PAPER – 2 : STRATEGIC FINANCIAL MANAGEMENT

*Question No.**1** is compulsory.*

*Candidates are required to answer any **four** out of the remaining **five** questions.*

Working notes should form part of the respective answers.

Question 1

(a) *Tangent Ltd. is considering calling ₹ 3 crores of 30 years, ₹ 1,000 bond issued 5 years ago with a coupon interest rate of 14 per cent. The bonds have a call price of ₹ 1,150 and had initially collected proceeds of ₹ 2.91 crores since a discount of ₹ 30 per bond was offered. The initial floating cost was ₹ 3,90,000. The Company intends to sell ₹ 3 crores of 12 per cent coupon rate, 25 years bonds to raise funds for retiring the old bonds. It proposes to sell the new bonds at their par value of ₹ 1,000. The estimated floatation cost is ₹ 4,25,000. The company is paying 40% tax and its after tax cost of debt is 8 per cent. As the new bonds must first be sold and then their proceeds to be used to retire the old bonds, the company expects a two months period of overlapping interest during which interest must be paid on both the old and the new bonds. You are required to evaluate the bond retiring decision. [PVIFA 8%, 25 = 10.675]* ***(8 Marks)***

(b) *A dealer in foreign exchange has the following position in Swiss Francs on 31st January, 2018:*

	(Swiss Francs)
Balance in the Nostro A/c Credit	*1,00,000*
Opening Position Overbought	*50,000*
Purchased a bill on Zurich	*70,000*
Sold forward TT	*49,000*
Forward purchase contract cancelled	*41,000*
Remitted by TT	*75,000*
Draft on Zurich cancelled	*40,000*

Examine what steps would the dealer take, if he is 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? ***(8 Marks)***

(c) *Explain Angel Investors.* ***(4 Marks)***

Answer

(a) NPV for bond refunding

	₹
PV of annual cash flow savings (W.N. 2)	
(3,49,600 × PVIFA 8%,25) i.e. 10.675	37,31,980
Less: Initial investment (W.N. 1)	31,15,000
NPV	6,16,980

Recommendation: Refunding of bonds is recommended as NPV is positive.

Working Notes:

(1) Initial investment:

(a)	Call premium		
	Before tax (1,150 – 1,000) × 30,000	45,00,000	
	Less tax @ 40%	18,00,000	
	After tax cost of call prem.		27,00,000
(b)	Floatation cost		4,25,000
(c)	Overlapping interest		
	Before tax (0.14 × 2/12 × 3 crores)	7,00,000	
	Less tax @ 40%	2,80,000	4,20,000
(d)	Tax saving on unamortised discount on old bond (25/30 × 9,00,000 × 0.4)		(3,00,000)
(e)	Tax savings from unamortised floatation		
	Cost of old bond 25/30 × 3,90,000 × 0.4		(1,30,000)
			31,15,000

(2) Annual cash flow savings:

(a)	Old bond		
(i)	Interest cost (0.14 × 3 crores)	42,00,000	
	Less tax @ 40%	16,80,000	25,20,000
(ii)	Tax savings from amortisation of discount (9,00,000/30 × 0.4)		(12,000)
(iii)	Tax savings from amortisation of floatation cost (3,90,000/30 × 0.4)		(5,200)
	Annual after tax cost payment under old Bond (A)		**25,02,800**

(b) New bond

(i)	Interest cost before tax (0.12 × 3 crores)	36,00,000	
	Less tax @ 40%	14,40,000	
	After tax interest		21,60,000
(ii)	Tax savings from amortisation of floatation cost (0.4 × 4,25,000/25)		(6,800)
	Annual after tax payment under new Bond (B)		**21,53,200**
	Annual Cash Flow Saving (A) – (B)		**3,49,600**

(b) Exchange Position:

Particulars	*Purchase Sw. Fcs.*	*Sale Sw. Fcs.*
Opening Balance Overbought	50,000	
Bill on Zurich	70,000	
Forward Sales – TT		49,000
Cancellation of Forward Contract		41,000
TT Sales		75,000
Draft on Zurich cancelled	40,000	—
	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.

