

**Paper – 2: STRATEGIC FINANCIAL MANAGEMENT**

**QUESTIONS**

**Security Valuation**

1. Mr. A is holding 1000 shares of face value of ₹ 100 each of M/s. ABC Ltd. He wants to hold these shares for long term and have no intention to sell.

On 1<sup>st</sup> January 2020, M/s XYZ Ltd. has made short sales of M/s. ABC Ltd.'s shares and approached Mr. A to lend his shares under Stock Lending Scheme with following terms:

- (i) Shares to be borrowed for 3 months from 01-01-2020 to 31-03-2020,
- (ii) Lending Charges/Fees of 1% to be paid every month on the closing price of the stock quoted in Stock Exchange and
- (iii) Bank Guarantee will be provided as collateral for the value as on 01-01-2020.

**Other Information:**

- (a) Cost of Bank Guarantee is 8% per annum,
- (b) On 29-02-2020 M/s ABC Ltd.'s share quoted in Stock Exchange on various dates are as follows:

Date	Share Price in Scenario -1 Bullish	Share Price in Scenario -2 Bullish
01-01-2020	1000	1000
31-01-2020	1020	980
29-02-2020	1040	960
31-03-2020	1050	940

You are required to find out:

- (i) Earning of Mr. A through Stock Lending Scheme in both the scenarios,
  - (ii) Total Earnings of Mr. A during 01-01-2020 to 31-03-2020 in both the scenarios,
  - (iii) What is the Profit or loss to M/s. XYZ by shorting the shares using through Stock Lending Scheme in both the scenarios?
2. Following is the information for the options free bond:

Face value of the bond	₹ 1,000
Coupon rate	7%
Terms of Maturity	7 years
Yield to Maturity	8%

You are required to calculate:

- (i) Market price of the bond and duration.
- (ii) If there is an increase in yield by 35 basis points, what would be the price of bond?

Present Value	t <sub>1</sub>	t <sub>2</sub>	t <sub>3</sub>	t <sub>4</sub>	t <sub>5</sub>	t <sub>6</sub>	t <sub>7</sub>
PVIF <sub>0.07,t</sub>	0.935	0.874	0.817	0.764	0.714	0.667	0.623
PVIF <sub>0.08,t</sub>	0.926	0.857	0.794	0.735	0.681	0.631	0.584

### Portfolio Management

3. Mr. A is having 1 lakh shares of K Ltd. The beta of the company is 1.40.

Mr. B a financial advisor has suggested having the following portfolio:

Security	Beta	% holding
L	1.20	10
M	0.75	10
N	0.40	30
O	1.40	50
		<b>100</b>

Market Return is 12%

Risk free rate is 8%

You. Are required to calculate the following for the present investment and suggested portfolio:

- (i) What is the expected return based on CAPM and also
    - (1) If the market goes up by 2.5%.
    - (2) If the market goes down by 2.5%.
    - (3) If the market is giving a negative return of 2.5%.
  - (ii) If the probability of market giving negative return is more, please advise Mr. A whether to continue the holdings of M/s. K Ltd. or to buy the portfolio as per the suggestion of Mr. B. If so, why?
4. Mayuri is interested to construct a Portfolio of Securities X and Y. She has collected the following information:

	X	Y
Expected Return (ER)	19%	23%
Risk ( $\sigma$ )	14%	18%

Mayuri has 5 Portfolio options of X and Y as follows:

- (i) 50% of funds in each X and Y
- (ii) 75% of funds in X and 25% in Y
- (iii) 25% of funds in X and 75% in Y
- (iv) 60% of funds in X and 40% in Y
- (v) 35% of funds in X and 65% in Y

Suppose if Co-efficient of correlation ( $r$ ) between X and Y is 0.16, you are required to calculate:

- (i) Expected Return under different Portfolio Options.
- (ii) Risk Factor associated with these Portfolio Options.
- (iii) Which Portfolio is best from the point of view of Risk?
- (iv) Which Portfolio is best from the point of view of Return?

### Mutual Funds

5. On 1<sup>st</sup> April, an open ended scheme of mutual fund had 400 lakh units outstanding with Net Assets Value (NAV) of ₹19. At the end of April, it issued 5 lakh units at an opening NAV plus 2% load, adjusted for dividend equalization. At the end of May, 4 Lakh units were repurchased at the opening NAV less 2% exit load adjusted for dividend equalization. At the end of June, 60% of its available income was distributed.

