

PAPER – 2: STRATEGIC FINANCIAL MANAGEMENT

QUESTIONS

Replacement Decision

1. Trouble Free Solutions (TFS) is an authorized service center of a reputed domestic air conditioner manufacturing company. All complaints/ service related matters of Air conditioner are attended by this service center. The service center employs a large number of mechanics, each of whom is provided with a motor bike to attend the complaints. Each mechanic travels approximately 40000 kms per annum. TFS decides to continue its present policy of always buying a new bike for its mechanics but wonders whether the present policy of replacing the bike every three year is optimal or not. It is of believe that as new models are entering into market on yearly basis, it wishes to consider whether a replacement of either one year or two years would be better option than present three year period. The fleet of bike is due for replacement shortly in near future.

The purchase price of latest model bike is ₹ 55,000. Resale value of used bike at current prices in market is as follows:

Period	₹
1 Year old	35,000
2 Year old	21,000
3 Year old	9,000

Running and Maintenance expenses (excluding depreciation) are as follows:

Year	Road Taxes Insurance etc. (₹)	Petrol Repair Maintenance etc. (₹)
1	3,000	30,000
2	3,000	35,000
3	3,000	43,000

Using opportunity cost of capital as 10% you are required to determine optimal replacement period of bike.

Merger & Acquisition

2. Hanky Ltd. and Shanky Ltd. operate in the same field, manufacturing newly born babies's clothes. Although Shanky Ltd. also has interest in communication equipments, Hanky Ltd. is planning to take over Shanky Ltd. and the shareholders of Shanky Ltd. do not regard it as a hostile bid.

The following information is available about the two companies.

	Hanky Ltd.	Shanky Ltd.
Current earnings	₹ 6,50,00,000	₹ 2,40,00,000
Number of shares	50,00,000	15,00,000
Percentage of retained earnings	20%	80%
Return on new investment	15%	15%
Return required by equity shareholders	21%	24%

Dividends have just been paid and the retained earnings have already been reinvested in new projects. Hanky Ltd. plans to adopt a policy of retaining 35% of earnings after the takeover and expects to achieve a 17% return on new investment.

Saving due to economies of scale are expected to be ₹ 85,00,000 per annum.

Required return to equity shareholders will fall to 20% due to portfolio effects.

Requirements

- (a) Calculate the existing share prices of Hanky Ltd. and Shanky Ltd.
 - (b) Find the value of Hanky Ltd. after the takeover
 - (c) Advise Hanky Ltd. on the maximum amount it should pay for Shanky Ltd.
3. A Ltd.'s (Acquirer company) equity capital is ₹ 2,00,00,000. Both A Ltd. and T Ltd. (Target Company) have arrived at an understanding to maintain debt equity ratio at 0.30 : 1 of the merged company. Pre-merger debt outstanding of A Ltd. stood at ₹ 20,00,000 and T Ltd at ₹ 10,00,000 and marketable securities of both companies stood at ₹ 40,00,000.

You are required to calculate total fund requirements of A Ltd. to acquire T Ltd. against cash payment at mutually agreed price of ₹ 65,00,000.

Index Futures

- | | |
|-------------------------|------------|
| 4. BSE | 5000 |
| Value of portfolio | ₹10,10,000 |
| Risk free interest rate | 9% p.a. |
| Dividend yield on Index | 6% p.a. |
| Beta of portfolio | 1.5 |

We assume that a future contract on the BSE index with four months maturity is used to hedge the value of portfolio over next three months. One future contract is for delivery of 50 times the index.

Based on the above information calculate:

- (i) Price of future contract.
- (ii) The gain on short futures position if index turns out to be 4,500 in three months.

(iii) Value of Portfolio using CAPM.

5. Suppose current price of an index is ₹13,800 and yield on index is 4.8% (p.a.). A 6-month future contract on index is trading at ₹14,340.

Assuming that Risk Free Rate of Interest is 12%, show how Mr. X (an arbitrageur) can earn an abnormal rate of return irrespective of outcome after 6 months. You can assume that after 6 months index closes at ₹ 10,200 and ₹ 15,600 and 50% of stock included in index shall pay dividend in next 6 months.

Also calculate implied risk free rate.

Portfolio Management

6. Following data is related to Company X, Market Index and Treasury Bonds for the current year and last 4 years:

Year	Company X		Market Index		Return on Treasury Bonds
	Average Share Price (P)	Dividend Per Share (D)	Average Market Index	Market Dividend Yield	
2009	₹ 139	₹ 7.00	1300	3%	7%
2010	₹ 147	₹ 8.50	1495	5%	9%
2011	₹ 163	₹ 9.00	1520	5.5%	8%
2012	₹ 179	₹ 9.50	1640	4.75%	8%
2013 (Current Year)	₹ 203.51	₹ 10.00	1768	5.5%	8%

With the above data estimate the beta of Company X's share.

7. The rates of return on the security of Company X and market portfolio for 10 periods are given below:

Period	Return of Security X (%)	Return on Market Portfolio (%)
1	20	22
2	22	20
3	25	18
4	21	16
5	18	20
6	-5	8
7	17	-6
8	19	5
9	-7	6
10	20	11

- (i) What is the beta of Security X?
- (ii) What is the characteristic line for Security X?

Foreign Exchange Management

8. Columbus Surgicals Inc. is based in US, has recently imported surgical raw materials from the UK and has been invoiced for £ 480,000, payable in 3 months. It has also exported surgical goods to India and France.

The Indian customer has been invoiced for £ 138,000, payable in 3 months, and the French customer has been invoiced for € 590,000, payable in 4 months.

Current spot and forward rates are as follows:

£ / US\$

Spot: 0.9830 – 0.9850

Three months forward: 0.9520 – 0.9545

US\$ / €

Spot: 1.8890 – 1.8920

Four months forward: 1.9510 – 1.9540

Current money market rates are as follows:

UK: 10.0% – 12.0% p.a.