(c) Angel investors invest in small startups or entrepreneurs. Often, angel investors are entrepreneur's family and friends. The capital angel investors provide may be a one-time investment to help the business propel or an ongoing injection of money to support and carry the company through its difficult early stages.

Angel investors provide more favorable terms compared to other lenders, since they usually invest in the entrepreneur starting the business rather than the viability of the business. Angel investors are focused on helping startups take their first steps, rather than the possible profit they may get from the business. Essentially, angel investors are the opposite of venture capitalists.

Angel investors are also called informal investors, angel funders, private investors, seed investors or business angels. These are affluent individuals who inject capital for startups in exchange for ownership equity or convertible debt. Some angel investors invest through crowdfunding platforms online or build angel investor networks to pool in capital.

Angel investors typically use their own money, unlike venture capitalists who take care of pooled money from many other investors and place them in a strategically managed fund.

Though angel investors usually represent individuals, the entity that actually provides the fund may be a limited liability company, a business, a trust or an investment fund, among many other kinds of vehicles.

Angel investors who seed startups that fail during their early stages lose their investments completely. This is why professional angel investors look for opportunities for a defined exit strategy, acquisitions or initial public offerings (IPOs).

Question 2

(a) Shares of Volga Ltd. are being quoted at a price-earning ratio of 8 times. The company retains 50% of its Earnings Per Share. The Company's EPS is ₹10.

You are required to determine:

(1) the cost of equity to the company if the market expects a growth rate of 15% p.a.

(2) the indicative market price with the same cost of capital and if the anticipated growth rate is 16% p.a.

(3) the market price per share if the company's cost of capital is 20% p.a. and the anticipated growth rate is 18% p.a. ***(8 Marks)***

(b) Mr. Kapoor owns a portfolio with the following characteristics:

	Security X	***Security Y***	***Risk Free Security***
Factor 1 sensitivity	*0.75*	*1.50*	*0*
Factor 2 sensitivity	*0.60*	*1.10*	*0*
Expected Return	*15%*	*20%*	*10%*

It is assumed that security returns are generated by a two factor model.

(i) If Mr. Kapoor has ₹ 1,00,000 to invest and sells short ₹ 50,000 of security Y and purchases ₹ 1,50,000 of security X, what is the sensitivity of Mr. Kapoor's portfolio to the two factors?

(ii) If Mr. Kapoor borrows ₹ 1,00,000 at the risk free rate and invests the amount he borrows along with the original amount of ₹ 1,00,000 in security X and Y in the same proportion as described in part (i), what is the sensitivity of the portfolio to the two factors?

(iii) What is the expected return premium of factor 2? ***(8 Marks)***

(c) Discuss about the Primary Participants in the process of Securitization. ***(4 Marks)***

Answer

(a) (1) Cost of Capital

Retained earnings (50%)	₹ 5 per share
Dividend (50%)	₹ 5 per share
EPS (100%)	₹ 10 per share (given)
P/E Ratio	8 times (given)
Market price	₹ 10 × 8 = ₹ 80 per share

Cost of equity capital

$$= \left(\frac{\text{Div}}{\text{Price}} \times 100\right) + \text{Growth \%} = \frac{₹\ 5}{₹\ 80} \text{x} 100 \times 100 + 15\% = 21.25\%$$

(2) Market Price $= \left(\frac{\text{Dividend}}{\text{Cost of Capital(\%) - Growth Rate(\%)}}\right)$

$= \frac{₹5}{(21.25-16)\%} = ₹\ 95.24$ per share

(3) Market Price $= \frac{₹5}{(20-18)\%} = ₹\ 250$ per share

Alternatively, if candidates have assumed the given figure of EPS as of last year then answer will be as follows:

(1) Cost of Capital

Retained earnings (50%)	₹ 5 per share
Dividend (50%)	₹ 5 per share
EPS (100%)	₹ 10 per share (given)

P/E Ratio 8 times (given)

Market price ₹ 10 × 8 = ₹ 80 per share

Cost of equity capital

$$= \left(\frac{\text{Div}}{\text{Price}} \times 100\right) + \text{Growth \%} = \frac{₹\,5(1.15)}{₹\ 80} \times 100 + 15\% = 22.19\%$$

