

PAPER – 2: STRATEGIC FINANCIAL MANAGEMENT

QUESTIONS

Swap

1. Drilddip Inc. a US based company has won a contract in India for drilling oil field. The project will require an initial investment of ₹ 500 crore. The oil field along with equipments will be sold to Indian Government for ₹ 740 crore in one year time. Since the Indian Government will pay for the amount in Indian Rupee (₹) the company is worried about exposure due exchange rate volatility.

You are required to:

- (a) Construct a swap that will help the Drilddip to reduce the exchange rate risk.
- (b) Assuming that Indian Government offers a swap at spot rate which is 1US\$ = ₹ 50 in one year, then should the company should opt for this option or should it just do nothing. The spot rate after one year is expected to be 1US\$ = ₹ 54. Further you may also assume that the Drilddip can also take a US\$ loan at 8% p.a.

Business Valuation

2. BRS Inc deals in computer and IT hardwares and peripherals. The expected revenue for the next 8 years is as follows:

Years	Sales Revenue (\$ Million)
1	8
2	10
3	15
4	22
5	30
6	26
7	23
8	20

Summarized financial position as on 31 March 2012 was as follows:

\$ Million

Liabilities	Amount	Assets	Amount
Equity Stocks	12	Fixed Assets (Net)	17
12% Bonds	8	Current Assets	3
	20		20

Additional Information:

- (a) Its variable expenses is 40% of sales revenue and fixed operating expenses (cash) are estimated to be as follows:

Period	Amount (\$ Million)
1- 4 years	1.6
5-8 years	2

- (b) An additional advertisement and sales promotion campaign shall be launched requiring expenditure as per following details:

Period	Amount (\$ Million)
1 year	0.50
2-3 years	1.50
4-6 years	3.00
7-8 years	1.00

- (c) Fixed assets are subject to depreciation at 15% as per WDV method.
 (d) The company has planned capital expenditures for the coming 8 years as follows:

Period	Amount (\$ Million)
1	0.50
2	0.80
3	2.00
4	2.50
5	3.50
6	2.50
7	1.50
8	1.00

- (e) Investment in Working Capital is estimated to be 20% of Revenue.
 (f) Applicable tax rate for the company is 30%.
 (g) Cost of Equity is estimated to be 16%.
 (h) The Free Cash Flow of the firm is expected to grow at 5% per annum after 8 years.

With above information you are required to determine the:

- (i) Value of Firm
 (ii) Value of Equity

Cap & Floor

3. (a) Suppose that a 1-year cap has a cap rate of 8% and a notional amount of ₹ 100 crore. The frequency of settlement is quarterly and the reference rate is 3-month MIBOR. Assume that 3-month MIBOR for the next four quarters is as shown below.

Quarters	3-months MIBOR (%)
1	8.70
2	8.00
3	7.80
4	8.20

You are required to compute payoff for each quarter.

- (b) Suppose that a 1-year floor has a floor rate of 4% and a notional amount of ₹ 200 crore. The frequency of settlement is quarterly and the reference rate is 3-month MIBOR. Assume that 3-month MIBOR for the next four quarters is as shown below.

Quarters	3-months MIBOR (%)
1	4.70
2	4.40
3	3.80
4	3.40

You are required to compute payoff for each quarter.

Security Valuation

4. The following data is related to 8.5% Fully Convertible (into Equity shares) Debentures issued by JAC Ltd. at ₹ 1000.

Market Price of Debenture	₹ 900
Conversion Ratio	30
Straight Value of Debenture	₹ 700
Market Price of Equity share on the date of Conversion	₹ 25
Expected Dividend Per Share	₹ 1

You are required to calculate:

- Conversion Value of Debenture
- Market Conversion Price
- Conversion Premium per share
- Ratio of Conversion Premium

- (e) Premium over Straight Value of Debenture
- (f) Favourable income differential per share
- (g) Premium pay back period

Financial Services

5. Extracts from the recent financial statements of ABC Ltd. are given below.

	₹ '000	₹ '000
Turnover		21,300
Cost of sales		16,400
Gross Profit		4,900
Non-current assets		3,000
Current assets		
Inventory	4,500	
Trade receivables	3,500	8,000
Total Assets		11,000
Trade payables	3,000	
Overdraft	3,000	6,000
Equity Shares	1,000	
Reserves	1,000	2,000
Debentures		3,000
Total Liabilities		11,000

XYZ Fincorp, a factor has offered to manage the trade receivables of ABC Ltd. under a servicing and factor-financing agreement. XYZ expects to reduce the average trade receivables period of ABC from its current level to 35 days; to reduce bad debts from 0.9% of turnover to 0.6% of turnover; and to save ABC ₹ 40,000 per year in administration costs.

The XYZ would also make an advance to ABC of 80% of the revised book value of trade receivables. The interest rate on the advance would be 2% higher than the 7% that ABC currently pays on its overdraft. The XYZ would charge a fee of 0.75% of turnover on a with-recourse basis, or a fee of 1.25% of turnover on a non-recourse basis.

Assuming 365 days in a year and all sales and purchases are on credit you are required to evaluate the proposal of XYZ Fincorp.

Forward Rate Agreement

6. TM Fincorp has bought a 6X9 ₹ 100 crore Forward Rate Agreement (FRA) at 5.25%. On fixing date reference rate i.e. MIBOR turns out be as follows:

Period	Rate (%)
3 months	5.50
6 months	5.70
9 months	5.85

You are required to determine:

- Profit/Loss to TM Fincorp. in terms of basis points.
- The settlement amount.

(Assume 360 days in a year)

Future Contract

7. Suppose that there is a future contract on a share presently trading at ₹ 1000. The life of future contract is 90 days and during this time the company will pay dividends of ₹ 7.50 in 30 days, ₹ 8.50 in 60 days and ₹ 9.00 in 90 days.

Assuming that the Compounded Continuously Risk free Rate of Interest (CCRRI) is 12% p.a. you are required to find out:

- Fair Value of the contract if no arbitrage opportunity exists.
- Value of Cost to Carry.

