

PAPER – 2 : STRATEGIC FINANCIAL MANAGEMENT

Question No.1 is compulsory.

Answer any five questions from the remaining six questions.

Working notes should form part of the answers.

Question 1

(a) On April 3, 2016, a Bank quotes the following:

Spot exchange Rate (US \$ 1)	INR 66.2525	INR 67.5945
2 months' swap points	70	90
3 months' swap points	160	186

In a spot transaction, delivery is made after two days.

Assume spot date as April 5, 2016.

Assume 1 swap point = 0.0001,

You are required to:

- ascertain swap points for 2 months and 15 days. (For June 20, 2016),
- determine foreign exchange rate for June 20, 2016, and
- compute the annual rate of premium/discount of US\$ on INR, on an average rate.

(5 Marks)

(b) The following information is available in respect of Security A:

Equilibrium Return	12%
Market Return	12%
6% Treasury Bond trading at	₹ 120
Co-variance of Market Return and Security Return	196%
Coefficient of Correlation	0.80

You are required to determine the Standard Deviation of:

- Market Return and
- Security Return

(5 Marks)

(c) Mr. A has invested in three Mutual Fund (MF) schemes as per the details given below:

Particulars	MF 'A'	MF 'B'	MF 'C'
Date of Investment	01-11-2015	01-02-2016	01-03-2016
Amount of investment (₹)	1,00,000	2,00,000	2,00,000

Net Asset Value (NAV) at entry date (₹)	10.30	10.00	10.10
Dividend Received upto 31-3-2016 (₹)	2,850	4,500	NIL
NAV as on 31-3-2016 (₹)	10.25	10.15	10.00

Assume 1 year = 365 days.

Show the amount of rupees upto two decimal points.

You are required to find out the effective yield (upto three decimal points) on per annum basis in respect of each of the above three Mutual Fund (MF) schemes upto 31-3-2016.

(5 marks)

- (d) A Ltd. has issued convertible bonds, which carries a coupon rate of 14%. Each bond is convertible into 20 equity shares of the company A Ltd. The prevailing interest rate for similar credit rating bond is 8%. The convertible bond has 5 years maturity. It is redeemable at par at ₹100.

The relevant present value table is as follows.

Present values	t_1	t_2	t_3	t_4	t_5
$PVIF_{0.14, t}$	0.877	0.769	0.675	0.592	0.519
$PVIF_{0.08, t}$	0.926	0.857	0.794	0.735	0.681

You are required to estimate:

(Calculations be made upto 3 decimal places)

- current market price of the bond, assuming it being equal to its fundamental value,
- minimum market price of equity share at which bond holder should exercise conversion option; and
- duration of the bond.

(5 Marks)

Answer 1

- (a) (i) Swap Points for 2 months and 15 days

	Bid	Ask
Swap Points for 2 months (a)	70	90
Swap Points for 3 months (b)	160	186
Swap Points for 30 days (c) = (b) – (a)	90	96
Swap Points for 15 days (d) = (c)/2	45	48
Swap Points for 2 months & 15 days (e) = (a) + (d)	115	138

(ii) Foreign Exchange Rates for 20th June 2016

	Bid	Ask
Spot Rate (a)	66.2525	67.5945
Swap Points for 2 months & 15 days (b)	0.0115	0.0138
	66.2640	67.6083

(iii) Annual Rate of Premium

	Bid	Ask
Spot Rate (a)	66.2525	67.5945
Foreign Exchange Rates for 20 th June 2016 (b)	66.2640	67.6083
Premium (c)	0.0115	0.0138
Total (d) = (a) + (b)	132.5165	135.2028
Average (d) / 2	66.2583	67.6014
Premium	$\frac{0.0115}{66.2583} \times \frac{12}{2.5} \times 100$ = 0.0833%	$\frac{0.0138}{67.6014} \times \frac{12}{2.5} \times 100$ = 0.0980%

(b) (i) $R_f = \frac{6}{120} \times 100 = 5\%$

Applying CAPM

$$12\% = 5\% + \beta(12\% - 5\%)$$

$$7\% = \beta(7\%)$$

$$\beta = 1$$

$$\beta = \frac{\text{Cov}(r, m)}{\sigma_m^2}$$

$$1 = \frac{196}{\sigma_m^2}$$

$$\sigma_m^2 = 196$$

$$\sigma_m = \sqrt{196} = 14$$

Standard Deviation of Market Return = 14

$$(ii) \text{ Cor.} = \frac{\text{Cov}(r, m)}{\sigma_m \sigma_r}$$

$$0.80 = \frac{196}{14\sigma_r}$$

$$\sigma_r = 17.50\%$$

Standard Deviation of Security Return = 17.50%

(c)

Particulars	MF 'A'	MF 'B'	MF 'C'
(a) Investments	₹1,00,000	₹2,00,000	₹2,00,000
(b) Opening NAV	₹10.30	₹10.00	₹10.10
(c) No. of units (a/b)	9,708.74	20,000	19,801.98
(d) Unit NAV ON 31-3-2016	₹10.25	₹10.15	₹10.00
(e) Total NAV on 31-3-2016 (c x d)	₹ 99,514.59	₹2,03,000	₹1,98,019.86
(f) Increase / Decrease of NAV (a-e)	(₹485.41)	₹3,000	(₹1,980.14)
(g) Dividend Received	₹2,850	₹4,500	Nil
(h) Total yield (f + g)	₹ 2,364.59	₹ 7,500	(₹ 1,980.20)
(i) Number of Days	152	60	31
(j) Effective yield p.a. (h/a x 365/i x 100)	5.678%	22.813%	(-) 11.657%