In respect of April-June quarter, the following additional information is available:

Particulars	₹ in Lakhs
Portfolio value appreciation	515.67
Income of April	31.960
Income of May	46.125
Income for June	58.470

You are required to calculate:

- (i) Income available for distribution;
- (ii) Issue price at the end of April;
- (iii) Repurchase price at the end of May; and
- (iv) Net Asset Value (NAV) as on 30<sup>th</sup> June.

**Derivatives Analysis & Valuation**

6. Mr. P established the following spread on the Coastal Corporation's stock:
- (i) Purchased one 3-month call option with a premium of ₹ 6.5 and an Exercise price of ₹ 110.
  - (ii) Purchased one 3-month put option with a premium of ₹ 10 and an Exercise price of ₹ 90.

Coastal Corporation's stock is currently selling at ₹ 100. Determine profit or loss, if the price of Coastal Corporation's stock:

- (i) Remains at ₹ 100 after 3 months.
- (ii) Falls at ₹ 70 after 3 months.
- (iii) Rises to ₹ 138 after 3 months.

Assume the size of option is 1,000 shares of Coastal Corporation.

7. Following information is available for consideration:

BSE Index	25,000
Value of portfolio	₹ 50,50,000
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 4 months maturity is used to hedge the value of portfolio over next 3 months. One future contract is for delivery of 50 times the index.

Based on the above information calculate:

- (i) Price of future contract.
- (ii) Gain on short futures position if index turns out to be 22,500 in 3 months.

Note: Daily compounding (exponential) formula is not required to be used.

**Foreign Exchange Exposure & Risk Management**

8. A US investor chose to invest in Sensex for a period of one year. The relevant information is given below.

Size of investment (\$)	20,00,000
Spot rate 1 year ago (₹/\$)	42.50/60
Spot rate now (₹/\$)	43.85/90

Sensex 1 year ago	3,256
Senex now	3,765
Inflation in US	5%
Inflation in India	9%

- (i) Compute the nominal rate of return to the US investor.
  - (ii) Compute the real depreciation /appreciation of Rupee.
  - (iii) What should be the exchange rate if relevant purchasing power parity holds good?
  - (iv) What will be the real return to an Indian investor in Sensex?
9. Mr. Mammen, an Indian investor invests in a listed bond in USA. If the price of the bond at the beginning of the year is USD 100 and it is USD 103 at the end of the year. The coupon rate is 3% payable annually.
- Find the return on investment in terms of home country currency if:
- (i) USD is Flat.
  - (ii) USD appreciates during the year by 3%.
  - (iii) USD depreciates during the year by 3%.
  - (iv) Indian Rupee appreciates during the year by 5%.
  - (v) Will your answer differ if Mr. Mammen invests in the bond just before the interest payable.

#### International Financial Management

10. M/s. Raghu Ltd. is interested in expanding its operation and planning to install manufacturing plant at US. It requires 8.82 million USD (net of issue expenses/ floatation cost) to fund the proposed project. GDRs are proposed to be issued to finance this project. The estimated floatation cost of GDRs is 2%.

Additional information:

- (i) Expected market price of share at the time of issue of GDR is ₹ 360 (Face Value ₹ 100)
  - (ii) Each GDR will represent two underlying Shares.
  - (iii) The issue shall be priced at 10% discount to the market price.
  - (iv) Expected exchange rate is INR/USD 72.
  - (v) Dividend is expected to be paid at the rate of 20% with growth rate of 12%.
- (1) You, as a financial consultant, are required to compute the number of GDRs to be issued and cost of the GDR.

- (2) What is your suggestion if the company receives an offer from a US Bank willing to provide an equivalent loan with an interest rate of 12%?
- (3) How much company can save by choosing the option as recommended by you?

### Interest Rate Risk Management

11. A textile manufacturer has taken floating interest rate loan of ₹ 40,00,000 on 1<sup>st</sup> April, 2012. The rate of interest at the inception of loan is 8.5% p.a. interest is to be paid every year on 31<sup>st</sup> March, and the duration of loan is four years.
  - (i) Suppose in the month of October 2012, the Central bank of the country releases following projections about the interest rates likely to prevail in future.