(2) Market Price = $\left(\frac{\text{Dividend}}{\text{Cost of Capital(\%)} - \text{Growth Rate(\%)}}\right)$

$$= \frac{₹\ 5.75}{(22.19-16)\%} = ₹\ 92.89 \text{ per share}$$

(3) Market Price = $\frac{₹\,5(1.18)}{(20-18)\%} = ₹\,295$ per share

(b) (i) Mr. Kapoor's position in the two securities is +1.50 in security X and -0.5 in security Y. Hence the portfolio sensitivities to the two factors:-

b prop. 1 =1.50 x 0.75 + (-0.50 x 1.50) = 0.375

b prop. 2 = 1.50 x 0.60 + (-0.50 x 1.10) = 0.35

(ii) Mr. Kapoor's current position:

Security X ₹ 3,00,000 / ₹ 1,00,000 = 3

Security Y -₹ 1,00,000 / ₹ 1,00,000 = -1

Risk free asset -₹ 100000 / ₹ 100000 = -1

b prop. 1 = 3.0 x 0.75 + (-1 x 1.50) + (- 1 x 0) = 0.75

b prop. 2 = 3.0 x 0.60 + (-1 x 1.10) + (-1 x 0) = 0.70

(iii) Expected Return = Risk Free Rate of Return + Risk Premium

Let λ_1 and λ_2 are the Value Factor 1 and Factor 2 respectively.

Accordingly

$15 = 10 + 0.75\ \lambda_1 + 0.60\ \lambda_2$

$20 = 10 + 1.50\ \lambda_1 + 1.10\ \lambda_2$

On solving equation, the value of λ_1 and λ_2 comes 6.67 and 0 respectively.

Accordingly, the expected risk premium for the factor 2 shall be Zero and whatever be the risk the same shall be on account of factor 1.

Alternatively, the risk premium of Securities X & Y can be calculated as follows:

Security X

Total Return = 15%

Risk Free Return = 10%

Risk Premium = 5%

Security Y

Total Return = 20%

Risk Free Return = 10%

Risk Premium = 10%

(c) Primary Participants are main parties to the process of securitization. The primary participants in the process of securitization are as follows:

(i) Originator: It is the initiator of deal or can be termed as securitizer. It is an entity which sells the assets lying in its books and receives the funds generated through the sale of such assets. The originator transfers both legal as well as beneficial interest to the Special Purpose Vehicle.

(ii) Special Purpose Vehicle: Also, called SPV, it is created for the purpose of executing the deal. Since issuer originator transfers all rights in assets to SPV, it holds the legal title of these assets. It is created especially for the purpose of securitization only and normally could be in form of a company, a firm, a society or a trust.

The main objective of creating SPV is to remove the asset from the Balance Sheet of Originator. Since, SPV makes an upfront payment to the originator, it holds the key position in the overall process of securitization. Further, it also issues the securities (called Asset Based Securities or Mortgage Based Securities) to the investors.

(iii) The Investors: Investors are the buyers of securitized papers which may be an individual, an institutional investor such as mutual funds, provident funds, insurance companies, Financial Institutions etc.

Since, they acquire a participating share in the total pool of assets/receivable, they receive their money back in the form of interest and principal as per the agreed terms.

Question 3

(a) A mutual fund having 300 units has shown its NAV of ₹ 8.75 and ₹ 9.45 at the beginning and at the end of the year respectively. The Mutual fund has given two options to the investors:

(i) Get dividend of ₹ 0.75 per unit and capital gain of ₹ 0.60 per unit, or

(ii) These distributions are to be reinvested at an average NAV of ₹ 8.65 per unit.

What difference would it make in terms of returns available and which option is preferable by the investors? ***(8 Marks)***

(b) The equity share of SSC Ltd. is quoted at ₹ 310. A three month call option is available at a premium of ₹ 8 per share and a three month put option is available at a premium of ₹ 7 per share.

Ascertain the net payoffs to the option holder of a call option and a put option, considering that:

(i) the strike price in both cases is ₹ 320; and

(ii) the share price on the exercise day is ₹ 300, 310, 320, 330 and 340.