France: 14.0% – 16.0% p.a.

USA: 11.5% – 13.0% p.a.

You as Treasury Manager are required to show how the company can hedge its foreign exchange exposure using Forward markets and Money markets hedge and suggest which the best hedging technique is.

9. ABN-Amro Bank, Amsterdam, wants to purchase ₹15 million against US\$ for funding their Vostro account with Canara Bank, New Delhi. Assuming the inter-bank, rates of US\$ is ₹51.3625/3700, what would be the rate Canara Bank would quote to ABN-Amro Bank? Further, if the deal is struck, what would be the equivalent US\$ amount.

Mutual Fund

10. A Mutual Fund Co. has the following assets under it on the close of business as on:

Company	No. of Shares	1 st February 2012	2 nd February 2012
		Market price per share ₹	Market price per share ₹
L Ltd	20,000	20.00	20.50
M Ltd	30,000	312.40	360.00

N Ltd	20,000	361.20	383.10
P Ltd	60,000	505.10	503.90

Total No. of Units 6,00,000

(i) Calculate Net Assets Value (NAV) of the Fund.

(ii) Following information is given:

Assuming one Mr. A, submits a cheque of ₹ 30,00,000 to the Mutual Fund and the Fund manager of this company purchases 8,000 shares of M Ltd; and the balance amount is held in Bank. In such a case, what would be the position of the Fund?

(iii) Find new NAV of the Fund as on 2nd February 2012.

Dividend Decision

11. X Ltd., has 8 lakhs equity shares outstanding at the beginning of the year 2012. The current market price per share is ₹ 120. The Board of Directors of the company is contemplating ₹ 6.4 per share as dividend. The rate of capitalisation, appropriate to the risk-class to which the company belongs, is 9.6%:

- Based on M-M Approach, calculate the market price of the share of the company, when the dividend is – (a) declared; and (b) not declared.
- How many new shares are to be issued by the company, if the company desires to fund an investment budget of ₹ 3.20 crores by the end of the year assuming net income for the year will be ₹ 1.60 crores?

Leasing

12. Sundaram Ltd. discounts its cash flows at 16% and is in the tax bracket of 35%. For the acquisition of a machinery worth ₹10,00,000, it has two options – either to acquire the asset by taking a bank loan @ 15% p.a. repayable in 5 yearly installments of ₹2,00,000 each plus interest or to lease the asset at yearly rentals of ₹3,34,000 for five (5) years. In both the cases, the instalment is payable at the end of the year. Depreciation is to be applied at the rate of 15% using 'written down value' (WDV) method. You are required to advise which of the financing options is to be exercised and why.

Year	1	2	3	4	5
P.V factor @16%	0.862	0.743	0.641	0.552	0.476

Security Valuation

13. Calculate the value of share from the following information:

Profit of the company	₹ 290 crores
Equity capital of company	₹ 1,300 crores
Par value of share	₹ 40 each
Debt ratio of company	27

Long run growth rate of the company	8%
Beta 0.1; risk free interest rate	8.7%
Market returns	10.3%
Capital expenditure per share	₹ 47
Depreciation per share	₹ 39
Change in Working capital	₹ 3.45 per share

Money Market Instrument

14. Nominal value of 10% bonds issued by a company is ₹100. The bonds are redeemable at ₹110 at the end of year 5.

Determine the value of the bond if required yield is (i) 5%, (ii) 5.1%, (iii) 10% and (iv) 10.1%.

Economic Value Added

15. Consider the following operating information gathered from 3 companies that are identical except for their capital structures:

	<i>P Ltd.</i>	<i>Q Ltd.</i>	<i>R Ltd.</i>
Total invested capital	€100,000	€100,000	€100,000
Debt/assets ratio	0.80	0.50	0.20
Shares outstanding	6,100	8,300	10,000
Before-tax cost of debt	14%	12%	10%
Cost of equity	26%	22%	20%
Operating income, (EBIT)	€25,000	€25,000	€25,000
Net Income	€8,970	€12,350	€14,950
Tax rate	35%	35%	35%

- Compute the weighted average cost of capital, WACC, for each firm.
- Compute the Economic Value Added, EVA, for each firm.
- Based on the results of your computations in part b, which firm would be considered the best investment? Why?
- Assume the industry P/E ratio generally is 15 ×. Using the industry norm, estimate the price for each share.
- What factors would cause you to adjust the P/E ratio value used in part d so that it is more appropriate?

Indian Capital Market

16. Abhishek Ltd. has a surplus cash of ₹90 lakhs and wants to distribute 30% of it to the shareholders. The Company decides to buyback shares. The Finance Manager of the Company estimates that its share price after re-purchase is likely to be 10% above the buyback price; if the buyback route is taken. The number of shares outstanding at present is 10 lakhs and the current EPS is ₹3.

You are required to determine:

- The price at which the shares can be repurchased, if the market capitalization of the company should be ₹ 200 lakhs after buyback.
 - The number of shares that can be re-purchased.
 - The impact of share re-purchase on the EPS, assuming the net income is same.
17. A Mutual Fund is holding the following assets in ₹ Crores :

Investments in diversified equity shares	90.00
Cash and Bank Balances	<u>10.00</u>
	<u>100.00</u>

The Beta of the portfolio is 1.1. The index future is selling at 4300 level. The Fund Manager apprehends that the index will fall at the most by 10%. How many index futures he should short for perfect hedging so that the portfolio beta is reduced to 1.00? One index future consists of 50 units.

Substantiate your answer assuming the Fund Manager's apprehension will materialize.

Swap

18. A Inc. and B Inc. intend to borrow \$200,000 and \$200,000 in ¥ respectively for a time horizon of one year. The prevalent interest rates are as follows:

Company	¥ Loan	\$ Loan
A Inc	5%	9%
B Inc	8%	10%

The prevalent exchange rate is \$1 = ¥120.