Date	Rate of Interest
On 31 <sup>st</sup> March, 2013	8.75%
On 31 <sup>st</sup> March, 2014	10.00%
On 31 <sup>st</sup> March, 2015	10.50%
On 31 <sup>st</sup> March, 2016	7.75%

Show how borrower can hedge the risk arising out of expected rise in the rate of interest when he wants to peg his interest cost at 8.50% p.a.

- (ii) Assume that the premium negotiated by both the parties is 0.75% to be paid on 1<sup>st</sup> October, 2012 and the actual rate of interest on the respective due dates happens to be as follows:

Date	Rate of Interest
On 31 <sup>st</sup> March, 2013	10.20%
On 31 <sup>st</sup> March, 2014	11.50%
On 31 <sup>st</sup> March, 2015	9.25%
On 31 <sup>st</sup> March, 2016	8.25%

Show how the settlement will be executed on the perspective interest due dates.

### Corporate Valuation

12. Herbal Box is a small but profitable producer of beauty cosmetics using the plant Aloe Vera. Though it is not a high-tech business, yet Herbal's earnings have averaged around ₹ 18.50 lakhs after tax, mainly on the strength of its patented beauty cream to remove the pimples.

The patent has nine years to run, and Herbal Box has been offered ₹ 50 lakhs for the patent rights. Herbal's assets include ₹ 50 lakhs of property, plant and equipment, and ₹ 25 lakhs of working capital. However, the patent is not shown on the books of Herbal

Box. Assuming Herbal's cost of capital being 14 percent, calculate its Economic Value Added (EVA).

### Mergers, Acquisitions & Corporate Restructuring

13. B Ltd. Wants to acquire S Ltd. and has offered a swap ratio of 2:3 (2 shares for every 3 share of S Ltd.). Following information is available:

Particulars	B Ltd.	S Ltd.
Profit after tax (in ₹)	21,00,000	4,50,000
Equity shares outstanding (Nos.)	6,00,000	1,80,000
EPS (₹)	3.5	2.5
PE Ratio	10 times	7 times
Price quoting per share on BSE before the merger announcement (₹)	35.00	17.50

#### Required:

- The number of equity shares to be issued by B Ltd. for acquisition of S Ltd.
- What is the EPS of B Ltd. after the acquisition?
- Determine the equivalent earnings per share of S Ltd. and calculate per share gain or loss to shareholders of S Ltd.
- What is the expected market price per share of B Ltd. after the acquisition, assuming its PE Multiple remains unchanged?
- Determine the market value of the merged firm.
- After the announcement of merger, price of shares of S Ltd. rose by 10% on BSE. Mr. X, an investor, having 10,000 shares of S Ltd. is having another investment opportunity, which yields annual return of 14% is seeking your advice whether he needs to offload the shares in the market or accept the shares from B Ltd.

### Theoretical Questions

- Unrelated companies come together to form an entity. What this relationship is called? Discuss briefly the features of this entity.
- There exists a vast difference between Project and Parent cash flow? What are these factors? Briefly discuss.

## SUGGESTED ANSWERS/HINTS

## 1. Earnings of Mr. A through stock lending scheme

		Scenario 1	Scenario 2
(i)	Lending fee		
	31-01-20      1020 x 1% and 980 x 1%	10.20	9.80
	29-02-20      1040 x 1% and 960 x 1%	10.40	9.60
	31-03-20      1050 x 1% and 940 x 1%	10.50	9.40
	Earnings from lending per Share (A)	31.10	28.80
	Total No. of Shares	1000	1000
	Total Earning from Lending	31,100	28,800
(ii)	Dividend income per Share (B)	25.00	25.00
	Total earnings per share (A) + (B)	56.10	53.80
	Total No. of Shares	1000	1000
	Total Earning	56,100	53,800
(iii)	Gain on shortening the shares (1,050 - 1,000) and (1,000 - 940)	(50.00)	60.00
	Lending fees paid	(31.10)	(28.80)
	Bank guarantee charges @ 8%	(20.00)	(20.00)
	Gain Per Share	(101.10)	11.20
	Total No. of Shares	1000	1000
	Total Gain on shortening the shares	(1,01,100)	11,200