(d) (i) Current Market Price of Bond

Time	CF	PVIF 8% PV (CF)	PV (CF)
1	14	0.926	12.964
2	14	0.857	11.998
3	14	0.794	11.116
4	14	0.735	10.290
5	114	0.681	<u>77.634</u>
		$\Sigma \text{PV (CF) i.e. } P_0 =$	<u>124.002</u>

Say

₹ 124.00

(ii) Minimum Market Price of Equity Shares at which Bondholder should exercise conversion option:

$$\frac{124.00}{20.00} = \text{Rs. } 6.20$$

(iii) Duration of the Bond

Year	Cash flow	P.V. @ 8%		Proportion of bond value	Proportion of bond value x time (years)
1	14	0.926	12.964	0.105	0.105
2	14	0.857	11.998	0.097	0.194
3	14	0.794	11.116	0.089	0.267
4	14	0.735	10.290	0.083	0.332
5	114	0.681	<u>77.634</u>	<u>0.626</u>	<u>3.130</u>
			<u>124.002</u>	<u>1.000</u>	<u>4.028</u>

Question 2

- (a) LMN Ltd. is an export oriented business house based in Mumbai. The Company invoices in customer's currency. The receipt of US \$ 6,00,000 is due on 1st September, 2016.

Market information as at 1st June 2016 is :

Exchange Rates	US\$/₹	Exchange Rates US \$ / ₹		Contract Size
Spot	0.01471	Currency Futures		
1 Month Forward	0.01464	June	0.01456	₹ 30,00,000
3 Months Forward	0.01458	September	0.01449	
	Initial Margin (₹)		Interest Rates in India %	
June	12,000		8.00 p.a.	
September	16,000		8.50 p.a.	

On 1st September, 2016, the spot rate US \$/₹ is 0.01461 and currency futures rate is US \$/₹ 0.01462.

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

Which of the following methods would be most advantageous for LMN Ltd.:

- (i) using Forward Contract,
- (ii) using Currency Futures; and
- (iii) not hedging Currency Risks

Show the calculations and comment.

(8 Marks)

- (b) On 10th July, an importer entered into a forward contract with bank for US \$ 50,000 due on 10th September at an exchange rate of ₹ 66.8400. The bank covered its position in the interbank market at ₹ 66.6800.

How the bank would react if the customer requests on 20th September:

- (i) to cancel the contract?
- (ii) to execute the contract?
- (iii) to extend the contract with due date to fall on 10th November?

The exchange rates for US\$ in the interbank market were as below:

		10 th September	20 th September
Spot	US\$1 =	66.1500/1700	65.9600/9900
Spot/September		66.2800/3200	66.1200/1800
Spot/October		66.4100/4300	66.2500/3300
Spot/November		66.5600/6100	66.4000/4900

Exchange margin was 0.1% on buying and selling.

Interest on outlay of funds was 12% p.a.

You are required to show the calculations to:

- (i) cancel the Contract,
- (ii) execute the Contract, and
- (iii) extend the Contract as above.

(8 Marks)

Answer

(a)

Receipts using a forward contract (6,00,000/0.01458)	= ₹4,11,52,263
Receipts using currency futures	
The number of contracts needed is	
(6,00,000/0.01449)/30,00,000 = 13.80 say 14 contracts	
Initial margin payable is 14 x ₹ 16,000 = ₹ 2,24,000	
On September 1 Close at 0.01462	
Receipts = US\$6,00,000/0.01461	= 4,10,67,762
Variation Margin = [(0.01462 – 0.01449) x 14 x 30,00,000/-]/0.01461	
OR (0.00013x14x3000000)/0.01461 = 5,460/0.01461	<u>3,73,717</u>
	4,14,41,479
Less: Interest Cost – 2,24,000 x 0.085 x 3/12	<u>₹4,760</u>

Net Receipts	<u>₹ 4,14,36,719</u>
Receipts under different methods of hedging	
Forward contract	₹4,11,52,263
Futures	₹4,14,36,719
No hedge	
US\$ 6,00,000/0.01461	₹ 4,10,67,762
The most advantageous option would have been to hedge with futures.	

- (b) In each of the case first the FEADI Rule of Automatic Cancellation shall be applied and customer shall pay the charges consisted of following:

- (a) Exchange Difference
 (b) Swap Loss
 (c) Interest on Outlay Funds
 (a) Exchange Difference

- (1) Cancellation Rate:

The forward sale contract shall be cancelled at Spot TT Purchase for \$ prevailing on the date of cancellation as follows:

\$/ ₹ Market Buying Rate	₹ 65.9600
Less: Exchange Margin @ 0.10%	₹ 0.0660
	₹ 65.8940

Rounded off to ₹ 65.8950

- (2) Amount payable on \$ 50,000

Bank sells \$50,000 @ ₹ 66.8400	₹ 33,42,000
Bank buys \$50,000 @ ₹ 65.8950	₹ 32,94,750
Amount payable by customer	₹ 47,250

- (b) Swap Loss

On 10th September the bank does a swap sale of \$ at market buying rate of ₹ 66.1500 and forward purchase for September at market selling rate of ₹ 66.3200.