[Given $e^{-0.01} = 0.9905$, $e^{-0.02} = 0.9802$, $e^{-0.03} = 0.97045$ and $e^{0.03} = 1.03045$]

Portfolio Management

8. Suppose that economy A is growing rapidly and you are managing a global equity fund that has so far invested only in developed-country stocks. Now you have decided to add stocks of economy A to your portfolio. The table below shows the expected rates of return, standard deviations, and correlation coefficients (all estimated for the aggregate stock market of developed countries and stock market of Economy A).

	Developed country stocks	Stocks of Economy A
Expected rate of return (annualized percent)	10	15
Risk [Annualized Standard Deviation (%)]	16	30
Correlation Coefficient (r)	0.30	

Assuming the risk-free interest rate to be 3%, you are required to determine:

- (a) What percentage of your portfolio should you allocate to stocks of Economy A if you want to increase the expected rate of return on your portfolio by 0.5%?
- (b) What will be the standard deviation of your portfolio assuming that stocks of Economy A are included in the portfolio as calculated above?
- (c) Also show how well the Fund will be compensated for the risk undertaken due to inclusion of stocks of Economy A in the portfolio?
9. An investor has decided to invest ₹ 1,00,000 in the shares of two companies, namely, ABC and XYZ the projections of returns from the shares of the two companies along with their probabilities are as follows:

<u>Probability</u>	<u>ABC(%)</u>	<u>XYZ(%)</u>
0.20	12	16
0.25	14	10
0.25	-7	28
0.30	28	-2

You are required to

- (i) Comment on return and risk of investment in individual shares.
- (ii) Compare the risk and return of these two shares with a Portfolio of these shares in equal proportions.
- (iii) Find out the proportion of each of the above shares to formulate a minimum risk portfolio.

Capital Budgeting

10. A USA based company is planning to set up a software development unit in India. Software developed at the Indian unit will be bought back by the US parent at a transfer price of US \$10 millions. The unit will remain in existence in India for one year; the software is expected to get developed within this time frame.

The US based company will be subject to corporate tax of 30 per cent and a withholding tax of 10 per cent in India and will not be eligible for tax credit in the US. The software developed will be sold in the US market for US \$ 12.0 millions. Other estimates are as follows:

Rent for fully furnished unit with necessary hardware in India	₹15,00,000
Man power cost (80 software professional will be working for 10 hours each day)	₹400 per man hour
Administrative and other costs	₹12,00,000

Advise the US Company on the financial viability of the project. The rupee-dollar rate is ₹48/\$.

Leasing

11. ABC Company has decided to acquire a ₹ 5,00,000 pulp control device that has a useful life of ten years. A subsidy of ₹ 50,000 is available at the time the device is acquired and placed into service. The device would be depreciated on straight-line basis and no salvage value is expected. The company is in the 50% tax bracket. If the acquisition is financed with a lease, lease payments of ₹ 55,000 would be required at the beginning of each year. The company can also borrow at 10% repayable in equal instalments. Debt payments would be due at the beginning of each year:
- What is the present value of cash outflow for each of these financing alternatives, using the after-tax cost of debt?
 - Which of the two alternatives is preferable?

Dividend Decision

12. The following information is supplied to you:

	₹
Total Earnings	2,00,000
No. of equity shares (of ₹100 each)	20,000
Dividend paid	1,50,000
Price/Earning ratio	12.5

- Ascertain whether the company is the following an optimal dividend policy.
- Find out what should be the P/E ratio at which the dividend policy will have no effect on the value of the share.
- Will your decision change, if the P/E ratio is 8 instead of 12.5?

Money Market Operations

13. M Ltd. has to make a payment on 30th January, 2010 of ₹ 80 lakhs. It has surplus cash today, i.e. 31st October, 2009; and has decided to invest sufficient cash in a bank's Certificate of Deposit scheme offering a yield of 8% p.a. on simple interest basis. What is the amount to be invested now?

Mergers and Acquisition

14. Reliable Industries Ltd. (RIL) is considering a takeover of Sunflower Industries Ltd. (SIL). The particulars of 2 companies are given below:

Particulars	Reliable Industries Ltd	Sunflower Industries Ltd.
Earnings After Tax (EAT)	₹20,00,000	₹10,00,000
Equity shares O/s	10,00,000	10,00,000
Earnings per share (EPS)	2	1
PE Ratio (Times)	10	5

Required:

- What is the market value of each Company before merger?
- Assume that the management of RIL estimates that the shareholders of SIL will accept an offer of one share of RIL for four shares of SIL. If there are no synergic effects and PE ratio of RIL shall remain unchanged even after merger, what is the market value of the Post-merger RIL? What is the new price per share? Are the shareholders of RIL better or worse off than they were before the merger?
- Due to synergic effects, the management of RIL estimates that the earnings will increase by 20%. What are the new post-merger EPS and Price per share? Will the shareholders be better off or worse off than before the merger?

Note: It may be assumed that Price Earning Ratio of RIL shall remain unchanged even after merger.

Security Valuation

15. The following data are available for a bond

Face value	₹ 1,000
Coupon Rate	16%
Years to Maturity	6
Redemption value	₹ 1,000
Yield to maturity	17%

What is the current market price, duration and volatility of this bond? Calculate the expected market price, if increase in required yield is by 75 basis points.

Mutual Funds

16. Mr. Sinha has invested in three Mutual fund schemes as per details below:

	Scheme X	Scheme Y	Scheme Z
Date of Investment	01.12.2011	01.01.2012	01.03.2012
Amount of Investment	₹ 5,00,000	₹ 1,00,000	₹ 50,000
Net Asset Value at entry date	₹ 10.50	₹ 10.00	₹ 10.00

Dividend received upto 31.03.2012	₹ 9,500	₹ 1,500	Nil
NAV as at 31.3.2012	₹ 10.40	₹ 10.10	₹ 9.80

You are required to calculate the effective yield on per annum basis in respect of each of the three schemes to Mr. Sinha upto 31.03.2012.

Indian Capital Market

17. A call and put exist on the same stock each of which is exercisable at ₹ 60. They now trade for:

Market price of Stock or stock index	₹ 55
Market price of call	₹ 9
Market price of put	₹ 1

Calculate the expiration date cash flow, investment value, and net profit from:

- (i) Buy 1.0 call
- (ii) Write 1.0 call
- (iii) Buy 1.0 put
- (iv) Write 1.0 put

for expiration date stock prices of ₹ 50, ₹ 55, ₹ 60, ₹ 65, ₹ 70.