## 2. (i) (1) Market price and duration of Bond

$$= 70 (\text{PVIAF } 8\%, 7) + 1,000 (\text{PVIF } 8\%, 7)$$

$$= 70 (5.208) + 1,000 (0.584) = 364.56 + 584.00 = 948.56$$

## (2) Duration of Bond

Period (A)	Cash flow (₹) (B)	PVF@ 8% (C)	PV (₹) (D) = (B) x (C)	(E) = (A) x (D)
1	70	0.926	64.82	64.82
2	70	0.857	59.99	119.98
3	70	0.794	55.58	166.74
4	70	0.735	51.45	205.80

5	70	0.681	47.67	238.35
6	70	0.631	44.17	265.02
7	1,070	0.584	624.88	4374.16
			948.56	5434.87

Duration of the Bond is  $\frac{5434.87}{948.56} = 5.73$  years

(ii) Price of Bond if increase in yield by 35 basis points

Period	Cash flow (₹)	PVF@8.35%	PV (₹)
1	70	0.923	64.61
2	70	0.852	59.64
3	70	0.786	55.02
4	70	0.726	50.82
5	70	0.670	46.90
6	70	0.618	43.26
7	1,070	0.570	609.90
			930.15

Alternatively, if the same increase in yield is linked with duration as computed in sub part (i), then answer will be computed as follows:

$$\text{Volatility of Bond} = \frac{\text{Duration}}{1 + \text{YTM}} = \frac{5.73}{1 + 0.08} = 5.306$$

The expected market price if increase in yield is by 35 basis points.

$$= ₹ 948.56 \times 0.35 (5.306/100) = ₹ 17.62$$

Hence expected market price is ₹ 948.56 – ₹ 17.62 = ₹ 930.94

Hence, the market price will decrease with increase in the yield.

### 3. Working Notes -

Calculation of Portfolio Beta suggested by Mr. B

Security	Beta	Wt. of Holding	Beta x Wt. of Holding
L	1.20	0.1	0.120
M	0.75	0.1	0.075
N	0.40	0.3	0.120
O	1.40	0.5	0.700
Total		1.0	1.015

Portfolio Beta is 1.015

Calculation of Expected Return based on CAPM at present situation-

Particulars	Risk Free Rate ( $R_f$ )	Beta	Market Return	Risk Premium = $R_m - R_f$	Beta X Risk Premium	Expected Return
a	b	c	d	e = d - b	f = c x e	g = b + f
K Ltd.	8	1.400	12	4	5.600	13.60
Portfolio	8	1.015	12	4	4.060	12.06

(i) (1) Calculation of Expected Return based on CAPM if market goes up by 2.5%:

Particulars	Risk Free Rate ( $R_f$ )	Beta	Market Return	Risk Premium = $R_m - R_f$	Beta X Risk Premium	Expected Return
a	b	c	d	e = d - b	f = c X e	g = b + f
K Ltd.	8	1.400	14.5	6.5	9.100	17.10
Portfolio	8	1.015	14.5	6.5	6.598	14.60

(2) Calculation of Expected Return based on CAPM if market goes down by 2.5%:

Particulars	Risk Free Rate( $R_f$ )	Beta	Market Return	Risk Premium = $R_m - R_f$	Beta X Risk Premium	Expected Return
a	b	c	d	e = d - b	f = c X e	g = b + f
K Ltd.	8	1.400	9.5	1.5	2.100	10.10
Portfolio	8	1.015	9.5	1.5	1.523	9.52

(3) Calculation of Expected Return based on CAPM if market gives negative returns of 2.5%-

Particulars	Risk Free Rate( $R_f$ )	Beta	Market Return	Risk Premium = $R_m - R_f$	Beta X Risk Premium	Expected Return
a	b	c	d	e = d - b	f = c X e	G = b + f
K Ltd.	8	1.400	-2.5	-10.5	-14.700	-6.70
Portfolio	8	1.015	-2.5	-10.5	-10.658	-2.66

- (ii) If the probability of market giving negative return is more, it is advisable to Mr. A to buy the portfolio suggested by Mr. B because Beta of the portfolio is less than of K Ltd.