Also indicate the price range at which the call and the put options may be gainfully exercised. ***(8 Marks)***

(c) How different stakeholders view the financial risk? ***(4 Marks)***

Answer

(a) Option 1: When Dividend and Capital Gain are paid:

Calculation of monthly return on the mutual funds:

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

$$\text{Or, } r = \frac{(₹\ 9.45 - ₹\ 8.75) + (₹\ 0.75 + ₹\ 0.60)}{8.75}$$

$$= \frac{0.70 + 1.35}{8.75} = 23.43\%$$

Option 2: When Dividend and Capital Gain are reinvested:

If all dividends and capital gain are reinvested into additional units at ₹ 8.65 per unit the position would be.

Total amount reinvested = ₹ 1.35 × 300 = ₹ 405

Additional units added = $\frac{₹\ 405}{8.65}$ = 46.82 units or 47 units

Value of units at the end = 346.82 units x ₹ 9.45 = ₹ 3277.45

Or = 347 units x ₹ 9.45 = ₹ 3279.15

Price paid for 300 units as at the beginning = (300 × ₹ 8.75) = ₹ 2,625

Return = (₹ 3277.45 – ₹ 2625)/ ₹2625 = 24.86%

Or Return = $\frac{`\ 3279.15 - `\ 2625}{`\ 2625} = \frac{`\ 654.15}{`\ 2625} = 24.92\%$

From the above, it can be said that reinvestment option is better.

(b) Net payoff for the holder of the call option

					(₹)
Share price on exercise day	300	310	320	330	340
Option exercise	No	No	No	Yes	Yes
Outflow (Strike price)	Nil	Nil	Nil	320	320
Out flow (premium)	8	8	8	8	8
Total Outflow	8	8	8	328	328
Less inflow (Sales proceeds)	-	-	-	330	340
Net payoff	-8	-8	-8	2	12

Net payoff for the holder of the put option

Share price on exercise day	300	310	320	330	340
Option exercise	Yes	Yes	No	No	No
Inflow (strike price)	320	320	Nil	Nil	Nil
Less outflow (purchase price)	300	310	-	-	-
Less outflow (premium)	7	7	7	7	7
Net Payoff	13	3	-7	-7	-7

The Call Option can be exercised gainfully for any price above ₹ 328 and Put Option for any Price below ₹ 313.

(c) The financial risk can be viewed by different stakeholders as follows:

(i) From shareholder's and lender's point of view: Major stakeholders of a business are equity shareholders and they view financial gearing i.e. ratio of debt in capital structure of company as risk since in the event of winding up of a company they will be least be given priority.

Even for a lender, existing gearing is also a risk since company having high gearing faces more risk in default of payment of interest and principal repayment.

(ii) From Company's point of view: From company's point of view if a company borrows excessively or lend to someone who defaults, then it can be forced to go into liquidation.

(iii) From Government's point of view: From Government's point of view, the financial risk can be viewed as failure of any bank (like Lehman Brothers) or down grading of any financial institution leading to spread of distrust among society at large. Even this risk also includes willful defaulters. This can also be extended to sovereign debt crisis.

Question 4

(a) TK Ltd. and SK Ltd. are both in the same industry. The former is in negotiation for acquisition of the latter. Information about the two companies as per their latest financial statements are given below:

	TK Ltd.	***SK Ltd.***
₹ 10 Equity shares outstanding	*24 Lakhs*	*12 Lakhs*
Debt:		
10% Debentures (₹ Lakhs)	*1160*	*-*
12.5% Institutional Loan (₹ Lakhs)	*-*	*480*
Earnings before interest, depreciation and tax (EBIDAT) (₹ Lakhs)	*800.00*	*230.00*
Market Price/Share (₹)	*220.00*	*110.00*

TK Ltd. plans to offer a price for SK Ltd. business, as a whole, which will be 7 times of EBIDAT as reduced by outstanding debt and to be discharged by own shares at market price.

SK Ltd. is planning to seek one share in TK Ltd. for every 2 shares in SK Ltd. based on the market price. Tax rate for the two companies may be assumed as 30%.