Foreign Exchange Risk Management

18. A company is considering hedging its foreign exchange risk. It has made a purchase on 1st. January, 2008 for which it has to make a payment of US \$ 50,000 on September 30, 2008. The present exchange rate is 1 US \$ = ₹ 40. It can purchase forward 1 US \$ at ₹ 39. The company will have to make a upfront premium of 2% of the forward amount purchased. The cost of funds to the company is 10% per annum and the rate of corporate tax is 50%. Ignore taxation. Consider the following situations and compute the Profit/Loss the company will make if it hedges its foreign exchange risk:

- (i) If the exchange rate on September 30, 2008 is ₹ 42 per US \$.
- (ii) If the exchange rate on September 30, 2008 is ₹ 38 per US \$.

19. An Indian exporting firm, Rohit and Bros., would be cover itself against a likely depreciation of pound sterling. The following data is given:

Receivables of Rohit and Bros	: £500,000
Spot rate	: ₹ 56.00/£
Payment date	: 3-months
3 months interest rate	: India : 12 per cent per annum
	: UK : 5 per cent per annum

What should the exporter do?

20. Write a short note on

- (a) Link between Financial Policy and Strategic Management
- (b) Zero Date of a Project in Project Management
- (c) Timing of Investment Decisions on the basis of Dow Jones Theory
- (d) Main Functions of Investment Banking
- (e) Distinction between Capital and Money Market

SUGGESTED ANSWERS/HINTS

1. (a) The following swap arrangements can be entered by Drilldip.
 - (i) Swap a US\$ loan today at an agreed rate with any party to obtain Indian Rupees (₹) to make initial investment.
 - (ii) After one year swap back the Indian Rupees with US\$ at the agreed rate. In such case the company is exposed only on the profit earned from the project.
- (b) With the swap

	Year 0 (Million US\$)	Year 1 (Million US\$)
Buy ₹ 500 crore at spot rate of 1US\$ = ₹ 50	(100.00)	----
Swap ₹ 500 crore back at agreed rate of ₹ 50	----	100.00
Sell ₹ 240 crore at 1US\$ = ₹ 54	----	44.44
Interest on US\$ loan @8% for one year	----	(8.00)
	(100.00)	136.44

Net result is a net receipt of US\$ 36.44 million.

Without the swap

	Year 0 (Million US\$)	Year 1 (Million US\$)
Buy ₹ 500 crore at spot rate of 1US\$ = ₹ 50	(100.00)	----
Sell ₹ 740 crore at 1US\$ = ₹ 54	----	137.04
Interest on US\$ loan @8% for one year	----	(8.00)
	(100.00)	129.04

Net result is a net receipt of US\$ 29.04 million.

Decision: Since the net receipt is higher in swap option the company should opt for the same.

2. Working Notes:**(a) Determination of Weighted Average Cost of Capital**

Sources of funds	Cost (%)	Proportions	Weights	Weighted Cost
Equity Stock	16	12/20	0.60	9.60
12% Bonds	$12\%(1-0.30) = 8.40$	8/20	0.40	3.36
				12.96 say 13

(b) Schedule of Depreciation

\$ Million

Year	Opening Balance of Fixed Assets	Addition during the year	Total	Depreciation @ 15%
1	17.00	0.50	17.50	2.63
2	14.87	0.80	15.67	2.35
3	13.32	2.00	15.32	2.30
4	13.02	2.50	15.52	2.33
5	13.19	3.50	16.69	2.50
6	14.19	2.50	16.69	2.50
7	14.19	1.50	15.69	2.35
8	13.34	1.00	14.34	2.15

(c) Determination of Investment

\$ Million

Year	Investment Required			Existing Investment in CA	Additional Investment required
	For Capital Expenditure	CA (20% of Revenue)	Total		
1	0.50	1.60	2.10	3.00	0.00
2	0.80	2.00	2.80	2.50*	0.30
3	2.00	3.00	5.00	2.00**	3.00
4	2.50	4.40	6.90	3.00	3.90
5	3.50	6.00	9.50	4.40	5.10
6	2.50	5.20	7.70	6.00	1.70
7	1.50	4.60	6.10	5.20	0.90
8	1.00	4.00	5.00	4.60	0.40

* Balance of CA in Year 1 (\$3 Million) – Capital Expenditure in Year 1(\$ 0.50 Million)

** Similarly balance of CA in Year 2 (\$2.80) – Capital Expenditure in Year 2(\$ 0.80 Million)

(d) Determination of Present Value of Cash Inflows

\$ Million

Particulars	Years							
	1	2	3	4	5	6	7	8
Revenue (A)	8.00	10.00	15.00	22.00	30.00	26.00	23.00	20.00
<u>Expenses</u>								
Variable Costs	3.20	4.00	6.00	8.80	12.00	10.40	9.20	8.00
Fixed cash operating cost	1.60	1.60	1.60	1.60	2.00	2.00	2.00	2.00
Advertisement Cost	0.50	1.50	1.50	3.00	3.00	3.00	1.00	1.00
Depreciation	2.63	2.35	2.30	2.33	2.50	2.50	2.35	2.15
Total Expenses (B)	7.93	9.45	11.40	15.73	19.50	17.90	14.55	13.15
EBIT (C) = (A) - (B)	0.07	0.55	3.60	6.27	10.50	8.10	8.45	6.85
Less: Taxes@30% (D)	0.02	0.16	1.08	1.88	3.15	2.43	2.53	2.06
NOPAT (E) = (C) - (D)	0.05	0.39	2.52	4.39	7.35	5.67	5.92	4.79
Gross Cash Flow (F) = (E) + Depreciation	2.68	2.74	4.82	6.72	9.85	8.17	8.27	6.94
Less: Investment in Capital Assets plus Current Assets (G)	0	0.30	3.00	3.90	5.10	1.70	0.90	0.40
Free Cash Flow (H) = (F) - (G)	2.68	2.44	1.82	2.82	4.75	6.47	7.37	6.54
PVF@13% (I)	0.885	0.783	0.693	0.613	0.543	0.480	0.425	0.376
PV (H)(I)	2.371	1.911	1.261	1.729	2.579	3.106	3.132	2.46