4. We have  $E_p = W_1E_1 + W_2E_2 + \dots + W_nE_n$

$$\text{and for standard deviation } \sigma_p^2 = \sum_{i=1}^n \sum_{j=1}^n w_i w_j \sigma_{ij}$$

$$\sigma_p^2 = \sum_{i=1}^n \sum_{j=1}^n w_i w_j \rho_{ij} \sigma_i \sigma_j$$

Two asset portfolio

$$\sigma_p^2 = w_1^2 \sigma_1^2 + w_2^2 \sigma_2^2 + 2 w_1 w_2 \sigma_1 \sigma_2 \rho_{12}$$

Or

$$\sigma_p = \sqrt{w_1^2 \sigma_1^2 + w_2^2 \sigma_2^2 + 2 w_1 w_2 \sigma_1 \sigma_2 \rho_{12}}$$

Substituting the respective values we get,

- (i) 50% of funds in each of X and Y

$$E_p = 0.50 \times 19\% + 0.50 \times 23\% = 21\%$$

$$\sigma_p^2 = (0.50)^2(14\%)^2 + (0.50)^2(18\%)^2 + 2(0.50)(0.50)(0.16)(14\%)(18\%)$$

$$\sigma_p^2 = 49 + 81 + 20.16 = 150.16$$

$$\sigma_p = 12.25\%$$

- (ii) 75% in X and 25% in Y

$$E_p = 0.75 \times 19\% + 0.25 \times 23\% = 20\%$$

$$\sigma_p^2 = (0.75)^2(14\%)^2 + (0.25)^2(18\%)^2 + 2(0.75)(0.25)(0.16)(14\%)(18\%)$$

$$\sigma_p^2 = 110.25 + 20.25 + 15.12 = 145.62$$

$$\sigma_p = 12.07\%$$

- (iii) 25% in X and 75% in Y

$$E_p = 0.25 \times 19\% + 0.75 \times 23\% = 22\%$$

$$\sigma_p^2 = (0.25)^2(14\%)^2 + (0.75)^2(18\%)^2 + 2(0.25)(0.75)(0.16)(14\%)(18\%)$$

$$\sigma_p^2 = 12.25 + 182.25 + 15.12 = 209.62$$

$$\sigma_p = 14.48\%$$

(iv) 60% in X and 40% in Y

$$E_p = 0.60 \times 19\% + 0.40 \times 23\% = 20.60\%$$

$$\sigma_p^2 = (0.60)^2(14\%)^2 + (0.40)^2(18\%)^2 + 2(0.60)(0.40)(0.16)(14\%)(18\%)$$

$$\sigma_p^2 = 70.56 + 51.84 + 19.35 = 141.75$$

$$\sigma_p = 11.91\%$$

(v) 35% in X and 65% in Y

$$E_p = 0.35 \times 19\% + 0.65 \times 23\% = 21.60\%$$

$$\sigma_p^2 = (0.35)^2(14\%)^2 + (0.65)^2(18\%)^2 + 2(0.35)(0.65)(0.16)(14\%)(18\%)$$

$$\sigma_p^2 = 24.01 + 136.89 + 18.35 = 179.25$$

$$\sigma_p = 13.39\%$$

Portfolio	(i)	(ii)	(iii)	(iv)	(v)
Return	21.00	20.00	22.00	20.60	21.60
$\sigma$	12.25	12.07	14.48	11.91	13.39

In the terms of return, we see that portfolio (iii) is the best portfolio.

In terms of risk we see that portfolio (iv) is the best portfolio.

##### 5. Calculation of Income available for Distribution

	Units (Lakh)	Per Unit (₹)	Total (₹ In lakh)
Income from April	400	0.0799	31.960
Add: Dividend equalization collected on issue	5	0.0799	0.3995
	405	0.0799	32.3595
Add: Income from May		0.1139	46.125
	405	0.1938	78.4845
Less: Dividend equalization paid on repurchase	4	0.1938	(0.7752)
	401	0.1938	77.7093
Add: Income from June		0.1458	58.470
	401	0.3396	136.1793
Less: Dividend Paid		0.2038	(81.7076)
	401	0.1358	54.4717

**Calculation of Issue Price at the end of April**

	₹
Opening NAV	19.00000
Add: Entry Load 2% of ₹ 19	(0.38000)
	19.38000
Add: Dividend Equalization paid on Issue Price	0.07999
	19.45999
	Or 19.46

