

**PAPER – 2: STRATEGIC FINANCIAL MANAGEMENT**  
**QUESTIONS**

**Security Valuation**

1. Today being 1<sup>st</sup> January 2019, Ram is considering to purchase an outstanding Corporate Bond having a face value of ₹ 1,000 that was issued on 1<sup>st</sup> January 2017 which has 9.5% Annual Coupon and 20 years of original maturity (i.e. maturing on 31<sup>st</sup> December 2027). Since the bond was issued, the interest rates have been on downside and it is now selling at a premium of ₹ 125.75 per bond.

Determine the prevailing interest on the similar type of Bonds if it is held till the maturity which shall be at Par.

PV Factors:

	1	2	3	4	5	6	7	8	9
6%	0.943	0.890	0.840	0.792	0.747	0.705	0.665	0.627	0.592
8%	0.926	0.857	0.794	0.735	0.681	0.630	0.583	0.540	0.500

2. The following data is available for NNTC bond:

Face value: ₹ 1000

Coupon rate: 7.50%

Years to maturity: 8 years

Redemption Value: ₹ 1000

YTM: 8%

Calculate:

- (i) The current market price, duration and volatility of the bond.
- (ii) The expected market price if there is a decrease in required yield by 50 bps.

**Portfolio Management**

3. A study by a Mutual fund has revealed the following data in respect of three securities:

Security	$\sigma$ (%)	Correlation with Index, $P_m$
A	20	0.60
B	18	0.95
C	12	0.75

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The standard deviation of market portfolio (BSE Sensex) is observed to be 15%.

- (i) What is the sensitivity of returns of each stock with respect to the market?
  - (ii) What are the covariances among the various stocks?
  - (iii) What would be the risk of portfolio consisting of all the three stocks equally?
  - (iv) What is the beta of the portfolio consisting of equal investment in each stock?
  - (v) What is the total, systematic and unsystematic risk of the portfolio in (iv) ?
4. 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
Mix	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

**Mutual Fund**

5. There are two Mutual Funds viz. D Mutual Fund Ltd. and K Mutual Fund Ltd. Each having close ended equity schemes.

NAV as on 31-12-2019 of equity schemes of D Mutual Fund Ltd. is ₹ 70.71 (consisting 99% equity and remaining cash balance) and that of K Mutual Fund Ltd. is 62.50 (consisting 96% equity and balance in cash).

Following is the other information:

Particular	Equity Schemes	
	D Mutual Fund Ltd.	K Mutual Fund Ltd.
Sharpe Ratio	2	3.3
Treynor Ratio	15	15
Standard deviation	11.25	5

There is no change in portfolios during the next month and annual average cost is ₹ 3 per unit for the schemes of both the Mutual Funds.

If Share Market goes down by 5% within a month, calculate expected NAV after a month for the schemes of both the Mutual Funds.

For calculation, consider 12 months in a year and ignore number of days for particular month.

### Derivatives

6. Mr. SG sold five 4-Month Nifty Futures on 1<sup>st</sup> February 2020 for ₹ 9,00,000. At the time of closing of trading on the last Thursday of May 2020 (expiry), Index turned out to be 2100. The contract multiplier is 75.

Based on the above information calculate:

- The price of one Future Contract on 1<sup>st</sup> February 2020.
- Approximate Nifty Sensex on 1<sup>st</sup> February 2020 if the Price of Future Contract on same date was theoretically correct. On the same day Risk Free Rate of Interest and Dividend Yield on Index was 9% and 6% p.a. respectively.
- The maximum Contango/ Backwardation.
- The pay-off of the transaction.

**Note:** Carry out calculation on month basis.

7. A Rice Trader has planned to sell 22000 kg of Rice after 3 months from now. The spot price of the Rice is ₹ 60 per kg and 3 months Future on the same is trading at ₹ 59 per kg. Size of the contract is 1000 kg. The price is expected to fall as low as ₹ 56 per kg, 3 months hence.

Required:

- to interpret the position of trader in the Cash Market.
- to advise the trader the trader should take in Future Market to mitigate its risk of reduced profit.

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- (iii) to demonstrate effective realized price for its sale if he decides to make use of future market and after 3 months, spot price is ₹ 57 per kg and future contract price for closing the contract is ₹ 58 per kg.

