has 3,00,000 shares having a market price of Rs. 30 per share, while Company Y has 2,00,000 shares selling at Rs. 20 per share. The EPS are Rs. 4.00 and Rs. 2.25 for Company X and Y respectively. Managements of both companies are discussing two alternative proposals for exchange of shares as indicated below:

(i) in proportion to the relative earnings per share of two companies.

(ii) 0.5 share of Company X for one share of Company Y (.5 : 1).

You are required:

(i) to calculate the Earnings Per Share (EPS) after merger under two alternatives; and

(ii) to show the impact on EPS for the shareholders of two companies under both the alternatives.

Answer

(a) (i) Mergers effect on EPS

(Exchange ratio in proportion to relative EPS)

(in Rs.)

Company	Existing No. Of shares	EPS	Total earnings
X	3,00,000	4.00	12,00,000
Y	2,00,000	2.25	4,50,000
		Total earnings	16,50,000

No. of shares after merger 3,00,000 + 1,12,500 = 4,12,500

Note: 1,12,500 may be calculated as $= \left(2\ 00\ 000 \times \frac{2.25}{4.00}\right)$

EPS for Co X after merger $= \frac{1\ \ 50\ 000}{4\ 12\ 500}$

= Rs. 4.00

Equivalent EPS of Co. Y

Before merger Rs. 2.25

After merger (EPS before merger ÷ Share exchange ratio on EPS basis)

2.25 ÷ .5625 = Rs. 4.00

Merger effect on EPS with share exchange ratio of 0.5 : 1

Total earnings after merger	Rs. 16,50,000
No. of shares post merger	
(3,00,000 + 1,00,000 (.5 × 2,00,000)	4,00,000
EPS 16,50,000 ÷ 4,00,000	4.125

(ii) Impact on EPS

Co. X' shareholders	Rs.
EPS before merger	4.00
EPS after merger i.e. (16,50,000 ÷ 4,00,000)	4.125
Increase in EPS	0.125
Co. Y' Shareholders	
Equivalent EPS before merger 2.25 ÷ 0.5	4.5
EPS after the merger	4.125
Decrease in EPS	0.375

Question 2

XYZ Ltd., is considering merger with ABC Ltd. XYZ Ltd.'s shares are currently traded at Rs. 20. It has 2,50,000 shares outstanding and its earnings after taxes (EAT) amount to Rs. 5,00,000. ABC Ltd., has 1,25,000 shares outstanding; its current market price is Rs. 10 and its EAT are Rs. 1,25,000. The merger will be effected by means of a stock swap (exchange). ABC Ltd., has agreed to a plan under which XYZ Ltd., will offer the current market value of ABC Ltd.'s shares:

(i) What is the pre-merger earnings per share (EPS) and P/E ratios of both the companies?

(ii) If ABC Ltd.'s P/E ratio is 6.4, what is its current market price? What is the exchange ratio? What will XYZ Ltd.'s post-merger EPS be?

(iii) What should be the exchange ratio, if XYZ Ltd.'s pre-merger and post-merger EPS are to be the same?

Answer

(i) Pre-merger EPS and P/E ratios of XYZ Ltd. and ABC Ltd.

Particulars	XYZ Ltd.	ABC Ltd.
Earning after taxes	5,00,000	1,25,000
Number of shares outstanding	2,50,000	1,25,000

EPS	2	1
Market Price per share	20	10
P/E Ratio (times)	10	10

(ii) Current Market Price of ABC Ltd. if P/E ratio is 6.4 = Rs. 1 × 6.4 = Rs. 6.40

$$\text{Exchange ratio} = \frac{Rs.20}{6.40} - = 3.125$$

Post merger EPS of XYZ Ltd.

$$= \frac{\text{Rs. 5,00,000} + \text{Rs. 1,25,000}}{\text{Rs. 2,50,000} + (\text{Rs. 1,25,000}/3.125)}$$

$$= \frac{\text{Rs. 6,25,000}}{\text{Rs. 2,90,000}} = 2.16$$

(iii) Desired exchange ratio

Total number of shares in post-merged company

$$= \frac{\text{Post-merger earnings}}{\text{Pre- merger EPS of XYZ Ltd}} = \frac{Rs.6,25,000}{2} = 3,12,500$$

Number of shares required to be issued

= 3,12,500 – 2,50,000 = 62,500

Therefore, the exchange ratio is

62,500 : 1,25,000

$$= \frac{62,500}{1,25,000} = 0.50$$

Question 3

M Co. Ltd., is studying the possible acquisition of N Co. Ltd., by way of merger. The following data are available in respect of the companies:

Particulars	M Co. Ltd.	N Co. Ltd.
Earnings after tax (Rs.)	80,00,000	24,00,000
No. of equity shares	16,00,000	4,00,000
Market value per share (Rs.)	200	160

(i) If the merger goes through by exchange of equity and the exchange ratio is based on the current market price, what is the new earning per share for M Co. Ltd.?

(ii) N Co. Ltd. wants to be sure that the earnings available to its shareholders will not be diminished by the merger. What should be the exchange ratio in that case?

Answer

(i) Calculation of new EPS of M Co. Ltd.

No. of equity shares to be issued by M Co. Ltd. to N Co. Ltd.

= 4,00,000 shares × Rs. 1.6/Rs. 2.0 = 3,20,000 shares

Total no. of shares in M Co. Ltd. after acquisition of N Co. Ltd.

= 16,00,000 + 3,20,000 = 19,20,000

Total earnings after tax [after acquisition]

= 80,00,000 + 24,00,000 = 1,04,00,000

$$\text{EPS} = \frac{\text{Rs. 1,04,00,000}}{\text{19,20,000 equity shares}} = \text{Rs. 5.42}$$

(ii) Calculation of exchange ratio which would not diminish the EPS of N Co. Ltd. after its merger with M Co. Ltd.

Current EPS:

$$\text{M Co. Ltd.} = \frac{\text{Rs. 80,00,000}}{\text{16,00,000 equity shares}} = \text{Rs. 5}$$

$$\text{N Co. Ltd.} = \frac{\text{Rs. 24,00,000}}{\text{4,00,000 equity shares}} = \text{Rs. 6}$$

Exchange ratio = 6/5 = 1.20

No. of new shares to be issued by M Co. Ltd. to N Co. Ltd.

= 4,00,000 × 1.20 = 4,80,000 shares

Total number of shares of M Co. Ltd. after acquisition

= 16,00,000 + 4,80,000 = 20,80,000 shares

$$\text{EPS [after merger]} = \frac{\text{Rs. 1,04,00,000}}{\text{20,80,000 shares}} = \text{Rs. 5}$$

Total earnings in M Co. Ltd. available to new shareholders of N Co. Ltd.

= 4,80,000 × Rs. 5 = Rs. 24,00,000

Recommendation: The exchange ratio (6 for 5) based on market shares is beneficial to shareholders of 'N' Co. Ltd.

Question 4

ABC Ltd. is intending to acquire XYZ Ltd. by merger and the following information is available in respect of the companies:

	ABC Ltd.	XYZ Ltd.
Number of equity shares	10,00,000	6,00,000
Earnings after tax (Rs.)	50,00,000	18,00,000
Market value per share (Rs.)	42	28

Required:

(i) What is the present EPS of both the companies?

(ii) If the proposed merger takes place, what would be the new earning per share for ABC Ltd.? Assume that the merger takes place by exchange of equity shares and the exchange ratio is based on the current market price.

(iii) What should be exchange ratio, if XYZ Ltd. wants to ensure the earnings to members are as before the merger takes place?

Answer

(i) Earnings per share = Earnings after tax /No. of equity shares

ABC Ltd. = Rs. 50,00,000/10,00,000 = Rs. 5

XYZ Ltd. = Rs. 18,00,000 / 6,00,000 = Rs. 3

(ii) Number of Shares XYZ limited's shareholders will get in ABC Ltd. based on market value per share = Rs. 28/ 42 × 6,00,000 = 4,00,000 shares

Total number of equity shares of ABC Ltd. after merger = 10,00,000 + 4,00,000 = 14,00,000 shares

Earnings per share after merger = Rs. 50,00,000 + 18,00,000 / 14,00,000 = Rs. 4.86

(iii) Calculation of exchange ratio to ensure shareholders of XYZ Ltd. to earn the same as was before merger:

Shares to be exchanged based on EPS = (Rs. 3/Rs. 5) × 6,00,000 = 3,60,000 shares

EPS after merger = (Rs. 50,00,000 + 18,00,000)/13,60,000 = Rs. 5

Total earnings in ABC Ltd. available to shareholders of XYZ Ltd. = 3,60,000 × Rs. 5 = Rs. 18,00,000.

Exchange ratio based on market price is beneficial to shareholders of XYZ Ltd. because of higher Earnings available to them i.e. (4,00,000 shares × Rs. 4.86 = Rs. 19,44,000).

Question 5

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.

Answer

Particulars	Mark Ltd.	Mask Ltd.
EPS	Rs. 2,000 Lakhs/ 200 lakhs	Rs. 400 lakhs / 100 lakhs
	= Rs. 10	Rs. 4
Market Price	Rs. 10 × 10 = Rs. 100	Rs. 4 × 5 = Rs. 20

(i) The Swap ratio based on current market price is

Rs. 20 / Rs. 100 = 0.2 or 1 share of Mark Ltd. for 5 shares of Mask Ltd.

No. of shares to be issued = Rs. 100 lakh × 0.2 = Rs. 20 lakhs.

(ii) EPS after merger

$$= \frac{\text{Rs. } 2{,}000 \text{ lakhs} + \text{Rs. } 400 \text{ lakhs}}{200 \text{ lakhs} + 20 \text{ lakhs}}$$

= Rs. 10.91

(iii) Expected market price after merger assuming P / E 10 times.