Calculate and show the following under both alternatives -TK Ltd.'s offer and SK Ltd.' s plan :

(i) Net consideration payable.

(ii) No. of shares to be issued by TK Ltd.

(iii) EPS of TK Ltd. after acquisition.

(iv) Expected market price per share of TK Ltd. after acquisition.

(v) State briefly the advantages to TK Ltd. from the acquisition.

Calculations may be rounded off to two decimals points. ***(12 Marks)***

(b) An Indian company obtains the following quotes (₹/$)

Spot:	*35.90/36.10*
3 - Months forward rate:	*36.00/36.25*
6 - Months forward rate:	*36.10/36.40*

The company needs $ funds for six months. Determine whether the company should borrow in $ or ₹ Interest rates are :

3 - Months interest rate : ₹ : 12%, $: 6%

6 - Months interest rate : ₹ : 11.50%, $: 5.5%

Also determine what should be the rate of interest after 3-months to make the company indifferent between 3-months borrowing and 6-months borrowing in the case of:

(i) Rupee borrowing

(ii) Dollar borrowing

Note:** For the purpose of calculation you can take the units of dollar and rupee as 100 each.* ***(8 Marks)

Answer

(a) As per TK Ltd.'s Offer

	₹ in lakhs
(i) Net Consideration Payable	
7 times EBIDAT, i.e. 7 x ₹ 230 lakh	1610
Less: Debt	480
	1130
(ii) No. of shares to be issued by TK Ltd	
₹ 1130 lakh/₹ 220 (rounded off) (Nos.)	5,13,600
(iii) EPS of TK Ltd after acquisition	
Total EBIDT (₹ 800 lakh + ₹ 230 lakh)	1030.00
Less: Interest (₹ 116 lakh + ₹ 60 lakh)	176.00
	854.00
Less: 30% Tax	256.20
Total earnings (NPAT)	597.80
Total No. of shares outstanding	29,13,600
(24 lakh + 5,13,600)	
EPS (₹ 597.80 lakh/ 29,13,600)	₹ 20.52

(iv) Expected Market Price:

	₹ in lakhs
Pre-acquisition P/E multiple:	
EBIDAT	800.00

Less: Interest $(1160 \times \frac{10}{100})$	116.00
	684.00
Less: 30% Tax	205.20
	478.80
No. of shares (lakhs)	24
EPS	₹ 19.95
Hence, PE multiple (220/19.95)	11.03
Expected market price after acquisition (₹ 20.52 x 11.03)	₹ 226.34

As per SK Ltd.'s Offer

	₹ in lakhs
(i) Net consideration payable	
12 lakhs shares x ₹ 110	1320
(ii) No. of shares to be issued by TK Ltd	
₹ 1320 lakhs ÷ ₹ 220	6 lakh
(iii) EPS of T Ltd after Acquisition	
NPAT (as per earlier calculations)	597.80
Total no. of shares outstanding (24 lakhs + 6 lakhs)	30 lakh
Earning Per Share (EPS) ₹ 597.8/30 lakh	₹ 19.93
(iv) Expected Market Price (₹ 19.93 x 11)	219.23

(v) Advantages of Acquisition to TK Ltd.

Since the two companies are in the same industry, the following advantages could accrue:

- Synergy, cost reduction and operating efficiency.
- Better market share.
- Avoidance of competition

(b) (i) If company borrows in $ then outflow would be as follows:

Let company borrows $ 100	$ 100.00
Add: Interest for 6 months @ 5.5%	$ 2.75
Amount Repayable after 6 months	$ 102.75
Applicable 6 month forward rate	36.40

Amount of Cash outflow in Indian Rupees	₹ 3,740.10

If company borrows equivalent amount in Indian Rupee, then outflow would be as follows:

Equivalent ₹ amount ₹ 36.10 x 100	₹ 3,610.00
Add: Interest @11.50%	₹ 207.58
	₹ 3817.58

Since cash outflow is more in ₹ borrowing then borrowing should be made in $.