They entered in a currency swap under which it is agreed that B Inc will pay A Inc @ 1% over the ¥ Loan interest rate which the later will have to pay as a result of the agreed currency swap whereas A Inc will reimburse interest to B Inc only to the extent of 9%. Keeping the exchange rate invariant, quantify the opportunity gain or loss component of the ultimate outcome, resulting from the designed currency swap.

Commodity Futures

19. A company is long on 10 MT of copper @ ₹ 474 per kg (spot) and intends to remain so for the ensuing quarter. The standard deviation of changes of its spot and future prices are 4% and 6% respectively, having correlation coefficient of 0.75.

What is its hedge ratio? What is the amount of the copper future it should short to achieve a perfect hedge?

20. Write a short note on

- How financial policy is linked to strategic management
- 'Zero date of a Project' in project management
- Cross Border Leasing
- Offer for Sale
- External Commercial Borrowings (ECBs)

SUGGESTED ANSWERS/HINTS

1. In this question the effect of increasing running cost and decreasing resale value have to be weighted upto against the purchase cost of bike. For this purpose we shall compute Equivalent Annual Cost (EAC) of replacement in different years shall be computed and compared.

Year	Road Taxes (₹)	Petrol etc. (₹)	Total (₹)	PVF @10%	PV (₹)	Cumulative PV (₹)	PV of Resale Price (₹)	Net Outflow (₹)
1	3,000	30,000	33,000	0.909	29,997	29,997	31,815	(1,818)
2	3,000	35,000	38,000	0.826	31,388	61,385	17,346	44,039
3	3,000	43,000	46,000	0.751	34,546	95,931	6,759	89,172

Computation of EACs

Year	Purchase Price of Bike (₹)	Net Outflow (₹)	Total Outflow (₹)	PVAF @ 10%	EAC (₹)
1	55,000	(1,818)	53,182	0.909	58,506
2	55,000	44,039	99,039	1.735	57,083
3	55,000	89,172	1,44,172	2.486	57,993

Thus, from above table it is clear that EAC is least in case of 2 years, hence bike should be replaced every two years.

2. (a) Existing share price of Hanky (P) Ltd.

$$g = r \times b$$

$$r = 15\%$$

$$b = 20\%$$

$$g = 0.15 \times 0.2$$

$$= 0.03$$

$$\text{Ex dividend market value} = \frac{\text{Next year's dividend}}{k_e - g}$$

$$= \frac{6,50,00,000 \times 0.8 \times 1.03}{0.21 - 0.03}$$

$$= ₹ 29,75,55,556$$

$$= ₹ 59.51 \text{ per share}$$

Existing share price Shanky (P) Ltd.

$$g = r \times b$$

$$= 0.15 \times 0.8$$

$$= 0.12$$

$$\text{Ex dividend market value} = \frac{\text{Next year's dividend}}{k_e - g}$$

$$= \frac{2,40,00,000 \times 0.2 \times 1.12}{0.24 - 0.12}$$

$$= ₹ 4,48,00,000$$

$$= ₹ 29.87 \text{ per share}$$

- (b) Value of Hanky Ltd. after the takeover

Care must be taken in calculating next year's dividend and the subsequent growth rate. Next year's earnings are already determined, because both companies have already reinvested their retained earnings at the current rate of return. In addition, they will get cost savings of ₹ 85,00,000.

The dividend actually paid out at the end of next year will be determined by the new 35% retention and the future growth rate will take into account the increased return on new investment.

$$\text{Growth rate for combined firm, } g = 0.17 \times 0.35 = 0.0595$$

$$\text{New cost of equity} = 20\%$$

$$\begin{aligned}
 \text{Next year's earnings} &= ₹ 6,50,00,000 \times 1.03 + ₹ 2,40,00,000 \times 1.12 + ₹ 85,00,000 \\
 &= ₹ 10,23,30,000 \\
 \text{Next year's dividend} &= ₹ 10,23,30,000 \times 0.65 \\
 &= ₹ 6,65,14,500 \\
 \text{Market value} &= \frac{₹ 6,65,14,500}{0.20 - 0.0595} \\
 &= ₹ 47,34,12,811
 \end{aligned}$$

(c) Maximum Hanky Ltd. should pay for Shanky Ltd.

$$\begin{aligned}
 \text{Combined value} &= ₹ 47,34,12,811 \\
 \text{Present Value of Hanky Ltd.} &= ₹ 29,75,55,556 \\
 &= ₹ 17,58,57,255
 \end{aligned}$$

3.

	₹
Debt capacity of merged company (2,00,00,000 × 0.30)	60,00,000
Less: Debt of A Ltd and T Ltd.	<u>30,00,000</u>
	30,00,000
Add: Marketable securities of both companies	<u>40,00,000</u>
	<u>70,00,000</u>

Since the combined liquidity of merged company shall remain comfortable, it shall be feasible to pay cash for acquiring the T Ltd. against tentative price of ₹ 65,00,000.

4. (i) Current future price of the index = $5000 + 5000 (0.09 - 0.06) \frac{4}{12} = 5000 + 50 = 5,050$

Price of the future contract = ₹ 50 × 5,050 = ₹ 2,52,500

(ii) Hedge ratio = $\frac{10,10,000}{2,52,500} \times 1.5 = 6$ contracts

Index after three months turns out to be 4500

Future price will be = $4500 + 4500 (0.09 - 0.06) \frac{1}{12} = 4,511.25$

Therefore, Gain from the short futures position is = $6 \times (5050 - 4511.25) \times 50 = ₹ 1,61,625$

(iii) To use CAPM we require risk-free rate of return, beta of portfolio and Market Return. Since risk-free rate of return and beta of portfolio is given first we shall calculate market return as follows:

Change in Index Value = $4500 - 5000 = -500$

$$\text{Return from Index} = \frac{-500}{5000} \times 100 = -10\% \text{ for 3 months}$$

Dividend yield on index p.a. = 6% and for 3 months shall be 1.5%.