= Rs. 10.91 × 10 = Rs. 109.10

(iv) Market value of merged firm

= Rs. 109.10 market price × 220 lakhs shares = 240.02 crores

(v) Gain from the merger

Post merger market value of the merged firm Rs. 240.02 crores

Less: Pre-merger market value

Mark Ltd. 200 Lakhs × Rs. 100 = 200 crores

Mask Ltd. 100 Lakhs × Rs. 20 = 20 crores Rs. 220.00 crores

Gain from merger Rs. 20.02 crores

Appropriation of gains from the merger among shareholders:

	Mark Ltd.	Mask Ltd.
Post merger value	218.20 crores	21.82 crores
Less: Pre-merger market value	200.00 crores	20.00 crores
Gain to Shareholders	18.20 crores	1.82 crores

Question 6

The following information is provided relating to the acquiring company Efficient Ltd. and the target Company Healthy Ltd.

	Efficient Ltd.	Healthy Ltd.
No. of shares (F.V. Rs. 10 each)	10.00 lakhs	7.5 lakhs
Market capitalization	500.00 lakhs	750.00 lakhs
P/E ratio (times)	10.00	5.00
Reserves and Surplus	300.00 lakhs	165.00 lakhs
Promoter's Holding (No. of shares)	4.75 lakhs	5.00 lakhs

Board of Directors of both the Companies have decided to give a fair deal to the shareholders and accordingly for swap ratio the weights are decided as 40%, 25% and 35% respectively for Earning, Book Value and Market Price of share of each company:

(i) Calculate the swap ratio and also calculate Promoter's holding % after acquisition.

(ii) What is the EPS of Efficient Ltd. after acquisition of Healthy Ltd.?

(iii) What is the expected market price per share and market capitalization of Efficient Ltd. after acquisition, assuming P/E ratio of Firm Efficient Ltd. remains unchanged.

(iv) Calculate free float market capitalization of the merged firm.

Answer

Swap Ratio	**Efficient Ltd.**	**Healthy Ltd.**
Market capitalisation	500 lakhs	750 lakhs
No. of shares	10 lakhs	7.5 lakhs
Market Price per share	Rs. 50	Rs. 100
P/E ratio	10	5
EPS	Rs. 5	Rs. 20
Profit	Rs. 50 lakh	Rs. 150 lakh

Share capital	Rs. 100 lakh	Rs. 75 lakh
Reserves and surplus	Rs. 300 lakh	Rs. 165 lakh
Total	Rs. 400 lakh	Rs. 240 lakh
Book Value per share	Rs. 40	Rs. 32

(i) **Calculation of Swap Ratio**

EPS	1 : 4 i.e.	4.0 × 40%	1.6
Book value	1 : 0.8 i.e.	0.8 × 25%	0.2
Market price	1 : 2 i.e.	2.0 × 35%	0.7
		Total	2.5

Swap ratio is for every one share of Healthy Ltd., to issue 2.5 shares of Efficient Ltd. Hence, total no. of shares to be issued 7.5 lakh × 2.5 = 18.75 lakh shares

Promoter's holding = 4.75 lakh shares + (5 × 2.5 = 12.5 lakh shares) = 17.25 lakh i.e. Promoter's holding % is (17.25 lakh/28.75 lakh) × 100 = 60%.

Calculation of EPS, Market price, Market capitalization and free float market capitalisation

(ii) Total No. of shares — 10 lakh + 18.75 lakh = 28.75 lakh

Total capital — 100 lakh + 187.5 lakh = Rs. 287.5 lakh

EPS — $\frac{\text{Total profit}}{\text{No. of shares}} = \frac{50 \text{ lakh} + 150 \text{ lakh}}{28.75 \text{ lakh}} = \frac{200}{28.75}$

= Rs. 6.956

(iii) Expected market price — EPS 6.956 × P/E 10 = Rs. 69.56

Market capitalization — = Rs. 69.56 per share × 28.75 lakh shares

= Rs. 1,999.85 lakh

(iv) Free float of market capitalization — = Rs. 69.56 per share × (28.75 lakh × 40%)

= Rs. 799.94 lakh

Question 7

The following information is relating to Fortune India Ltd. having two division, viz. Pharma Division and Fast Moving Consumer Goods Division (FMCG Division). Paid up share capital of Fortune India Ltd. is consisting of 3,000 Lakhs equity shares of Re. 1 each. Fortune India Ltd. decided to de-merge Pharma Division as Fortune Pharma Ltd. w.e.f. 1.4.2011. Details of Fortune India Ltd. as on 31.3.2011 and of Fortune Pharma Ltd. as on 1.4.2011 are given below:

Particulars	Fortune Pharma Ltd.	Fortune India Ltd.
	Rs.	Rs.
Outside Liabilities		
Secured Loans	400 lakh	3,000 lakh
Unsecured Loans	2,400 lakh	800 lakh
Current Liabilities & Provisions	1,300 lakh	21,200 lakh

Assets		
Fixed Assets	7,740 lakh	20,400 lakh
Investments	7,600 lakh	12,300 lakh
Current Assets	8,800 lakh	30,200 lakh
Loans & Advances	900 lakh	7,300 lakh
Deferred tax/Misc. Expenses	60 lakh	(200) lakh

Board of Directors of the Company have decided to issue necessary equity shares of Fortune Pharma Ltd. of Re. 1 each, without any consideration to the shareholders of Fortune India Ltd. For that purpose following points are to be considered:

1. Transfer of Liabilities & Assets at Book value.
2. Estimated Profit for the year 2011-12 is Rs. 11,400 Lakh for Fortune India Ltd. & Rs. 1,470 lakhs for Fortune Pharma Ltd.
3. Estimated Market Price of Fortune Pharma Ltd. is Rs. 24.50 per share.
4. Average P/E Ratio of FMCG sector is 42 & Pharma sector is 25, which is to be expected for both the companies.

Calculate:

1. The Ratio in which shares of Fortune Pharma are to be issued to the shareholders of Fortune India Ltd.
2. Expected Market price of Fortune India Ltd.
3. Book Value per share of both the Companies immediately after Demerger.

Answer

Share holders' funds

Particulars	Fortune India Ltd.	Fortune Pharma Ltd.	Fortune India (FMCG) Ltd.
Assets	70,000	25,100	44,900
Outside liabilities	25,000	4,100	20,900
Net worth	45,000	21,000	24,000

1. Calculation of Shares of Fortune Pharma Ltd. are to be issued to shareholders of Fortune India Ltd.

	Fortune Pharma Ltd.
Estimated Profit (Rs. in lakhs)	1,470
Estimated market price (Rs.)	24.5
Estimated P/E	25
Estimated EPS (Rs.)	0.98

No. of shares lakhs	1,500

Hence, Ratio is 1 share of Fortune Pharma Ltd. for 2 shares of Fortune India Ltd.

2. Expected market price of Fortune India Ltd.

	Fortune India (FMCG) Ltd.
Estimated Profit (Rs. in lakhs)	11,400
No. of equity shares (Rs. in lakhs)	3,000
Estimated EPS (Rs.)	3.8
Estimated P/E	42
Estimated market price (Rs.)	159.6

3. Book value per share

	Fortune Pharma Ltd.	Fortune India (FMCG) Ltd.
Net worth (Rs.in lakhs)	21,000	24,000
No. of shares (Rs. in lakhs)	1,500	3,000
Book value of shares	Rs. 14	Rs. 8

Question 9

Reliable Industries Ltd. (RIL) is considering a takeover of Sunflower Industries Ltd. (SIL). The particulars of 2 companies are given below:

Particulars	Reliable Industries Ltd	Sunflower Industries Ltd.
Earnings After Tax (EAT)	Rs.20,00,000	Rs.10,00,000
Equity shares O/s	10,00,000	10,00,000
Earnings per share (EPS)	2	1
PE Ratio (Times)	10	5

Required:

(i) What is the market value of each Company before merger?

(ii) Assume that the management of RIL estimates that the shareholders of SIL will accept an offer of one share of RIL for four shares of SIL. If there are no synergic effects, what is the market value of the Post-merger RIL? What is the new price per share? Are the shareholders of RIL better or worse off than they were before the merger?

(iii) Due to synergic effects, the management of RIL estimates that the earnings will increase by 20%. What is the new post-merger EPS and Price per share? Will the shareholders be better off or worse off than before the merger?

Answer

(i) Market value of Companies before Merger

Particulars	**RIL**	**SIL**
EPS	Rs.2	Re.1
P/E Ratio	10	5
Market Price Per Share	Rs.20	Rs.5
Equity Shares	10,00,000	10,00,000
Total Market Value	2,00,00,000	50,00,000

(ii) Post Merger Effects on RIL

	Rs.
Post merger earnings	30,00,000
Exchange Ratio (1:4)	
No. of equity shares o/s (10,00,000 + 2,50,000)	12,50,000
EPS: 30,00,000/12,50,000	2.4
Market Price per share	10.00
Market Value 10 x 2.4	24
Total Value (12,50,000 x 24)	3,00,00,000
Gains From Merger:	Rs.
Post-Merger Market Value of the Firm	3,00,00,000
Less: Pre-Merger Market Value	
RIL 2,00,00,000	
SIL 50,00,000	2,50,00,000
Total gains from Merger	50,00,000

Apportionment of Gains between the Shareholders:

Particulars	**RIL**	**SIL**
Post Merger Market Value:	Rs.	Rs.
10,00,000 x 24	2,40,00,000	--
2,50,000 x 24	-	60,00,000
Less: Pre-Merger Market Value	2,00,00,000	50,00,000
Gains from Merger:	40,00,000	10,00,000

Thus, the shareholders of both the companies (RIL + SIL) are better off than before

(iii) Post-Merger Earnings:

Increase in Earnings by 20%

New Earnings: Rs.30,00,000 x 20% = Rs.36,00,000

No. of equity shares outstanding: 12,50,000

EPS: Rs. 36,00,000/12,50,000 = Rs.2.88

PE Ratio = 10

Market Price Per Share:

= Rs.2.88 x 10 = Rs.28.80

∴ Shareholders will be better-off than before the merger situation.

Question 11

AB Ltd., is planning to acquire and absorb the running business of XY Ltd. The valuation is to be based on the recommendation of merchant bankers and the consideration is to be discharged in the form of equity shares to be issued by AB Ltd. As on 31.3.2011, the paid up capital of AB Ltd. consists of 80 lakhs shares of Rs.10 each. The highest and the lowest market quotation during the last 6 months were Rs.570 and Rs.430. For the purpose of the exchange, the price per share is to be reckoned as the average of the highest and lowest market price during the last 6 months ended on 31.3.11.