**Foreign Exchange Exposure and Risk Management**

8. Citi Bank quotes JPY/ USD 105.00 -106.50 and Honk Kong Bank quotes USD/JPY 0.0090- 0.0093.
- (a) Are these quotes identical if not then how they are different?
- (b) Is there a possibility of arbitrage?
- (c) If there is an arbitrage opportunity, then show how would you make profit from the given quotation in both cases if you are having JPY 1,00,000 or US\$ 1,000.
9. (a) Given:
- US\$ 1 = ¥ 107.31
- £ 1 = US\$ 1.26
- A\$ 1 = US\$ 0.70
- (i) Calculate the cross rate for Pound in Yen terms
- (ii) Calculate the cross rate for Australian Dollar in Yen terms
- (iii) Calculate the cross rate for Pounds in Australian Dollar terms
- (b) The current spot exchange rate is \$1.35/£ and the three-month forward rate is \$1.30/£. According to your analysis of the exchange rate, you are quite confident that the spot exchange rate will be \$1.32/£ after 3 months.
- (i) Suppose you want to speculate in the forward market then what course of action would be required and what is the expected dollar Profit (Loss) from this speculation?
- (ii) What would be your Profit (Loss) in Dollar terms on the position taken as per your speculation if the spot exchange rate turns out to be \$1.26/£.

Assume that you would like to buy or sell £1,000,000.

**International Financial Management**

10. Suppose you are a treasurer of XYZ plc in the UK. XYZ have two overseas subsidiaries, one is based in Amsterdam and another in Switzerland. The surplus position of funds in hand is as follows which it does not need for the next three months but will be needed at the end of that period (91 days).

Holding Company	£ 150,000
Swiss Subsidiary	CHF 1,996,154
Dutch Subsidiary	€ 1,450,000

Exchange Rate as on date are as follows:

Spot Rate (€)	£0.6858 - 0.6869
91 day Pts	0.0037 0.0040
Spot Rate (£)	CHF 2.3295 - 2.3326
91 day Pts	0.0242 0.0228

91-Day Interest rates on p.a. basis on the Deposits in Money Market are as follows:

Amount of Currency	£	€	CHF
0 – 200,000	1.00	0.25	Nil
200,001 – 1,000,000	2.00	1.50	0.25
1,000,001 – 2,000,000	4.00	2.00	0.50
Over 2,000,000	5.38	3.00	1.00

You have been approached by your banker wherein the above-mentioned surplus was lying, requesting you to swap the surplus lying with other two subsidiaries and place them in deposit with them.

Determine the minimum interest rate per annum (upto 3 decimal points) that should be offered by the bank to your organization so that your organization is ready to undertake such swap arrangement.

Note: Consider 360 days a year.

### Interest Rate Risk Management

11. Two companies ABC Ltd. and XYZ Ltd. approach the DEF Bank for FRA (Forward Rate Agreement). They want to borrow a sum of ₹ 100 crores after 2 years for a period of 1 year. Bank has calculated Yield Curve of both companies as follows:

Year	XYZ Ltd.	ABC Ltd.*
1	3.86	4.12
2	4.20	5.48
3	4.48	5.78

\*The difference in yield curve is due to the lower credit rating of ABC Ltd. compared to XYZ Ltd.

- You are required to calculate the rate of interest DEF Bank would quote under 2V3 FRA, using the company's yield information as quoted above.
- Suppose bank offers Interest Rate Guarantee for a premium of 0.1% of the amount of loan, you are required to calculate the interest payable by XYZ Ltd. if interest rate in 2 years turns out to be

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(a) 4.50%

(b) 5.50%

**Corporate Valuation**

12. Following information is given in respect of WXY Ltd., which is expected to grow at a rate of 20% p.a. for the next three years, after which the growth rate will stabilize at 8% p.a. normal level, in perpetuity.

	For the year ended March 31, 2014
Revenues	₹ 7,500 Crores
Cost of Goods Sold (COGS)	₹ 3,000 Crores
Operating Expenses	₹ 2,250 Crores
Capital Expenditure	₹ 750 Crores
Depreciation (included in Operating Expenses)	₹ 600 Crores

During high growth period, revenues & Earnings before Interest & Tax (EBIT) will grow at 20% p.a. and capital expenditure net of depreciation will grow at 15% p.a. From year 4 onwards, i.e. normal growth period revenues and EBIT will grow at 8% p.a. and incremental capital expenditure will be offset by the depreciation. During both high growth & normal growth period, net working capital requirement will be 25% of revenues.

The Weighted Average Cost of Capital (WACC) of WXY Ltd. is 15%.

Corporate Income Tax rate will be 30%.

Required:

Estimate the value of WXY Ltd. using Free Cash Flows to Firm (FCFF) & WACC methodology.