**Calculation of Repurchase Price at the end of May**

	₹
Opening NAV	19.0000
Less: Exit Load 2% of ₹ 19	(0.3800)
	18.6200
Add: Dividend Equalization paid on Issue Price	0.1938
	18.8138

**Closing NAV as on 30<sup>th</sup> June**

		₹ (Lakh)
Opening Net Asset Value (₹ 19 × 400)		7,600.0000
Portfolio Value Appreciation		515.6700
Issue of Fresh Units (5 × 19.46)		97.3000
Income Received (31.960 + 46.125 + 58.470)		136.5550
		8349.5250
Less: Units repurchased (4 × 18.8138)	75.2552	
Income Distributed	81.7076	156.9628
Closing Net Asset Value		8,192.5622
Closing Units (400 + 5 – 4) lakh		401 lakhs
∴ Closing NAV as on 30 <sup>th</sup> June		₹ 20.4303

6. (i) Total premium paid on purchasing a call and put option  
 = (₹ 6.50 per share × 1000) + (₹ 10 per share × 1000).  
 = ₹ 6,500 + ₹ 10,000 = ₹ 16,500

In this case, Mr. P exercises neither the call option nor the put option as both will result in a loss for him.

Ending value = - ₹ 16,500 + zero gain = - ₹ 16,500

i.e. Net loss = ₹ 16,500

- (ii) Since the price of the stock is below the exercise price of the call, the call will not be exercised. Only put is valuable and is exercised.

Total premium paid = ₹ 16,500

Ending value = - ₹ 16,500 + ₹[(90 - 70) × 1000] = - ₹ 16,500 + ₹ 20,000 = ₹ 3,500

∴ Net gain = ₹ 3,500

- (iii) In this situation, the put is worthless, since the price of the stock exceeds the put's exercise price. Only call option is valuable and is exercised.

Total premium paid = ₹ 16,500

Ending value = - ₹ 16,500 + ₹ [(138 - 110) × 1000]

∴ Net Gain = - ₹ 16,500 + ₹ 28,000 = ₹ 11,500

7. (i) Current future price of the index =  $25000 + 25000 (0.09 - 0.06) \frac{4}{12}$   
 $= 25000 + 250 = 25250$

∴ Price of the future contract = ₹ 50 × 25,250 = ₹ 12,62,500

- (ii) Hedge Ratio =  $\frac{50,50,000}{12,62,500} \times 1.5 = 6$  contracts

Index after three months turns out to be 22500

Future price will be =  $22500 + 22500 (0.09 - 0.06) \times \frac{1}{12} = 22556.25$

Therefore, Gain from the short futures position is =  $6 \times (25250 - 22556.25) \times 50$   
 $= ₹ 8,08,125$

8. (i) Nominal rate of return to the US investor

Size of investment (\$)	20,00,000
Size of investment (₹) (\$ 20,00,000 × 42.50)	8,50,00,000
Sensex at $T_0$	3,256
No. of units of Sensex that can be purchased at $T_0$	
(₹ 8,50,00,000/3,256)	26,105
Sensex at $T_1$	3,765

Sale of Sensex (26,105 x 3,765)	9,82,85,325
US\$ at T <sub>1</sub>	₹ 43.90
Equivalent Amount in US\$	22,38,846
Gain in US\$ [22,38,846 – 20,00,000]	2,38,846
Nominal rate to US investor	11.94%

## (ii) Real Appreciation/Depreciation of Rupee

$$\text{Real Exchange Rate (Buying)} = 43.85 \frac{(1+0.05)}{(1+0.09)} = 42.24$$

$$\text{Real Appreciation of ₹} = \frac{42.50 - 42.24}{42.50} \times 100 = 0.61\%$$

## (iii) Exchange rate if relevant purchasing power parity holds

$$\text{Buying Rate} = 42.50 \frac{(1+0.09)}{(1+0.05)} = 44.12$$

$$\text{Selling rate} = 42.60 \frac{(1+0.09)}{(1+0.05)} = 44.22$$

$$\text{Exchange rate} = 44.12/44.22$$

## (iv) Real return to Indian Investor in Sensex

$$\text{Nominal Return} = \frac{3,765 - 3,256}{3,256} \times 100 = 15.63\%$$

$$\text{Real return} = \frac{(1.1563)}{(1.09)} - 1 = 0.0608 \text{ or } 6.08\%$$

## 9. (i) If USD is flat

$$\text{Return} = \frac{(\text{Price at end} - \text{Price at beginning}) + \text{Interest}}{\text{Price at beginning}}$$