XY Ltd.'s Balance Sheet as at 31.3.2011 is summarised below:

	Rs. lakhs
Sources	
Share Capital	
20 lakhs equity shares of Rs.10 each fully paid	200
10 lakhs equity shares of Rs.10 each, Rs.5 paid	50
Loans	100
Total	350
Uses	
Fixed Assets (Net)	150
Net Current Assets	200
	350

An independent firm of merchant bankers engaged for the negotiation, have produced the following estimates of cash flows from the business of XY Ltd.:

Year ended	By way of	Rs. lakhs
31.3.12	after tax earnings for equity	105
31.3.13	do	120
31.3.14	Do	125
31.3.15	Do	120

31.3.16	Do	100
	terminal value estimate	200

It is the recommendation of the merchant banker that the business of XY Ltd. may be valued on the basis of the average of (i) Aggregate of discounted cash flows at 8% and (ii) Net assets value. Present value factors at 8% for years

1-5:	0.93	0.86	0.79	0.74	0.68

You are required to:

(i) Calculate the total value of the business of XY Ltd.

(ii) The number of shares to be issued by AB Ltd.; and

(iii) The basis of allocation of the shares among the shareholders of XY Ltd.

Answer

Price/share of AB Ltd. for determination of number of shares to be issued:

(Rs.570 + Rs.430)/2	Rs.	500
Value of XY Ltd based on future cash flow capitalization (105x0.93)+(120x0.86)+(125x0.79)+(120x0.74)x(300x0.68)	Rs. lakhs	592.40
Value of XY Ltd based on net assets	Rs. lakhs	250.00
Average value (592.4+250)/2		421.20
No. of shares in AB Ltd to be issued 42120000/500	Nos.	84240
Basis of allocation of shares		
Fully paid equivalent shares in XY Ltd. (20+5) lakhs		2500000
Distribution to fully paid shareholders 84240x20/25		67392
Distribution to partly paid shareholders 84240-67392		16848
		Total

Question 12

AFC Ltd. wishes to acquire BCD Ltd. The shares issued by the two companies are 10,00,000 and 5,00,000 respectively:

(i) Calculate the increase in the total value of BCD Ltd. resulting from the acquisition on the basis of the following conditions:

Current expected growth rate of BCD Ltd.		7%
Expected growth rate under control of AFC Ltd., (without any additional capital investment and without any change in risk of operations)		8%
Current Market price per share of AFC Ltd.	Rs.	100
Current Market price per share of BCD Ltd.	Rs.	20

Current Dividend per share of BCD Ltd. Re. 0.60

(ii) On the basis of aforesaid conditions calculate the gain or loss to shareholders of both the companies, if AFC Ltd. were to offer one of its share for every four shares of BCD Ltd.

(iii) Calculate the gain to the shareholders of both the Companies, if AFC Ltd. pays Rs.22 for each share of BCD Ltd., assuming the P/E Ratio of AFC Ltd. does not change after the merger. EPS of AFC Ltd. is Rs.8 and that of BCD is Rs.2.50. It is assumed that AFC Ltd. invests its cash to earn 10%.

Answer

(i) For BCD Ltd., before acquisition

The cost of capital of BCD Ltd. may be calculated by using the following formula:

$$\frac{\text{Dividend}}{\text{Price}} + \text{Growth}\%$$

Cost of Capital i.e., Ke = (0.60/20) + 0.07 = 0.10

After acquisition g (i.e. growth) becomes 0.08

Therefore, price per share after acquisition = 0.60/(0.10-0.08) = Rs.30

The increase in value therefore is = Rs.(30-20) x 5,00,000 = Rs.50,00,000/-

(ii) To share holders of BCD Ltd. the immediate gain is Rs.100 – Rs.20x4 = Rs.20 per share

The gain can be higher if price of shares of AFC Ltd. rise following merger which they should undertake.

To AFC Ltd. shareholders	(Rs. (In lakhs)
Value of Company now	1,000
Value of BCD Ltd.	150
	1,150
No. of shares	11.25
∴ Value per share	1150/11.25= Rs.102.22

Gain to shareholders of BCD Ltd. = Rs.102.22 – Rs.(4 x 20) = Rs.22.22

Gain to shareholders of AFC Ltd. = Rs.102.22 – Rs.100.00 = Rs.2.22

(iii) Gain to shareholders of AFC Ltd:-

Earnings of BCD Ltd. (5,00,000 x 2.50) =	Rs.12,50,000/-
Less: Loss of earning in cash (5,00,000/- x 22 x 0.10)	Rs.11,00,000/-
Net Earning	Rs.1,50,000/-
Number of shares	10,00,000
Net increase in earning per share	0.15

P/E ratio of AFC Ltd. = 100/8 = 12.50

Therefore, Gain per share of shareholders of AFC Ltd.
= 0.15x12.50 = Rs.1.88
Gain to the shareholders of BCD Ltd. Rs. (22-20) = Rs.2/- per share

Question 13

A Ltd. wants to acquire T Ltd. and has offered a swap ratio of 1:2 (0.5 shares for every one share of T Ltd.). Following information is provided:

	A Ltd.	T. Ltd.
Profit after tax	Rs.18,00,000	Rs.3,60,000
Equity shares outstanding (Nos.)	6,00,000	1,80,000
EPS	Rs.3	Rs.2
PE Ratio	10 times	7 times
Market price per share	Rs.30	Rs.14

Required:

(i) The number of equity shares to be issued by A Ltd. for acquisition of T Ltd.

(ii) What is the EPS of A Ltd. after the acquisition?

(iii) Determine the equivalent earnings per share of T Ltd.

(iv) What is the expected market price per share of A Ltd. after the acquisition, assuming its PE multiple remains unchanged?

(v) Determine the market value of the merged firm.

Answer

(a) (i) **The number of shares to be issued by A Ltd.:**

The Exchange ratio is 0.5

New Shares = 1,80,000 x 0.5 =90,000

(ii) **EPS of A Ltd. After a cquisition:**

Total Earnings	(18,00,000+3,60,000)	Rs.21,60,000
No. of Shares	(6,00,000 + 90,000)	6,90,000
EPS	(21,60,000)/6,90,000)	Rs.3.13

(iii) **Equivalent EPS of T Ltd.:**

No. of new Shares	0.5
EPS	Rs.3.13
Equivalent EPS (3.13 x .5)	Rs.1.57

(iv) **New Market Price of A Ltd. (P/E remaining unchanged):**

Present P/E Ratio of A Ltd.	10 times
Expected EPS after merger	Rs.3.13
Expected Market Price (3.13 x 10)	Rs.31.30

(v) **Market Value of merged firm:**

Total number of Shares	6,90,000
Expected Market Price	Rs.31.30
Total value (6,90,000 x 31.30)	Rs.2,15,97,000

Question 14

BA Ltd. and DA Ltd. both the companies operate in the same industry. The Financial statements of both the companies for the current financial year are as follows:

Balance Sheet

Particulars	**BA Ltd. (Rs.)**	**DA Ltd. (Rs.)**
Current Assets	14,00,000	10,00,000
Fixed Assets (Net)	10,00,000	5,00,000
Total (Rs.)	**24,00,000**	**15,00,000**
Equity capital (Rs.10 each)	10,00,000	8,00,000
Retained earnings	2,00,000	--
14% long-term debt	5,00,000	3,00,00
Current liabilities	7,00,000	4,00,000
Total (Rs.)	**24,00,000**	**15,00,000**

Income Statement

	BA Ltd. (Rs.)	**DA Ltd. (Rs.)**
Net Sales	34,50,000	17,00,000
Cost of Goods sold	27,60,000	13,60,000
Gross profit	6,90,000	3,40,000
Operating expenses	2,00,000	1,00,000
Interest	70,000	42,000
Earning before taxes	4,20,000	1,98,00
Taxes @ 50%	2,10,000	99,000
Earning after taxes (EAT)	**2,10,000**	**99,000**
Additional Information :		
No. of Equity shares	1,00,000	80,000
Dividend payment ratio (D/P)	40%	60%
Market price per share	Rs.40	Rs.15

Assume that both companies are in the process of negotiating a merger through an exchange of equity shares. You have been asked to assist in establishing equitable exchange terms and are required to :

(i) Decompose the share price of both the companies into EPS and P/E components; and also segregate their EPS figures into Return on Equity (ROE) and book value/intrinsic value per share components.

(ii) Estimate future EPS growth rates for each company.

(iii) Based on expected operating synergies BA Ltd. estimates that the intrinsic value of DA's equity share would be Rs.20 per share on its acquisition. You are required to develop a range of justifiable equity share exchange ratios that can be offered by BA Ltd. to the shareholders of DA Ltd. Based on your analysis in part (i) and (ii), would you expect the negotiated terms to be closer to the upper, or the lower exchange ratio limits and why?

(iv) Calculate the post-merger EPS based on an exchange ratio of 0.4 : 1 being offered by BA Ltd. Indicate the immediate EPS accretion or dilution, if any, that will occur for each group of shareholders.

(v) Based on a 0.4 : 1 exchange ratio and assuming that BA Ltd.'s pre-merger P/E ratio will continue after the merger, estimate the post-merger market price. Also show the resulting accretion or dilution in pre-merger market prices.

Answer

Market price per share (MPS) = EPS SP/E ratio or P/E ratio = MPS/EPS

(i) Determination of EPS, P/E ratio, ROE and BVPS of BA Ltd. and DA Ltd.

		BA Ltd.	DA Ltd.
Earnings After Tax	(EAT)	210000	99000
No. of Shares	(N)	100000	80000
EPS	(EAT/N)	2.1	1.2375
Market price per share	(MPS)	40	15
P/E Ratio	(MPS/EPS)	19.05	12.12
Equity Funds	(EF)	1200000	800000
BVPS	(EF/N)	12	10
ROE	(EAT/EF) × 100	17.50%	12.37%

(ii) Estimation of growth rates in EPS for BA Ltd. and DA Ltd.

