

PAPER– 2 : STRATEGIC FINANCIAL MANAGEMENT

QUESTIONS

Capital Budgeting

1. XYZ Co proposes to manufacture Refrigerator with new technology, for which it plans to invest Rs.500 lakhs for new machinery, Rs.20 lakhs for its installation and Rs.80 lakhs for factory and other infrastructural facilities.

- (i) The capacity of the machine 2000 units annually. The capacity utilization plan and Sales promotion expenses for next 7 years are estimated as :

Year	1	2	3	4	5	6	7
Capacity Utilization %	60	60	75	80	100	100	80
Sales promotion expenses (Rs. lakhs)	20	20	15	15	15	15	15

- (ii) Depreciation will be @ 20% on Written down value.
 - (iii) Salvage value at the end of 7 years may be taken as book value.
 - (iv) Estimated operation cost :
Sales Value for each refrigerator Rs.15,000, Variable Cost per unit Rs.3,000 and Annual Fixed Cost Rs.15 lakhs.
 - (v) Cost of Capital is 12%
 - (vi) Tax of the company is 35%
2. ABC Engineering Co is considering replacement of a machine as the maintenance cost of existing machine is increasing and salvage value is falling as given under :

Existing machine	Present	Year 1	Year 2	Year 3	Year 4
Maintenance	Nil	1.00	2.00	3.00	4.00
Salvage value	5.00	2.50	1.50	1.00	0.00

- (i) New Machine cost Rs.9.00 lakhs with expected life of 8 years.
 - (ii) At the end of 8 years , salvage value of machine is expected to be Rs.2 lakhs.
 - (iii) Annual repairing cost Rs.1.00 lakh
 - (iv) Tax rate of the company is nil.
 - (v) Cost of capital is 15%
 - (vi) PV @ 15% in 8 years is 4.4873 and PV on 8th year is 0.3269.
- You are required to advise when the machine should be replaced.

Buy or lease

3. Excel Engineers proposes to expand its business with the help of installation of a new machine costing Rs.50 lakhs.

Proposal I : Buying

The machine may be bought at a cost of Rs.50 lakhs @ 15% interest and loan to be repaid in 5 equal installments and interest on reducing value. Salvage value of machine at the end of 5 years is estimated to be Rs.6 lakhs. (Dismantling cost may be ignored). Depreciation of the machine is 25% on written down value.

Proposal II : Lease

Annual lease rent to be paid Rs.12 lakhs per year for next 5 years. Company's Tax rate is 40%. Advise the company on which option is to be chosen.

4. A customer of ABC leasing company has expressed to acquire a machine on lease on the terms that lease rent will be paid in three years in the ratio of 3:2:1.

The sale value of the machine is Rs.600 lakhs and depreciation will be charged on straight line.

On the assumption that depreciation will be charged on straight line method and return rate of ABC leasing Company is 10%, find out the lease rents for three years.

5. A firm has an investment proposal, requiring an outlay of Rs. 80,000. The investment proposal is expected to have two years economic life with no salvage value. Cash flows (after Tax) with following probabilities for year 1 and year 2 are given below :

	Possibility 1	Possibility 2
The cash inflow year 1 with probabilities	Rs. 50,000 0.4	Rs. 60,000 0.6
The cash inflow year 2 With probabilities	Possibility 1 Rs. 24,000 0.2 Rs. 32,000 0.3 Rs. 44,000 0.5	Possibility 2 Rs. 40,000 0.4 Rs. 50,000 0.5 Rs. 60,000 0.1

The firm uses a 10% discount rate..(10% discount factor 1 year 0.909; 2 year 0.826)

Required:

- (i) Construct a decision tree for the proposed investment project and calculate the expected net present value (NPV).
- (ii) What will be the worst outcome and the probability of occurrence ?
- (iii) What will be the best outcome and the probability of that occurrence ?
- (iv) Will the project be accepted?

