PAPER – 2 : STRATEGIC FINANCIAL MANAGEMENT

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

*Candidates are also required to answer any **four** from the remaining **five** questions.*

Working notes should form part of the respective answer.

Question 1

(a) On August 1, 2023, an investor has a portfolio consisting of 5 securities as shown below:

Security	Market Price (₹)	No. of Shares	Beta
A	60.00	450	0.87
B	320.00	850	1.31
C	640.00	200	0.94
D	130.00	500	0.66
E	480.00	600	1.50

The cost of capital for the investor is 20% p.a. compounded. The current NIFTY value is 19,500. NIFTY futures are available with expiry for 3 months (Oct-23) and 4 months (Nov-23) and are currently quoted at 19,700 and 19,900 respectively. Each NIFTY futures can be traded in units of 50 only.

You are required to calculate:

(i) The beta of his portfolio;

(ii) Theoretical value of Futures contract for contracts expiring in Oct. and Nov.

(Given $e^{0.05}$ = 1.05127, $e^{0.06}$=1.06184, $e^{0.07}$=1.07251)

(iii) The number of contracts the NIFTY the investor needs to sell to get a full hedge until November for his portfolio.

(iv) The number of future contracts the investor should trade if he desires to reduce the beta of his portfolio to 0.25. ***(8 Marks)***

(b) An investor has categorized all the available stock in the market into the following types and the estimated weights of the categories of stocks in the market index are given below. Further, the sensitivity of returns of these categories of stocks to two factors Inflation and Stock market are also given below:

Category	Weight in Market Index	Factor 1 (Inflation)			Factor 2 (Stock Market)		
		Beta 1	Expected Value in %	Actual Value in %	Beta 2	Expected Value in %	Actual Value in %
Small Cap	20%	1.20	6.70	6.70	0.80	10.00	10.50

Medium Cap	*30%*	*1.75*	*4.50*	*6.00*	*0.90*	*7.00*	*8.00*
Large Cap	*15%*	*1.30*	*6.75*	*8.00*	*1.165*	*9.00*	*10.00*
Flexi Cap	*35%*	*1.70*	*7.00*	*6.50*	*0.85*	*8.85*	*9.75*

Risk Free Rate of Interest is 7.50%.

Round off to 2 decimal.

You are required to calculate:

(i) Expected return on the market index for both the factors.

(ii) Expected return on the market index under Arbitrage Pricing Theory (Existing Scenario).

(iii) Expected return on the market index under Arbitrage Pricing Theory if the composition of the Portfolio is changed to 25% equally in all four categories.

(iv) Which alternative (Existing or Changed) will be more profitable? ***(8 Marks)***

(c) "Lack of existence of a well-developed debt market in India, is an obstacle that hinders the growth of the Secondary Market of securitized or asset backed Securities". Is it true?

*What are the other problems in Securitization Process? (Any **three**)* ***(4 Marks)***

Answer

(a) (i) Calculation of Portfolio Beta

Security	Price of the Stock	No. of shares	Value	Weightage w_i	BetaB_i	Weighted Beta
A	60.00	450	27,000	0.0346	0.87	0.0301
B	320.00	850	2,72,000	0.3488	1.31	0.4569
C	640.00	200	1,28,000	0.1641	0.94	0.1543
D	130.00	500	65,000	0.0833	0.66	0.0550
E	480.00	600	2,88,000	0.3692	1.50	0.5538
			7,80,000			1.2501

Portfolio Beta = 1.25

(ii) Calculation of Theoretical Value of Future Contracts

Cost of Capital = 20% p.a.

(1) For October contract, t = 3/12 = 0.25

Further $F = Se^{rt}$

$F = ₹\ 19,500e^{(0.20)(0.25)}$

$F = ₹\ 19,500e^{0.05}$

F = ₹ 19,500 X 1.05127 = ₹ 20,499.77

(2) For November contract, t = 4/12 = 0.3333

Further $F = Se^{rt}$

$F = ₹ 19,500e^{(0.20)(0.3333)}$

$F = ₹ 19,500e^{0.067}$

$e^{0.067}$ shall be computed using Interpolation Formula as follows:

$e^{0.07}$	= 1.07251
$e^{0.06}$	= 1.06184
$e^{0.01}$	= 0.01067
$e^{0.007}$	= 0.00747
$e^{0.0033}$	= 0.00352

$e^{0.067}$ = 1.06184 + 0.00747 = 1.06931 or 1.07251 – 0.00352 = 1.06899

Accordingly, the price of the November Contract

19500 X 1.06931 = ₹ 20,851.55 or 19500 X 1.06899 = ₹ 20,845.31

(iii) When total portfolio is to be hedged:

$$= \frac{\text{Value of Spot Position requiring hedging}}{\text{Value of Future Contract}} \times \text{Portfolio Beta}$$

$$= \frac{7,80,000}{19,900 \times 50} \times 1.25 = 0.98 \text{ contracts say 1 contract}$$

(iv) When total portfolio beta is to be reduced to 0.25:

Number of Contracts to be sold = $\frac{P(\beta_P - \beta_P^{'})}{F}$

October Contracts

$$= \frac{7,80,000}{19,700 \times 50} \times (1.25 - 0.25) = 0.79 \text{ contracts say 1 contract}$$

Alternatively, if students use November Contracts

$$= \frac{7,80,000}{19,900 \times 50} \times (1.25 - 0.25) = 0.78 \text{ contracts say 1 contract}$$