The PVIF @ 15 % for the three years are as below:

Year	$t_1$	$t_2$	$t_3$
PVIF	0.8696	0.7561	0.6575

**Mergers, Acquisitions and Corporate Restructuring**

13. The following is the Balance-sheet of Grape Fruit Company Ltd as at March 31<sup>st</sup>, 2019.

Liabilities	(₹ in lakhs)	Assets	(₹ in lakhs)
Equity shares of ₹ 100 each	600	Land and Building	200
14% preference shares of ₹ 100/- each	200	Plant and Machinery	300
13% Debentures	200	Furniture and Fixtures	50
Debenture interest accrued and payable	26	Inventory	150

Loan from bank	74	Sundry debtors	70
Trade creditors	340	Cash at bank	130
		Preliminary expenses	10
		Cost of issue of debentures	5
		Profit and Loss account	525
	1440		1440

The Company did not perform well and has suffered sizable losses during the last few years. However, it is felt that the company could be nursed back to health by proper financial restructuring. Consequently the following scheme of reconstruction has been drawn up :

- (i) Equity shares are to be reduced to ₹ 25/- per share, fully paid up;
- (ii) Preference shares are to be reduced (with coupon rate of 10%) to equal number of shares of ₹ 50 each, fully paid up.
- (iii) Debenture holders have agreed to forgo the accrued interest due to them. In the future, the rate of interest on debentures is to be reduced to 9 percent.
- (iv) Trade creditors will forego 25 percent of the amount due to them.
- (v) The company issues 6 lakh of equity shares at ₹ 25 each and the entire sum was to be paid on application. The entire amount was fully subscribed by promoters.
- (vi) Land and Building was to be revalued at ₹ 450 lakhs, Plant and Machinery was to be written down by ₹ 120 lakhs and a provision of ₹15 lakhs had to be made for bad and doubtful debts.

Required:

- (i) Show the impact of financial restructuring on the company's activities.
- (ii) Prepare the fresh balance sheet after the reconstructions is completed on the basis of the above proposals.

### Theoretical Questions

14. (a) Explain key decisions that fall within the scope of financial strategy.  
 (b) What is Financial Risk? How it can be evaluated from point of views.  
 (c) Explain various "Market Indicators".
15. (a) Discuss briefly the problems faced in the growth of Securitization of Instruments in Indian context.  
 (b) Explain the methods in which a Startup firm can bootstrap.  
 (c) Explain the difference between Forward and Future Contract.

## SUGGESTED ANSWERS/HINTS

1. To determine the prevailing rate of interest for the similar type of Bonds we shall compute the YTM of this Bond using IRR method as follows:

$$M = ₹ 1000$$

$$\text{Interest} = ₹ 95 (0.095 \times ₹ 1000)$$

$$n = 9 \text{ years}$$

$$V_0 = ₹ 1125.75 (₹ 1,000 + ₹ 125.75)$$

YTM can be determined from the following equation

$$₹ 95 \times \text{PVIFA} (\text{YTM}, 9) + ₹ 1000 \times \text{PVIF} (\text{YTM}, 9) = ₹ 1125.75$$

Let us discount the cash flows using two discount rates 8% and 10% as follows:

Year	Cash Flows	PVF@6%	PV@6%	PVF@8%	PV@8%
0	-1125.75	1	-1125.75	1	-1125.75
1	95	0.943	89.59	0.926	87.97
2	95	0.890	84.55	0.857	81.42
3	95	0.840	79.80	0.794	75.43
4	95	0.792	75.24	0.735	69.83
5	95	0.747	70.97	0.681	64.70
6	95	0.705	66.98	0.630	59.85
7	95	0.665	63.18	0.583	55.39
8	95	0.627	59.57	0.540	51.30
9	1095	0.592	648.24	0.500	547.50
			112.37		-32.36

Now we use interpolation formula

$$6.00\% + \frac{112.37}{112.37 - (-32.36)} \times 2.00\%$$

$$6.00\% + \frac{112.37}{144.73} \times 2.00\% = 6.00\% + 1.553\%$$

$$\text{YTM} = 7.553\% \text{ say } 7.55\%$$

Thus, prevailing interest rate on similar type of Bonds shall be approx. 7.55%.



2. (i) Current Market Price of Bond shall be computed as follows:

Year	Cash Flows	PVF@ 8%	PV@8%
1	75	0.926	69.45
2	75	0.857	64.28
3	75	0.794	59.55
4	75	0.735	55.13
5	75	0.681	51.08
6	75	0.630	47.25
7	75	0.583	43.73
8	1075	0.540	580.50
			970.97

Thus, the current market price of the Bond shall be ₹ 970.97.

**Alternatively**, using the Short-cut method the Market Price of Bond can also be computed as follows:

Interest+(Discount/Premium)/ Years to maturity

(Face Value + market Value)/2

Let market price be X

$$0.08 = \frac{75 + (1000 - X)/8}{(1000 + X)/2}$$

Thus, Value of X i.e. the price of Bond shall be ₹ 969.70

For the duration of the bond, we have to see the future cash flow and discount them as follows:

Year	CF	PV@8%	DCF	Proportion	Prop* Time (Yrs)
1	75	0.926	69.45	0.071	0.071
2	75	0.857	64.28	0.066	0.132
3	75	0.794	59.55	0.061	0.183
4	75	0.735	55.13	0.057	0.228
5	75	0.681	51.08	0.053	0.265
6	75	0.630	47.25	0.049	0.294
7	75	0.583	43.73	0.045	0.315
8	1075	0.540	580.50	0.598	4.784
		Total	970.97	1.000	6.272