Total present value = \$ 18.549 million

(e) Determination of Present Value of Continuing Value (CV)

$$CV = \frac{FCF_9}{k - g} = \frac{\$6.54 \text{ million}(1.05)}{0.13 - 0.05} = \frac{\$6.867 \text{ million}}{0.08} = \$85.8375 \text{ million}$$

Present Value of Continuing Value (CV) = \$85.8376 million X PVF_{13%,8} = \$85.96875 million X 0.376 = \$32.2749 million

(i) Value of Firm

	\$ Million
Present Value of cash flow during explicit period	18.5490
Present Value of Continuing Value	32.2749
Total Value	50.8239

(ii) Value of Firm

	\$ Million
Total Value of Firm	50.8239
Less: Value of Debt	8.0000
Value of Equity	42.8239

3. (a) There is no payoff to the cap if the cap rate exceeds 3-month MIBOR. For Periods 2 and 3, there is no payoff because 3-month MIBOR is below the cap rate. For Periods 1 and 4, there is a payoff and the payoff is determined by:

$$₹ 100 \text{ crore} \times (3\text{-month MIBOR} - \text{Cap Rate})/4$$

The payoffs are summarized below:

Quarters	3-months MIBOR (%)	Pay-off (₹)
1	8.70	17,50,000
2	8.00	Nil
3	7.80	Nil
4	8.20	5,00,000

- (b) There is a payoff to the floor if 3-month MIBOR is less than the floor rate. For Periods 1 and 2, there is no payoff because 3-month MIBOR is greater than the floor rate. For Periods 3 and 4, there is a payoff and the payoff is determined by:

$$₹ 200 \text{ crore} \times (\text{Floor Rate} - 3\text{-month MIBOR})/4$$

The payoffs are summarized below:

Quarters	3-months MIBOR (%)	Pay-off (₹)
1	4.70	Nil
2	4.40	Nil
3	3.80	10,00,000
4	3.40	30,00,000

4. (a) Conversion Value of Debenture

= Market Price of one Equity Share X Conversion Ratio

$$= ₹ 25 \times 30 = ₹ 750$$

(b) Market Conversion Price

$$= \frac{\text{Market Price of Convertible Debenture}}{\text{Conversion Ratio}} = \frac{₹ 900}{30} = ₹ 30$$

(c) Conversion Premium per share

Market Conversion Price – Market Price of Equity Share

$$= ₹ 30 - ₹ 25 = ₹ 5$$

(d) Ratio of Conversion Premium

$$\frac{\text{Conversion premium per share}}{\text{Market Price of Equity Share}} = \frac{₹ 5}{₹ 25} = 20\%$$

(e) Premium over Straight Value of Debenture

$$\frac{\text{Market Price of Convertible Bond}}{\text{Straight Value of Bond}} - 1 = \frac{₹ 900}{₹ 700} - 1 = 28.6\%$$

(f) Favourable income differential per share

$$\frac{\text{Coupon Interest from Debenture} - \text{Conversion Ratio} \times \text{Dividend Per Share}}{\text{Conversion Ratio}}$$

$$\frac{₹ 85 - 30 \times ₹ 1}{30} = ₹ 1.833$$

(g) Premium pay back period

$$\frac{\text{Conversion premium per share}}{\text{Favourable Income Differential Per Share}} = \frac{₹ 5}{₹ 1.833} = 2.73 \text{ years}$$

5. Working Notes:

(i) Present Trade receivables period = $365 \times 3,500/21,300 = 60$ days

(ii) Reduction in trade receivables under factoring arrangement

	₹
Current trade receivables	3,500,000
Revised trade receivables (₹ 21,300,000 x 35/365)	2,042,466
Reduction in trade receivables	1,457,534

Calculation of benefit of with-recourse offer

As the XYZ's offer is with recourse, ABC will gain the benefit of bad debts reducing from 0.9% of turnover to 0.6% of turnover.

	₹
Finance cost saving = $1,457,534 \times 0.07$	102,027
Administration cost saving	40,000
Bad debt saving = $21,300,000 \times (0.009 - 0.006)$	63,900
Total saving	205,927
Additional interest on advance $(2,042,466 \times 0.8 \times 0.02)$	32,680
Net benefit before factor fee (A)	173,247
With-recourse factor fee = $21,300,000 \times 0.0075$ (B)	159,750
Net benefit of with-recourse offer (A) – (B)	13,497

Calculation of benefit of non-recourse offer

As the offer is without recourse, the bad debts of ABC will reduce to zero, as these will be carried by the XYZ, and so the company will gain a further benefit of 0.6% of turnover.

	₹
Net benefit before with-recourse factor fee (A) as above	173,247
Non-recourse factor fee ₹ $21,300,000 \times 0.0125$ (D)	266,250
Net cost before adjusting for bad debts (E) = (D) – (A)	93,003
Remaining bad debts eliminated = $21,300,000 \times 0.006$ (F)	127,800
Net benefit of non-recourse offer (F) – (E)	34,797

The XYZ's offer is financially acceptable on a with-recourse basis, giving a net benefit of ₹ 13,497. On a non-recourse basis, the XYZ's offer is not financially acceptable, giving a net loss of ₹ 93,003, if the elimination of bad debts is ignored.

The difference between the two factor fees (₹ 106,500 or 0.5% of sales), which represents insurance against the risk of bad debts, is less than the remaining bad debts (₹ 127,800 or 0.6% of sales), which will be eliminated under non-recourse factoring.

When this elimination of bad debts is considered, the non-recourse offer from the factor is financially more attractive than the with-recourse offer.

6. (a) TM will make a profit of 25 basis points since a 6X9 FRA is a contract on 3-month interest rate in 6 months, which turns out to be 5.50% (higher than FRA price).