(b) (i) Expected Return on Market Index for Both factors

Factor 1

= 0.20 x 6.70% + 0.30 x 4.50% + 0.15 x 6.75% + 0.35 x 7.00%

= 1.34% + 1.35% + 1.01% + 2.45% = 6.15%

Factor 2

= 0.20 x 10% + 0.30 x 7% + 0.15 x 9% + 0.35 x 8.85%

= 2% + 2.10% + 1.35% + 3.10%

= 8.55%

(ii) Calculation of expected Return on the Market index under Arbitrage Pricing Theory (Existing Scenario):

	Factor 1 (Inflation)				
Category	**Beta**	**Actual value**	**Expected value**	**Difference**	**Beta x Diff.**
	(a)	**(b) (%)**	**(c) (%)**	**(b) - (c) = (d) (%)**	**(e)**
Small Cap	1.20	6.70	6.70	0.00	0.00
Medium Cap	1.75	6.00	4.50	1.50	2.63
Large Cap	1.30	8.00	6.75	1.25	1.63
Flexi cap	1.70	6.50	7.00	(0.50)	(0.85)

	Factor 2 (Stock Market)					
Category	**Beta**	**Actual value**	**Expected value**	**Difference**	**Beta x Diff.**	**Total**
	(f)	**(g) (%)**	**(h) (%)**	**(g) – (h) = (i) (%)**	**(j)**	**(e) + (j) = (k)**
Small Cap	0.80	10.50	10.00	0.50	0.40	0.40
Medium Cap	0.90	8.00	7.00	1.00	0.90	3.53
Large Cap	1.165	10.00	9.00	1.00	1.17	2.80
Flexi cap	0.85	9.75	8.85	0.90	0.77	(0.08)

Category	**Weight in market index (1)**	**Total Beta x Diff (2)**	**Expected Return (2 x 1 = 3)**
Small Cap	20%	0.40	0.08
Medium Cap	30%	3.53	1.06
Large Cap	15%	2.80	0.42
Flexi cap	35%	(0.08)	(0.03)
Total			1.53
Add: Risk Free Rate of Interest			7.50
Expected Return (%)			9.03

(iii) Expected Return on the Market Index under Arbitrage Pricing Theory under changed scenario:

Category	Weight in market index (1)	Total Beta x Diff (2)	Expected Return (2 x 1 = 3)
Small Cap	25%	0.40	0.10
Medium Cap	25%	3.53	0.88
Large Cap	25%	2.80	0.70
Flexi cap	25%	(0.08)	(0.02)
Total			1.66
Add: Risk Free Rate of Interest			7.50
Expected Return (%)			9.16

(iv) As per the above calculation, the investors by investing 25% equally in all four categories, is profitable compared to the existing composition. As the proposed composition gives rate of return of 9.16% per annuam when compared to the existing return of the present portfolio which is 9.03%.

(c) Yes.

Following are main problems faced in growth of Securitization of instruments especially in Indian context:

(1) Stamp Duty: Stamp Duty is one of the obstacle in India. Under Transfer of Property Act, 1882, a mortgage debt stamp duty which even goes upto 12% in some states of India and hence impedes the growth of securitization in India. It should be noted that since pass through certificate does not evidence any debt only able to receivable, they are exempted from stamp duty.

Moreover, in India, recognizing the special nature of securitized instruments in some states has reduced the stamp duty on them.

(2) Taxation: Taxation is another area of concern in India. In the absence of any specific provision relating to securitized instruments in Income Tax Act, experts' opinion differ a lot. Some are of the opinion that SPV as a trustee is liable to be taxed in a representative capacity whereas others are of view that instead of SPV, investors will be taxed on their share of income. Clarity is also required on the issues of capital gain implications on passing payments to the investors.

(3) Accounting: Accounting and reporting of securitized assets in the books of originator is another area of concern. Although securitization is slated to be an off-balance sheet instrument but in true sense receivables are removed from originator's balance sheet. Problem arises especially when assets are transferred without recourse.

(4) Lack of standardization: Every originator follows his own format for documentation and administration and hence lack of standardization is another obstacle in the growth of securitization.

(5) Ineffective Foreclosure laws: For many years efforts are on for effective foreclosure but still foreclosure laws are not supportive to lending institutions and this makes securitized instruments especially mortgaged backed securities less attractive as lenders face difficulty in transfer of property in event of default by the borrower.

Note: Students need to mention any three points.

Question 2

(a) Following is the information available pertaining to shares of Omni Ltd.:

Current Market Price (₹)	*₹ 420.00*
Strike Price (₹)	*₹ 450.00*
Maximum Price (₹) expected in next 3 months' time	*₹ 525.00*
Minimum Price (₹) expected in next 3 months' time	*₹ 378.00*
Continuously Compounded Rate of Interest (p.a.) (%)	*8.00%*
e^{rt}	*1.0202*

From the above:

(i) Calculate the 3 months call option by using Binomial Method and Risk Neutral Method.

Are the calculated values under both the models are same?

(ii) State also clearly the basis of Valuation of options under these models. ***(8 Marks)***

(b) Mr. S has invested in 3 different Mutual Fund Schemes. The following are the details of the same:

Particulars	***Scheme A***	***Scheme B***	***Scheme C***
Date of Investment	*01-06-2022*	*01-07-2022*	*01-08-2022*
Net Asset Value at Entry Date	*₹ 11.00*	*₹ 10.50*	*₹ 12.00*
Dividend received upto 31-03-23 (₹)	*12,500.00*	*17,000.00*	*4,000.00*
Unit NAV at 31-03-23 (₹)	*11.25*	*11.48*	*10.80*
Increase / (Decrease) in NAV (₹)	*22,727.27*	*93,333.33*	*(50,000.00)*
Effective Rate of Yield per annum	*4.2296%*	*14.6978%*	*(-) 13.8190%*

Ignore Entry/Exit load expenditure.