Bank buys at	₹ 66.3200
Bank sells at	₹ 66.1500
Amount payable by customer	₹ 0.1700

Swap Loss for \$ 50,000 in ₹ = ₹ 8,500

(c) Interest on Outlay of Funds

On 10th September, the bank receives delivery under cover contract at ₹ 66.6800 and sell spot at ₹ 66.1500.

Bank buys at	₹ 66.6800
Bank sells at	₹ 66.1500
Amount payable by customer	₹ 0.5300

Outlay for \$ 50,000 in ₹ 26,500

Interest on ₹ 26,500 @ 12% for 10 days ₹ 87

(d) Total Cost

Cancellation Charges	₹ 47,250.00
Swap Loss	₹ 8,500.00
Interest	₹ 87.00
	₹ 55,837.00

(e) New Contract Rate

The contract will be extended at current rate

\$/ ₹ Market forward selling Rate for November	₹ 66.4900
Add: Exchange Margin @ 0.10%	₹ 0.0665
	₹ 66.5565

Rounded off to ₹ 66.5575

(i) Charges for Cancellation of Contract = ₹ 55,838.00 or ₹ 55,837.00

(ii) Charges for Execution of Contract

Charges for Cancellation of Contract	₹ 55,837.00
Spot Selling US\$ 50,000 on 20 th September at ₹ 65.9900 + 0.0660 (Exchange Margin) = ₹ 66.0560 rounded to ₹ 66.0550	₹ 33,02,750.00
	₹ 33,58,587.00

(iii) Charges for Extension of Contract

Charges for Cancellation of Contract	55837
New Forward Rate	₹ 66.5575

Question 3

(a) Details about portfolio of shares of an investor is as below:

Shares	No. of shares (lakh)	Price per share	Beta
A Ltd.	3.00	₹ 500	1.40
B Ltd.	4.00	₹ 750	1.20
C Ltd.	2.00	₹ 250	1.60

The investor thinks that the risk of portfolio is very high and wants to reduce the portfolio beta to 0.91. He is considering two below mentioned alternative strategies:

- (i) Dispose off a part of his existing portfolio to acquire risk free securities, or
- (ii) Take appropriate position on Nifty Futures which are currently traded at ₹ 8125 and each Nifty points is worth ₹200.

You are required to determine:

- (1) portfolio beta,
- (2) the value of risk free securities to be acquired,
- (3) the number of shares of each company to be disposed off,
- (4) the number of Nifty contracts to be bought/sold; and
- (5) the value of portfolio beta for 2% rise in Nifty. (8 Marks)

(b) The returns and market portfolio for a period of four years are as under:

Year	% Return of Stock B	% Return on Market Portfolio
1	10	8
2	12	10
3	9	9
4	3	-1

For stock B, you are required to determine:

- (i) characteristic line; and
- (ii) the Systematic and Unsystematic risk. (8 Marks)

Answer

(a)

Shares	No. of shares (lakhs) (1)	Market Price of Per Share (2)	(1) × (2) (₹ lakhs)	% to total (w)	β (x)	wx
A Ltd.	3.00	500.00	1500.00	0.30	1.40	0.42
B Ltd.	4.00	750.00	3000.00	0.60	1.20	0.72
C Ltd.	2.00	250.00	<u>500.00</u>	<u>0.10</u>	1.60	<u>0.16</u>
			<u>5000.00</u>	1		<u>1.30</u>

(1) Portfolio beta 1.30

(2) Required Beta 0.91

Let the proportion of risk free securities for target beta $0.91 = p$

$$0.91 = 0 \times p + 1.30 (1 - p)$$

$$p = 0.30 \text{ i.e. } 30\%$$

Shares to be disposed off to reduce beta $5000 \times 30\%$ ₹ 1,500 lakh

(3) Number of shares of each company to be disposed off

Shares	% to total (w)	Proportionate Amount (₹ lakhs)	Market Price Per Share	No. of Shares (Lakh)
A Ltd.	0.30	450.00	500.00	0.90
B Ltd.	0.60	900.00	750.00	1.20
C Ltd.	<u>0.10</u>	150.00	250.00	0.60

(4) Number of Nifty Contract to be sold

$$\frac{(1.30 - 0.91) \times 5000 \text{ lakh}}{8,125 \times 200} = 120 \text{ contracts}$$

(5) 2% rises in Nifty is accompanied by $2\% \times 1.30$ i.e. 2.6% rise for portfolio of shares

	₹ Lakh
Current Value of Portfolio of Shares	5000
Value of Portfolio after rise	5130
Mark-to-Market Margin paid $(8125 \times 0.020 \times ₹ 200 \times 120)$	39
Value of the portfolio after rise of Nifty	5091
% change in value of portfolio $(5091 - 5000) / 5000$	1.82%