- (b) The settlement amount shall be calculated by using the following formula:

$$\frac{N(RR - FR) (dtm / 360)}{1 + RR (dtm / 360)}$$

Where

N = Notional Principal Amount

RR = Reference Rate

FR = Agreed upon Forward Rate

dtm = FRA period specified in days.

Accordingly:

$$\frac{100 \text{ crore} (5.50\% - 5.25\%) (92 / 360)}{1 + 0.055 (92 / 360)} = ₹ 6,30,032$$

Hence there is profit of ₹ 6,30,032 to TM Fincorp.

7. (a) First of all we shall calculate the Dividend Proceed which is as follows:

$$= ₹ 7.50e^{-0.12 \times 30 / 360} + ₹ 8.50e^{-0.12 \times 60 / 360} + ₹ 9.00e^{-0.12 \times 90 / 360}$$

$$= ₹ 7.50e^{-0.01} + ₹ 8.50e^{-0.02} + ₹ 9.00e^{-0.03}$$

$$= ₹ 7.50 \times 0.9905 + ₹ 8.50 \times 0.9802 + ₹ 9.00 \times 0.97045$$

$$= ₹ 7.43 + ₹ 8.33 + ₹ 8.73 = ₹ 24.49$$

$$\text{Fair Value of Future Contract} = ₹ 1000 e^{0.12 \times 90 / 360} - \text{Dividend Proceeds}$$

$$= ₹ 1000 \times 1.03045 - ₹ 24.49 = ₹ 1005.96$$

- (b) Since Value of Future Contract = Spot Price + Cost to Carry

$$₹ 1005.96 = ₹ 1000 + \text{Cost to Carry}$$

$$\text{Cost to Carry} = ₹ 5.96$$

8. (a) Let the weight of stocks of Economy A is expressed as w, then

$$(1 - w) \times 10.0 + w \times 15.0 = 10.5$$

$$\text{i.e. } w = 0.1 \text{ or } 10\%.$$

- (b) Variance of portfolio shall be:

$$(0.9)^2 (0.16)^2 + (0.1)^2 (0.30)^2 + 2(0.9)(0.1)(0.16)(0.30)(0.30) = 0.02423$$

$$\text{Standard deviation is } (0.02423)^{1/2} = 0.15565 \text{ or } 15.6\%.$$

- (c) The Sharpe ratio will improve by approximately 0.04, as shown below:

$$\text{Sharpe Ratio} = \frac{\text{Expected Return} - \text{Risk Free Rate of Return}}{\text{Standard Deviation}}$$

Investment only in developed countries: $\frac{10-3}{16}=0.437$

With inclusion of stocks of Economy A: $\frac{10.5-3}{15.6}=0.481$

9. (i)

Probability	ABC (%)	XYZ (%)	1X2 (%)	1X3 (%)
(1)	(2)	(3)	(4)	(5)
0.20	12	16	2.40	3.2
0.25	14	10	3.50	2.5
0.25	-7	28	-1.75	7.0
0.30	28	-2	<u>8.40</u>	<u>-0.6</u>
Average return			<u>12.55</u>	<u>12.1</u>

Hence the expected return from ABC = 12.55% and XYZ is 12.1%

Probability	(ABC- $\overline{ABC}$)	(ABC- $\overline{ABC}$) ²	1X3	(XYZ- $\overline{XYZ}$)	(XYZ- $\overline{XYZ}$) ²	(1)X(6)
(1)	(2)	(3)	(4)	(5)	(6)	
0.20	-0.55	0.3025	0.06	3.9	15.21	3.04
0.25	1.45	2.1025	0.53	-2.1	4.41	1.10
0.25	-19.55	382.2025	95.55	15.9	252.81	63.20
0.30	15.45	238.7025	<u>71.61</u>	-14.1	198.81	<u>59.64</u>
			<u>167.75</u>			<u>126.98</u>

$$S^2_{ABC} = 167.75(\%)^2; S_{ABC} = 12.95\%$$

$$S^2_{XYZ} = 126.98(\%)^2; S_{XYZ} = 11.27\%$$

(ii) In order to find risk of portfolio of two shares, the covariance between the two is necessary which can be calculated as below:

Probability	(ABC- $\overline{ABC}$)	(XYZ- $\overline{XYZ}$)	2X3	1X4
(1)	(2)	(3)	(4)	(5)
0.20	-0.55	3.9	-2.145	-0.429
0.25	1.45	-2.1	-3.045	-0.761
0.25	-19.55	15.9	-310.845	-77.71
0.30	15.45	-14.1	-217.845	<u>-65.35</u>
				<u>-144.25</u>

$$S^2_P = (0.5^2 \times 167.75) + (0.5^2 \times 126.98) + 2 \times (-144.25) \times 0.5 \times 0.5$$

$$S^2_P = 41.9375 + 31.745 - 72.125$$

$$S^2_P = 1.5575 \text{ or } 1.56(\%)$$

$$S_P = \sqrt{1.56} = 1.25\%$$

$$E(R_p) = (0.5 \times 12.55) + (0.5 \times 12.1) = 12.325\%$$

Hence, the return is 12.325% with the risk of 1.25% for the portfolio. Thus the portfolio results in the reduction of risk by the combination of two shares.

(iii) For constructing the minimum risk portfolio the condition to be satisfied is

$$X_{ABC} = \frac{\sigma_X^2 - r_{AX}\sigma_A\sigma_X}{\sigma_A^2 + \sigma_X^2 - 2r_{AX}\sigma_A\sigma_X} \text{ or}$$

$$= \frac{\sigma_X^2 - \text{Cov.}_{AX}}{\sigma_A^2 + \sigma_X^2 - 2\text{Cov.}_{AX}}$$

σ_X = Std. Deviation of XYZ

σ_A = Std. Deviation of ABC

r_{AX} = Coefficient of Correlation between XYZ and ABC

Cov._{AX} = Covariance between XYZ and ABC.