Assume 365 days in a year. Round off the investment to nearest ₹100.

You are required to calculate:

(i) The amount of investments made initially by Mr. S in these schemes.

(ii) Number of units invested in the three schemes by Mr. S.

Advise also whether he can continue to hold this investment or can he redeem now.

(8 Marks)

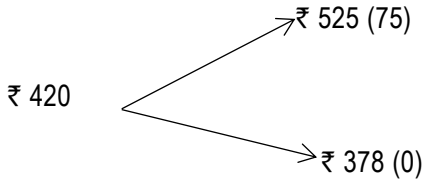
(c) Explain in brief the following:

(i) Conversion factor in Interest Rate Futures.

(ii) VEGA and RHO in OPTION VALUE. ***(4 Marks)***

Answer

(i) (1) Call Option value using Binomial Model



$$\Delta = \frac{₹525 - ₹378}{₹75 - 0} = 0.51$$

Initial Investment= 0.51 x 420 = 214.20

Value of Portfolio if Price goes down to ₹ 378

Value of holding 0.51 x ₹ 378 = 192.78

Accordingly Let 'P' be the option price, then

₹ 214.20 - P = ₹ 192.78/1.0202 = ₹ 188.96

P = ₹ 25.24

(2) Value of Call Option using Risk Neutral Method

Let ''P' be the probability of Price increase, then

p x 525 + (1 - p) x 378 = 420(1.0202)

147p = 50.48

p = 0.34

Probability of Price increase = 0.34

Probability of Price decrease= 0.66

$$\frac{0.34 \times 75 + 0.66 \times 0}{1.0202} = ₹ 25.24$$

Yes, the value of option under both Models is same.

(ii) Basis of valuation of options :

- Binomial model uses an approach called " Risk less Hedge Approach" to find the price of the option, by creating a portfolio which will have same value at expiration irrespective of any price. Hedge means to create an equal and opposite position for protecting the value of portfolio.
- In Risk Neutral Model, valuation of options is based on arbitrage and is therefore independent of risk preferences; one should be able to value options assuming any set of risk preferences and get the same answer.

(b) (i) Calculation of amount of investment made initially by Mr. S:

Particulars	Scheme A	Scheme B	Scheme C
(a) Period of Investment	304 days	274 days	243 days
(b) Effective Yield p.a.	4.2296%	14.6978%	(-) 13.8190%
(c) Effective Yield for holding period	3.5227%	11.0334%	(-) 9.2000%
(d) Dividend Received	₹ 12,500	₹ 17,000	₹ 4000
(e) Increase / Decrease of NAV	₹ 22,727.27	₹ 93,333.33	(₹ 50,000)
(f) Total Yield (d+e)	₹ 35,227.27	₹ 1,10,333.33	(₹ 46,000)
(g) Initial Investment (f/c)	₹ 10,00,000	₹ 10,00,000	₹ 5,00,000
(h) NAV on date of Investment	₹ 11.00	₹ 10.50	₹ 12.00

(ii) Units invested in three schemes by Mr. S

Particulars	Scheme A	Scheme B	Scheme C
Initial Investment	₹ 10,00,000	₹ 10,00,000	₹ 5,00,000
NAV on date of Investment	₹ 11.00	₹ 10.50	₹ 12.00
Units of Investment	90,909.09	95,238.10	41,666.67
Or	90,909	95,238	41,667

Advise: He should continue to investment in Scheme B and get redeemed both schemes A and C and invest their proceeds in Scheme B.

(c) (i) Conversion factor: All the deliverable bonds have different maturities and coupon rates. To make them comparable to each other, and also with the notional bond, RBI introduced Conversion Factor. Conversion factor for each deliverable bond and for each expiry at the time of introduction of the contract is being published by NSE.

(Conversion Factor) x (futures price) = actual delivery price for a given deliverable bond.

(ii) Vega: Sensitivity of option value to change in volatility. Vega indicates an absolute change in option value for a one percent change in volatility.

For example, a Vega of 0.09 indicates an absolute change in the option's theoretical value will increase by 0.09 if the volatility percentage is increased by 1.0 or decreased by 0.09 if the volatility percentage is decreased by 1.0. Results may not be exact due to rounding. It can also be stated as the change in option price given a one percentage point change in volatility. Like delta and gamma, Vega is also used for hedging.

Rho: Rho is the change in option price given a one percentage point change in the risk free interest rate. It is the sensitivity of the option value to change in interest rate. Rho indicates an absolute change in option value for a one percentage change in the interest rate.

For example, a Rho of 0.06 indicates the option's theoretical value will increase by 0.06 if the interest rate is decreased by 1.0.

Question 3

(a) The following information of AB Ltd., is available below:

Market Value per share - ₹ 20 per share

Equity Share Capital - 12,00,000 shares @ the face value of ₹ 10 per share.

The company is planning to issue Rights Shares to the existing shareholders and raise ₹ 60,00,000 to finance a new project.

You are required:

(i) To calculate the ex-right price of shares and the value of right, if

(a) The company offers one right share for every three shares held.

(b) The company offers two right shares for every five shares held.