Thus return to investor for investment in index for three months = $-10\% + 1.5\% = -8.5\%$

Now we can use CAPM to compute expected return for 3 months:

$$\begin{aligned} \text{Expected Return} &= R_f + \beta (R_m - R_f) \\ &= 2.25\% + 1.50(-8.5 - 2.25\%) \\ &= 2.25\% + 1.50(-10.75\%) \\ &= -13.875\% \end{aligned}$$

The expected value of portfolio (without hedging) after 3 months will be:

$$₹ 10,10,000[1 + (-0.13875)] = ₹ 8,69,862.25$$

The expected value of portfolio with hedging after 3 months will be:

$$\begin{aligned} &= \text{Expected Value of portfolio (without hedging)} + \text{Gain from the future Index} \\ &= ₹ 8,69,862.25 + ₹ 1,61,625 = ₹ 10,31,487.25 \end{aligned}$$

5. The fair price of the index future contract can be calculated as follows:

$$\begin{aligned} \text{FC} &= 13,800 + \left[\left(13,800 \times 0.12 \times \frac{6}{12} - 13,800 \times 4.8\% \times 0.50 \right) \right] \\ &= 13,800 + [828 - 331.20] = ₹ 14,296.80 \end{aligned}$$

Since presently index is trading at ₹ 14,340, hence it is overpriced.

To earn an abnormal rate of return, Mr. X shall take following steps:

1. Mr. X shall buy a portfolio which comprising of shares as index consisted of.
2. Mr. X shall go for short position on index future contract.

Now we shall calculate return to Mr. X under two given situations:

- (i) Return of Mr. X, if index closes at ₹ 10,200

	₹
Profit from short position of futures (₹14,340 – ₹10,200)	4,140.00
Cash Dividend on Portfolio (₹13,800 × 4.8% × 0.5)	331.20
Loss on sale of portfolio (₹10,200 – ₹13,800)	<u>(3,600.00)</u>
	<u>871.20</u>

(ii) Return of Mr. X if index closes at ₹ 15,600

	₹
Loss from short position in futures. (₹14,340 – ₹15,600)	(1,260.00)
Cash dividend on portfolio	331.20
Profit on sale of underlying portfolio (₹15,600 – ₹13,800)	<u>1,800.00</u>
	<u>871.20</u>

$$\text{6 months Return} = \frac{871.20}{13,800} \times 100 = 6.31\%$$

$$\text{Annualised Return} = 6.31 \times 2 = 12.63\%$$

6. First of we shall calculate expected return from share of Company X

(i) Average annual capital gain (%)

Let g = average annual capital gain, then:

$$₹203.51(1+g)^4 = ₹147$$

$$\text{Then } g = (203.51/147)^{1/4} - 1 = 0.10 \text{ i.e. } 10\%$$

(ii) Average annual dividend yield (%)

Year	Dividend/Share Price	Dividend Yield
2009	₹7.00/₹139	0.050
2010	₹8.50/ ₹147	0.058
2011	₹9.00/ ₹163	0.055
2012	₹9.50/ ₹179	0.053
2013 (Current Year)	₹10.00/ ₹203.51	0.049
		<u>0.265</u>

$$\text{Average Yield} = 0.265/5 = 0.053 \text{ i.e. } 5.3\%$$

Thus with this data expected return of share of Company X can be given as follows:

$$E(r_x) = \text{Average Annual Capital Gain} + \text{Average Annual Dividend}$$

$$= 10\% + 5.3\% = 15.3\%$$

Then we shall calculate expected return from market index as follows:

(i) Average annual capital gain (%)

$$1300 (1+g)^4 = 1768$$

$$\text{Then } g = (1768/1300)^{1/4} - 1 = 0.08 \text{ i.e. } 8\%$$

(ii) Average annual dividend yield (%)

$$3\% + 5\% + 5.5\% + 4.75\% + 5.5\% = 23.75\%/5 = 4.75\%$$

Thus expected return on Market Index $E(r_M) = 8\% + 4.75\% = 12.75\%$

Average annual risk-free rate of return

$$7\% + 9\% + 8\% + 8\% + 8\% = 40\%/5 = 8\%$$

Now with the above information we compute Beta (β) of share company X using CAPM as follows:

$$E(r_X) = r_f + \beta[E(r_M) - r_f]$$

$$15.3\% = 8\% + \beta[12.75\% - 8\%]$$

$$\beta = 1.54$$

7. (i)

Period	R_X	R_M	$R_X - \bar{R}_X$	$R_M - \bar{R}_M$	$(R_X - \bar{R}_X)(R_M - \bar{R}_M)$	$(R_M - \bar{R}_M)^2$
1	20	22	5	10	50	100
2	22	20	7	8	56	64
3	25	18	10	6	60	36
4	21	16	6	4	24	16
5	18	20	3	8	24	64
6	-5	8	-20	-4	80	16
7	17	-6	2	-18	-36	324
8	19	5	4	-7	-28	49
9	-7	6	-22	-6	132	36
10	<u>20</u>	<u>11</u>	5	-1	<u>-5</u>	<u>1</u>
	150	120			357	706
	ΣR_X	ΣR_M			$\Sigma (R_X - \bar{R}_X)(R_M - \bar{R}_M)$	$\Sigma (R_M - \bar{R}_M)^2$

$$\bar{R}_X = 15 \quad \bar{R}_M = 12$$

$$\sigma^2_M = \frac{\sum (R_M - \bar{R}_M)^2}{n} = \frac{706}{10} = 70.60$$

$$\text{Cov}_{X,M} = \frac{\sum (R_X - \bar{R}_X)(R_M - \bar{R}_M)}{n} = \frac{357}{10} = 35.70$$