% rise in the value of Nifty	2%
Beta	0.91

(b) Characteristic line is given by

$$\alpha_i + \beta_i R_m$$

$$\beta_i = \frac{\sum xy - n \bar{x} \bar{y}}{\sum x^2 - n(\bar{x})^2}$$

$$\alpha_i = \bar{y} - \beta \bar{x}$$

Return on B (Y)	Return on Market (X)	XY	X ²	(x - $\bar{x}$)	(x - $\bar{x}$) ²	(y - $\bar{y}$)	(y - $\bar{y}$) ²
10	8	80	64	1.50	2.25	1.50	2.25
12	10	120	100	3.50	12.25	3.50	12.25
9	9	81	81	2.50	6.25	0.50	0.25
<u>3</u>	<u>-1</u>	<u>-3</u>	<u>1</u>	-7.50	<u>56.25</u>	-5.50	<u>30.25</u>
34	26	278	246		77.00		45.00

$$\bar{y} = 34/4 = 8.50$$

$$\bar{x} = 26/4 = 6.50$$

$$\beta = \frac{\sum xy - n \bar{x} \bar{y}}{\sum x^2 - n(\bar{x})^2} = \frac{278 - 4(6.50)(8.50)}{246 - 4(6.50)^2} = \frac{278 - 221}{246 - 169}$$

$$= \frac{57}{77} = 0.74$$

$$\alpha = \bar{y} - \beta \bar{x} = 8.50 - 0.74 (6.50) = 3.69$$

Hence the characteristic line is $3.69 + 0.74 (R_m)$

$$\text{Total Risk of Market} = \sigma_{m^2} = \frac{\sum (x - \bar{x})^2}{n} = \frac{77}{4} = 19.25(\%)$$

$$\text{Total Risk of Stock} = \frac{45}{4} = 11.25 (\%)$$

$$\text{Systematic Risk} = \beta_i^2 \sigma_m^2 = (0.74)^2 \times 19.25 = 10.54(\%)$$

Unsystematic Risk is = Total Risk – Systematic Risk

$$= 11.25 - 10.54 = 0.71(\%)$$

Question 4

- (a) Mr. Abhishek is interested in investing ₹ 2,00,000 for which he is considering following three alternatives:

- (i) Invest ₹ 2,00,000 in Mutual Fund X (MFX)
- (ii) Invest ₹ 2,00,000 in Mutual Fund Y (MFY)
- (iii) Invest ₹ 1,20,000 in Mutual Fund X (MFX) and ₹ 80,000 in Mutual Fund Y (MFY)

Average annual return earned by MFX and MFY is 15% and 14% respectively. Risk free rate of return is 10% and market rate of return is 12%.

Covariance of returns of MFX, MFY and market portfolio Mix are as follow:

	MFX	MFY	Mix
MFX	4.800	4.300	3.370
MFY	4.300	4.250	2.800
M	3.370	2.800	3.100

You are required to calculate:

- (i) variance of return from MFX, MFY and market return,
 - (ii) portfolio return, beta, portfolio variance and portfolio standard deviation,
 - (iii) expected return, systematic risk and unsystematic risk; and
 - (iv) Sharpe ratio, Treynor ratio and Alpha of MFX, MFY and Portfolio Mix (8 Marks)
- (b) KLM Ltd. requires ₹ 15,00,000 for a new project.

Useful life of project is 3 years.

Salvage value - NIL.

Depreciation is ₹ 5,00,000 p.a.

Given below are projected revenues and costs (excluding depreciation) ignoring inflation:

Year →	1	2	3
Revenues in ₹	10,00,000	13,00,000	14,00,000
Costs in ₹	5,00,000	6,00,000	6,50,000

Applicable tax rate is 35%. Assume cost of capital to be 14% (after tax). The inflation rates for revenues and costs are as under:

Year	Revenues %	Costs %
1	9	10

2	8	9
3	6	7

PVF at 14%, for 3 years =0.877, 0.769 and 0.675

Show amount to the nearest rupee in calculations.

You are required to calculate act present value of the project.

(8 Marks)

Answer

(a) (i) Variance of Returns

$$\text{Cor}_{ij} = \frac{\text{Cov}(i, j)}{\sigma_i \sigma_j}$$

Accordingly, for MFX

$$1 = \frac{\text{Cov}(X, X)}{\sigma_X \sigma_X}$$

$$\sigma_X^2 = 4.800$$

Accordingly, for MFY

$$1 = \frac{\text{Cov}(Y, Y)}{\sigma_Y \sigma_Y}$$

$$\sigma_Y^2 = 4.250$$

Accordingly, for Market Return

$$1 = \frac{\text{Cov}(M, M)}{\sigma_M \sigma_M}$$

$$\sigma_M^2 = 3.100$$

(ii) Portfolio return, beta, variance and standard deviation

$$\text{Weight of MFX in portfolio} = \frac{1,20,000}{2,00,000} = 0.60$$

$$\text{Weight of MFY in portfolio} = \frac{80,000}{2,00,000} = 0.40$$

Accordingly Portfolio Return

$$0.60 \times 15\% + 0.40 \times 14\% = 14.60\%$$

Beta of each Fund

$$\beta = \frac{\text{Cov (Fund, Market)}}{\text{Variance of Market}}$$

$$\beta_x = \frac{3.370}{3.100} = 1.087$$

$$\beta_y = \frac{2.800}{3.100} = 0.903$$

Portfolio Beta

$$0.60 \times 1.087 + 0.40 \times 0.903 = 1.013$$

Portfolio Variance

$$\begin{aligned}\sigma_{xy}^2 &= w_x^2 \sigma_x^2 + w_y^2 \sigma_y^2 + 2 w_x w_y \text{Cov}_{x,y} \\ &= (0.60)^2 (4.800) + (0.40)^2 (4.250) + 2(0.60) (0.40) (4.300) \\ &= 4.472\end{aligned}$$