Retention Ratio	(1-D/P ratio)	0.6	0.4
Growth Rate	(ROE × Retention Ratio)	10.50%	4.95%

(iii) Justifiable equity shares exchange ratio

(a)	Intrinsic value based		= Rs.20 / Rs.40	= 0.5:1 (upper limit)
)b)	Market price based	= MPSb/MPSa	= Rs.15 / Rs.40	= 0.375:1 (lower limit)

Since, BA Ltd. has a higher EPS, ROE, P/E ratio and even higher EPS growth expectations, the negotiable terms would be expected to be closer to the lower limit, based on the existing share prices.

(iv) Calculation of post merger EPS and its effects

Particulars			**BA Ltd.**	**DA Ltd.**	**Combined**
EAT	(Rs.)	(i)	210000	99000	309000
Share outstanding		(ii)	100000	80000	132000*
EPS	(Rs.)	(i) / (ii)	2.1	1.2375	2.341
EPS Accretion (Dilution)	(Re.)		0.241	(0.301***)	

(v) Estimation of Post merger Market price and other effects

Particulars			**BA Ltd.**	**DA Ltd.**	**Combined**
EPS	(Rs.)	(i)	2.1	1.2375	2.341
P/E Ratio		(ii)	19.05	12.12	19.05
MPS	(Rs.)	(i) / (ii)	40	15	44.6
MPS Accretion	(Rs.)		4.6	2.84***	

* Shares outstanding (combined)	= 100000 shares + (.40 × 80000)	= 132000 shares
** EPS claim per old share	= Rs.2.34 × .04	= Re.0.936
EPS dilution	= Rs.1.2375 – Re.0.936	= Re.0.3015
***S claim per old share	(Rs.44.60 × 0.4)	17.84
Less: MPS and per old share		15.00
		2.84

6
COMPANIES ACT, 1956

Question 1

The Board of Directors of M/s ABC Consultants Limited, registered in Mumbai, proposes to hold the next board meeting in the month of May, 2011.They seek, your advice in respect of the following matters:

(i) Can the board meeting be held in Chennai, when all the directors of the company reside at Mumbai?

(ii) Whether the board meeting can be called on a public holiday and that too after business hours as the majority of the directors of the company have gone to Chennai on vacation.

(iii) Is it necessary that the notice of the board meeting should specify the nature of business to be transacted?

Advise with reference to the relevant provisions of the Companies Act.

Answer

(i) There is no difficulty at all in holding the board meeting at Chennai even if all the directors of the company reside at Mumbai and the registered office is situated at Mumbai provided requirements regarding signing of register of contracts, etc. are complied with.

(ii) Under provisions of Section 166 of the Companies Act, 1956, the annual general meeting shall be held during business hours and on a day that is not a public holiday. There is no similar provisions in the Act with regard to board meetings. Therefore, in the absence of any specific restrictive provision, the board meeting can be held even on a public holiday and out of the business hours.

(iii) If the articles of association of the company are silent, the notice of board meeting is not required to specify the nature of business to be transacted thereat [Compagnie de Mayville v. Whitley (1896) 1 Ch. 788 (CA)]. If, however, the articles provide otherwise, then the notice must specify the nature of business to be transacted. All said and done, a better course seems to be that the notice should specify the purpose of the meeting, if it is an extra-ordinary or special meeting .

Question 2

Happy Ltd. maintains the Minutes Book of the Board Meetings in loose-leaf system and get them bound once in three months. Can it do so? Board meetings were held on 24t^{h} March, 2011 and 15th April, 2011. Mr. Sameer , who was the Chairman of these two Board Meetings died on 1.5.2011, without signing the Minutes. How should be the Minutes be signed and by whom?

Answer

Ordinarily minutes cannot be kept in loose-leaf system. Section 193(1) of the Companies Act, 1956 enjoins the Minutes must be entered within 30 days of the conclusion of the relevant meeting. Ordinarily Minutes cannot be kept in loose-lead system. The Department of Company Affairs, however, has expressed that it would refrain from taking any action against a company which maintained its minutes in

the loose-leaf form, provided that adequate safeguards are taken against falsification, and loose-leaves are bound in books at reasonable intervals, say six months.

In this case, since the Minutes Book leaves are bound once in three months (January to March, 2011), and as such the same is in order.

The minutes of the Board Meeting are required to be written within a period of 30 days from the date of the meeting held. [Section193(1)]. But there cannot be any insistence that the same must be signed within a period of 30 days from the date of the Board Meeting. (Dept.'s circular No. 25/76 dated 1.9.1976). According to section 193(1A), the minutes of a Board Meeting may be signed by the Chairman of the said meeting or the Chairman of the next succeeding meeting.

In this case, Mr. Sameer, who was the Chairman of the Board Meeting, held on 24.3.2011 and 15.4.2011 died on 1.5.2011 without signing the minutes.

The Chairman of the Board Meeting held after 15th April, 2011 for the first time may sign the minutes of Board Meeting, held on 15th April, 2011 in accordance with section 193(1A)(a).

According to the provisions of section 193(1) read with section 193(1A) the minutes of Board Meeting held on 24th March, 2011 should have been signed by Mr. Sameer himself as he was the Chairman of the Board Meeting held on 24th March, 2011 as well as the Chairman of the next succeeding meeting. There is no specific provision in the Companies Act, 1956 as to the person who can sign the minutes of Board Meeting held on 24th March, 2011 in this case. Hence a board meeting may be convened and the Chairman of the said meeting may sign the minutes of Board Meeting held on 24th March, 2011.

Question 3

Advise the company with reference to the relevant provisions of the Companies Act about sending notice of board meetings to the following directors:

(i) Mr. Ajay, a director, who intimates his inability to attend the next board meeting.

(ii) Mr. Zaheer, who has gone abroad for four months and an alternate Director has been appointed in his place.

(iii) Mr. Hari is a director residing abroad representing the foreign collaborator and the Articles of Association of the company provide for sending notice to such directors.

Answer

According to Section 286 of the Companies Act, 1956 notice of every board meeting shall be given in writing to every Director for the time being in India and at his usual address in India to every other Director.

(i) Notice should be given even if Mr. Ajay expressed his inability to attend the next board meeting. Otherwise Section 286(i) will be violated. [In re Portigese Consolidated Copper Mines Ltd (1889)42 Ch.D. 160 9CA)]

(ii) Although there is no legal precedent in this regard, it would be a prudent practice (under section 286)that notice should be served to both, the alternative director as well as the original director Mr. Zaheer, who is outside India, at his usual address in India.

(iii) In the case of a company having foreign collaboration, Articles generally provide that notice of Board Meeting should be sent by Air Mail. But a question crops up whether such provisions are valid, as section 286(1) requires services of such notice to a Director to be sent at his usual address in India. Despite provision contained in the Articles and in the Act, 1956, it is advisable as a good secretarial practice and taking into account the fact that it is a foreign collaboration agreement, and to avoid unnecessary legal nitty-gritties, the company may also send notice of the Board Meeting to the director residing abroad.

Question 4

Mr. B, a Chartered Accountant is a Director in Z Limited. The company proposes to appoint/engage the firm B & Co. in which Mr. B is a partner in one or more of the following capacities:

(i) Consultants on regular retainer basis.

(ii) Authorised representatives to appear before tribunals.

Discuss whether the provisions of Section 314 of the Companies Act are attracted in the above situations.

Answer

Apparently the prohibition under Sub-section (1) & (1B) of the Section 314 of the Companies Act, 1956 is not applicable to remuneration/compensation given to concerned persons (i.e. directors) for the services of a professional nature rendered by them to the company in their professional capacity such as advocate, chartered accountant, solicitor etc. However, prohibition will apply to them if they bind themselves on regular retainer ship basis. Therefore,

(i) Chartered Accountants appointed by a company on a regular retainer basis as advisers, consultants, internal auditors, etc., also hold the position or place of consultant or adviser and accordingly such appointments are hit by the restrictive provisions of Sub-sections (1) and (1B) of Section 314.

(ii) Based on the above analogy as contained above the bare engagement of a Chartered Accountant in a particular case and the payment to him of his professional fees in that case would not attract the provisions of Sub-sections (1) and (1B) of Section 314 of the Companies Act. Engaging a person in his professional capacity for performing a particular function, say, for attending to a particular case or for undertaking a particular assignment of consultancy, or rendering advice on a specific matter, would not by itself constitute appointment to an office or place of profit in or under the company. But if the terms of engagement of a Chartered Accountant are that he should attend to all the tax cases or act as adviser in all connected matters, whether generally or in a particular city or town, then even though he may be paid on a case by case basis, it would amount to appointment to a “place of profit” under the company.

Question 5

Discuss the validity of the arguments of the Director in the following cases:

(a) In the General Meeting of X Ltd., held on 2.5.2011, Mr. D was appointed as a Director. On that day, he was not holding any equity shares in X Ltd. As per the Articles of Association of X LTD, the share qualification is the holding of 500 equity shares. On 15.6.2011 Mr. D applied for 1,000 equity shares in X Ltd and the shares were allotted on 10.7.2011. Mr. D

claims that he was holding the qualification shares within the time specified in Companies Act.

(b) Mr. Kathal holding 3% shares in OPQ Ltd., became a director of this company on 1.5.2011. The company, prior to his appointment as director, had commenced transactions with A Ltd. In the next Board Meeting to be held on 10.5.2011, the Board proposes to discuss about price revisions sought for by A Ltd. Briefly explain:

(i) Whether Mr. Kathal should make a disclosure of his interest in A Ltd., assuming that the company is going to have transactions with A Ltd. on a continuous basis; if yes, when and how? When should it be renewed?

(ii) Can he vote in the price revision resolution in the Board Meeting?

You are informed that Mr. Kathal holds 1.5% of the share capital of A Ltd and that his wife holds another 3% of the share capital of A Ltd.

Answer

(a) Under Section 270 of the Companies Act, 1956, the director must obtain qualification shares within two months from the date of appointment. In this case, he was appointed on 2.7.2011 and therefore he must obtain qualification shares on or before 2nd July, 2011 but the shares were allotted on 10th July, 2011. Only after the date of allotment, he was looking those shares and not on the date of application. Therefore, the argument of A is not correct.