(ii) To show the effect of the rights issue on the wealth of a Shareholder X, who has 1,500 shares, when the company offers one right share for every three shares held, assuming :

(a) He subscribes to the Rights issue

(b) He ignores the Rights issue ***(8 Marks)***

(b) *A Japanese company imports hi-tech printer cartridges from US worth $1 million. The chief financial officer of the company wishes to know the best strategy for protection against uncertainty, for the payment that has to be made at the end of 3 months. Financial team of the company has collected the following options for evaluation:*

Table-1: Exchange rates quoted in FOREX Market:

¥/$ Quotations	Bid Price	Offer/Ask Price
Spot Rates	146.03	146.63
3M – Forward Rates	144.03	145.00
6M – Forward Rates	146.35	146.70

Table-2 : Options Market rates for European options with 3 months expiry :

Type of Option	Strike Price (X) (¥/$)	Premium (%) for Call & Put Options
Call & Put	145.20	1.6766% (Call) & 1.7414% (Put)
Call & Put	146.00	1.3505% (Call) & 2.1006% (Put)

The expected spot price at expiry is ¥/$: 144.90/145.05

Suggest the best strategy for CFO of the Japanese Company to protect against uncertainty, with respect to the following alternatives :

(i) Forward Hedge

(ii) Buy 3 months call, X = 145.20

(iii) Sell 3 months put, X = 145.20

(iv) Buy call & sell put both having X = 146.00 **(8 Marks)**

(c) *Describe the main function of corporate level strategy and state which three basic questions it should be able to answer.* **(4 Marks)**

Answer

(a) (i) Ex-right price of share and the value of right

(a) Number of shares to be issued : 4,00,000

Subscription price ₹ 60,00,000 / 4,00,000 = ₹ 15

$$\text{Ex-Right Price} = \frac{₹240 \text{ Lakh} + ₹60 \text{ Lakh}}{16 \text{ Lakhh}} = ₹ 18.75$$

Value of a Right = ₹ 18.75 – ₹ 15 = ₹ 3.75

$$\text{Value of a Right Per Share Basis} = \frac{₹ 3.75}{3} = ₹ 1.25$$

(b) Number of shares to be issued : 4,80,000

Subscription price ₹ 60,00,000 / 4,80,000 = ₹ 12.50

Ex-Right Price = $\frac{₹\,240\ \text{Lakh} + ₹\,60\ \text{Lakh}}{16.80\ \text{Lakh}}$ = ₹ 17.86

Value of a Right = ₹ 17.86 – ₹ 12.50 = ₹ 5.36

Value of a Right Per Share Basis = $\frac{₹\,5.36 \times 2}{5}$ = ₹ 2.14 or $\frac{₹\,5.36}{5}$ = ₹ 1.07

(ii) (a) Shareholder's wealth that is holding 1500 shares when firm offers one share for three shares held and subscribes the offer.

Value of Shares after right issue (2000 X ₹ 18.75)	₹ 37,500
Less: Amount paid to acquire right shares (500 X ₹15)	₹ 7,500
	₹ 30,000

Wealth before Right Issue = 1500 x 20 = ₹ 30,000

Thus, there is no change in the wealth

(b) Shareholder's wealth that is holding 1500 shares when firm offers one share for three shares held and does not subscribe the offer.

Value of Shares after right issue (1500 X ₹ 18.75) ₹ 28,125

Thus, if shareholder does not subscribe right offer there will be loss of wealth of ₹ 1,875.

(b) (i) Forward Hedge

Amount payable after 3 months $ 1000000

3 month applicable buying rate ¥ 145/$

Amt. payable in Yen ¥ 145 million

(ii) Buy 3 month call option X = ¥ 145.20

If expected spot price after 3 month is ¥ 145.05

Then company would not exercise its option. Accordingly the cost of import will be

Buying Yen in spot Market after 3 month	¥ 145.05 million
Add: Premium Paid ¥ 145.20 x 1.6766%x $ 1 million	¥ 2.43 million
	¥ 147.48 million

(iii) Selling 3 month Put at X = ¥ 145.20

If expected spot price after 3 month ¥ 144.90 , then Put Option buyer will exercise his /her option.

Accordingly the import Bill will be :

Buying Yen in under option after 3 month	¥ 145.20 million
Less: Premium Receipt ¥ 145.20 x 1.7414%x $ 1 million	¥ 2.53 million
	¥ 142.67 million

(iv) Buying Call and selling Put at X = ¥ 146

Net Premium receipt

Premium paid on call option = ¥ 146.00 x 1.3505%	¥ 1.9717 million
Premium Receipt on Put option = ¥ 146.00 x 2.1006%	¥ 3.0669 million
	¥ 1.0952 million

If expected spot Rate expiry happens to be ¥ 144.90/145.05, then call option will be lapsed and Put option by buyer will be exercised. Accordingly, the import bill will be:

Buying US$ under Put Option	¥ 146.00 million
Less: Receipt of Net Premium	¥ 1.09520 million
	¥ 144.905 million

Decision: Since expected outflow is least in case of selling Put option, the same strategy is recommended.

(c) Corporate level strategy fundamentally is concerned with selection of businesses in which a company should compete and with the development and coordination of that portfolio of businesses.

Corporate level strategy should be able to answer three basic questions:

(i) **Suitability:** Whether the strategy would work for the accomplishment of common objective of the company.

(ii) **Feasibility:** Determines the kind and number of resources required to formulate and implement the strategy.