$$\text{Beta}_X = \frac{\text{Cov}_{X,M}}{\sigma_M^2} = \frac{35.70}{70.60} = 0.505$$

$$(ii) \quad \bar{R}_X = 15 \quad \bar{R}_M = 12$$

$$y = \alpha + \beta x$$

$$15 = \alpha + 0.505 \times 12$$

$$\text{Alpha } (\alpha) = 15 - (0.505 \times 12)$$

$$= 8.94\%$$

$$\text{Characteristic line for security X} = \alpha + \beta \times R_M$$

Where, R_M = Expected return on Market Index

$$\therefore \text{Characteristic line for security X} = 8.94 + 0.505 R_M$$

8. £ Exposure

Since Columbus has a £ receipt (£ 138,000) and payment of (£ 480,000) maturing at the same time i.e. 3 months, it can match them against each other leaving a net liability of £ 342,000 to be hedged.

(i) Forward market hedge

Buy 3 months' forward contract accordingly, amount payable after 3 months will be
£ 342,000 / 0.9520 = US\$ 359,244

(ii) Money market hedge

To pay £ after 3 months' Columbus shall require to borrow in US\$ and translate to £ and then deposit in £.

For payment of £ 342,000 in 3 months (@2.5% interest) amount required to be deposited now

$$(\text{£ } 342,000 \div 1.025) = \text{£ } 333,658$$

$$\text{With spot rate of 0.9830 the US\$ loan needed will be} = \text{US\$ } 339,429.$$

$$\text{Loan repayable after 3 months (@3.25% interest) will be} = \text{US\$ } 350,460.$$

In this case the money market hedge is a cheaper option.

€ Receipt

$$\text{Amount to be hedged} = \text{€ } 590,000$$

Now we Convert exchange rates to home currency

€ / US\$

Spot 0.5285 – 0.5294

4 months forward 0.5118 – 0.5126

(i) *Forward market hedge*

Sell 4 months' forward contract accordingly, amount receivable after 4 months will be

(€ 590,000 / 0.5126) = US\$ 1,150,995

(ii) *Money market hedge*

For money market hedge Columbus shall borrow in € and then translate to US\$ and deposit in US\$

For receipt of € 590,000 in 4 months (@ 5.33% interest) amount required to be borrowed now

(€590,000 ÷ 1.0533) = € 560,144

With spot rate of 0.5294 the US\$ deposit will be = US\$ 1,058,073

deposit amount will increase over 3 months (@3.83% interest) will be = US\$ 1,098,597

In this case, more will be received in US\$ under the forward hedge.

9. Here Canara Bank shall buy US\$ and credit ₹ to Vostro account of ABN-Amro Bank. Canara Bank's buying rate will be based on the Inter-bank Buying Rate (as this is the rate at which Canara Bank can sell US\$ in the Interbank market)

Accordingly, the Interbank Buying Rate of US\$ will be ₹ 51.3625 (lower of two)

Equivalent of US\$ for ₹15 million at this rate will be

$$= \frac{15,000,000}{51.3625} = \text{US\$ } 2,92,041.86$$

10. (i) *NAV of the Fund*

$$= \frac{\text{₹ } 4,00,000 + \text{₹ } 93,72,000 + \text{₹ } 72,24,000 + \text{₹ } 3,03,06,000}{6,00,000}$$

$$= \frac{\text{₹ } 4,73,02,000}{6,00,000} = \text{₹ } 78.8366 \text{ rounded to ₹ } 78.84$$

- (ii) The revised position of fund shall be as follows:

Shares	No. of shares	Price	Amount (₹)
L Ltd.	20,000	20.00	4,00,000
M Ltd.	38,000	312.40	1,18,71,200

N Ltd.	20,000	361.20	72,24,000
P Ltd.	60,000	505.10	3,03,06,000
Cash			<u>5,00,800</u>
			<u>5,03,02,000</u>

$$\text{No. of units of fund} = 6,00,000 + \frac{30,00,000}{78.8366} = 6,38,053$$

(iii) On 2nd February 2012, the NAV of fund will be as follows:

Shares	No. of shares	Price	Amount (₹)
L Ltd.	20,000	20.50	4,10,000
M Ltd.	38,000	360.00	1,36,80,000
N Ltd.	20,000	383.10	76,62,000
P Ltd.	60,000	503.90	3,02,34,000
Cash			<u>5,00,800</u>
			<u>5,24,86,800</u>

$$\text{NAV as on 2nd February 2012} = \frac{\text{₹ } 5,24,86,800}{6,38,053} = \text{₹ } 82.26 \text{ per unit}$$

11. Modigliani and Miller (M-M) – Dividend Irrelevancy Model:

$$P_0 = \frac{P_1 + D_1}{1 + K_e}$$

Where,

P_0 = Existing market price per share i.e. ₹ 120

P_1 = Market price of share at the year-end (to be determined)

D_1 = Contemplated dividend per share i.e. ₹ 6.4

K_e = Capitalisation rate i.e. 9.6%.