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Volatility of the bond = Duration / (1 + Yield) = 6.272/1.08 = 5.81

- (ii) If there is decrease in required yield by 50 bps the expected market price of the Bond shall be increased by:

$$= ₹ 970.97 \times 0.50 (5.81/100) = ₹ 28.21$$

Hence expected market price is ₹ 970.97 + ₹ 28.21 = ₹ 999.18

Alternatively, this portion using Bond Price as per Short-cut method can also be computed as follows:

$$= ₹ 969.70 \times 0.50 (5.81/100) = ₹ 28.17$$

then the market price will be = ₹ 969.70 + ₹ 28.17 = ₹ 997.87

3. (i) Sensitivity of each stock with market is given by its beta.

Standard deviation of market Index = 15%

Variance of market Index = 0.0225

Beta of stocks =  $\sigma_i r / \sigma_m$

$$A = 20 \times 0.60/15 = 0.80$$

$$B = 18 \times 0.95/15 = 1.14$$

$$C = 12 \times 0.75/15 = 0.60$$

- (ii) Covariance between any 2 stocks =  $\beta_1 \beta_2 \sigma_m^2$

**Covariance matrix**

Stock/Beta	0.80	1.14	0.60
A	400.000	205.200	108.000
B	205.200	324.000	153.900
C	108.000	153.900	144.000

- (iii) Total risk of the equally weighted portfolio (Variance) =  $400(1/3)^2 + 324(1/3)^2 + 144(1/3)^2 + 2(205.20)(1/3)^2 + 2(108.0)(1/3)^2 + 2(153.900)(1/3)^2 = 200.244$

- (iv)  $\beta$  of equally weighted portfolio =  $\beta_p = \sum \beta_i / N = \frac{0.80 + 1.14 + 0.60}{3}$

$$= 0.8467$$

- (v) Systematic Risk  $\beta_p^2 \sigma_m^2 = (0.8467)^2 (15)^2 = 161.303$

Unsystematic Risk = Total Risk – Systematic Risk

$$= 200.244 - 161.303 = 38.941$$

## 4. (i) Variance of Returns

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

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

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

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

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

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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

$$\text{Portfolio Return} = 10\% + 1.013 (12\% - 10\%) = 12.03\%$$

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

$$\text{MF Y Return} = 10\% + 0.903(12\% - 10\%) = 11.81\%$$

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

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*

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

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

$$\text{Portfolio} = \frac{14.6\% - 10\%}{1.013} = 4.54$$

*Alpha*

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

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

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

## 5. Working Notes:

- (i) Decomposition of Funds in Equity and Cash Components

	D Mutual Fund Ltd.	K Mutual Fund Ltd.
NAV on 31.12.19	₹ 70.71	₹ 62.50
% of Equity	99%	96%
Equity element in NAV	₹ 70	₹ 60
Cash element in NAV	₹ 0.71	₹ 2.50

- (ii) Calculation of Beta

- (a) D Mutual Fund Ltd.

$$\text{Sharpe Ratio} = 2 = \frac{E(R) - R_f}{\sigma_D} = \frac{E(R) - R_f}{11.25}$$

$$E(R) - R_f = 22.50$$

$$\text{Treynor Ratio} = 15 = \frac{E(R) - R_f}{\beta_D} = \frac{22.50}{\beta_D}$$

$$\beta_D = 22.50/15 = 1.50$$

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(b) K Mutual Fund Ltd.

$$\text{Sharpe Ratio} = 3.3 = \frac{E(R) - R_f}{\sigma_K} = \frac{E(R) - R_f}{5}$$

$$E(R) - R_f = 16.50$$

$$\text{Treynor Ratio} = 15 = \frac{E(R) - R_f}{\beta_K} = \frac{16.50}{\beta_K}$$

$$\beta_K = 16.50/15 = 1.10$$

(iii) Decrease in the Value of Equity

	D Mutual Fund Ltd.	K Mutual Fund Ltd.
Market goes down by	5.00%	5.00%
Beta	1.50	1.10
Equity component goes down	7.50%	5.50%

(iv) Balance of Cash after 1 month

	D Mutual Fund Ltd.	K Mutual Fund Ltd.
Cash in Hand on 31.12.19	₹ 0.71	₹ 2.50
Less: Exp. Per month	₹ 0.25	₹ 0.25
Balance after 1 month	₹ 0.46	₹ 2.25

## NAV after 1 month

	D Mutual Fund Ltd.	K Mutual Fund Ltd.
Value of Equity after 1 month		
70 x (1 - 0.075)	₹ 64.75	-
60 x (1 - 0.055)	-	₹ 56.70
Cash Balance	0.46	2.25
	65.21	58.95