Therefore,

$$\% \text{ ABC} = \frac{126.98 - (-144.25)}{126.98 + 167.75 - [2 \times (-144.25)]}$$

$$\frac{271.23}{583.23} = 0.46 \text{ or } 46\%$$

$$\% \text{ ABC} = 46\%, \text{ XYZ} = 54\%$$

$$(1 - 0.46) = 0.54$$

10. Proforma profit and loss account of the Indian software development unit

	₹	₹
Revenue		48,00,00,000
Less: Costs:		
Rent	15,00,000	
Manpower (₹400 x 80 x 10 x 365)	11,68,00,000	
Administrative and other costs	12,00,000	11,95,00,000

Earnings before tax		36,05,00,000
Less: Tax		10,81,50,000
Earnings after tax		25,23,50,000
Less: Withholding tax(TDS)		2,52,35,000
Repatriation amount (in rupees)		22,71,15,000
Repatriation amount (in dollars)		\$4.7 million

Note: Students may assume the year of 360 days instead of 365 days as has been done in the answer provided above. In such a case where a year is assumed to be of 360 days, manpower cost is ₹ 11,52,00,000 and repatriated amount ₹ 22,81,23,000.

Advise: The cost of development software in India for the US based company is \$5.268 million. As the USA based Company is expected to sell the software in the US at \$12.0 million, it is advised to develop the software in India.

11. Initial amount borrowed = ₹5,00,000 – ₹50,000 = ₹4,50,000

This amount of ₹4,50,000 is the amount which together with interest at the rate of 10% on outstanding amount is repayable in equal installments i.e., annuities in the beginning of each of 10 years. The PVAF at the rate of 10% for 9 years is 5.759 and for the year 0 it is 1.000. So, the annuity amount may be ascertained by dividing ₹4,50,000 by (5.759 + 1.000).

So Annual payment = ₹4,50,000/6.759 = ₹66,578

Amount owed at time 0 = ₹4,50,000 – ₹ 66,578 = ₹3,83,422.

Schedule of Debt Payment

End of Year	Total Payment ₹	Interest ₹	Principal Amount Outstanding ₹
0	66,578	0	3,83,422
1	66,578	38,342	3,55,186
2	66,578	35,519	3,24,127
3	66,578	32,413	2,89,962
4	66,578	28,996	2,52,380
5	66,578	25,238	2,11,040
6	66,578	21,104	1,65,566
7	66,578	16,557	1,15,545
8	66,578	11,555	55,023
9	66,578	5,502	NIL

Schedule of Cash Outflows: Debt Alternative

(Amount in ₹)

(1) End of year	(2) Debt Payment	(3) Interest	(4) Dep	(5) Tax Shield [(3)+(4)]0.5	(6) Cash outflows (2) – (5)	(7) PV factors @ 5%	(8) PV
0	66,578	0	0	0	66,578	1.000	66,578
1	66,578	38,342	50,000	44,171	22,407	0.952	21,331
2	66,578	35,519	50,000	42,759	23,819	0.907	21,604
3	66,578	32,413	50,000	41,206	25,372	0.864	21,921
4	66,578	28,996	50,000	39,498	27,080	0.823	22,287
5	66,578	25,238	50,000	37,619	28,959	0.784	22,704
6	66,578	21,104	50,000	35,552	31,026	0.746	23,145
7	66,578	16,557	50,000	33,279	33,299	0.711	23,676
8	66,578	11,555	50,000	30,777	35,801	0.677	24,237
9	66,578	5,502	50,000	27,751	38,827	0.645	25,043
10	-	0	50,000	25,000	(-25,000)	0.614	(-15,350)
Total present value of Outflows = ₹2,57,176							

Schedule of Cash Outflows: Leasing Alternative

(Amount in ₹)

End of year	Lease Payment	Tax Shield	Cash Outflow	PVIFA @ 5%	PV
0	55,000	0	55,000	1.000	55,000
1-9	55,000	27,500	27,500	7.109	1,95,498
10	0	27,500	-27,500	0.614	(-16,885)
Total Present value of Outflows = ₹2,33,613					

The present values of cash outflow are ₹2,57,176 and ₹2,33,613 respectively under debt and lease alternatives. As under debt alternatives the cash outflow would be more, the lease is preferred.

Note:

- (i) The repayment of loan as well as payment of lease rental is made in the beginning of the years. So, at the end of year 10, there will not be any payment in either

option, but the tax benefit of depreciation for the year 10 as well as of lease rentals paid in the beginning of year 10, will be available only at the end of year 10.

- (ii) Students may also calculate depreciation after subtracting the amount of subsidy from original cost, however, even in this situation, lease alternative is preferable.
12. (i) The EPS of the firm is ₹10 (i.e., ₹2,00,000/20,000). The P/E Ratio is given at 12.5 and the cost of capital, k_e , may be taken at the inverse of P/E ratio. Therefore, k_e is 8 (i.e., $1/12.5$). The firm is distributing total dividends of ₹1,50,000 among 20,000 shares, giving a dividend per share of ₹7.50. the value of the share as per Walter's model may be found as follows:

$$P = \frac{D}{K_e} + \frac{(r/K_e)(E - D)}{K_e}$$

$$= \frac{7.50}{.08} + \frac{(.10/.08)(10 - 7.5)}{.08}$$

$$= ₹132.81$$

The firm has a dividend payout of 75% (i.e., ₹1,50,000) out of total earnings of ₹2,00,000. since, the rate of return of the firm, r , is 10% and it is more than the k_e of 8%, therefore, by distributing 75% of earnings, the firm is not following an optimal dividend policy. The optimal dividend policy for the firm would be to pay zero dividend and in such a situation, the market price would be

$$P = \frac{D}{k_e} + \frac{(r/K_e)(E - D)}{K_e}$$

$$= \frac{0}{.08} + \frac{(.10/.08)(10 - 0)}{.08}$$

$$= ₹156.25$$

So, theoretically the market price of the share can be increased by adopting a zero payout.