(iii) **Acceptability:** It is concerned with the stakeholders' satisfaction and can be financial and non-financial.

Question 4

(a) The following information is provided relating to the acquiring Company R Ltd. And the target Company K Ltd.:

Particulars	R Ltd.	K Ltd.
Promoter Holding	50%	60%
Share Capital (₹ in lakh)	100	50
Free Reserves & Surplus (₹ in lakh)	400	250
Paid up value per share (₹)	100	10
Free Float Market Capitalization (₹ in lakh)	200	64
P/E Ratio (times)	20	8

For deciding the swap ratio, weights are assigned to different parameters by the Board of Directors of both the companies as follows:

Book value	*20%*
EPS	*60%*
Market Price	*20%*

You are required to calculate:

(i) Swap ratio based on above weights.

(ii) Book Value per share, EPS and expected market price of R Ltd. after acquisition of K Ltd. (Assuming PE multiple of K Ltd. remains unchanged and all assets and liabilities of K Ltd. are taken over at book value)

(iii) Revised promoter's holding (%) in R Ltd. after acquisition.

(iv) Post-acquisition Free Float Market Capitalization. **(10 Marks)**

(b) In March, 2022, SMD Bank sold 7% Interest Rate Futures underlying Notional 7.5% Coupon Bonds. The Exchange provides following details of eligible securities that can be delivered :

Security	Quoted Spot Price of Bonds	Conversion Factor
6.55 GOI 2025	9264.0	0.9060
6.80 GOI 2029	8775.5	0.9195
6.85 GOI 2026	9723.0	0.9643
8.44 GOI 2027	11463.0	1.1734
8.85 GOI 2028	12017.0	1.2428

Recommend the Cheapest to Deliver (CTD) security that should be delivered by SMD Bank if Future settlement price is 10000. **(6 Marks)**

(c) List out the four methods for Identification and Management of Financial Risk. What are the parameters to identify the currency risk? **(4 Marks)**

Answer

(a) (i) Swap Ratio

	R Ltd.	K Ltd.
Share Capital	100 Lakh	50 Lakh
Free Reserves	400 Lakh	250 Lakh
Total	500 Lakh	300 Lakh
No. of Shares	1 Lakh	5 Lakh
Book Value per share	₹ 500	₹ 60
Promoter's holding	50%	60%
Non promoter's holding	50%	40%
Free Float Market Cap. i.e. relating to Public's holding	200 Lakh	64 Lakh
Hence Total market Cap.	400 Lakh	160 Lakh
No. of Shares	1 Lakh	5 Lakh
Market Price	₹ 400	₹ 32
P/E Ratio	20	8
EPS	20	4
Profits (₹ 1 lakh X 20)	₹ 20 lakh	-
(₹ 4 lakh X 5)	-	₹ 20 lakh

Calculation of Swap Ratio			
Book Value	1 : 0.12 i.e.	0.12 x 20%	0.024
EPS	1 : 0.2	0.20 x 60%	0.120
Market Price	1 : 0.08	0.08 x 20%	0.016
		Total	0.160

Swap ratio is for every one share of K Ltd., to issue 0.16 shares of R Ltd. Hence, total no. of shares to be issued.

5 Lakh x 0.16 = 0.80 lakh shares

(ii) Book Value, EPS & Market Price

Total No of Shares 1 Lakh + 0.80 Lakh = 1.80 Lakh

Total Capital ₹ 100 Lakh + ₹ 80 Lakh = ₹ 180 Lakh

Reserves ₹ 400 Lakh + ₹ 220 Lakh = ₹ 620 Lakh

Book Value $\frac{₹ 180 \text{ Lakh} + ₹ 620 \text{ Lakh}}{1.80 \text{ Lakh}}$ = ₹ 444.44 per share

$$\text{EPS } \frac{\text{Total Profit}}{\text{No. of Share}} = \frac{20 \text{ Lakh} + 20 \text{ Lakh}}{1.80 \text{ Lakh}} = ₹ \ 22.22$$

Expected Market Price EPS (₹ 22.22) x P/E Ratio (8) = ₹ 177.76

(iii) Revised Promoter's holding

Promoter's Revised R Ltd. 50% i.e.	0.50 Lakh
Holding K Ltd. 60% i.e.	0.48 Lakh
Total	0.98 Lakh

Promoter's % = 0.98/1.80 x 100 = 54.44%

(iv) Post Acquisition Free Float Market Capitalization

Free Float Market Capitalization = (1.80 Lakh – 0.98 Lakh) x ₹ 177.76 = ₹ 145.76 Lakh

(b) Profit of SMD Bank as selling IRF using different conversion factors

Security	Future Settlement Price	Conversion factor	FSP x Con. Factor	Quoted spot price	Profit / loss
6.55GOI 2025	10000	0.9060	9060	9264	(204)
6.80 GOI 2029	10000	0.9195	9195	8775	420
6.85 GOI 2026	10000	0.9643	9643	9723	(80)
8.44 GOI 2027	10000	1.1734	11743	11463	280
8.85 GOI 2028	10000	1.2428	12428	12017	411

Since 6.80% GOI 2029 maximize profit the same should be recommended as CTD.

(c) Following are the four methods for identification and management of financial risk:

- ❖ Counter Party risk
- ❖ Political risk
- ❖ Interest Rate Risk
- ❖ Currency Risk

Parameters to identity the currency risk are as follows:

(1) Government Action: The Government action of any country has visual impact in its currency.