Or Portfolio Standard Deviation

$$\sigma_{xy} = \sqrt{4.472} = 2.115$$

(iii) Expected Return, Systematic and Unsystematic Risk of Portfolio

$$\text{Portfolio Return} = 10\% + 1.0134(12\% - 10\%) = 12.03\%$$

$$\text{MF X Return} = 10\% + 1.087(12\% - 10\%) = 12.17\%$$

$$\text{MF Y Return} = 10\% + 0.903(12\% - 10\%) = 11.06\%$$

$$\text{Systematic Risk} = \beta^2 \sigma^2$$

Accordingly,

$$\text{Systematic Risk of MFX} = (1.087)^2 \times 3.10 = 3.663$$

$$\text{Systematic Risk of MFY} = (0.903)^2 \times 3.10 = 2.528$$

$$\text{Systematic Risk of Portfolio} = (1.013)^2 \times 3.10 = 3.181$$

$$\text{Unsystematic Risk} = \text{Total Risk} - \text{Systematic Risk}$$

Accordingly,

$$\text{Unsystematic Risk of MFX} = 4.80 - 3.663 = 1.137$$

$$\text{Unsystematic Risk of MFY} = 4.250 - 2.528 = 1.722$$

$$\text{Unsystematic Risk of Portfolio} = 4.472 - 3.181 = 1.291$$

(iv) Sharpe and Treynor Ratios and Alpha

Sharpe Ratio

$$\text{MFX} = \frac{15\% - 10\%}{\sqrt{4.800}} = 2.282$$

$$\text{MFY} = \frac{14\% - 10\%}{\sqrt{4.250}} = 1.94$$

$$\text{Portfolio} = \frac{14.6\% - 10\%}{2.115} = 2.175$$

Treynor Ratio

$$\text{MFX} = \frac{15\% - 10\%}{1.087} = 4.60$$

$$\text{MFY} = \frac{14\% - 10\%}{0.903} = 4.43$$

$$\text{Portfolio} = \frac{14.6\% - 10\%}{1.0134} = 4.54$$

Alpha

$$\text{MFX} = 15\% - 12.17\% = 2.83\%$$

$$\text{MFY} = 14\% - 11.81\% = 2.19\%$$

$$\text{Portfolio} = 14.6\% - 12.03\% = 2.57\%$$

(b) Computation of Annual Cash Flow**(i) Inflation adjusted Revenues**

Year	Revenues (₹)	Revenues (Inflation Adjusted) (₹)
1	10,00,000	10,00,000(1.09) = 10,90,000
2	13,00,000	13,00,000(1.09) (1.08) = 15,30,360
3	14,00,000	14,00,000(1.09) (1.08)(1.06) = 17,46,965

(ii) Inflation adjusted Costs

Year	Costs (₹)	Costs (Inflation Adjusted) (₹)
1	5,00,000	5,00,000(1.10) = 5,50,000
2	6,00,000	6,00,000(1.10)(1.09) = 7,19,400
3	6,50,000	6,50,000(1.10)(1.09)(1.07) = 8,33,905

(iii) Tax Benefit on Depreciation = ₹ 5,00,000 x 0.35 = ₹ 1,75,000

(iv) Net Profit after Tax

Year	Revenues (Inflation Adjusted) (₹) (1)	Costs (Inflation Adjusted) (₹) (2)	Net Profit (₹) (3) = (1) - (2)	Tax (₹) (4) = 35% of (3)	Profit after Tax (₹) (3) - (4)
1	10,90,000	5,50,000	5,40,000	1,89,000	3,51,000
2	15,30,360	7,19,400	8,10,960	2,83,836	5,27,124
3	17,46,965	8,33,905	9,13,060	3,19,571	5,93,489

(iv) Present Value of Cash Inflows

Year	Net Profit after tax (₹)	Tax Benefit on Depreciation (₹)	Cash Inflow (₹)	PVF@ 14%	PV (₹)
1	3,51,000	1,75,000	5,26,000	0.877	4,61,302
2	5,27,124	1,75,000	7,02,124	0.769	5,39,933
3	5,93,489	1,75,000	7,68,489	0.675	5,18,730
					15,19,965

$$NPV = ₹ 15,19,965 - ₹ 15,00,000 = ₹ 19,965$$

Question 5

- (a) Projected sales for the next year of Z Ltd. is ₹ 1000 Cr. The company manages its accounts receivables internally. Its present annual cost of sales ledger administration is ₹ 11 Cr. The company finances its investment on debtors through a mix of bank credit and own long term funds in the ratio of 60 : 40. Current cost of bank credit and long term funds are 10% and 12% respectively. The past experience indicates that bad debt losses are 1.5% on total sales.

The company has a credit policy of 2/10, net 30. On an average, 40% of receivables are collected within the discount period and rest are collected 70 days after the invoice date. Over the years, gross profit is maintained at 20% and the same is expected to be continued in future.

To enable the management focus on promotional activities and get rid of escalating cost associated with in house management of debtors, the company is considering the possibility of availing the services of Fairgrowth Factors Ltd. for managing receivables of the company.

According to the proposal of the factor, it would pay advance to the tune of 85% of receivables with 20% interest and 81% of receivables with 21% interest for the recourse and non-recourse agreements respectively. The proposal provides for guaranteed payment within 30 days from the date of invoice. The factoring commission would be 4%

without recourse and 2% with recourse.

If the company goes for the factoring arrangement, the staff would be under burdened and concentrate more on promotional activities and consequently additional sales of ₹ 100 Cr. would be achieved. Assume that all sales of the company are credit sales and the year is of 360 days.