(b) (i) OPQ Ltd. entered into certain transactions (arrangement/contract) with A Ltd. in which Mr. Kathal is interested before his appointment as a director in OPQ Ltd. The issue is whether Mr. Kathal should disclose his interest in A Ltd.

Section 299(2)(b) of the Companies Act, 1956 applies to a case of contract or arrangement in which a person was concerned or interested before he becomes a director and also to a case of a contract or arrangement in which he becomes concerned or interest after he becomes a director. The words 'becomes concerned or interested' occurring in the provision denotes a present state of thing. In the case of a person who was actually concerned or interested in the contract or arrangement, the liability for disclosure arises the moment he accepts office as director (M.O. Varghese v. Thomas Stephen & Co. Ltd. (1970) 40 CC 1131 Kerala).

Further, in this case, the Board proposes to discuss in the Board meeting to be held on 10.5.2011 the price revision sought by A Ltd.

In view of the above, Mr. Kathal should make a disclosure of his interest in the first meeting to be held on 10.5.2011 after he became a director. Such disclosure may be made by a general notice under section 299(3) to the effect that he is a member or a director of a specified body corporate. Such notice is valid only for the financial year in which it is given and therefore, it should be renewed in the last month of every year, where necessary.

(ii) Another issue is whether Mr. Kathal can vote in the price revision resolution in the Board Meeting. As per section 300(1), no director of a company shall, as a director, take any part in the discussion of, or vote on, any contract or arrangement entered into, or to be entered into, by or on behalf of the company, if he is in any way, whether directly or indirectly, concerned or interested in the contract or arrangement. As per sub-section (2) the provision of sub-section

(1) shall not apply to any contract or arrangement entered into or to be entered into with a public company, in which the interest of the director aforesaid consists solely in his being a member holding not more than two percent of its paid-up share capital.

In the given case, Mr. Kathal is holding 1.5% of the share capital of A Ltd., and his wife is holding another 3% in the share capital of A Ltd. and, therefore, it cannot be said he is interested only to the extent of less than 2% of the paid-up share capital of A Ltd. [The word 'solely' is used in section 300(2) (d)]. Hence Mr. Kathal should not participate and vote in the Board Meeting to be held on 10.5.2011.

Question 6

The Board of Directors of Unhappy Ltd. at a meeting held on 15.1.2011 resolved to borrow a sum of Rs. 45 crores from a nationalized bank. Subsequently the said amount was received by the company. One of the Directors, who opposed the said borrowing as not in the interest of the company has raised an issue that the said borrowing is outside the powers of the Board of Directors. The Company seeks your advice and the following data is given for your information:

(i)	Share Capital	Rs. 15 crores
(ii)	Reserves and Surplus	Rs. 15 crores
(iii)	Secured Loans	Rs. 45 crores
(iv)	Unsecured Loans	Rs. 15 crores

Advice the management of the company.

Answer

According to the provisions of Section 293(1)(d) of the Companies Act, 1956 there are restrictions on the borrowing powers to be exercised by the Board of directors. According to that section, the borrowings should not exceed the aggregate of the paid up capital and free reserves. While calculating the limit, the temporary loans obtained by the company from its bankers in the ordinary course of business will be excluded. However, from the figures available in the present case the proposed borrowing of Rs. 45 crores will exceed the limit mentioned. Thus the borrowing will be beyond the powers of the Board of directors. However the share holders have the power to ratify the act of the Board of Directors, if it is not beyond the powers of the company as laid down in the memorandum of association. In that case the shareholders can ratify as it is intra vires the company even though it may be beyond the powers of the Board of Directors.

Thus the management of Unhappy Ltd., should take steps to convene the annual general meeting and pass a resolution by the members in the meeting as stated in Section 293(1)(d) of the Act. Then the borrowing will be valid and binding on the company and its members.

Question 7

Mr. Doubtful was appointed as the Managing Director of Carefree Industries Ltd. for a period of five years with effect from 1.4.1998 on a salary of Rs. 12 lakhs per annum with other perquisites. The Board of Directors of the company, on coming to know of certain questionable transactions, terminated the services of the Managing Director from 1.3.2001. Mr. Doubtful termed his removal as

illegal and claimed compensation from the company. Meanwhile the company paid a sum of Rs. 5 lakhs on ad hoc basis to Mr. Doubtful pending settlement of his dues. Discuss whether:

(i) The company is bound to pay compensation to Mr. Doubtful, and, if so, how much;

(ii) The company can recover the amount of Rs. 5 lakhs paid on the ground that Mr. Doubtful is not entitled to any compensation, because he is guilty of corrupt practices.

Answer

Section 318 to 328 of the Companies Act, 1956 contain elaborate provisions for regulating payment of compensation to directors for loss of office. According to Section 318, such compensation can be paid only to Managing Director or Whole Time Directors or directors who are full time employees of the company. The compensation payable is limited to the average remuneration actually earned by such director during the three years period immediately preceeding the date on which he ceased to hold the office and multiplied for the unexpired period of his term or for three years whichever is shorter. Further no compensation will be payable to such a director if the company goes into compulsory winding up within a period of 12 months from the date of cessation of his office. The company is not bound to pay compensation to Mr. Doubtful if he has been found guilty of any fraud or breach of trust or gross negligence and mismanagement of the affairs of the company. [Section 318(3)(e)]. However, it is not proper for the company to with hold the payment of compensation on the basis of allegations unless there is a proper finding on the involvement of Mr. Doubtful in corrupt practices. The compensation payable is Rs. 25 lakhs i.e., at the rate of Rs. 12 lakhs per annum for unexpired period of 2 years and 1 month.

Regarding the ad hoc payment of compensation to Mr. Doubtful, it will be difficult to recover the amount already paid. In the case of Bell Vs. Lever Brothers it was held that the director was not bound to refund the money because he failed to disclose his fiduciary obligation. In the said case Lever Bros. removed the managing director by paying him compensation. Later on it was discovered, that the managing director could have been removed without paying any compensation for the malpractices committed by him. Action was initiated for recovery of the compensation money paid. Held no recovery was possible because Managing Director was not bound to disclose his fiduciary obligations so as to give an opportunity to the company to dismiss him.

Question 8

Mr. Influential is already a director of 19 companies. He is being appointed as a director of another company named M/s Expensive Remedies Ltd. Advise Mr. Influential in regard to the following:

(i) Restrictions on the number of directorships to be held by an individual and whether he can accept the new appointment in view thereof.

(ii) What are the companies to be excluded for the purpose of calculating the ceiling on the appointment of directors?

Answer

(i) After the commencement of the Companies (Amendment) Act, 2011, (i.e, w.e.f. 14.12.2011), no

person, shall save as otherwise provided in section 276, hold office at the same time as director in more than 15 companies (Section 275). Earlier the limit was 20 companies.

For calculating the limit certain companies are to be excluded as provided in section 278(1).

Any person holding office as Director in more than 15 companies immediately before the commencement of the Companies (Amendment) Act, 2011, has to make a choice of 15 companies in which he wishes to continue as Director. He has to make this choice within 2 months from the commencement of the Companies (Amendment) Act, 2011 (i.e. 12.2.2001) [Section 276(1)]. No such person shall act as a director in more than 15 companies after the expiry of 2 months from the commencement Companies (Amendment) Act, 2011 [Section 276 (3) (1)].

In view of the above, it is not possible for Mr. Influential to be a director in 19 companies after excluding the companies listed in section 278 (1). In the absence of information about companies, it is not possible to ascertain the exact number of directorship held by Mr. Influential for the purpose of section 275.

There are two possibilities. Either Mr. Influential is a director in less than 15 companies (say 14 Companies) or 15 Companies. If he is a director in 14 Companies he can accept the directorship of M/s Expensive Remedies Limited. If he is already a director in 15 companies, he must within 15 days of his appointment as a director in M/s Expensive Remedies Ltd., relinquish any of his directorship. If he does not exercise the option within 15 days and does not vacate his directorship in any of the 15 companies, the appointment in M/s Expensive Remedies Ltd., shall become void immediately on the expiry of the 15 days [Section 277(1)].

(ii) For calculating the limit of 15 companies the following companies can be excluded:

(i) a private company which is neither a subsidiary nor a holding company of a public company.

(ii) An unlimited company.

(iii) An association not carrying on business for profit or which prohibits the payment of a dividend.

(iv) A company in which the person is only acting as alternate director.[Section 278(1)].

In making the above said calculation, any company referred to in (I), (ii) & (iii) above shall be excluded for a period of 33 months from the date on which the company ceases to fall within the purview of these clauses [Section 278(2)].

Question 9

Mr. Rehan is a director of M/s Doubtful Industries Ltd. He along with other two directors has been running the Company for the past twenty years without declaring any dividends or giving any benefit to the shareholders. Frustrated by this, some shareholders are desirous of giving notice to pass a resolution with the support of other shareholders for his removal as a director in the Annual General Meeting of the Company to be held in the month of December of 2001. State the procedure to be followed for the removal of Mr. Rehan as a director and the right of Mr. Rehan to defend his position.

Answer

Mr. Rehan a director of M/s Doubtful Industries Ltd., can be removed by following the procedure laid down in Section 284 of the Companies Act, 1956. The procedure is as under:

(i) An ordinary resolution is required to be passed at the general meeting of the company.

(ii) A special notice, as provided in Section 190 of the Act is required to be given to the company at least 14 days before the general meeting.

(iii) On receipt of the notice, the company has to send a copy of the notice to Mr. Rehan and he is entitled to be heard on the resolution at the meeting.

(iv) Mr. Rehan is also entitled to make a representation in writing to the company and the same has to be sent to all the members by the company.

(v) In case the representation has reached or the same could not be sent to all the members the same has to be read out at the meeting.

(vi) Such a representation need not be sent to the members or read out at the meeting if on the application of the company or any person aggrieved, the Company Law Board is satisfied that the rights conferred under this section are being abused to secure needless publicity for defamatory matter and passes an order to this effect.

If at the general meeting the resolution is passed by a simple majority, Mr. Rehan will have to step down from the office as director of the company.

Question 10

Mr. X is a director of M/s ABC Ltd. He has approached M/s Housing Finance Co. Ltd. for the purpose of obtaining a loan of Rs.50 crores to be used for construction of building his residential house. The loan was sanctioned subject to the condition that M/s ABC Ltd. should provide the guarantee for repayment of loan instalments by Mr. X. Advise Mr. X.