(ii) (a) Let 'i_r' be the interest rate of ₹ borrowing make indifferent between 3 months borrowings and 6 months borrowing then

$(1 + 0.03)(1 + i_r) = (1 + 0.0575)$

i_r = 2.67% or 10.68% (on annualized basis)

(b) Let 'i_d' be the interest rate of $ borrowing after 3 months to make indifference between 3 months borrowings and 6 months borrowings. Then,

$(1 + 0.015)(1 + i_d) = (1 + 0.0275)$

i_d = 1.232% or 4.93% (on annualized basis)

Question 5

(a) Following details are available for X Ltd.

Income Statement for the year ended 31st March, 2018

Particulars	***Amount***
Sales	*40,000*
Gross Profit	*12,000*
Administrative Expenses	*6,000*
Profit Before tax	*6,000*
Tax @ 30%	*1,800*
Profit After Tax	*4,200*

Balance sheet as on 31st March, 2018

Particulars	***Amount***
Fixed Assets	*10,000*
Current Assets	*6,000*
Total Assets	*16,000*
Equity Share Capital	*15,000*

Sundry Creditors	*1,000*
Total Liabilities	*16,000*

The Company is contemplating for new sales strategy as follows :

(i) Sales to grow at 30% per year for next four years.

(ii) Assets turnover ratio, net profit ratio and tax rate will remain the same.

(iii) Depreciation will be 15% of value of net fixed assets at the beginning of the year.

(iv) Required rate of return for the company is 15%

Evaluate the viability of new strategy. ***(12 Marks)***

(b) A dealer quotes 'All-in-cost' for a generic swap at 6% against six month LIBOR flat. If the notional principal amount of swap is ₹ 8,00,000:

(i) Calculate semi-annual fixed payment.

(ii) Find the first floating rate payment for (i) above if the six month period from the effective date of swap to the settlement date comprises 181 days and that the corresponding LIBOR was 5% on the effective date of swap.

(iii) In (ii) above, if the settlement is on 'Net' basis, how much the fixed rate payer would pay to the floating rate payer? Generic swap is based on 30/360 days basis.

(4 Marks)

(c) Explain the concept of Riba in Islamic Finance. ***(4 Marks)***

Answer

(a)

Projected Balance Sheet					
	Year 1	Year 2	Year 3	Year 4	Year 5
Fixed Assets (25% of Sales)	13,000	16,900	21,970	28,561.00	28,561.00
Current Assets (15% of Sales)	7,800	10,140	13,182	17,136.60	17,136.60
Total Assets	20,800	27,040	35,152	45,697.60	45,697.60
Equity (37.5% of sales)	19,500	25,350	32,955	42,841.50	42,841.50
Sundry Creditors (2.5% of Sales)	1,300	1,690	2,197	2,856.10	2,856.10
Total Liabilities	20,800	27,040	35,152	45,697.60	45,697.60

Projected Cash Flows:-

	Year 1	Year 2	Year 3	Year 4	Year 5
Sales	52,000	67,600	87,880.00	1,14,244.00	1,14,244.00
PBT (15% of sales)	7,800	10,140	13,182.00	17,136.60	17,136.60
PAT (10.5% of sales)	5,460	7,098	9,227.40	11,995.62	11,995.62
Depreciation	1,500	1,950	2,535.00	3,295.50	4,284.15
Addition to Fixed Assets	4,500	5,850	7,605.00	9,886.50	4,284.15
Increase in Net Current Assets	1,500	1,950	2,535.00	3,295.50	-
Operating cash flow	960	1,248	1,622.40	2,109.12	11,995.62

Projected Cash Flows:-

Present value of Projected Cash Flows:-

Cash Flows	PVF at 15%	PV
960	0.870	835.20
1248	0.756	943.49
1622.40	0.658	1067.54
2109.12	0.572	1206.42
		4,052.65

Residual Value = 11,995.62/0.15 = 79,970.80

Present value of Residual value = 79,970.80 x PVF (15%, 4)

= 79,970.80 x 0.572 = 45,743.30

Total shareholders' value = 45743.30 + 4052.65 = 49795.95

Pre-strategy value = 4200 / 0.15 = 28,000

∴ Value of strategy = 49795.95 – 28,000 = 21795.95

Conclusion: The strategy is financially viable.