Capital Market

6. A 9% 5 years bond is issued in the market at Rs.90 and redemption price Rs.105. For an investor with marginal income tax rate of 30% and capital gain tax 10% (assuming no indexation), what is the post-tax yield to maturity ?
7. The most recently published Balance sheet of X Ltd is given below :

Liabilities (Rs Lakhs)		Assets (Rs Lakhs)	
Equity (each share of Rs 100)	300.00	Fixed Asset	560.80
Reserve & Surplus	383.20	Current Asset	943.07
12% Debenture of	600.00		
Current liabilities	220.67		
Total	1503.87		1503.87

Shares are being traded at Rs 300. Current P/E ratio is 20.

The company wish to raise Rs.300 lakhs for expansion of existing operation. The expected cash flow (pre tax) from Rs.60 lakhs. Company's tax rate is @ 40%.

The company desires to increase earning of shareholders by 20%, advise what should be doses of equity issue and debenture.

Dividend Policy

8. Valuation based on dividend

The following information are available for XYZ CO.

- ◆ No of shares outstanding is 1 lakh
- ◆ EPS is Rs 4
- ◆ DPS is Rs 2.4
- ◆ Equity capitalization rate : 12%
- ◆ Rate of return on investment : 15%

- (i) As per Walter's model, what will be Market value per Share ?
 - (ii) To keep Share price at Rs 40, what should be payout ratio ?
 - (iii) As per Walter's model, what is optimum payout ratio?
 - (iv) Market Value at that payout ratio ?
9. ABC Ltd has 10 lakhs equity shares outstanding at the beginning of the year. The current market price of is Rs.150 and the directors have recommended a dividend of Rs.8 per share. The shareholders expect a return of 12%.
- (i) applying MM Model calculate the fair price of the share when a) dividend is declared and b) dividend is not declared.
 - (ii) If the investment budget is Rs.500 lakhs and anticipated profit is Rs.180 lakhs, compute how many shares are to be issued if a) dividend is declared and b) dividend is not declared.

Financial Services

10. ABC Co. Ltd. has a turnover of 900 lakhs and 80% of which is on credit. Average collection period of debtors is one month. A factor is willing to advance against the bills raised after charging a factoring commission of 2% and interest @ 12% per annum on the amount of advance. Administrative expenses for collection of credit is Rs.5,00,000 per annum. The bad debt remain to be approximately 1% which will be the responsibility of the factor. Interest rate of Bank on working capital is 18%. Advise whether the company should accept the offer of the factor (For calculation, assume one year = 360 days).
11. XYZ & Co plans to issue CP of Rs 1,00,000 at a price of Rs 97,000
Maturity period is 3 months.
Issue Expenses are :
- (i) brokerage is 0.12 %
 - (ii) Rating charges is 0.50% and stamp duty is 0.12 %
- What is the effective interest rate per annum and the cost of fund ?

Mutual Fund

12. On 01.07.2005 Mr. A invested in 10,000 units of face value of Rs.10 per unit. On 31.03.2006 dividend was paid @ 10% and annualized yield was 140 %. On 31.03.2007, 20% dividend was given. On 31.03.2008, Mr. A redeemed his all his 11,270.56 units when his annualized yield was 75.45 % over the period of his holding. What are the NAVs as on 31.03.2006, 31.03.2007 and 31.03.2008 ?

Portfolio Management

13. Following information is available on Return (%) of shares of two companies A and B :

Probilities	Return of A	Return of B
0.05	6	8
0.20	12	18
0.50	20	28
0.20	24	34
0.05	30	44

- (i) Compute expected return from the portfolio
- (ii) If the investment in A and B is in the ratio of 70:30 what is the risk of the portfolio ?
14. You have the following five stocks in your portfolio :
- | Security | No of Shares | Price / Share | Beta |
|----------|--------------|---------------|------|
| A | 10000 | 50 | 1.2 |
| B | 5000 | 20 | 2.0 |
| C | 8000 | 25 | 0.7 |
| D | 10000 | 100 | 1.0 |
| E | 500 | 200 | 1.3 |
- (i) Compute portfolio beta
- (ii) How much additional investment is required in Risk free investment to have beta to 0.8 ?
- (iii) How much additional investment is required in Security B to increase beta to 1.4 ?
- (iv) If the Nifty future is 2700 points and future have a contract multiplier of 50, how many future contracts to be hedged to obtain the position as in (iii) above ?
15. Details of portfolio held by your client which yields average return of 14% are given below