(2) Nominal Interest Rate: As per interest rate parity (IRP) the currency exchange rate depends on the nominal interest of that country.

(3) Inflation Rate: Purchasing power parity theory discussed in later chapters impact the value of currency.

(4) Natural Calamities: Any natural calamity can have negative impact.

(5) War, Coup, Rebellion etc.: All these actions can have far reaching impact on currency's exchange rates.

(6) Change of Government: The change of government and its attitude towards foreign investment also helps to identify the currency risk.

Question 5

(a) An import customer booked a forward contract with the bank on 10th April for USD 20,000 due on 10th June at ₹ 49.4000. The bank covered its position in the market at ₹ 49.2800.

The exchange rate for dollar in the interbank market on 10th June and 20th June were:

	10th June	***20th June***
Spot	*USD 1 = ₹ 48.8000/8200*	*48.6800/7200*
Spot/ June	*48.9200/9500*	*48.8000/8500*
Spot/July	*49.0500/0900*	*48.9300/9900*
Spot/August	*49.3000/3500*	*49.1800/2500*
Spot/September	*49.6000/6600*	*49.4800/5600*
Exchange margin is 0.10%		
Interest on outlay of funds 12%		

Calculate how the bank will react, if the customer requires on 20th June:

(i) To cancel the contract.

(a) Exchange difference,

(b) Swap loss,

(c) Interest on outlay of funds and

(d) Cancellation charges

(ii) To Execute the contract.

(iii) To Extend the contract with due date to fall on 10th August. ***(8 Marks)***

(b) Expected returns on two stocks against BSE SENSEX returns are given in the following table under two scenarios-bullish and bearish:

Market return	***Scenario -1: Bullish Case***	***Scenario -2: Bearish Case***
BSE Sensex	*25%*	*-5%*
Stock R	*32%*	*-4%*
Stock Z	*18%*	*-3%*

You are required to calculate:

(i) The Betas of two stocks R and Z.

(ii) Expected return on each stock, if the likelihood of market achieving Scenario-1 is thrice the likelihood of the market achieving Scenario-2.

(iii) The Security Market Line (SML), if the risk free rate is 8% and likelihood of the market return achieving the bullish base returns of 25% is thrice that of achieving -5% returns.

(iv) The Alphas of the two stocks based on Sharpe Index Model. ***(8 Marks)***

(c) NIYA Healthcare is a proprietary concern engaged in the manufacture and development of Pharmaceutical products since last five years. To scale up the business operations and increase the present turnover which is hovering around 500 Million, the proprietor decides to convert his existing business into a Private Limited Company. He also wants to get access to various tax benefits, easier compliances under the startup India initiative and get recognized as a startup company.

Advise whether NIYA Healthcare can be recognized as a startup company in view of the criteria considered eligible for the startup recognition initiated by the Government of India? ***(4 Marks)***

Answer

(a) (i) Cancellation of Contract

(a) Exchange Difference:

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

$/ ₹ Market Buying Rate	₹ 48.6800
Less: Exchange Margin @ 0.10%	₹ 0.0487
	₹ 48.6313

Rounded off to ₹ 48.6325

Exchange Difference Payable

Bank sells $ 20,000 @ ₹ 49.4000	₹ 9,88,000
Bank buys $ 20,000 @ ₹ 48.6325	₹ 9,72,650
Amount payable by customer	₹ 15,350

(b) Swap Loss

On 10th June the bank does a swap sale of $ at market buying rate of ₹ 48.8000 and forward purchase for June at market selling rate of ₹ 48.9500.

Bank buys at	₹ 48.9500
Bank sells at	₹ 48.8000
Amount payable by customer	₹ 0.1500

Swap Loss for $ 20,000 is = ₹ 3,000

(c) Interest on Outlay of Funds

On 10th June, the bank receives delivery under cover contract at ₹ 49.2800 and sell spot at ₹ 48.8000.

Bank buys at	₹ 49.2800
Bank sells at	₹ 48.8000
Amount payable by customer	₹ 0.4800

Outlay for $ 20,000 is ₹ 9,600

Interest on ₹ 9,600 @ 12% for 10 days ₹ 31.56 or ₹ 32.00

(d) Cancellation Charges

Particulars	Amount (₹)
Exchange Difference	15,350
Swap Loss	3,000
Interest on Outlay of Funds	32.00
Cancellation Charges payable by Customer	18,382

Or

Particulars	Amount (₹)
Exchange Difference	15,350
Swap Loss	3,000
Interest on Outlay of Funds	31.56
Cancellation Charges payable by Customer	18,381.56

(ii) Execution of Contract

Cancellation charges of ₹ 18,382 or ₹ 18,381.56 as computed above will be recovered. The contract will be executed at the spot TT selling rate calculated as follows:

Dollar/₹ interbank spot selling rate	₹ 48.7200
Add: exchange margin at 0.10%	+ 0.0487
	₹ 48.7687

(iii) Extension of Contract

Cancellation charges of ₹ 18,382 or ₹ 18,381.56 as computed above will be recovered.

The contract will be extended at the current rate.

Dollar/₹ market forward selling rate for August	₹ 49.2500
Add: Exchange margin at 0.10%	+ 0.0492
	₹ 49.2992

The exchange rate applied for the extended contract is ₹ 49.3000 or ₹ 49.2992.