You are required to:

- (i) calculate cost of in house management of receivables,
 - (ii) compute cost of Fairgrowth Factors Ltd. proposal (with recourse and without recourse),
 - (iii) calculate net benefits under recourse factoring and non-recourse factoring; and
 - (iv) decide the best option for the company. (8 Marks)
- (b) A company is considering hedging its foreign exchange risk. It has made a purchase on 1st July, 2016 for which it has to make a payment of US\$ 60,000 on December 31, 2016. The present exchange rate is 1 US \$ = ₹ 65. It can purchase forward 1 \$ at ₹ 64. The company will have to make an upfront premium @ 2% of the forward amount purchased. The cost of funds to the company is 12% per annum.

In the following situations, compute the profit/loss the company will make if it hedges its foreign exchange risk with the exchange rate on 31st December, 2016 as :

- (i) ₹ 68 per US \$.
- (ii) ₹ 62 per US \$.
- (iii) ₹ 70 per US \$.
- (iv) ₹ 65 per US \$. (8 Marks)

Answer

(a) Financial Analysis of Receivable Management Alternatives (₹ Crores)

(i) In-House Management

Cash Discount (₹ 1000 crore x 40% x 2%)	8.00
Bad Debt (₹ 1000 crore x 1.50%)	15.00
Avoidable Administrative and Selling Cost	11.00
Foregone contribution on sales ₹ 100 crore (0.20 – 0.015)	18.50
Cost of Investment in Receivable*	11.04
	63.54

* Cost of Investment in Receivable

Average Collection Period (0.40 x 10 + 0.60 x 70) 46 days

Investment in Debtors ($\text{₹ } 1000 \text{ crores} \times 46/360$) $\times 0.80$	₹ 102.22 crores
Cost of Investment ($0.60 \times 10 + 0.40 \times 12$)	10.80%
Cost of Investment in Receivable ($\text{₹ } 102.22 \text{ crores} \times 10.80\%$)	₹ 11.04 crores

(ii) Fairgrowth Factors Ltd. Proposal

	With Recourse	Without Recourse
Factoring Commission (₹ 1100 crores $\times 2.0\%$) and (₹ 1100 crores $\times 4.0\%$)	22.00	44.00
Interest Charges (₹ 1100 crores – ₹ 22.00 crores) $0.85 \times 20\% \times 30/360$	15.27	-
(₹ 1100 crores – ₹ 44.00 crores) $0.81 \times 21\% \times 30/360$	-	14.97
Cost of Long Term Funds Invested in Debtors (₹ 1100 crores – ₹ 916.30 crores) $0.12 \times 30/360 \times 0.80$	1.47	-
(₹ 1100 crores – ₹ 855.36 crores) $0.12 \times 30/360 \times 0.80$	-	1.96
	38.74	60.93

(iii) Decision Analysis:

	With Recourse	Without Recourse
Benefits (₹ 63.54 crore – ₹ 15 crore [†])	48.54	65.04 ^Δ
Costs	38.74	60.93
	9.80	4.11

† Bad Debt Δ ₹ 63.54 crore + ₹ 1.50 (Bad Debt Saving on additional Sale)

(iv) Advice: Company should go for recourse factoring.

(b)

	(₹)
Present Exchange Rate ₹65 = 1 US\$	
If company purchases US\$ 60,000 forward premium is $60000 \times 64 \times 2\%$	76,800
Interest on ₹76,800 for 6 months at 12%	<u>4,608</u>
Total hedging cost	<u>81,408</u>
If exchange rate is ₹68	

Then gain (₹68 – ₹64) for US\$ 60,000	2,40,000
Less: Hedging cost	<u>81,408</u>
Net gain	<u>1,58,592</u>
If US\$ = ₹62	
Then loss (₹64 – ₹62) for US\$ 60,000	1,20,000
Add: Hedging Cost	<u>81,408</u>
Total Loss	<u>2,01,408</u>
If US\$ = ₹70	
Then Gain (₹70 – ₹64) for US\$ 60,000	3,60,000
Less: Hedging Cost	<u>81,408</u>
Total Gain	<u>2,78,592</u>
If US\$ = ₹65	
Then Gain (₹ 65 – ₹ 64) for US\$ 60,000	60,000
Less: Hedging Cost	<u>81,408</u>
Net Loss	<u>21,408</u>

Question 6

- (a) XN Ltd. reported a profit of ₹ 100.32 lakhs after 34% tax for the financial Year 2015-2016. An analysis of the accounts reveals that the income included extraordinary items of ₹ 14 lakhs and an extraordinary loss of ₹ 5 lakhs. The existing operations, except for the extraordinary items, are expected to continue in future. Further, a new product is launched and the expectations are as under:

Particulars	Amount ₹ in lakhs
Sales	70
Material Costs	20
Labour Costs	16
Fixed Costs	10

The company has 50,00,000 Equity Shares of ₹ 10 each and 80,000, 9% Preference Shares of ₹ 100 each with P/E Ratio being 6 times.