- (ii) The P/E ratio at which the dividend policy will have no effect on the value of the share is such at which the k_e would be equal to the rate of return, r , of the firm. The K_e would be 10% ($=r$) at the P/E ratio of 10. Therefore, at the P/E ratio of 10, the dividend policy would have no effect on the value of the share.
- (iii) If the P/E is 8 instead of 12.5, then the k_e which is the inverse of P/E ratio, would be 12.5 and in such a situation $k_e > r$ and the market price, as per Walter's model would be

$$P = \frac{D}{K_e} + \frac{(r/K_e)(E - D)}{K_e}$$

$$= \frac{7.50}{.125} + \frac{(.1/.125)(10 - 7.5)}{.125}$$

$$= ₹76$$

The optimal dividend policy for the firm would be to pay 100% dividend and market price of share in such case would be

$$P = \frac{10.0}{0.125} + \frac{(0.1/0.125)(10-10)}{0.125}$$

$$= ₹80$$

13. Calculation of Investment Amount

Amount required for making payment on 30th January, 2010 = ₹ 80,00,000

Investment in Certificates of Deposit (CDs) on 31st October, 2009

Rate of interest = 8% p.a.

No. of days to maturity = 91 days

Interest on ₹ 1 of 91 days

(₹ 1 × 0.08 × 91/365) = 0.0199452

Amount to be received for ₹ 1

(₹ 1.00 + ₹ 0.0199452) = 1.0199452

Calculation of amount to be invested now to get ₹ 80 lakhs after 91 days:

$$= \frac{₹ 80,00,000}{₹ 1.0199452} = ₹ 78,43,558.65$$

Or, ₹ 78,43,600 or ₹ 78,44,000 approximately.

14. (i) Market value of Companies before Merger

Particulars	RIL	SIL
EPS	₹ 2	Re.1
P/E Ratio	10	5
Market Price Per Share	₹ 20	₹ 5
Equity Shares	10,00,000	10,00,000
Total Market Value	2,00,00,000	50,00,000

(ii) Post Merger Effects on RIL

	₹
Post merger earnings	30,00,000
Exchange Ratio (1:4)	
No. of equity shares o/s (10,00,000 + 2,50,000)	12,50,000
EPS: 30,00,000/12,50,000	2.4
PE Ratio	10
Market Value 10 x 2.4	24
Total Value (12,50,000 x 24)	3,00,00,000
Gains From Merger:	₹
Post-Merger Market Value of the Firm	3,00,00,000
Less: Pre-Merger Market Value	
RIL 2,00,00,000	
SIL <u>50,00,000</u>	<u>2,50,00,000</u>
Total gains from Merger	<u>50,00,000</u>

Apportionment of Gains between the Shareholders:

Particulars	RIL(₹)	SIL(₹)
Post Merger Market Value:		
10,00,000 x 24	2,40,00,000	--
2,50,000 x 24	-	60,00,000
Less: Pre-Merger Market Value	2,00,00,000	50,00,000
Gains from Merger:	40,00,000	10,00,000

Thus, the shareholders of both the companies (RIL + SIL) are better off than before

(iii) Post-Merger Earnings:

Increase in Earnings by 20%

New Earnings: ₹30,00,000 x (1+0.20) ₹36,00,000

No. of equity shares outstanding: 12,50,000

EPS (₹ 36,00,000/12,50,000) ₹2.88

PE Ratio 10

Market Price Per Share:

= ₹2.88 x 10 = ₹28.80

\ Shareholders will be better-off than before the merger situation.

15. (a) Calculation of Market price:

$$TM = \frac{\text{Coupon interest} + \frac{\text{Discount or premium}}{\text{Years left}}}{\frac{\text{Face Value} + \text{Market value}}{2}}$$

Discount or premium – YTM is more than coupon rate, market price is less than Face Value i.e. at discount.

Let x be the market price

$$0.17 = \frac{160 + \frac{(1,000 - x)}{6}}{\frac{1,000 + x}{2}}$$

$$x = ₹ 960.26$$

Alternatively, the candidate may attempt by

$$160 (\text{PVIFA } 17\%, 6) + 1,000 (\text{PVIF } 17\%, 6)$$

$$= 160 (3.589) + 1,000 (0.390)$$

$$= 574.24 + 390$$

$$= 964.24$$

(b) Duration

Year	Cash flow	P.V. @ 17%		Proportion of bond value	Proportion of bond value x time (years)
1	160	.855	136.80	0.142	0.142
2	160	.731	116.96	0.121	0.246
3	160	.624	99.84	0.103	0.309
4	160	.534	85.44	0.089	0.356
5	160	.456	72.96	0.076	0.380
6	1160	.390	<u>452.40</u>	<u>0.469</u>	<u>2.814</u>
			<u>964.40</u>	<u>1.000</u>	<u>4.247</u>

Duration of the Bond is 4.247 years

(c) Volatility

$$\text{Volatility of the bonds} = \frac{\text{Duration}}{(1 + \text{yields})} = \frac{4.247}{1.17} = 3.63$$

(d) The expected market price if increase in required yield is by 75 basis points.

$$= ₹ 960.26 - .75 (3.63/100) = ₹ 26.142$$

Hence expected market price is ₹ 960.26 – ₹ 26.142 = ₹ 934.118

Hence, the market price will decrease

This portion can also be alternatively done as follows

$$= ₹ 964.40 - .75 (3.63/100)$$

$$= ₹ 26.26$$

then the market price will be

$$= ₹ 964.40 - ₹ 26.26 = ₹ 938.14$$

16. Calculation of effective yield on per annum basis in respect of three mutual fund schemes to Mr. Sinha up to 31-03-2012:

PARTICULARS	MFY	MFY	MFZ
(a) Investments	₹ 5,00,000	₹ 1,00,000	₹ 50,000
(b) No. of units	47,619.05	10,000	5,000
(c) Unit NAV ON 31-3-2012	₹ 10.40	₹ 10.10	₹ 9.80
(d) Total NAV on 31-3-2012 (b x c)	₹ 4,95,238.12	₹ 1,01,000	₹ 49,000
(e) Increase / Decrease of NAV (a-d)	(₹ 4,761.88)	₹ 1,000	(₹ 1,000)
(f) Dividend Received	₹ 9,500	₹ 1,500	Nil
(g) Total yield (e + f)	₹ 4,738.12	₹ 2,500	(₹ 1,000)
(h) Number of Days	121	90	31
(i) Effective yield p.a. (g/a x 365/h x 100)	2.859%	10.139%	(-) 23.55%

17. Expiration date cash flows

Stock Prices	₹ 50	₹ 55	₹ 60	₹ 65	₹ 70
Buy 1.0 call	0	0	0	-60	-60
Write 1.0 call	0	0	0	60	60
Buy 1.0 put	60	60	0	0	0
Write 1.0 put	-60	-60	0	0	0

Expiration date investment value

Stock Prices	₹ 50	₹ 55	₹ 60	₹ 65	₹ 70
Buy 1.0 call	0	0	0	5	10
Write 1.0 call	0	0	0	-5	-10
Buy 1.0 put	10	5	0	0	0
Write 1.0 put	-10	-5	0	0	0

Expiration date net profits

Stock Prices	₹ 50	₹ 55	₹ 60	₹ 65	₹ 70
Buy 1.0 call	-9	-9	-9	-4	1
Write 1.0 call	9	9	9	4	-1
Buy 1.0 put	9	4	-1	-1	-1
Write 1.0 put	-9	-4	1	1	1

18.