Answer

According to section 295 of the Companies Act, 1956, no company shall make a loan or give any guarantee, or provide any security in connection with a loan made by any other person to any director of the lending company unless the previous approval of the Central Government is obtained in this behalf. Thus, Mr. X has to approach his company ABC Ltd by stating the full details of the loan transaction and the stipulation of M/s Housing Finance Company Ltd. Thereafter M/s ABC Ltd has to make an application to the Central Government for approval under Section 295 along with the prescribed fees. Only on receipt of the approval M/s ABC Ltd can provide guarantee to M/s Housing Finance Co. Ltd.

The company is also required to comply with the provisions of section 292 (i.e. Board Resolution) and section 372A (special resolution in a general meeting if required).

Question 11

The last three years' Balance Sheets of RBS Ltd, contains the following information and figures:

	As at 31.03.2009 Rs.	As at 31.03.2010 Rs.	As at 31.03.2011 Rs.
Paid up Capital	50,00,000	50,00,000	75,00,000
General Reserve	45,00,000	50,00,000	60,00,000
Debenture Redemption Reserve	15,00,000	20,00,000	25,00,000
Reserve Secured Loans	10,00,000	15,00,000	30,00,000
Net Profit for the year (as calculated in accordance with the provisions of Section 349 and 350 of the Companies Act, 1956)	12,50,000	19,00,000	34,50,000

In the ensuing Board Meeting scheduled to be held on 5th September,2011, among other items of agenda, following item is also appearing:

"To decide about borrowing from financial institutions on long-term basis." Based on above information, you are required to find out as per the provisions of the Companies Act, 1956, the amount upto which the Board can borrow from financial institutions without seeking the approval in general meeting?

Answer

As per section 293 (1)(d) of the Companies Act, 1956, the Board of Directors of a public company or a private company which is a subsidiary of a public company, without obtaining the approval of shareholders in a general meeting, can borrow the funds including funds already borrowed upto an amount which does not exceed the aggregate of paid up capital of the company and its free reserves. Such borrowing shall not include temporary loans obtained from the company's bankers in ordinary course of business. Here, free reserves do not include the reserves set apart for specific purpose.

Since the decision to borrow is to be taken in a meeting to be held on 5th September, 2011, the figures relevant for this purpose are the figures as per the Balance Sheet as at 31.03.2011. According to the above provisions, the Board of Directors of RBS Ltd. can borrow, without obtaining approval of the shareholders in a general meeting, upto an amount calculated as follows:

Paid up capitalRs. 75,00,000/-	
General Reserve (being free reserve)	Rs. 60,00,000/-
Debenture Redemption Reserve (This reserve is not to be considered since it is kept apart for specific purpose of debenture redemption)	—
Aggregate of paid up capital and free reserve	Rs. 1,35,00,000/-
Total borrowing power of the Board of Directors of the company. i.e., 100% of the aggregate of paid up capital and free reserves	Rs. 1,35,00,000/-
Less amount already borrowed as secured loans	Rs. 30,00,000/-
Amount upto which the Board of Directors can further borrow without the approval of shareholders in a general meeting.	Rs 1,05,00, 000/-

It is presumed that the amount already borrowed as secured loans are not "temporary loans" obtained

from the company's bankers in the ordinary course of business within the meaning of Explanation II to Section 293.

Question 12

From the following information extracted from the Balance Sheet of VCD Ltd. as at 31st March, 2011, Board of Directors of the Company decide to grant a loan of Rs. 80 crores to another company JN Ltd.

	Rs. (in crores)
Paid-up Share Capital:	
Equity Share Capital	50
Preference Share Capital	10
General Reserves	100
Debentures	5
Debenture Redemption Reserve	5

The company has already given loans to the following companies:

(i) Peters Ltd. Rs. 5 crores

(ii) Steel India Ltd. Rs. 10 crores

The Company has also given a corporate guarantee of Rs. 10 crores to NR & Co. Ltd.

Advise whether the Board can go ahead with the above proposal.

Answer

Problem on Inter-Corporate Investment

In accordance with the provisions of the Companies Act, 1956, as contained in Section 372A, Companies Act, 1956 a company cannot grant any loans or inter corporate investment exceeding 60% of its paid up capital and free reserves or 100% of its free reserves, whichever is more.

In case of VCD Ltd. the position as at 31st March, 2011 is as under:

Paid-up share Capital:	Equity Share Capital :	Rs. 50 crores
	Preference Share Capital:	Rs. 10 crores
General Reserves		Rs. 100 crores

Total Rs. 160 crores. (60% of Rs. 160 crores = Rs. 96 crores)

100% of Reserves & Surplus (i.e. General Reserve) Rs. 100 crores.

As 100% of free reserves, i.e. Rs. 100 crores is more than 60% of paid up share capital (both Equity and Preference share Capital) and free reserves, i.e. Rs. 96 crores, therefore, the overall limit for release of loan is Rs. 100 crores.

The company has already granted loan / given guarantee as under:

(i)	Peters Ltd.	Rs. 5 crores
(ii)	Steel India Ltd.	Rs. 10 crores
(iii)	Corporate Guarantee	Rs. 10 crores
	Total	**Rs. 25 crores**

Balance of limit upto which further loans/guarantee can be given = Rs. 100 crores – 25 crores = Rs. 75 crores

Therefore, the company can grant loan upto Rs. 75 crores to JN Ltd. Loan upto Rs. 80 crores as proposed can be given provided a special resolution in company's general meeting has been passed as required under Section 372A of the Companies Act, 1956. It may however, be noted that the special resolution as required must be passed through postal ballot in accordance with the rule 4 of the Companies (Passing of the Resolution by Postal Ballot) Rules, 2001.

Question 13

Following is the latest audited Balance Sheet of XYZ Ltd.:

Capital and Liabilities	Rs.	Assets	Rs.
Equity Share Capital	10,00,000	Goodwill	1,00,000
(10,000 shares of Rs.100 each)		Land and Buildings	10,50,000
Less: Calls unpaid	10,000	Plant and Machinery	20,25,000
	9,90,000	Equity shares in A Ltd.	1,25,000
Preference Share Capital	1,50,000	Preference Shares in B Ltd.	50,000
Securities Premium a/c	1,50,000	Debentures in C Ltd.	1,00,000
Capital Redemption Reserve	2,25,000	Shares in P Ltd.	2,25,000
General Reserve	5,00,000	Capital in Z & Co.	1,00,000
Profit & Loss A/c	2,20,000	Current Assets	55,000
Sinking Profit Reserve	1,10,000		
Dividend Equalisation Reserve	60,000		
Loan from TICC	10,00,000		
Deposits from S Ltd.	2,00,000		
Current Liabilities	1,25,000		
Provision for Taxation	1,00,000		
	38,30,000		38,30,000

The following is the additional relevant information:

(i) Of the equity share capital, 3,000 shares have been issued as rights shares and 2,000 shares as bonus shares.

(ii) B Ltd. is subsidiary of XYZ Ltd. with 90% shareholding, whereas A Ltd. is wholly owned subsidiary of XYZ Ltd.

(iii) Z & Co. is a partnership firm.

The directors seek advice as to whether the following additional investments can be made by a decision taken in a Board Meeting:

		Rs.
(i)	Loan to A Ltd.	10,00,000
(ii)	Debentures in B Ltd.	2,25,000
(iii)	Purchase of shares of Shree Ltd. in the open market	95,000

State reasons.

Answer

By virtue of Explanation (b) to Section 372A, no company shall, directly or indirectly

(a) make any loan to any other body corporate;

(b) give any guarantee, or provide security, in connection with a loan made by any other person to, or to any other person, by any body corporate, and

(c) acquire, by way of subscription, purchase or otherwise the securities of any other body corporate, exceeding sixty per cent of its paid-up share capital and free reserves, or hundred per cent of its free reserves, whichever is more. Hence, it becomes necessary to compute the paid-up capital and free reserves first.

Paid up Share Capital	
Equity share capital	10,00,000
Less: Calls unpaid	10,000
	9,90,000
Preference share capital	1,50,000
	11,40,000
Free reserves	
Securities premium A/c	1,50,000
General reserve	5,00,000
Profit and Loss A/c	2,20,000
Dividend Equilisation Reserve	60,000
	9,30,000

According to Explanation (b) to section 372A, 'Free reserves' means those reserves which, as per the latest audited balance sheet of the company, are free for distribution as dividend and shall include balance to the credit of the securities premium account but shall not include share application money.

Capital redemption reserve sinking fund are not available for free distribution of dividend and hence not included.

Ceiling limits

60% of paid-up capital and free reserves

= 60% of (11,40,000 & 9,30,000).

= 60% of 20,70,000 i.e. Rs.12,42,000

100% of free reserves = 9,30,000

60% of paid-up capital & free reserves being higher than 100% of free reserves, inter-corporate loans and investments may be made upto Rs.12,42,000.

Investments as per the Balance Sheet	
Preference Shares in B Ltd.	50,000
Debentures in C Ltd.	1,00,000
Shares in P Ltd.	2,25,000
	3,75,000

Note: Equity shares in A Ltd are not considered, since by virtue of Section 372A(8)(e), acquisition of shares by a holding company in its wholly owned subsidiary are outside the purview of Section 372A.

Additional investments within the purview of Section 372A:

Debentures in B Ltd. (loans including debentures	
As per explanation (a) to section 372 A)	2,25,000
Shares in Shree Ltd.	95,000
	3,20,000

Note: Loan to A Ltd. A Ltd. being a wholly owned subsidiary, is to be excluded by virtue of section 372(8)(c).

Total permissible investment

60% of paid up capital and free reserves	12,42,000
Less: investments already made	3,75,000
Further investment possible	8,67,000

Since the additional proposed investment is well within the above limit, the directors may by passing a resolution at a meeting of the Board, for which the consent of all the directors present at the meeting is obtained. Special resolution is not necessary and so also the prior approval of the financial institution like TIIC.