You are required to:

- compute the value of the business. Assume cost of capital to be 12% (after tax) and
 - determine the market price per equity share. (8 Marks)
- (b) The municipal corporation of a city with mass population is planning to construct a flyover that will replace the intersection of two busy highways X and Y. Average traffic per day is

10,000 vehicles on highway X and 8,000 vehicles on highway Y. 70% of the vehicles are private and rest are commercial vehicles. The flow of traffic across and between aforesaid highways is controlled by traffic lights. Due to heavy flow, 50% of traffic on each of the highways is delayed. Average loss of time due to delay is 1.3 minute in highway X and 1.2 minute in highway Y. The cost of time delayed is estimated to be ₹80 per hour for commercial vehicle and ₹30 for private vehicle.

The cost of stop and start is estimated to be ₹1.20 for commercial vehicle and ₹0.80 for private vehicle. The cost of operating the traffic lights is ~ 80,000 a year. One policeman is required to be posted for 3 hours a day at the crossing which costs ₹150 per hour.

Due to failure to obey traffic signals, eight fatal accidents and sixty non-fatal accidents occurred in last 4 years. On an average, insurance settlements per fatal and non-fatal accidents are ₹5,00,000 and ₹15,000 respectively.

To eliminate the delay of traffic and the accidents caused due to traffic light violations, the flyover has been designed. It will add a quarter of kilometer to the distance of 20% of total traffic. No posting of policeman will be required at the flyover. The flyover will require investment of ₹3 Cr. Extra maintenance cost would be ₹70,000 a year.

The incremental operating cost for commercial vehicle will be ₹5 per km and ₹2 for non-commercial vehicle. Expected economic life of the flyover is 30 years having no salvage value. The cost of capital for the project is 8%. (corresponding capital recovery rate is 0.0888).

You are required to calculate:

- (i) total net benefits to users,
- (ii) annual cost to the state; and
- (iii) benefit cost ratio

(8 Marks)

Answer

(a) Computation of Business Value

	(₹ Lakhs)
Profit before tax $\frac{100.32}{1-0.34}$	152
Less: Extraordinary income	(14)
Add: Extraordinary losses	<u>5</u>
	143
Profit from new product	(₹ Lakhs)
Sales	70
Less: Material costs	20

Labour costs	16		
Fixed costs	<u>10</u>	(46)	<u>24</u>
			167.00
Less: Taxes @34%			<u>56.78</u>
Future Maintainable Profit after taxes			<u>110.22</u>
Relevant Capitalisation Factor			0.12
Value of Business ($\text{₹}110.22/0.12$)			918.50

(ii) Determination of Market Price of Equity Share

Future maintainable profits (After Tax)	₹ 1,10,22,000
Less: Preference share dividends 80,000 shares of ₹ 100 @ 9%	<u>₹ 7,20,000</u>
Earnings available for Equity Shareholders	<u>₹ 1,03,02,000</u>
No. of Equity Shares	50,00,000
Earning per share = $\frac{\text{₹ } 1,03,02,000}{50,00,000} =$	₹ 2.06
PE ratio	6
Market price per share	₹ 12.36

(b) Benefit to the Users (when 365 days taken in a year)

(i)	Annual Savings in Cost of Delays:	
	Highway X $(10000 \times 365 \times 0.50 \times \frac{1.3}{60}) (0.70 \times 30 + 0.30 \times 80)$	₹ 17,79,375
	Highway Y $(8000 \times 365 \times 0.50 \times \frac{1.2}{60}) (0.70 \times 30 + 0.30 \times 80)$	₹ 13,14,000
	(a)	₹ 30,93,375
(ii)	Annual Savings in Cost of Stops and Starts	
	Highway X $(10000 \times 365 \times 0.50) (0.70 \times 0.80 + 0.30 \times 1.20)$	₹ 16,79,000
	Highway Y $(8000 \times 365 \times 0.50) (0.70 \times 0.80 + 0.30 \times 1.20)$	₹ 13,43,200
	(b)	₹ 30,22,200
(iii)	Annual Saving in Accidents Claims (c)	
	$\frac{8}{4} \times 500000 + \frac{60}{4} \times 15000$	₹ 12,25,000
	(c)	
	Total Benefits (d) = (a) + (b) + (c)	₹ 73,40,575

Less: Incremental Expenditures due to added distance	
Highway X (10000 × 365 × 0.20 × 0.25) (0.70 × 2 + 0.30 × 5)	₹ 5,29,250
Highway Y (8000 × 365 × 0.20 × 0.25) (0.70 × 2 + 0.30 × 5)	₹ 4,23,400
(e)	₹ 9,52,650
Total Net Benefits (d) – (e)	₹ 63,87,925

Annual Cost to State

Investment Cost (₹ 3,00,00,000 × 0.0888)	₹ 26,64,000
Extra Annual Maintenance	₹ 70,000
	₹ 27,34,000
Less: Saving in Cost of operating traffic lights (₹ 80,000 + 3 × 365 × ₹ 150)	₹ 2,44,250
	₹ 24,89,750

$$\begin{aligned}
 \text{Cost Benefit Ratio} &= \frac{\text{PV of Benefits}}{\text{PV of Costs}} = \frac{₹ 63,87,925 \text{ PVAF} \left(\frac{1}{0.0888} \right)}{₹ 24,89,750 \text{ PVAF} \left(\frac{1}{0.0888} \right)} \\
 &= \frac{₹ 7,19,36,092}{₹ 2,80,37,725} = 2.57
 \end{aligned}$$

Question 7

Write short notes on any four of the following:

- What is cross border leasing? State its advantages.
- What are the rigidities in the Indian money market?
- What is exchange traded fund ? What are its advantages ?
- What are the problems for mergers and acquisitions in India ?
- What makes an organization sustainable ? State the specific steps. (4 × 4 = 16 Marks)

Answer

- Cross-border leasing is a leasing agreement where lessor and lessee are situated in different countries. This raises significant additional issues relating to tax avoidance and tax shelters. It has been widely used in some European countries, to arbitrage the difference in the tax laws of different countries.