	(₹)
Present Exchange Rate ₹40 = 1 US\$	
If company purchases US\$ 50,000 forward premium is	
$50000 \times 39 \times 2\%$	39,000
Interest on ₹39,000 for 9 months at 10%	<u>2,925</u>
Total hedging cost	<u>41,925</u>
If exchange rate is ₹42	
Then gain (₹42 – ₹39) for US\$ 50,000	1,50,000
Less: Hedging cost	<u>41,925</u>
Net gain	<u>1,08,075</u>
If US\$ = ₹38	
Then loss (39 – 38) for US\$ 50,000	50,000
Add: Hedging Cost	<u>41,925</u>
Total Loss	<u>91,925</u>

19. The only thing lefts Rohit and Bros to cover the risk in the money market. The following steps are required to be taken:

- (i) Borrow pound sterling for 3- months. The borrowing has to be such that at the end of three months, the amount becomes £ 500,000. Say, the amount borrowed is £ x. Therefore

$$x \left(1 + 0.05 \times \frac{3}{12} \right) = 500,000 \text{ or } x = £493,827$$

- (ii) Convert the borrowed sum into rupees at the spot rate. This gives: £493,827 × ₹ 56 = ₹ 27,654,312
- (iii) The sum thus obtained is placed in the money market at 12 per cent to obtain at the end of 3- months:

$$S = ₹ 27,654,312 \times \frac{₹}{₹} + 0.12 \times \frac{3}{12} \times ₹ 500,000 = ₹ 28,483,941$$

- (iv) The sum of ₹500,000 received from the client at the end of 3- months is used to refund the loan taken earlier.

From the calculations. It is clear that the money market operation has resulted into a net gain of ₹ 483,941 (₹ 28,483,941 – ₹ 500,000 × 56).

If pound sterling has depreciated in the meantime. The gain would be even bigger.

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:

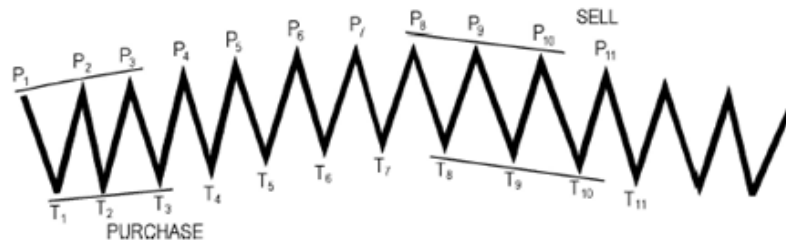
- a. Identification of project/product

- 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) Ideally speaking, the investment manager would like to purchase shares at a time when they have reached the lowest trough and sell them at a time when they reach the highest peak.

However, in practice, this seldom happens. Even the most astute investment manager can never know when the highest peak or the lowest trough has been reached. Therefore, he has to time his decision in such a manner that he buys the shares when they are on the rise and sells them when they are on the fall. It means that he should be able to identify exactly when the falling or the rising trend has begun.

This is technically known as identification of the turn in the share market prices. Identification of this turn is difficult in practice because of the fact that, even in a rising market, prices keep on falling as a part of the secondary movement. Similarly even in a falling market prices keep on rising temporarily. How to be certain that the rise in prices or fall in the same is due to a real turn in prices from a bullish to a bearish phase or *vice versa* or that it is due only to short-run speculative trends?

Dow Jones theory identifies the turn in the market prices by seeing whether the successive peaks and troughs are higher or lower than earlier. Consider the following graph:



According to the theory, the investment manager should purchase investments when the prices are at T1. At this point, he can ascertain that the bull trend has started, since T2 is higher than T1 and P2 is higher than P1.

Similarly, when prices reach P7 he should make sales. At this point he can ascertain that the bearish trend has started, since P9 is lower than P8 and T8 is lower than T7.

- (d) The following are, briefly, a summary of investment banking functions:
- “ Managing an IPO (Initial Public Offering): This includes hiring managers to the issue, due diligence and marketing the issue.
 - “ Issue of debt: When a company requires capital, it sometimes chooses to issue public debt instead of equity.
 - “ Mergers and Acquisitions: Acting as intermediary between Acquirer and target company
 - “ Private Placement: A private placement differs little from a public offering aside from the fact that a private placement involves a firm selling stock or equity to private investors rather than to public investors.
 - “ Financial Restructuring: When a company cannot pay its cash obligations - it goes bankrupt. In this situation, a company can, of course, choose to simply shut down operations and walk away or, it can also restructure and remain in business.
- (e) The capital market deals in financial assets. Financial assets comprises of shares, debentures, mutual funds etc. The capital market is also known as stock market.

Stock market and money market are two basic components of Indian financial system. Capital market deals with long and medium term instruments of financing while money market deals with short term instruments.

Some of the points of distinction between capital market and money market are as follows:

Money Market	Capital Market
There is no classification between primary market and secondary market	There is a classification between primary market and secondary market.
It deals for funds of short-term requirement.	It deals with funds of long-term requirement.
Money market instruments include interbank call money, notice money upto 14 days, short-term deposits upto three months, commercial paper, 91 days treasury bills.	Capital Market instruments are shares and debt instruments.
Money market participants are banks, financial institution, RBI and Government	Capital Market participants include retail investors, institutional investors like Mutual Funds, Financial Institutions, corporate and banks.