6. (i) The price of one Future Contract

Let X be the Price of Future Contract. Accordingly,

$$5 = \frac{₹9,00,000}{X}$$

$$X (\text{Price of One Future Contract}) = ₹ 1,80,000$$

(ii) Current Future price of the index =  $\frac{₹1,80,000}{75} = 2400$

Let Y be the current Nifty Index (on 1<sup>st</sup> February 2020) then

Accordingly,  $Y + Y(0.09 - 0.06) \frac{4}{12} = 2400$

and  $Y = \frac{2400}{1.01} = 2376.24$

Hence Nifty Index on 1<sup>st</sup> February 2020 shall be approximately 2376.

- (iii) To determine whether the market is in Contango/ Backwardation first we shall compute Basis as follows:

$$\text{Basis} = \text{Spot Price} - \text{Future Price}$$

If Basis is negative the market is said to be in Contango and when it is positive the market is said to be Backwardation.

Since current Spot Price is 2400 and Nifty Index is 2376, the Basis is negative and hence there is Contango Market and maximum Contango shall be 24 (2400 – 2376).

- (iv) Pay off on the Future transaction shall be [(2400-2100) x 375] ₹ 112500

The Future seller gains if the Spot Price is less than Futures Contract price as position shall be reversed at same Spot price. Therefore, Mr. SG has gained ₹ 1,12,500/- on the Short position taken.

7. (i) Since trader has planned to sell after 3 months now it implies, he is in Long Position in Cash or Spot Market.
- (ii) Since the trader is in Long Position in Cash Market, he can mitigate its risk of reduced profit by hedging his position by selling Rice Futures i.e. Short Position in Future Market.

- (iii) The gain on futures contract

$$= (₹ 59 - ₹ 58) \times 22,000 \text{ kg.} = ₹ 22,000$$

Revenue from the sale of Rice

$$= 22,000 \times ₹ 57 = ₹ 12,54,000$$

$$\text{Total Cash Flow} = ₹ 12,54,000 + ₹ 22,000 = ₹ 12,76,000$$

$$\text{Cash Flow per kg. of Rice} = \frac{₹ 12,76,000}{22,000} = ₹ 58$$

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8. (a) No, while Citi Bank's quote is a Direct Quote for JPY (i.e. for Japan) the Hong Kong Bank quote is a Direct Quote for USD (i.e. for USA).
- (b) Since Citi Bank quote imply USD/ JPY 0.0094 - 0.0095 and both rates exceed those offered by Hong Kong Bank, there is an arbitrage opportunity.

Alternatively, it can also be said that Hong Kong Bank quote imply JPY/ USD 107.53 – 111.11 and both rates exceed quote by Citi Bank, there is an arbitrage opportunity.

- (c) Let us how arbitrage profit can be made.

- (i) Convert US\$ 1,000 into JPY by buying from Hong Kong Bank      JPY 1,07,530  
 Sell these JPY to Citi Bank at JPY/ USD 106.50  
 and convert in US\$      US\$ 1009.67  
 Thus, arbitrage gain (US\$ 1009.67 - US\$ 1000.00)      US\$ 9.67
- (ii) Convert JPY 1,00,000 into USD by buying from  
 Citi Bank at JPY/ USD 106.50      US\$ 938.97  
 Sell these US\$ to Hong Kong Bank at  
 JPY/ USD 107.53 and convert in US\$      JPY 100967.44  
 Thus, arbitrage gain (JPY 1,00,967.44 - JPY 1,00,000)      JPY 967.44

9. (a) (i) Calculate the cross rate for Pounds in Yen terms

$$1\text{£} = ? \text{¥}$$

$$\text{US\$}1 = \text{¥} 107.31$$

$$\text{£} 1 = \text{US\$} 1.26$$

$$\frac{\text{¥}}{\text{\$}} \times \frac{\text{\$}}{\text{£}} = \frac{\text{¥}}{\text{£}}$$

$$\frac{\text{¥}}{\text{£}} = 107.31 \times 1.26$$

$$\text{£}1 = \text{¥} 135.21$$

- (ii) Calculate the cross rate for Australian Dollar in Yen terms

$$\text{A\$}1 = \text{¥} ?$$

$$\text{US\$}1 = \text{¥} 107.31$$

$$\text{A\$} 1 = \text{US\$} 0.70$$



$$\frac{¥}{\$} \times \frac{\$}{A\$} = \frac{¥}{A\$}$$

$$\frac{¥}{A\$} = 107.31 \times 0.70$$

$$A\$ 1 = ¥ 75.12$$

(iii) Calculate the cross rate for Pounds in Australian Dollar terms

$$£ 1 = A\$ ?$$

$$A\$ 1 = US\$ 0.70$$

$$US\$ 1 = A\$ 1.4286$$

$$£ 1 = US\$ 1.26$$

$$\frac{A\$}{\$} \times \frac{\$}{£} = \frac{A\$}{£}$$

$$\frac{A\$}{£} = 1.4286 \times 1.26 = 1.80$$

$$£ 1 = A\$ 1.80$$

- (b) (i) If you believe the spot exchange rate will be \$ 1.32/£ in three months, you should buy £ 1,000,000 forward for \$1.30/£ and sell at \$ 1.32/£ 3 months hence.