No loan or investment shall be made or guarantee or security given by the company unless the resolution sanctioning it is passed at a meeting of the Board with the consent of all the directors present at the meeting and the prior approval of the public financial institution referred to in section 4A, where any term loan is subsisting is obtained, however, the prior approval of a public financial institution shall not be required where the aggregate of the loans and investments so far made, the amount for which guarantee or security so far provided to or in all other bodies corporate, alongwith the investments, loans, guarantee or security proposed to be made or given does not exceed the limit of sixty per cent specified in sub-section (1), if there is no default in repayment of loan instalments or payment of interest thereon as per the terms and conditions of such loan to the public financial institution. [Proviso to section 372A(2)].

Question 14

M/s Sharda Fertilizers Ltd. proposes to acquire equity shares of ABC Ltd. worth Rs.19 lakhs. On the basis of the following information advise Sharda Fertilizers Ltd. about the requirements to be complied with under Companies Act, 1956 for the proposed investment in ABC Ltd.

	Rs.
Authorised Share Capital	50,00,000
Issued, subscribed and paid up Capital	25,00,000
Free Reserves	5,00,000

Answer

The provisions regarding inter corporate loans and investments are contained in Section 372A of the Companies Act, 1956 which provide that no company shall directly or indirectly make loan or give guarantee or provide security and acquire by way of subscription, purchase or otherwise securities of any other body corporate exceeding 60% of its paid up capital and free reserves, or 100% of the free reserves whichever is more, without the previous approval of the members by way of special resolution in general meeting.

The amount of proposed investment by Sharda Fertilizers ltd., in the equity shares of ABC Ltd. for Rs. 19.00 lakhs may be considered in the following manner as per the financial data given in the question:

(i) 60% the paid-up capital and free reserves i.e. 60% (Rs. 25.00 lakhs + Rs. 5.00 lakhs)

(ii) 100% of the free reserves = Rs. 500 lakhs = Rs. 18.00 lakhs rupees

Hence the maximum permissible limit for the bank is only Rs. 18.00 lakhs. However, the Sharda Fertilizer purposes to invest Rs. 19.00 lakhs in the shares of ABC Ltd. which can only be done with the approval of the members by way of special resolution with general meeting.

Therefore, Sharda fertilizers in advised to comply with the following requirements:

(a) Checks the provisions of the Articles and Memorandum of the Company, regarding powers of the company and of its Board to make investment in other corporate body.

If the powers are not available, take appropriate action to amend the Articles.

(b) Hold a Board meeting for consideration of the investment proposal and to call a general meeting of the members to obtain their approval by way of special resolution. The Board resolution must be passed for investment at the meeting of the Board with the consent of all the directors present. The nature of such general meeting should specifically indicate the following particulars in the explanatory statement:

(i) The specific limit is not less than Rs. 19.00 lakhs.

(ii) The particulars of ABC Co. Ltd.

(iii) The purpose of investment

(iv) Specification of the availability of funds of interest of directors, if any,

(v) Any other material detail or disclosure of interest of directors, if any,

(c) Check that there has been no default on the part of the company in repayment of loan installment or interest thereon.

(d) Check that the company has not defaulted either directly or indirectly in complying with the provisions of Section 58A.

(e) After investment, make entry in the Register of Investment within 7 days from the date of investment.

(f) File Form No. 23 with the Registration within 30 days from the date of passing the resolution.

Question 15

Following information is available from the audited Balance Sheet as at 31st March, 2011 of ASK Ltd.:

Share Capital:	Rs.
Equity Share Capital (5,00,000 shares of Rs.10 each fully paid up in cash)	50,00,000
Less: Calls in arrear	50,000
	49,50,000
Preference Share Capital	15,00,000
Share Application Money	10,00,000
Reserves and Surplus:	
Securities Premium	15,00,000
Capital Redemption Reserve	12,00,000
Fixed Assets Revaluation Reserve	10,50,000
Sinking Fund Reserve	11,00,000
General Reserve	40,00,000
Profit and Loss Account	22,00,000
Dividend Equalisation Reserve	6,00,000
Secured Loans:	
Cash Credit facility from Bank	1,00,00,00

You are required to find out, explaining the relevant provisions of the Companies Act, 1956, the amount upto which the Board of Directors can invest in securities of other bodies corporate and/or give loans.

Answer

According to the provisions of section 372A of the Companies Act, 1956, a public company and a private company, which is a subsidiary of the public company shall not, directly or indirectly:

(a) make any loan to any other body corporate

(b) give any guarantee, or provide security, in connection with a loan made by any person to, or other person, by any body corporate; and

(c) acquire, by way of subscription, purchase or otherwise the securities of any other body corporate exceeding 60% of its Paid up Share Capital and free reserves or 100% of its free reserves, which more without prior authorization by way of a special resolution passed in a general meeting.(Section 372 A (1).

In order to arrive at the conclusion whether the directors of ASK Ltd. can, make the proposed investments without seeking approval from the shareholders, the amount upto which they can invest has to be arrived at. In the given case, the Paid up Share Capital and free reserves are as follows:

Paid up Share Capital:

Equity Share Capital (500,000 shares of Rs.10/- each fully paid up in cash)	Rs. 50,00,000/-
Less: Calls in arrear	Rs. 50,000/-
	Rs.49,50,000/-
Add: Preference Share Capital	Rs.15,00,,000/-
Total of Paid up Share Capital	Rs.64,50,000/-
Free-Reserves:	
Securities Premium	Rs. 15,00,000/-
General Reserve	Rs. 40,00,000/-
Profit & Loss Account	Rs. 22,00,000/-
Dividend Equalisation Reserve	Rs. 6,00,000/-
Total Free Reserves	Rs. 83,00,000/-
Total of Paid up Share Capital and Free Reserves	Rs. 1,47,50,000/-

As per explanation to the said section, "Free Reserves" means those reserves, which, as per audited balance sheet of the company, are free for distribution as dividend and shall include balance to the credit of the securities premium account but shall not include share application money. (explanation (b) to section 372A).

Accordingly, for the purpose of calculating the amount of Free Reserves, the amounts lying in the accounts of Share Application Money and reserves not available for distribution as dividend being Capital Redemption Reserve, Fixed Assets Revaluation Reserve and Sinking Fund Reserve are excluded.

Ceiling limit for investments:

60% of Paid up Share Capital and free reserves	
(i.e. 60% of Rs.14,750,000/-)	Rs. 88,50,000/-
100% of Free Reserves (i.e.100% of Rs.83,00,000/-)	Rs. 83,00,000/-

Since 60% of Paid up Share Capital and free reserves is Rs.88,50,000/- which is higher than 100% of Free Reserves, the directors of ASK Ltd. can advance loans and make investments in other bodies corporate upto a total limit of Rs. 88,50,000/- without obtaining prior approval from the shareholders. It may be noted that the amount of secured loan given in question has no relevance in determining the limit up to which investments/loans can be made.

Question 16

Following information is available from the audited Balance Sheet as at 31st March, 2011 of ASK Ltd.:

Capital & Liabilities	Rs.	Assets	Rs.
Share Capital:		Fixed Assets:	
Equity Share Capital		Goodwill	10,00,000
(5,00,000 shares of Rs. 10 each fully paid up in cash)		Land & Buildings	75,00,000
		Plant & Machinery	1,50,00,000
	50,00,000	Furniture & Other	
Less: Calls in arrear	50,000	Assets	2,50,000
	49,50,000	Investments:	
Less: Calls in arrear	15,00,000	Equity Shares in wholly owned Subsidiary Company -	
Share Application Money	10,00,000		
Reserves & Surplus:			
Securities Premium	15,00,000	KMC Ltd.	12,50,000
Capital Redemption Reserve	12,00,000	Equity Shares representing 90% of MTC Ltd.	
Fixed Assets Revaluation Reserve	10,50,000	Share Capital of MTC Ltd.	4,50,000
General Reserve	40,00,000	Debentures in SKT Ltd.	
Profit and loss Account	22,00,000	SKT Ltd.	12,00,000
Dividend Eualisiation Reserve	6,00,000	Preference Shares in HUT Ltd.	5,00,000
Secured Loans:			
Cash credit facility from Bank	1,00,00,000	Capital account balance in Partnership Firm - BKP & Co.	8,00,000
		Current Assets:	
Fixed Deposits (From general	20,00,000	Stock and Book Debts	14,00,000

public maturing after 31.02.2012)			
Current Liabilities & Provisions:		Cash & Bank Balances	1,00,000
Current Liabilities	12,50,000	Loans & Advances:	
Provision for Taxation	10,00,000	Inter-corporate	
		Deposits	25,00,000
		Business Advances	14,00,000
	3,33,50,000		3,33,50,000

The directors of the company want to make further investments stated below by taking a decision in the meeting of Board of Directors without seeking approval of the shareholders :

		Rs.
(a)	Loan to KMC Ltd.	25,00,000
(b)	Loan to MTC Ltd.	15,00,000
(c)	Purchase of further debentures in SKT Ltd.	8,00,000
(d)	Purchase of shares from the open market in Glaxo Ltd.	15,00,000

You are required to state, with reference to the relevant provisions of the Companies Act, 1956, whether the directors can do so and mention the relevant calculations.

Answer

According to the provisions of section 372A of the Companies Act, 1956, a public company and private company, which is a subsidiary of the public company shall not, directly or indirectly:

(a) make any loan to any other body corporate.

(b) give any guarantee, or provide security, in connection with a loan made by any person to, or to any other person, by any body corporate; and

(c) acquire, by way of subscription, purchase or otherwise the securities of any other body corporate.

exceeding 60% of its Paid up Share Capital and free reserves or 100% of its free reserves, whichever is more without prior authorization by way of a special resolution passed in a general meeting.

In order to arrive at the conclusion whether the directors of ASK Ltd. can make the proposed investments without seeking approval from the shareholders, the amount upto which they can invest has to be arrived at. In the given case, the Paid up Share Capital and free reserves are as follows:

Paid up Share Capital

Equity Share Capital (500,000 shares of Rs. 10/- each fully paid up in	Rs. 5,000,000/-

cash)	
Less: Calls in arrear	Rs. 50,000/-
	Rs. 4,950,000/-
Preference Share Capital	Rs. 1,500,000/-
Total of Paid up Share Capital	Rs. 6,450,000/-
Free Reserves:	Rs. 1,500,000/-
	Rs. 4,000,000/-
	Rs. 2,2011,000/-
	Rs. 600,000/-
Total Free Reserves	Rs. 8,300,000/-
Total of paid up share capital and Free Reserves:	Rs. 14,750,000/-

As per explanation to the said section, "Free Reserves" means those reserves which, as per the latest, audited balance sheet of the company, are free for distribution as dividend and shall include balance to the credit of the securities premium account but shall not include share application money.