(b) (i) The Betas of two stocks:

Stock R - (32% + 4%)/(25% + 5%) = 1.2

Stock Z - (18% + 3%)/(25% + 5%) = 0.70

Alternatively, it can also be solved by using the Characteristic Line Relationship as follows:

$R_s = \alpha + \beta R_m$

Where

α = Alpha

β = Beta

R_m= Market Return

For Stock R

$32\% = \alpha + \beta(25\%)$

$-4\% = \alpha + \beta(-5\%)$

$36\% = \beta(30\%)$

$\beta = 1.2$

For Stock Z

$18\% = \alpha + \beta(25\%)$

$-3\% = \alpha + \beta(-5\%)$

$21\% = \beta(30\%)$

$\beta = 0.70$

Alternatively, Beta can also be calculated as follows:

Basic Calculation for stock R

(R_R)	$\overline{R_R}$	$R_R - \overline{R_R}$	$(R_R - \overline{R_R})^2$	(R_m)	$\overline{R_M}$	$R_m - \overline{R_M}$	$(R_m - \overline{R_M})^2$	$(R_R - \overline{R_R})(R_m - \overline{R_M})$
32%	14%	18%	324	25%	10%	15%	225	270
-4%	14%	-18%	324	-5%	10%	-15%	225	270
Total			648				450	540

Basic Calculation for stock Z

(R_Z)	$\overline{R_Z}$	$R_Z - \overline{R_Z}$	$(R_Z - \overline{R_Z})^2$	(R_m)	$\overline{R_M}$	$R_m - \overline{R_M}$	$(R_m - \overline{R_M})^2$	$(R_Z - \overline{R_Z})(R_m - \overline{R_M})$
18%	7.5%	10.5%	110.25	25%	10%	15%	225	157.50
-3%	7.5%	-10.5%	110.25	-5%	10%	-15%	225	157.50
Total			220.50				450	315

Co- Variance (R, M) = 540/2=270

Co- Variance (Z, M) = 315/2=157.50

$(\sigma_M)^2$ =450/2 = 225

Beta of stocks R & Z

$$\text{Beta (R)} = \frac{\text{Cov.(R,M)}}{\sigma_M^2} = 270/225 = 1.2$$

$$\text{Beta (Z)} = \frac{\text{Cov.(R,Z)}}{\sigma_M^2} = 157.5/225 = 0.7$$

(ii) Expected returns of the two stocks:

Stock R - 0.75 x 32% - 0.25 x 4% = 23%

Stock Z - 0.75 x 18% - 0.25 x 3% = 12.75%

(iii) Expected return of market portfolio = 0.75 x 25% + 0.25% x (-5%) = 17.50%

$\therefore$ Market risk prem. = 17.50% - 8.00% = 9.5%

$\therefore$ SML is, required return = 8.00% + βi 9.5%

(iv) Alpha for two stocks

Required Return for Stock R

$E(R) = \alpha_R + \beta R_M$

Accordingly

$23\% = \alpha_R + 1.20 \times 17.50\%$

$\alpha_R = 2\%$

Required Return for Stock Z

$E(Z) = \alpha_Z + \beta R_M$

Accordingly

$12.75\% = \alpha_Z + 0.70 \times 17.50\%$

$\alpha_Z = 0.5\%$

(c) As per Government of India notification an entity can be considered as a Startup:

i. If it is incorporated as a private limited company or registered as a partnership firm or a limited liability partnership in India upto a period of 10 years from date of incorporation or registration.

ii. Turnover of the entity for any of the financial years since incorporation/ registration has not exceeded one hundred crore rupees.

iii. Entity is working towards innovation, development or improvement of products or processes or services, or if it is a scalable business model with a high potential of employment generation or wealth creation.

Provided that an entity formed by splitting up or reconstruction of an existing business shall not be considered a 'Startup'.

Advise: In the present scenario, NIYA healthcare is converted into a private limited company. In other words there is a reconstruction of an exiting propriety business into a private limited company. In view of the above the company cannot be recognised as a startup company.

Question 6

(a) The following information is given for three companies that are identical in size, activities and operations, except for their capital structure:

Particulars	***A***	***B***	***C***
Total Capital Invested	*10,00,000*	*10,00,000*	*10,00,000*
Debt/ Assets Ratio	*0.75*	*0.60*	*0.25*
Shares Outstanding	*8,960*	*13,300*	*30,100*
Pre-tax cost of debt	*12%*	*10%*	*14%*
Operating Income (EBIT)	*2,50,000*	*2,50,000*	*2,50,000*
Beta Values	*1.25*	*1.00*	*0.875*

The tax rate is uniform 30% in all cases. Risk free interest rate is 6% and Market Risk premium is 16%.

You are required to compute:

(i) Weighted average cost of capital for each company.

(ii) Economic Value Added (EVA) for each company.

(iii) Based on EVA which company would be considered for best investment? Give reasons.

(iv) If the industry PE ratio is 12x, estimate the market price and Market Capitalization for each of the companies. ***(8 Marks)***

(b) Suppose a dealer bank quotes for a generic swap "AIC 8%/8.20% vs. 6M LIBOR Flat". Notional principal amount of swap is ₹ 1 Million, and the same is for a period of three years, reset after every six months.

In this context, answer the following questions:

(1) Interpret the dealer bank quote.

(2) If a firm is buying a swap, what is the nature of cash flows?

(3) If a firm is selling a swap, what is the nature of cash flows?

(4) Calculate semi-annual fixed payment for the buyer of swap at the end of every six months.

(5) If the six month period from the effective date of swap to the settlement date comprises of 181 days and that the corresponding LIBOR was 5% on the effective date of swap, then what will be the first floating rate payment for the buyer?