(i) (a) Calculation of share price when dividend is declared:

$$P_0 = \frac{P_1 + D_1}{1 + K_e}$$

$$120 = \frac{P_1 + 6.4}{1 + 0.096}$$

$$120 \times 1.096 = P_1 + 6.4$$

$$P_1 = 120 \times 1.096 - 6.4$$

$$= 125.12$$

(b) Calculation of share price when dividend is not declared:

$$P_0 = \frac{P_1 + D_1}{1 + K_e}$$

$$120 = \frac{P_1 + 0}{1 + 0.096}$$

$$120 \times 1.096 = P_1 + 0$$

$$P_1 = 131.52$$

(ii) Calculation of No. of shares to be issued:

(₹ in lakhs)

Particulars	If dividend declared	If dividend not declared
Net Income	160	160
Less: Dividend paid	<u>51.20</u>	<u>-----</u>
Retained earnings	108.80	160
Investment budget	<u>320</u>	<u>320</u>
Amount to be raised by issue of new shares (i)	<u>211.20</u>	<u>160</u>
Market price per share (ii)	125.12	131.52
No. of new shares to be issued (ii)	1,68,797.95	1,21,654.50
Or say	1,68,798	1,21,655

12. Alternative I: Acquiring the asset by taking bank loan:

Years		1	2	3	4	5
(a)	Interest (@15% p.a. on opening balance)	150,000	120,000	90,000	60,000	30,000
	Depreciation (@15%WDV)	<u>150,000</u>	<u>127,500</u>	<u>108,375</u>	<u>92,119</u>	<u>78,301</u>
		300,000	247,500	198,375	152,119	108,301
(b)	Tax shield (@35%)	<u>105,000</u>	<u>86,625</u>	<u>69,431</u>	<u>53,242</u>	<u>37,905</u>
	Interest less Tax shield (a)-(b)	45,000	33,375	20,569	6,758	(-)7,905
	Principal Repayment	<u>2,00,000</u>	<u>2,00,000</u>	<u>2,00,000</u>	<u>2,00,000</u>	<u>2,00,000</u>
	Total cash outflow	2,45,000	2,33,375	2,20,569	2,06,758	1,92,095
	Discounting Factor @ 16%	<u>0.862</u>	<u>0.743</u>	<u>0.641</u>	<u>0.552</u>	<u>0.476</u>
	Present Value	2,11,190	1,73,398	1,41,385	1,14,130	91,437

Total P.V of cash outflow = ₹731,540

Alternative II: Acquire the asset on lease basis

Year	Lease Rentals ₹	Tax Shield @35%	Net Cash Outflow	Discount Factor	Present Value
1	3,34,000	1,16,900	2,17,100	0.862	1,87,140
2	3,34,000	1,16,900	2,17,100	0.743	1,61,305
3	3,34,000	1,16,900	2,17,100	0.641	1,39,161
4	3,34,000	1,16,900	2,17,100	0.552	1,19,839
5	3,34,000	1,16,900	2,17,100	0.476	1,03,340
Present value of Total Cash out flow					7,10,785

Advice -By making Analysis of both the alternatives, it is observed that the present value of the cash outflow is lower in alternative II by ₹20,755 (i.e. ₹ 7,31,540 – ₹ 7,10,785) Hence, it is suggested to acquire the asset on lease basis.

$$13. \text{ No. of Shares} = \frac{\text{₹ } 1,300 \text{ crores}}{\text{₹ } 40 \text{ crores}} = 32.5 \text{ Crores}$$

$$\text{EPS} = \frac{\text{PAT}}{\text{No. of shares}}$$

$$\text{EPS} = \frac{\text{₹ } 290 \text{ crores}}{32.5 \text{ crores}} = \text{₹ } 8.923$$

$$\text{FCFE} = \text{Net income} - [(1-b) (\text{capex} - \text{dep}) + (1-b) (\Delta \text{WC})]$$

$$\text{FCFE} = 8.923 - [(1-0.27) (47-39) + (1-0.27) (3.45)]$$

$$= 8.923 - [5.84 + 2.5185]$$

$$= 0.5645$$

$$\text{Cost of Equity} = R_f + \beta (R_m - R_f)$$

$$= 8.7 + 0.1 (10.3 - 8.7)$$

$$= 8.86\%$$

$$P_0 = \frac{\text{FCFE}(1+g)}{K_e - g} = \frac{0.5645(1.08)}{0.0886 - .08} = \frac{0.60966}{0.0086} = \text{₹ } 70.89$$

14. Case (i) Required yield rate = 5%

Year	Cash Flow ₹	DF (5%)	Present Value ₹
1-5	10	4.3295	43.295
5	110	0.7835	86.185
Value of bond			129.48

Case (ii) Required yield rate = 5.1%

Year	Cash Flow ₹	DF (5.1%)	Present Value ₹
1-5	10	4.3175	43.175
5	110	0.7798	85.778
Value of bond			128.953

Case (iii) Required yield rate = 10%

Year	Cash Flow ₹	DF (10%)	Present Value ₹
1-5	10	3.7908	37.908
5	110	0.6209	68.299
Value of bond			106.207

Case (iv) Required yield rate = 10.1%

Year	Cash Flow ₹	DF (10.1%)	Present Value ₹
1-5	10	3.7811	37.811
5	110	0.6181	67.991
Value of bond			105.802

15. (a) $WACC_P = [14.0\%(1 - 0.35)](0.80) + 26.0\%(0.20) = 12.48\%$

$WACC_Q = [12.0\%(1 - 0.35)](0.50) + 22.0\%(0.50) = 14.90\%$

$WACC_R = [10.0\%(1 - 0.35)](0.20) + 20.0\%(0.80) = 17.30\%$

(b) $EVA = EBIT(1 - T) - (WACC \times \text{Invested capital})$

$EVA_P = ₹25,000(1 - 0.35) - (0.1248 \times ₹100,000)$

$= ₹16,250 - ₹12,480$

$= ₹3,770$

$EVA_Q = ₹25,000(1 - 0.35) - (0.1490 \times ₹100,000)$

$= ₹16,250 - ₹14,900$

$= ₹1,350$

$$\begin{aligned}
 EVA_R &= €25,000(1 - 0.35) - (0.1730 \times €100,000) \\
 &= €16,250 - €17,300 \\
 &= -€1,050
 \end{aligned}$$

- (c) $EVA_P > EVA_Q > EVA_R$; Thus, P Ltd. would be considered the best investment. The result should have been obvious, given that the firms have the same EBIT, but $WACC_P < WACC_Q < WACC_R$.