Your expected profit will be: £1,000,000 x (\$1.32 - \$1.30) = \$20,000

- (ii) If the spot exchange rate turns out to be \$1.26/£ in three months, your loss from the long position in Forward Market will be: -

$$£ 1,000,000 \times (\$ 1.26 - \$1.30) = \$ 40,000$$

10. XYZ plc shall be ready to undertake this swap arrangement only if it receives the interest on the surplus funds if invested on individual basis as follows:

	Interest	Amt. after 91 days	Conversion in £
Holland € 1,450,000 x 0.02 x 91/360 =	€ 7,330.56	€ 1,457,330.56	£1,004,829.42 (1,457,330.56 x 0.6895)
Switzerland CHF 1,996,154 x 0.005 x 91/360 =	CHF 2,522.92	CHF 1,998,676.92	£865,303.02 (1,998,676.92 ÷ 2.3098)

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UK			
£ 150,000 x 0.01 x 91/360 =	£ 379.17	£ 150,379.17	£ 150,379.17
Total GBP at 91 days			£ 2,020,511.61

**Swap to Sterling**

Sell € 1,450,000 (Spot at 0.6858) buy £	£ 994,410.00
Sell CHF 1,996,154 (Spot at 2.3326) buy £	£ 855,763.53
Independent GBP amount	£ 150,000.00
	£ 2,000,173.53
Amount accrued on Individual Basis (Principal + Interest)	£ 2,020,511.61
Interest Required	£ 20,338.08
Required Interest Rate on Per Annuam Basis	4.023%
$\frac{20,338.08}{2,000,173.53} \times \frac{360}{91} \times 100$	

Thus, the minimum rate that should be offered is 4.023%.

11. (i) DEF Bank will fix interest rate for 2V3 FRA after 2 years as follows:

XYZ Ltd.

$$\begin{aligned} (1+r) (1+0.0420)^2 &= (1+0.0448)^3 \\ (1+r) (1.0420)^2 &= (1.0448)^3 \\ r &= 5.04\% \end{aligned}$$

Bank will quote 5.04% for a 2V3 FRA.

ABC Ltd.

$$\begin{aligned} (1+r) (1+0.0548)^2 &= (1+0.0578)^3 \\ (1+r) (1.0548)^2 &= (1.0578)^3 \\ r &= 6.38\% \end{aligned}$$

Bank will quote 6.38% for a 2V3 FRA.

- (ii)

		4.50% Allow to Lapse	5.50% Exercise
Interest	₹ 100 crores X 4.50%	₹ 4.50 crores	-
	₹ 100 crores X 5.04%	-	₹ 5.04 crores

Premium (Cost of Option)	₹ 100 crores X 0.1%	₹ 0.10 crores	₹ 0.10 crores
		4.60 crores	5.14 crores

## 12. Determination of forecasted Free Cash Flow of the Firm (FCFF)

(₹ in crores)

	Yr. 1	Yr. 2	Yr 3	Terminal Year
Revenue	9000.00	10800.00	12960.00	13996.80
COGS	3600.00	4320.00	5184.00	5598.72
Operating Expenses	1980.00*	2376.00	2851.20	3079.30
Depreciation	720.00	864.00	1036.80	1119.74
EBIT	2700.00	3240.00	3888.00	4199.04
Tax @30%	810.00	972.00	1166.40	1259.71
EAT	1890.00	2268.00	2721.60	2939.33
Capital Exp. – Dep.	172.50	198.38	228.13	-
Δ Working Capital	375.00	450.00	540.00	259.20
Free Cash Flow (FCF)	1342.50	1619.62	1953.47	2680.13

\*Excluding Depreciation.

Present Value (PV) of FCFF during the explicit forecast period is:

FCFF (₹ in crores)	PVF @ 15%	PV (₹ in crores)
1342.50	0.8696	1167.44
1619.62	0.7561	1224.59
1953.47	0.6575	1284.41
		3676.44

PV of the terminal, value is:

$$\frac{2680.13}{0.15 - 0.08} \times \frac{1}{(1.15)^3} = ₹ 38287.57 \text{ Crore} \times 0.6575 = ₹ 25174.08 \text{ Crore}$$

The value of the firm is :

$$₹ 3676.44 \text{ Crores} + ₹ 25174.08 \text{ Crores} = ₹ 28,850.52 \text{ Crores}$$

## 13. Impact of Financial Restructuring

(i) Benefits to Grape Fruit Ltd.