(6) If the settlement is on "Net Basis", how much the buyer of swap has to pay or receive at the end of first six months?

[Assume 30/360 days basis] ***(8 Marks)***

(c) In a rational, well ordered and efficient market, technical analysis may not work very well". Is it true? List out the reasons for this statement regarding Technical Analysis.

OR

"In Deal Structuring, in many structures to facilitate the exit, the Venture Capital may put a tag-along clause". What do you mean by that clause? Explain Deal Structuring and Exit Plan to Venture Capital Investment Process. ***(4 Marks)***

Answer

(a) (i) Weighted Average Cost of Capital

(1) Cost of Debt

	A	B	C
Pre-tax Cost of debt	12%	10%	14%
Post-tax Cost of debt	8.40%	7.00%	9.80%

(2) Cost of Equity

	R_f	Beta	k_e
A	6%	1.25	6% +1.25 x 16% = 26%
B	6%	1.00	6% +1.00 x 16% = 22%
C	6%	0.875	6% +0.875 x 16% = 20%

WACC

A: (8.40 x 0.75) + (26 x 0.25) = 12.80%

B: (7.00 x 0.60) + (22 x 0.40) = 13.00%

C: (9.80 x 0.25) + (20 x 0.75) = 17.45%

(ii) EVA

	A	B	C
WACC	12.80%	13.00%	17.45%
EVA [EBIT (1-T)-(WACC x Invested Capital)]	47,000	45,000	500

(iii) Based on EVA Company A would be best for investment.

(iv) Market Price and Market Capitalization

	A	B	C
EBIT	₹ 2,50,000	₹ 2,50,000	₹ 2,50,000
Less: Interest on Debt	90,000	60,000	35,000
EBT	₹ 1,60,000	₹ 1,90,000	₹ 2,15,000
Tax @ 30%	₹ 48,000	₹ 57,000	₹ 64,500
EAT	₹ 1,12,000	₹ 1,33,000	₹ 1,50,500
No. Shares O/S	8,960	13,300	30,100
EPS	₹ 12.50	₹ 10.00	₹ 5.00
PE Multiple	12	12	12
Market Price Per Share	₹ 150	₹ 120	₹ 60
Market Capitalization	₹ 13,44,000	₹ 15,96,000	₹ 18,06,000

(b) **(1)** Interpretation of dealer bank quote:

- Ø AIC in the dealer bank quote refers to 'All in cost' i.e. cost of swap all inclusive.
- Ø First part of the quote i.e. '8%/8.20% refers to the fixed leg part and the second part of the quote i. e. '6m LIBOR Flat' refers to the floating leg part.
- Ø The difference in the fixed rates i.e. 20 bps refers to the margin charged by the Bank on the fixed leg of transactions.
- Ø The term 'flat' on the floating leg quote, indicates that the Bank does not charge any commission on the floating leg. Therefore, bank charges 20 bps for transacting swap as a whole.

(2) A buyer of swap pays 'Fixed' cash flows and receives 'Floating'. As per the quote, the buyer would pay 8.2% (higher of 8%, 8.2%) to the Bank and would receive '6M LIBOR' against it.

(3) A seller of swap pays 'floating' cash flows and receives 'fixed'. As per the quote, the seller would pay '6M LIBOR' to the bank and would receive 8% (lower of 8%, 8.2%) against it.

(4) Semi-annual Payment every six-month for buyer of Swap:

$₹ 10,00,000 \times 8.20\% \times \frac{1}{2} = ₹ 41,000$

(5) Floating Rate Payment

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

$= 10,00,000 \times 0.05 \times \frac{181}{360}$

= 10,00,000 × 0.05 (0.503) or 5,00,000 × 0.05 (0.502777)

= 10,00,000 × 0.02515 or 10,00,000 × 0.02514 = ₹ 25,150 or ₹ 25,140

(6) Net Settlement

₹ 41,000 - ₹ 25,150 = ₹ 15,850 Or ₹ 41,000 - ₹ 25,140 = ₹ 15,860

or ₹ 41,000 - ₹ 25,138.89 = ₹ 15,861.11

(c) The reasons for the statement "In a rational, well ordered and efficient market, technical analysis may not work very well" are as follows:

(i) Most technical analysts are not able to offer a convincing explanation for the tools employed by them.

(ii) Empirical evidence in support of random walk hypothesis cast its shadow over the usefulness of technical analysis.

(iii) By the time an uptrend and down trend may have been signalled by technical analysis it may already have taken place.

(iv) Ultimately technical analysis must be a self-defeating proposition. With more and more people employing it, the value of such analysis tends to decline.

OR

Tag-alone clause means VC is put by condition that promoter must sell a part of his/ her stake along with the VC.

Deal Structuring: Once the case passes through the due diligence it would now go through the deal structuring. The deal is structured in such a way that both parties win. In many cases, the convertible structure is brought in to ensure that the promoter retains the right to buy back the share.

Exit plan: At the time of investing, the VC would ask the promoter or company to spell out in detail the exit plan. Mainly, exit happens in two ways:

(a) One way is 'sell to third party(ies)'. This sale can be in the form of IPO or Private Placement to other VCs.

(b) The second way to exit is that promoter would give a buy back commitment at a pre agreed rate (generally between IRR of 18% to 25%). In case the exit is not happening in the form of IPO or third-party sell, the promoter would buy back. In many deals, the promoter buyback is the first refusal method adopted i.e. the promoter would get the first right of buyback.