(b) (i) Semi-annual fixed payment

= (N) (AIC) (Period)

Where N = Notional Principal amount = ₹8,00,000

AIC = All-in-cost = 6% = 0.06

$= 8,00,000 \times 0.06 \left(\frac{180}{360}\right)$

$= 8,00,000 \times 0.06\ (0.5)$

$= ₹24,000$

(ii) Floating Rate Payment

$= N\ (LIBOR) \left(\frac{dt}{360}\right)$

$= 8,00,000 \times 0.05 \times \frac{181}{360}$

= ₹20,111 or ₹ 20,120

(iii) Net Amount

= (i) – (ii)

= ₹24,000 – ₹20,111 = ₹3889

Or = ₹24,000 – ₹20,120 = ₹3880

(c) In Islamic Finance, the meaning of Riba is interest or usury. In Islamic Finance money is considered as medium of exchange, store of value or unit of measurement only, hence Riba is considered haram i.e. unfair reward to the provider of capital for little or no effort or risk undertaken. Due to this reason, Islamic finance models are based on risks and profit/loss sharing contract.

Riba is equated with wrongful appropriation of property belonging to others and hence Muslims are asked to accept principal only and forego principal even, if borrower is unable to repay the same.

In this backdrop in Islamic banking a link must be established between money and profit as an alternative to interest. This is in sharp contrast of conventional banking which is simply based on lender borrower's relationship.

Since, interest is not allowed in Islamic Finance, depositors are rewarded by a share in the profit from the underlying business (after deduction of management fees) in which the funds of depositors have been channeled.

Thus, it can be said that money has no intrinsic value i.e. time value of money.

The relationship between depositor and banker can be viewed as:

(a) Agent and Principal or

(b) Depositor and Custodian

(c) Investor and Entrepreneur

(d) Fellow joint partners

Thus, Islamic finance products are based on profit sharing.

Question 6

(a) The following data are available for three bonds A, B and C. These bonds are used by a bond portfolio manager to fund an outflow scheduled in 6 years. Current yield is 9%. All bonds have face value of ₹100 each and will be redeemed at par. Interest is payable annually.

Bond	Maturity (Years)	Coupon rate
A	10	10%
B	8	11%
C	5	9%

(i) Calculate the duration of each bond.

(ii) The bond portfolio manager has been asked to keep 45% of the portfolio money in Bond A. Calculate the percentage amount to be invested in bonds B and C that need to be purchased to immunise the portfolio.

(iii) After the portfolio has been formulated, an interest rate change occurs, increasing the yield to 11%. The new duration of these bonds are: Bond A = 7.15 Years, Bond B = 6.03 Years and Bond C = 4.27 years.

Is the portfolio still immunized? Why or why not?

(iv) Determine the new percentage of B and C bonds that are needed to immunize the portfolio. Bond A remaining at 45% of the portfolio.

Present values be used as follows :

Present Values	t_1	t_2	t_3	t_4	t_5
$PVIF_{0.09,t}$	0.917	0.842	0.772	0.708	0.650

Present Values	t_6	t_7	t_8	T_9	t_{10}
$PVIF_{0.09,t}$	0.596	0.547	0.502	0.460	0.4224

(12 Marks)

(b) On 19th January, Bank A entered into forward contract with a customer for a forward sale of US $ 7,000, delivery 20th March at ₹ 46.67. On the same day, it covered its position by buying forward from the market due 19th March, at the rate of ₹ 46.655. On 19th February, the customer approaches the bank and requests for early delivery of US $. Rates prevailing in the interbank markets on that date are as under:

Spot (₹/$) 46.5725/5800

March *46.3550/3650*

Interest on outflow of funds is 16% and on inflow of funds is 12%. Flat charges for early delivery are ₹100.

What is the amount that would be recovered from the customer on the transaction?