$$= \frac{(103 - 100) + 3}{100}$$

$$= \frac{3 + 3}{100} = 0.06 \text{ say } 6\%$$

(ii) If USD appreciates by 3%

$$(1+0.06)(1+0.03) - 1 = 1.06 \times 1.03 - 1 = 0.0918 \text{ i.e. } 9.18\%$$

(iii) If USD depreciates by 3%

$$(1+0.06)(1-0.03) - 1 = 1.06 \times 0.97 - 1 = 0.0282 \text{ i.e. } 2.82\%$$

(iv) If Indian Rupee is appreciated by 5%

$$(1+0.06)(1-0.05) - 1 = 1.06 \times 0.95 - 1 = 0.007 \text{ i.e. } 0.7\%$$

(v) No, our answer will not differ even if Mr. Mammen invests in bond just before the interest is payable.

10. Net Issue Size = \$ 8.82 million

$$\text{Gross Issue} = \frac{8.82}{0.98} = \$9.00 \text{ million}$$

Issue Price per GDR in ₹ (360 x 2 x 90%) ₹ 648

Issue Price per GDR in \$ (₹ 648/ ₹ 72) \$ 9.00

Dividend Per GDR ( $D_1$ ) = ₹ 20 x 2 = ₹ 40

Net Proceeds Per GDR = ₹ 648 x 0.98 = ₹ 635.04

(1) (a) Number of GDR to be issued

$$\frac{\$ 9.00 \text{ million}}{\$ 9} = 1.00 \text{ million}$$

(b) Cost of GDR

$$k_e = \frac{40.00}{635.04} + 0.12 = 18.30\%$$

(2) If the company receives an offer from US Bank willing to provide an equivalent amount of loan with interest rate of 12%, it should accept the offer.

(3) If the offer is accepted there will be net saving of 6.30%.

11. As borrower does not want to pay more than 8.5% p.a., on this loan where the rate of interest is likely to rise beyond this, hence, he has to hedge the risk by entering into an agreement to buy interest rate caps with the following parameters:

- National Principal: ₹ 40,00,000/-
- Strike rate: 8.5% p.a.
- Reference rate: the rate of interest applicable to this loan
- Calculation and settlement date: 31<sup>st</sup> March every year

- Duration of the caps: till 31<sup>st</sup> March 2016
- Premium for caps: negotiable between both the parties

To purchase the caps this borrower is required to pay the premium upfront at the time of buying caps. The payment of such premium will entitle him with right to receive the compensation from the seller of the caps as soon as the rate of interest on this loan rises above 8.5%. The compensation will be at the rate of the difference between the rate of none of the cases the cost of this loan will rise above 8.5% calculated on ₹ 40,00,000/-. This implies that in none of the cases the cost of this loan will rise above 8.5%. This hedging benefit is received at the respective interest due dates at the cost of premium to be paid only once.

The premium to be paid on 1<sup>st</sup> October 2012 is 30,000/- (₹ 40,00,000 x 0.75/100). The payment of this premium will entitle the buyer of the caps to receive the compensation from the seller of the caps whereas the buyer will not have obligation. The compensation received by the buyer of caps will be as follows:

**On 31<sup>st</sup> March 2013**

The buyer of the caps will receive the compensation at the rate of 1.70% (10.20 - 8.50) to be calculated on ₹ 40,00,000, the amount of compensation will be ₹ 68,000/- (40,00,000 x 1.70/100).

**On 31<sup>st</sup> March 2014**

The buyer of the caps will receive the compensation at the rate of 3.00% (11.50 – 8.50) to be calculated on ₹ 40,00,000/-, the amount of compensation will be ₹ 1,20,000/- (40,00,000 x 3.00/100).

**On 31<sup>st</sup> March 2015**

The buyer of the caps will receive the compensation at the rate of 0.75% (9.25 – 8.50) to be calculated on ₹ 40,00,000/-, the amount of compensation will be ₹ 30,000 (40,00,000 x 0.75/100).