Cross-border leasing have been in practice as a means of financing infrastructure development in emerging nations. Cross-border leasing may have significant applications in financing infrastructure development in emerging nations - such as rail and air

transport equipment, telephone and telecommunications, equipment, and assets incorporated into power generation and distribution systems and other projects that have predictable revenue streams.

A major advantage of cross-border leasing is to reduce the overall cost of financing through utilization by the lessor of tax depreciation allowances to reduce its taxable income. The tax savings are passed through to the lessee as a lower cost of finance. The basic prerequisites are relatively high tax rates in the lessor's country, liberal depreciation rules and either very flexible or very formalistic rules governing tax ownership.

Other important advantages of cross border leasing include the following:

- The lessor is often able to utilize nonrecourse debt to finance a substantial portion of the equipment cost. The debt is secured by among other things, a mortgage on the equipment and by an assignment of the right to receive payments under the lease.
 - Also, depending on the structure, in some countries the lessor can utilize very favourable "leveraged lease" financial accounting treatment for the overall transaction.
 - In some countries, it is easier for a lessor to repossess the leased equipment following a lessee default because the lessor is an owner and not a mere secured lender.
 - Leasing provides the lessee with 100% financing.
- (b) Notwithstanding the deregulation process initiated by the Reserve Bank of India and several innovations, the money market is not free from certain rigidities which are hampering the growth of the market. The most important rigidities in the Indian money market are:
- (i) Markets not integrated,
 - (ii) High volatility,
 - (iii) Interest rates not properly aligned,
 - (iv) Players restricted,
 - (v) Supply based-sources influence uses,
 - (vi) Not many instruments,
 - (vii) Players do not alternate between borrowing and lending,
 - (viii) Reserve requirements,
 - (ix) Lack of transparency,
 - (x) Inefficient Payment Systems,

- (xi) Seasonal shortage of funds,
 - (xii) Commercial transactions are mainly in cash, and
 - (xiii) Heavy Stamp duty limiting use of exchange bills
- (c) Exchange Traded Funds (ETFs) were introduced in US in 1993 and came to India around 2002. ETF is a hybrid product that combines the features of an index mutual fund and stock and hence, is also called index shares. These funds are listed on the stock exchanges and their prices are linked to the underlying index. The authorized participants act as market makers for ETFs.

ETF can be bought and sold like any other stock on stock exchange. In other words, they can be bought or sold any time during the market hours at prices that are expected to be closer to the NAV at the end of the day. NAV of an ETF is the value of the underlying component of the benchmark index held by the ETF plus all accrued dividends less accrued management fees.

There is no paper work involved for investing in an ETF. These can be bought like any other stock by just placing an order with a broker.

Some other important advantages of ETF are as follows:

1. It gives an investor the benefit of investing in a commodity without physically purchasing the commodity like gold, silver, sugar etc.
 2. It is launched by an asset management company or other entity.
 3. The investor does not need to physically store the commodity or bear the costs of upkeep which is part of the administrative costs of the fund.
 4. An ETF combines the valuation feature of a mutual fund or unit investment trust, which can be bought or sold at the end of each trading day for its net asset value, with the tradability feature of a closed ended fund, which trades throughout the trading day at prices that may be more or less than its net asset value.
- (d) Problems for mergers and acquisitions in India
- Indian corporates are largely promoter-controlled and managed.
 - In some cases, the need for prior negotiations and concurrence of financial institutions and banks is an added rider, besides SEBI's rules and regulations.
 - The reluctance of financial institutions and banks to fund acquisitions directly.
 - The BIFR route, although tedious, is preferred for obtaining financial concessions.
 - Lack of Exit Policy for restructuring/downsizing.
 - Absence of efficient capital market system makes the Market capitalisation not fair in some cases.

- Valuation is still evolving in India.
- (e) The concept of sustainable growth can be helpful for planning healthy corporate growth. This concept forces managers to consider the financial consequences of sales increases and to set sales growth goals that are consistent with the operating and financial policies of the firm. Often, a conflict can arise if growth objectives are not consistent with the value of the organization's sustainable growth. Question concerning right distribution of resources may take a difficult shape if we take into consideration the rightness not for the current stakeholders but for the future stakeholders also.

Sustainable growth is important to enterprise long-term development. Too fast or too slow growth will go against enterprise growth and development, so financial should play important role in enterprise development, adopt suitable financial policy initiative to make sure enterprise growth speed close to sustainable growth ratio and have sustainable healthy development.

Sustainable growth models assume that the business wants to:

- (1) maintain a target capital structure without issuing new equity;
- (2) maintain a target dividend payment ratio; and
- (3) increase sales as rapidly as market conditions allow.

Since the asset to beginning of period equity ratio is constant and the firm's only source of new equity is retained earnings, sales and assets cannot grow any faster than the retained earnings plus the additional debt that the retained earnings can support. The sustainable growth rate is consistent with the observed evidence that most corporations are reluctant to issue new equity. If, however, the firm is willing to issue additional equity, there is in principle no financial constraint on its growth rate.