Note: *Calculation should be made on months basis than on days basis.* ***(8 Marks)***

Answer

(a) (i) Calculation of Bond Duration

Bond A

Year	Cash flow	P.V. @ 9%		Proportion of bond value	Proportion of bond value x time (years)
1	10	0.917	9.17	0.086	0.086
2	10	0.842	8.42	0.079	0.158
3	10	0.772	7.72	0.073	0.219
4	10	0.708	7.08	0.067	0.268
5	10	0.650	6.50	0.061	0.305
6	10	0.596	5.96	0.056	0.336
7	10	0.547	5.47	0.051	0.357
8	10	0.502	5.02	0.047	0.376
9	10	0.460	4.60	0.043	0.387
10	110	0.4224	46.46	0.437	4.370
			106.40	1.000	6.862

Duration of the bond is 6.862 years or 6.86 year

Bond B

Year	Cash flow	P.V. @ 9%		Proportion of bond value	Proportion of bond value x time (years)
1	11	0.917	10.087	0.091	0.091
2	11	0.842	9.262	0.083	0.166
3	11	0.772	8.492	0.076	0.228
4	11	0.708	7.788	0.070	0.280
5	11	0.650	7.150	0.064	0.320
6	11	0.596	6.556	0.059	0.354

7	11	0.547	6.017	0.054	0.378
8	111	0.502	55.772	0.502	4.016
			111.224	1.000	5.833

Duration of the bond B is 5.833 years or 5.84 years

Bond C

Year	Cash flow	P.V. @ 9%		Proportion of bond value	Proportion of bond value x time (years)
1	9	0.917	8.253	0.082	0.082
2	9	0.842	7.578	0.076	0.152
3	9	0.772	6.948	0.069	0.207
4	9	0.708	6.372	0.064	0.256
5	109	0.650	70.850	0.709	3.545
			100.00	1.000	4.242

Duration of the bond C is 4.242 years or 4.24 years

(ii) Amount of Investment required in Bond B and C

Period required to be immunized	6.000 Year
Less: Period covered from Bond A	3.087 Year
To be immunized from B and C	2.913 Year

Let proportion of investment in Bond B and C is b and c respectively then

$b + c = 0.55$ (1)

$5.883b + 4.242c = 2.913$ (2)

On solving these equations, the value of b and c comes 0.3534 or 0.3621 and 0.1966 or 0.1879 respectively and accordingly, the % of investment of B and C is 35.34% or 36.21% and 19.66 % or 18.79% respectively.

(iii) With revised yield the Revised Duration of Bond stands

$0.45 \times 7.15 + 0.36 \times 6.03 + 0.19 \times 4.27 = 6.20$ year

No portfolio is not immunized as the duration of the portfolio has been increased from 6 years to 6.20 years.

(iv) New percentage of B and C bonds that are needed to immunize the portfolio.

Period required to be immunized	6.0000 Year
Less: Period covered from Bond A	3.2175 Year
To be immunized from B and C	2.7825 Year

Let proportion of investment in Bond B and C is b and c respectively, then

b + c = 0.55

6.03b + 4.27c = 2.7825

b = 0.2466

On solving these equations, the value of b and c comes 0.2466 and 0.3034 respectively and accordingly, the % of investment of B and C is 24.66% or 25% and 30.34 % or 30.00% respectively.

(b) The bank would sell US $ to its customer at the agreed rate under the contract. However, it would recover loss from the customer for early delivery.

On 19th February bank would buy US$ 7000 from market and shall sell to customer. Further, Bank would enter into one month forward contract to sell the US $ acquired under the cover deal.

(i) Swap Difference

Bank sells at	₹ 46.3550
Bank buys at	₹ 46.5800
Swap loss per US $	0.225
Swap loss for US $ 7000	₹ 1,575

(ii) Interest on Outlay of Funds

On 19th February, Bank sell to customer	₹ 46.67
It buys from spot Market	₹ 46.58
Inflow of funds per US $	₹ 0.09

Inflow of funds for US $ 7000 is ₹ 630

Interest on ₹ 630 at 12% for one month ₹ 6.30

(c) Charges for early delivery

Swap loss	₹ 1,575.00
Flat charges	₹ 100.00
Less: Interest on outflow of funds	₹ 6.30
	₹ 1,668.70

Total amount to be recovered from the customer

Amount as per Forward Contract ₹ 46.67 x 7000	₹ 3,26,690.00
Add: Charges for early delivery	₹ 1,668.70
	₹ 3,28,358.70