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## (a) Reduction of liabilities payable

	₹ in lakhs
Reduction in equity share capital (6 lakh shares x ₹75 per share)	450
Reduction in preference share capital (2 lakh shares x ₹ 50 per share)	100
Waiver of outstanding debenture Interest	26
Waiver from trade creditors (₹340 lakhs x 0.25)	<u>85</u>
	661
(b) Revaluation of Assets	
Appreciation of Land and Building (₹450 lakhs - ₹200 lakhs)	<u>250</u>
Total (A)	<u>911</u>

- (ii) Amount of ₹ 911 lakhs utilized to write off losses, fictitious assets and over-valued assets.

Writing off profit and loss account	525
Cost of issue of debentures	5
Preliminary expenses	10
Provision for bad and doubtful debts	15
Revaluation of Plant and Machinery (₹300 lakhs – ₹180 lakhs)	120
Total (B)	<u>675</u>
Capital Reserve (A) – (B)	236

- (ii) Balance sheet of Grape Fruit Ltd as at 31<sup>st</sup> March 2019 (after re-construction)

(₹ in lakhs)

Liabilities	Amount	Assets	Amount
12 lakhs equity shares of ₹ 25/- each	300	Land & Building	450
10% Preference shares of ₹ 50/- each	100	Plant & Machinery	180
Capital Reserve	236	Furnitures & Fixtures	50
9% Debentures	200	Inventory	150
Loan from Bank	74	Sundry debtors	70
Trade Creditors	255	Prov. for Doubtful Debts	<u>-15</u>
		Cash-at-Bank (Balancing figure)*	280
	1165		1165

\*Opening Balance of ₹130/- lakhs + Sale proceeds from issue of new equity shares ₹150/- lakhs.

14. (a) The key decisions falling within the scope of financial strategy are as follows:
1. **Financing decisions:** These decisions deal with the mode of financing or mix of equity capital and debt capital.
  2. **Investment decisions:** These decisions involve the profitable utilization of firm's funds especially in long-term projects (capital projects). Since the future benefits associated with such projects are not known with certainty, investment decisions necessarily involve risk. The projects are therefore evaluated in relation to their expected return and risk.
  3. **Dividend decisions:** These decisions determine the division of earnings between payments to shareholders and reinvestment in the company.
  4. **Portfolio decisions:** These decisions involve evaluation of investments based on their contribution to the aggregate performance of the entire corporation rather than on the isolated characteristics of the investments themselves.
- (b) Financial Risk is referred as the unexpected changes in financial conditions such as prices, exchange rate, Credit rating, and interest rate etc. Though political risk is not a financial risk in direct sense but same can be included as any unexpected political change in any foreign country may lead to country risk which may ultimately result in financial loss.
- The financial risk can be evaluated from different point of views as follows:
- (a) From stakeholder'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 event of winding up of a company they will be least prioritized.  
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.
  - (b) 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.
  - (c) From Government's point of view: From Government's point of view, the financial risk can be viewed as failure of any bank or (like Lehman Brothers) 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.
- (c) The various market indicators are as follows:
- (i) **Breadth Index:** It is an index that covers all securities traded. It is computed by dividing the net advances or declines in the market by the number of issues traded. The breadth index either supports or contradicts the movement of the Dow Jones Averages. If it supports the movement of the Dow Jones Averages,

this is considered sign of technical strength and if it does not support the averages, it is a sign of technical weakness i.e. a sign that the market will move in a direction opposite to the Dow Jones Averages. The breadth index is an addition to the Dow Theory and the movement of the Dow Jones Averages.

- (ii) **Volume of Transactions:** The volume of shares traded in the market provides useful clues on how the market would behave in the near future. A rising index/price with increasing volume would signal buy behaviour because the situation reflects an unsatisfied demand in the market. Similarly, a falling market with increasing volume signals a bear market and the prices would be expected to fall further. A rising market with decreasing volume indicates a bull market while a falling market with dwindling volume indicates a bear market. Thus, the volume concept is best used with another market indicator, such as the Dow Theory.
- (iii) **Confidence Index:** It is supposed to reveal how willing the investors are to take a chance in the market. It is the ratio of high-grade bond yields to low-grade bond yields. It is used by market analysts as a method of trading or timing the purchase and sale of stock, and also, as a forecasting device to determine the turning points of the market. A rising confidence index is expected to precede a rising stock market, and a fall in the index is expected to precede a drop in stock prices. A fall in the confidence index represents the fact that low-grade bond yields are rising faster or falling more slowly than high grade yields. The confidence index is usually, but not always a leading indicator of the market. Therefore, it should be used in conjunction with other market indicators.
- (iv) **Relative Strength Analysis:** The relative strength concept suggests that the prices of some securities rise relatively faster in a bull market or decline more slowly in a bear market than other securities i.e. some securities exhibit relative strength. Investors will earn higher returns by investing in securities which have demonstrated relative strength in the past because the relative strength of a security tends to remain undiminished over time.