Accordingly, for the purpose of calculating the amount of Free Reserves, the amounts lying in the accounts of Share Application Money and reserves not available for distribution as dividend being Capital Redemption Reserves, Fixed Assets Revaluation Reserve and Sinking Fund Reserve are excluded.

Ceiling limit for investments:

60% of Paid up Share Capital and free reserves (i.e., 60% of Rs. 14,750,000/-)	Rs. 88,50,000
100% of Free Reserves (i.e., 100% of Rs. 83,00,000/-	Rs. 83,00,000

Since 60% of Paid up Share Capital and free reserves is Rs. 88,50,000//- which is higher than 100% of Free Reserves, the directors of ASK Ltd. can advance loans and make investments in other bodies corporate upto a total limit of Rs. 88,50,000/- without obtaining prior approval from the shareholders.

For arriving at a decision for further investments, the extent of present investment is to be determined and the directors can make further loans and investments upto the residual amount.

The present investments and loans of ASK Ltd. calculated as per the provisions of section 372A of the Companies Act, 1956 are as follows:

Equity Shares in wholly owned 'Subsidiary Company – KMC Ltd.

(not to be counted since as per provisos of Section 372(8)(e), investments in wholly owned subsidiary company is outside the purview of this section)

Equity Shares representing 90% of share capital of MTC Ltd.	Rs. 4,50,000/-
Debentures in SKT Ltd.	Rs. 12,00,000/-
Preference shares in HUT Ltd.	Rs. 5,00,000/-
Inter-corporate Deposits	Rs. 25,00,000/-

Total investments of ASK Ltd. within the meaning of Section 372A	Rs. 46,50,000/-
Limit upto which directors can make investments as calculated above	Rs. 88,50,000/-
Less existing investments	Rs. 46,50,000/-
further investments which directors can make without shareholders' special resolution	Rs. 42,00,000/-

Proposed additional investments within the meaning of section 372 is to be calculated as follows:

(a)	Loan to KMC Ltd.	--
	(Not to be counted since as per provisions of section 372 (8)(c) Loan to Wholly owned subsidiary company is outside the purview of this section)	
(b)	Loan to MTC Ltd.	Rs 15,00, 000/-
(c)	Purchase of further debentures in SKT Ltd.	Rs 8,00,000/-
(d)	Purchase of share from the open market in Glaxo Ltd.	Rs 15,00,000/-
		38,00,000/-

Since the proposed additional investment is within the amount permissible as calculated above, the directors, by passing a unanimous resolution in a Board Meeting, can make the proposed additional investment, Since the total investments do not exceed the limit as calculated above, the directors are not required to obtain the approval of shareholder, In absence of any term loan from any public financial institution, the question of their permission does not arise. Moreover, the fixed deposits from public are not yet due for repayment and hence there is no default on this account. In the light of above, it can be concluded that the directors can make the proposed investments.

Question 17

The Board of Directors of XYZ Ltd. has agreed in principal go grant 'loan' worth Rs. 38 lakhs to MNC ltd. on the basis of the following information. Advise XYZ Ltd. about the requirements to be complied with under the Companies Act, 1956 for the proposed inter-corporate loan to MNC Ltd.

(i)	Authorized share capital	Rs.	1,00,00,000
(ii)	Issued, subscribed and paid up capital	Rs.	50,00,000
(iii)	Free reserves	Rs.	10,00,000

Answer

Inter corporate loans and investments are governed by the provisions of Section 372A of the Companies Act, 1956. As per this Section, a company can advance loans to other companies or invest in the securities, of other companies up to 60% of the paid-up capital and free reserves or upto 100% of free reserves, which is more. Further no loan or investment exceeding the said limits can be made by a company unless authorized by a previous special resolution passed in this regard.

First determine whether a special resolution is required for providing loans to MNC Ltd.

This can be determined as follows:

Paid up capital of the company	(A)	50,00,000
Free reserves	(B)	Rs. 10,00,000.00
Aggregate of paid up capital and free reserves	(C)	Rs. 60,00,000.00
60% of aggregate of paid up capital and free reserves	(D)	Rs. 36,00,000.00

Higher of (B) or (D) i.e. the ceiling limit for incorporate loan and investment etc. without requiring a special resolution Rs. ,000.00

Proposed loans to MNC Ltd. Rs. 38,00,000.00

Since the proposed loan exceeds the ceiling limit a special resolution is required. The company shall adopt the following procedure for providing loan to MNC Ltd.

(i) Unanimous approval of the Board shall be obtained by passing a resolution at a Board meeting.

(ii) A special resolution shall be passed in the general meeting

The notice of special resolution shall stake the specific limits, particulars of the company to which loan is proposed to given, specific source of funding and other relevant details. The company shall file a copy of special with the registrar within 30 days of passing the special resolution. If the company is listed company, it shall pass the resolution by postal ballot as prescribed under Section 192A.

(iii) the company shall obtain the prior approval of the Public Financial Institution, if any, from whom it has taken a term loan.

(iv) the company can provide such loan to other companies only if no default in respect of public deposits is subsisting.

(v) the prescribed particulars shall be entered in the register maintained under Section 372A(5).

7

SECURITIES EXCHANGE BOARD OF INDIA (SEBI)

Question 1

State the factors that must be taken into account by the adjudicating officer while determining the quantum of penalty in case of stock brokers.

Answer

Factors to be taken into account by the adjudicating officer: Section 15J of SEBI Act stipulates that the following factors shall be taken into account by the adjudicating officer while adjudging the quantum of penalty:

(a) the amount of disproportionate gain or unfair advantage, wherever quantifiable as a result of the default.

(b) the amount of loss caused to an investor or group of investors as a result of the default.

(c) the repetitive nature of the default.

Question 2

What provision has been made under Section 15G of the SEBI Act, 1992, in connection with penalty for insider trading?

Answer

If any insider who:

(i) either on his own behalf or on behalf of any other person, deals in securities of a body corporate on any stock exchange on the basis of any unpublished price sensitive information; or

(ii) communicates any unpublished price sensitive information to any person, with or without his request for such information except as required in the ordinary course of business or under any law; or

(iii) counsels, or procures for, any other person to deal in any securities of any body corporate on the basis of unpublished price sensitive information,

shall be liable to a penalty of twenty-five crore rupees or three times the amount of profits made out of insider trading, whichever is higher. [Section 15, SEBI Act, 1992].

Question 3

A group of investors are upset with the functioning of two leading stock brokers of Calcutta Stock Exchange and want to make a complaint to SEBI for intervention and redressal of their grievances. Explain briefly the purpose of establishing SEBI and what type of defaults by the stock brokers come within the purview of SEBI Act, 1992.

Answer

The Securities and Exchange Board of India (SEBI) was established primarily for the purpose of (1) to protect the interests of investors in securities (ii) to promote the development of securities market (iii) to regulate the securities market and (iv) for matters connected therewith and incidental thereto.

The following defaults by stock brokers come within the purview of SEBI Act:

(a) any failure on the part of the stock broker to issue contract notes in the form and in the manner specified by the Stock Exchange.

(b) any failure on the part of the broker to deliver any security or to make payment of the amount due to the investor in the manner or within the period specified in the regulations.

(c) any collection of charges by way of brokerage in excess of the brokerage as specified in the regulations. (Section15 F, SEBI Act, 1992)

Question 4

SEBI received a complaint from an investor that he has not received the payment due to him from a registered stock broker. Explain the action that can be taken by SEBI against the stock broker under the provisions of Securities and Exchange Board of India Act, 1992 and the factors that will be taken into account while taking such action.

Answer

The registered stock broker is liable to a penalty under section 15F of SEBI Act, 1992 in respect of certain defaults. According to section 15F (b), if a registered stock broker fails to make payment of the amount due to the investor in the manner or within the period specified in the regulations, he shall be liable to a penalty of one lakh rupees for each day during which such failure continues or one crore ruppes, whichever is less [SEBI (Amendment) Act, 2002].

For the purpose of adjudging under section 15 F, SEBI shall appoint any of its officers not below the rank of Division Chief to be an adjudicating officer for holding an enquiry in the prescribed manner after giving the person concerned a reasonable opportunity of being heard for the purpose of imposing any penalty. While holding an inquiry, the adjudicating officer has certain powers laid down in Section 15I(2).

While adjudging quantum of penalty under section 15J, the adjudicating officer shall have due regard to the following factors:

(a) the amount of disproportionate gain or unfair advantage, wherever quantifiable, made as a result of the defaults.
(b) the amount of loss to an investor or group of investors as a result of the default.
(c) the repetitive nature of the default.
Taking into consideration the above factors, the adjudicating officer may levy a maximum penalty as prescribed in Section 15F for default by the concern stock broker in making the payment to the investor.

Question 5

Mr. Raman, an investor is not satisfied with the dealings of his stock broker who is registered with Delhi Stock Exchange. Mr. Raman approaches you to guide him regarding the avenues available to him for making a complaint against the stock broker under Securities and Exchange Board of India Act, 1992 and also the grounds on which such complaint can be made. You are required to briefly explain the answer to his queries.

Answer

Securities and Exchange Board of India (SEBI) was established for regulating the various aspects of stock market. One of its function is to register and regulate the stock brokers. In the light of this, Mr. Raman is advised that the complaint against the erring stock broker may be submitted to SEBI.

The grounds on which or the defaults for which complaints may be made to SEBI are as follows:

(a) Any failure on the part of the stock broker to issue contract notes in the form and manner specified by the stock exchange of which the stock broker is a member.
(b) Any failure to deliver any security or any failure to make payment of the amount due to the investor in the manner within the period specified in the regulations.
(c) Any collection of charges by way of brokerage which is in excess of the brokerage specified in the regulations..