(d) P Ltd.	Q Ltd.	R Ltd.	
EBIT	€25,000	€25,000	€25,000
Interest ^a	<u>(11,200)</u>	<u>(6,000)</u>	<u>(2,000)</u>
Taxable income	13,800	19,000	23,000
Tax (35%)	<u>(4,830)</u>	<u>(6,650)</u>	<u>(8,050)</u>
Net income	<u>€ 8,970</u>	<u>€12,350</u>	<u>€14,950</u>
Shares	6,100	8,300	10,000
EPS	€1.470	€1.488	€1.495
Stock price: P/E = 15x	€22.05	€22.32	€22.43

$$^a \text{ Interest}_P = €100,000(0.80) \times 0.14 = €11,200$$

$$\text{Interest}_Q = €100,000(0.50) \times 0.12 = € 6,000$$

$$\text{Interest}_R = €100,000(0.20) \times 0.10 = € 2,000$$

- (e) Given the three firms have substantially different capital structures, we would expect that they also have different degrees of financial risk. Therefore, we might want to adjust the P/E ratios to account for the risk differences.

16. (a) Let P be the buyback price decided by Abhishek Ltd.

Market Capitalisation After Buyback:

1.1 P (Original Shares – Shares Bought back)

$$= 1.1P(10\text{Lakhs} - \frac{30\% \text{ of } 90\text{lakhs}}{P})$$

$$= 11\text{ Lakhs} \times P - 27\text{ lakhs} \times 1.1$$

$$= 11\text{ lakhs} \times P - 29.7\text{ lakhs}$$

Market capitalization rate after buyback is 200 lakhs.

Thus, we have:

$$11\text{ Lakhs} \times P - 29.7\text{ lakhs} = ₹200\text{ lakhs}$$

$$\text{or } 11P = 200 + 29.7$$

$$\text{or } P = \frac{229.7}{11} = ₹ 20.88$$

(b) Number of shares to be bought back:

$$= \frac{27 \text{ Lakhs}}{20.88} = 1.29 \text{ lakhs (Approximately)}$$

(c) New Equity Shares

$$= (10 - 1.29) \text{ lakhs} = 8.71 \text{ lakhs}$$

$$\text{EPS} = \frac{3 \times 10 \text{ lakhs}}{8.71 \text{ lakhs}} = \frac{30 \text{ L}}{8.71 \text{ L}} = \text{Rs. } 3.44$$

Thus EPS of Abhishek Ltd., increases to ₹3.44

17. Number of index future to be sold by the Fund Manager is:

$$\frac{1.1 \times 90,00,00,000}{4,300 \times 50} = 4,605$$

Justification of the answer:

Loss in the value of the portfolio if the index falls by 10% is

$$= \frac{10(1.10)}{100} \times ₹90 \text{ Crore} = \frac{11}{100} \times ₹90 \text{ Crore}$$

$$= ₹ 9.90 \text{ Crore.}$$

$$\text{Gain by short covering of index future is: } \frac{0.1 \times 4,300 \times 50 \times 4,605}{1,00,00,000} = 9.90 \text{ Crore}$$

This justifies the answer cash is not part of the portfolio.

18.

Opportunity gain of A Inc under currency swap	Receipt	Payment	Net
Interest to be remitted to B. Inc in \$ 2,00,000x9%=\$18,000 Converted into (¥18,000x¥120)		¥21,60,000	
Interest to be received from B. Inc in \$ converted into ¥ (6%x\$2,00,000 x ¥120)	¥14,40,000	-	
Interest payable on ¥ loan	-	¥12,00,000	
	¥14,40,000	¥33,60,000	
Net Payment	¥19,20,000	-	
	¥33,60,000	¥33,60,000	

\$ equivalent paid ¥19,20,000 x (1/¥120)			\$16,000
Interest payable without swap in \$			<u>\$18,000</u>
Opportunity gain in \$			<u>\$ 2,000</u>

Opportunity gain of B inc under currency swap	Receipt	Payment	Net
Interest to be remitted to A. Inc in (\$ 2,00,000 x 6%)		\$12,000	
Interest to be received from A. Inc in ¥ converted into \$ = ¥21,60,000/¥120	\$18,000		
Interest payable on \$ loan@10%	-	<u>\$20,000</u>	
	\$18,000	\$32,000	
Net Payment	<u>\$14,000</u>	-	
	<u>\$32,000</u>	<u>\$32,000</u>	
¥ equivalent paid \$14,000 X ¥120			¥16,80,000
Interest payable without swap in ¥ (\$2,00,000 X ¥120X8%)			<u>¥19,20,000</u>
Opportunity gain in ¥			<u>¥ 2,40,000</u>

Alternative Solution

Cash Flows of A Inc

(i) At the time of exchange of principal amount

Transactions		Cash Flows
Borrowings	\$2,00,000 x ¥120	+ ¥240,00,000
Swap		- ¥240,00,000
Swap		<u>+\$2,00,000</u>
Net Amount		<u>+\$2,00,000</u>

(ii) At the time of exchange of principal amount

Transactions		Cash Flows
Interest to the lender	¥240,00,000X5%	¥12,00,000
Interest Receipt from B Inc.	¥2,00,000X120X6%	¥14,40,000
Net Saving (in \$)	¥2,40,000/¥120	\$2,000
Interest to B Inc.	\$2,00,000X9%	<u>-\$18,000</u>
Net Interest Cost		<u>-\$16,000</u>

A Inc. used \$2,00,000 at the net cost of borrowing of \$16,000 i.e. 8%. If it had not opted for swap agreement the borrowing cost would have been 9%. Thus there is saving of 1%.