**On 31<sup>st</sup> March 2016**

The buyer of the caps will not receive the compensation as the actual rate of interest is 8.25% whereas strike rate of caps is 8.5%. Hence, his interest liability shall not exceed 8.50%.

Thus, by paying the premium upfront buyer of the caps gets the compensation on the respective interest due dates without any obligations.

12.  $EVA = \text{Income Earned} - (\text{Cost of Capital} \times \text{Total Investment})$

**Total Investments**

	Amount (₹ in Lakhs)
Working Capital	25.00
Property, Plant & Equipments	50.00
Patent Rights	50.00
Total	125.00

$$\begin{aligned}
 \text{EVA} &= \text{Profit Earned} - \text{WACC} \times \text{Invested Capital} \\
 &= ₹ 18.50 \text{ Lakhs} - 14\% \times ₹ 125 \text{ Lakhs} \\
 &= ₹ 1.00 \text{ Lakhs}
 \end{aligned}$$

13. (i) The number of shares to be issued by B Ltd.:

The Exchange ratio is 2:3

$$\text{So, new Shares} = 1,80,000 \times \frac{2}{3} = 1,20,000 \text{ shares.}$$

- (ii) EPS of B Ltd. after acquisition:

Total Earnings	(₹ 21,00,000 + ₹ 4,50,000)	₹25,50,000
No. of Shares	(6,00,000 + 1,20,000)	7,20,000
EPS	(₹ 25,50,000/7,20,000)	₹ 3.5416 or 3.54

- (iii) Equivalent EPS of S Ltd. and gain/loss to shareholders:

Equivalent EPS of S Ltd. ( $₹ 3.54 \times \frac{2}{3}$ )	₹ 2.36
Less: EPS before merger	2.50
Loss	(0.14)

- (iv) New Market Price of B Ltd. (P/E remaining unchanged):

Present P/E Ratio of B Ltd.	10 times
Expected EPS after merger	₹ 3.54
Expected Market Price ( $₹ 3.54 \times 10$ )	₹ 35.40

- (v) Market Value of merged firm:

Total number of Shares	7,20,000
Expected Market Price	₹ 35.40
Total value ( $7,20,000 \times 35.40$ )	₹ 2,54,88,000

(vi)

a) Equivalent EPS of S Ltd.	₹ 2.36
b) BSE price per share before merger announcement	₹ 17.50
c) After the merger announcement 10% increase in price of share	₹ 1.75
d) Present Market Price of share (b + c)	₹ 19.25
e) Return on Market Price per share (a/d)	12.26

As Mr. X is having another opportunity to earn 14% and expected return on S Ltd.'s share is 12.26%, it is advisable to offload in market.

14. Unrelated companies come together to form an entity. Such relationship is called conglomerate merger.

Such mergers involve firms engaged in unrelated type of business operations. In other words, the business activities of acquirer and the target are neither related to each other horizontally (i.e., producing the same or competing products) nor vertically (having relationship of buyer and supplier).

**Features:**

- ❖ In a pure conglomerate merger, there are no important common factors between the companies in production, marketing, research and development and technology.
  - ❖ There may however be some degree of overlapping in one or more of these common factors. Such mergers are in fact, unification of different kinds of businesses under one flagship company.
  - ❖ The purpose of merger remains utilization of financial resources, enlarged debt capacity and also synergy of managerial functions.
15. There exists a big difference between the project and parent cash flows due to tax rules, exchange controls.

Management and royalty payments are returns to the parent firm. The basis on which a project shall be evaluated depend on one's own cash flows, cash flows accruing to the parent firm or both.

Evaluation of a project on the basis of own cash flows entails that the project should compete favourably with domestic firms and earn a return higher than the local competitors. If not, the shareholders and management of the parent company shall invest in the equity/government bonds of domestic firms. A comparison cannot be made since foreign projects replace imports and are not competitors with existing local firms. Project evaluation based on local cash flows avoid currency conversion and eliminates problems associated with fluctuating exchange rate.

For evaluation of foreign project from the parent firm's angle, both operating and financial cash flows actually remitted to it form the yardstick for the firm's performance and the basis for distribution of dividends to the shareholders and repayment of debt/interest to lenders. An investment has to be evaluated on the basis of net after tax operating cash flows generated by the project. As both types of cash flows (operating and financial) are clubbed together, it is essential to see that financial cash flows are not mixed up with operating cash flows.