Relative strength can be measured in several ways. Calculating rates of return and classifying those securities with historically high average returns as securities with high relative strength is one of them. Even ratios like security relative to its industry and security relative to the entire market can also be used to detect relative strength in a security or an industry.

- (v) **Odd - Lot Theory:** This theory is a contrary - opinion theory. It assumes that the average person is usually wrong and that a wise course of action is to pursue strategies contrary to popular opinion. The odd-lot theory is used primarily to predict tops in bull markets, but also to predict reversals in individual securities.

15. (a) Following are main problems faced in growth of Securitization of instruments especially in Indian context:
- (i) **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 this impeded 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.
  - (ii) **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 opinion that SPV as a trustee is liable to be taxed in a representative capacity then 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.
  - (iii) **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.
  - (iv) **Lack of standardization:** Every originator following his own format for documentation and administration having lack of standardization is another obstacle in the growth of securitization.
  - (v) **Inadequate Debt Market:** Lack of existence of a well-developed debt market in India is another obstacle that hinders the growth of secondary market of securitized or asset backed securities.
  - (vi) **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.
- (b) Here are some of the methods in which a startup firm can bootstrap:
- (i) *Trade Credit:* When a person is starting his business, suppliers are reluctant to give trade credit. They will insist on payment of their goods supplied either by cash or by credit card. However, a way out in this situation is to prepare a well-

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crafted financial plan. The next step is to pay a visit to the supplier's office. If the business organization is small, the owner can be directly contacted. On the other hand, if it is a big firm, the Chief Financial Officer can be contacted and convinced about the financial plan.

Communication skills are important here. The financial plan has to be shown. The owner or the financial officer has to be explained about the business and the need to get the first order on credit in order to launch the venture. The owner or financial officer may give half the order on credit and balance on delivery. The trick here is to get the goods shipped and sell them before paying to them. One can also borrow to pay for the good sold. But there is interest cost also. So trade credit is one of the most important ways to reduce the amount of working capital one needs. This is especially true in retail operations.

- (ii) *Factoring*: This is a financing method where accounts receivable of a business organization is sold to a commercial finance company to raise capital. The factor then got hold of the accounts receivable of a business organization and assumes the task of collecting the receivables as well as doing what would've been the paperwork. Factoring can be performed on a non-notification basis. It means customers may not be told that their accounts have been sold.

In addition to reducing internal costs of a business, factoring also frees up money that would otherwise be tied to receivables. This is especially true for businesses that sell to other businesses or to government; there are often long delays in payment that this would offset. This money can be used to generate profit through other avenues of the company. Factoring can be a very useful tool for raising money and keeping cash flowing.

- (iii) *Leasing*: Another popular method of bootstrapping is to take the equipment on lease rather than purchasing it. It will reduce the capital cost and also help lessee (person who take the asset on lease) to claim tax exemption. So, it is better to take a photocopy machine, an automobile or a van on lease to avoid paying out lump sum money which is not at all feasible for a startup organization.

- (c) Difference between forward and future contract is as follows:

S. No.	Features	Forward	Futures
1.	Trading	Forward contracts are traded on personal basis or on telephone or otherwise.	Futures Contracts are traded in a competitive arena.



2.	Size of Contract	Forward contracts are individually tailored and have no standardized size	Futures contracts are standardized in terms of quantity or amount as the case may be
3.	Organized exchanges	Forward contracts are traded in an over the counter market.	Futures contracts are traded on organized exchanges with a designated physical location.
4.	Settlement	Forward contracts settlement takes place on the date agreed upon between the parties.	Futures contracts settlements are made daily via. Exchange's clearing house.
5.	Delivery date	Forward contracts may be delivered on the dates agreed upon and in terms of actual delivery.	Futures contracts delivery dates are fixed on cyclical basis and hardly takes place. However, it does not mean that there is no actual delivery.
6.	Transaction costs	Cost of forward contracts is based on bid – ask spread.	Futures contracts entail brokerage fees for buy and sell orders.
7.	Marking to market	Forward contracts are not subject to marking to market	Futures contracts are subject to marking to market in which the loss on profit is debited or credited in the margin account on daily basis due to change in price.
8.	Margins	Margins are not required in forward contract.	In futures contracts every participants is subject to maintain margin as decided by the exchange authorities
9.	Credit risk	In forward contract, credit risk is born by each party and, therefore, every party has to bother for the creditworthiness.	In futures contracts the transaction is a two way transaction, hence the parties need not to bother for the risk.