Cash Flows of B Inc

(i) At the time of exchange of principal amount

Transactions		Cash Flows
Borrowings		+ \$2,00,000
Swap		- \$2,00,000
Swap	\$2,00,000X¥120	+¥240,00,000
Net Amount		+¥240,00,000

(ii) At the time of exchange of principal amount

Transactions		Cash Flows
Interest to the lender	\$2,00,000X10%	- \$20,000
Interest Receipt from A Inc.		+\$18,000
Net Saving (in ¥)	-\$2,000X¥120	- ¥2,40,000
Interest to A Inc.	\$2,00,000X6%X¥120	- ¥14,40,000
Net Interest Cost		- ¥16,80,000

B Inc. used ¥240,00,000 at the net cost of borrowing of ¥16,80,000 i.e. 7%. If it had not opted for swap agreement the borrowing cost would have been 8%. Thus there is saving of 1%.

19. The optional hedge ratio to minimize the variance of Hedger's position is given by:

$$H = \rho \frac{\sigma_S}{\sigma_F}$$

Where

σ_S = Standard deviation of ΔS

σ_F = Standard deviation of ΔF

ρ = coefficient of correlation between ΔS and ΔF

H = Hedge Ratio

ΔS = change in Spot price.

ΔF = change in Future price.

Accordingly

$$H = 0.75 \times \frac{0.04}{0.06} = 0.5$$

No. of contract to be short = $10 \times 0.5 = 5$

Amount = $5000 \times ₹ 474 = ₹ 23,70,000$

20. (a) The success of any business is measured in financial terms. Maximising value to the shareholders is the ultimate objective. For this to happen, at every stage of its operations including policy-making, the firm should be taking strategic steps with value-maximization objective. This is the basis of financial policy being linked to strategic management.

The linkage can be clearly seen in respect of many business decisions. For example:

- (i) Manner of raising capital as source of finance and capital structure are the most important dimensions of strategic plan.
- (ii) Cut-off rate (opportunity cost of capital) for acceptance of investment decisions.
- (iii) Investment and fund allocation is another important dimension of interface of strategic management and financial policy.
- (iv) Foreign Exchange exposure and risk management.
- (v) Liquidity management
- (vi) A dividend policy decision deals with the extent of earnings to be distributed and a close interface is needed to frame the policy so that the policy should be beneficial for all.
- (vii) Issue of bonus share is another dimension involving the strategic decision.

Thus from above discussions it can be said that financial policy of a company cannot be worked out in isolation to other functional policies. It has a wider appeal and closer link with the overall organizational performance and direction of growth.

- (b) Zero Date of a Project means a date is fixed from which implementation of the project begins. It is a starting point of incurring cost. The project completion period is counted from the zero date. Pre-project activities should be completed before zero date. The pre-project activities should be completed before zero date. The pre-project activities are:
- a. Identification of project/product
 - b. Determination of plant capacity
 - c. Selection of technical help/collaboration
 - d. Selection of site.

- e. Selection of survey of soil/plot etc.
 - f. Manpower planning and recruiting key personnel
 - g. Cost and finance scheduling.
- (c) Cross-border leasing is a leasing agreement where lessor and lessee are situated in different countries. This raises significant additional issues relating to tax avoidance and tax shelters. It has been widely used in some European countries, to arbitrage the difference in the tax laws of different countries.

Cross-border leasing have been in practice as a means of financing infrastructure development in emerging nations. Cross-border leasing may have significant applications in financing infrastructure development in emerging nations - such as rail and air transport equipment, telephone and telecommunications, equipment, and assets incorporated into power generation and distribution systems and other projects that have predictable revenue streams.

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

- (d) Offer for sale is also known as bought out deal (BOD). It is a new method of offering equity shares, debentures etc., to the public. In this method, instead of dealing directly with the public, a company offers the shares/debentures through a sponsor. The sponsor may be a commercial bank, merchant banker, an institution or an individual. It is a type of wholesale of equities by a company. A company allots shares to a sponsor at an agreed price between the company and sponsor. The sponsor then passes the consideration money to the company and in turn gets the shares duly transferred to him. After a specified period as agreed between the company and sponsor, the shares are issued to the public by the sponsor with a premium. After the public offering, the sponsor gets the shares listed in one or more stock exchanges. The holding cost of such shares by the sponsor may be reimbursed by the company or the sponsor may get the profit by issue of shares to the public at premium.

Thus, it enables the company to raise the funds easily and immediately. As per SEBI guidelines, no listed company can go for BOD. A privately held company or an unlisted company can only go for BOD. A small or medium size company which needs money urgently chooses to BOD. It is a low cost method of raising funds. The cost of public issue is around 8% in India. But this method lacks transparency. There will be scope for misuse also. Besides this, it is expensive like the public issue method. One of the most serious short coming of this method is that the securities are sold to the investing public usually at a premium. The margin thus

between the amount received by the company and the price paid by the public does not become additional funds of the company, but it is pocketed by the issuing houses or the existing shareholders.

- (e) ECB include bank loans, supplier credit, securitised instruments, credit from export credit agencies and borrowings from multilateral financial institutions. These securitised instruments may be FRNs, FRBs etc. Indian corporate sector is permitted to raise finance through ECBs within the framework of the policies and procedures prescribed by the Central Government. Multilateral financial institutions like IFC, ADB, AFIC, CDC are providing such facilities while the ECB policy provides flexibility in borrowing consistent with maintenance of prudential limits for total external borrowings, its guiding principles are to keep borrowing maturities long, costs low and encourage infrastructure/core and export sector financing which are crucial for overall growth of the economy. The government of India, from time to time changes the guidelines and limits for which the ECB alternative as a source of finance is pursued by the corporate sector. During past decade the government has streamlined the ECB policy and procedure to enable the Indian companies to have their better access to the international financial markets.

The government permits the ECB route for variety of purposes namely expansion of existing capacity as well as for fresh investment. But ECB can be raised through internationally recognized sources. There are caps and ceilings on ECBs so that macro economy goals are better achieved. Units in SEZ are permitted to use ECBs under a special window.