Shares	Cost (Rs)	Dividend/ Interest	Market Price	Beta
A	30,000	5000	33000	0.7
B	40,000	4000	42000	0.9
C	20,000	2000	23000	0.8
D	15,000	2250	14000	1.1
Govt. Bond	50,000	5000	52000	1

Find out expected return of each investment using CAPM and average return of the portfolio.

16. An investor is holding 2000 shares of X Ltd. Current year dividend rate is Rs.2 per share. Market price of the share is Rs.30 each. The investor is concerned about several factors are likely to change during the next financial year as indicated below :

	Current Year	Next Year
Dividend paid / anticipated per share (Rs.)	2	1.8
Risk free rate	12%	10%
Market Risk Premium	5%	4%
Beta Value	1.3	1.4
Expected growth	9%	7%

In view of the above, advise whether the investor should buy, hold or sell the shares.

Indian Stock Market

17. From the following data for certain stock, find the value of a call option:

Price of stock now	=	Rs.80
Exercise price	=	Rs.75
Standard deviation of continuously compounded annual return	=	0.40
Maturity period	=	6 months
Annual interest rate	=	12%
Number of S.D. from Mean, (z)	Area of the left or right (one tail)	
0.25	0.4013	
0.30	0.3821	
0.55	0.2912	
0.60	0.2578	

$$e^{0.12 \times 0.05} = 1.0060$$

$$\ln 1.0667 = 0.0645$$

Merger & Acquisition

18. X Ltd is considering merger with Y Ltd to form XY LTD for better advantages in the market. Following are other information :

Particulars	X Ltd.	Y Ltd.
Number of shares outstanding	4,00,000	2,00,000
Earning after taxes	8,00,000	3,00,000
Market Price per share	Rs 30	Rs 15

- (i) What is the pre-merger earnings per share (EPS) and P/E ratios of both the companies?
 - (ii) If the exchange ratio is market price of share, what will be the post-merger EPS ?
 - (iii) What should be the exchange ratio, if X Ltd.'s pre-merger and post-merger EPS are to be the same?
19. R Ltd. is considering taking over S Ltd for better synergy in marketing the products. The Particulars of the companies are give :

	<u>R Ltd.</u>	<u>S Ltd.</u>
EAT (Rs. Lakhs)	20	10
Equity Shares (Rs. Lakhs)	10	6
EPS	3	2
P/E ratio	10	5

Required

- (i) What is the market value of each Company before merger?
 - (ii) Management of R Ltd. assumes that Shareholders of S Ltd. will accept offer of one share of R Ltd. for 3 shares of S Ltd. What will be port Merger Market Value of R Ltd..
 - (iii) Assuming that the merged company will be in a position to elevate its position in the share market so as to maintain the same P/E ratio, what is Port –Merger EPS and price per share ?
 - (iv) What is the gain from the merger in terms of market value of the merged company ?
 - (v) What will be the gain of shareholders of R Ltd in terms of share price ?
20. X Ltd. made an attempt to acquire Y Ltd. Following information is available for both the Companies:

	<u>X Ltd.</u>	<u>Y Ltd.</u>
Price for Share (Rs)	30	20
P/E ratio	5	4
No. of Shares (lakhs) (FV of Rs 10)	3.0	2.0
Reserve & Surplus (Rs lakhs)	30	20
Promoters' holding (lakh shares)	1.2	0.75

Board of Directors of both the Companies have decided that a workable swap ratio is to be based on weights of 30%, 30% and 40% respectively for Earning, Book Value and Market Price of share of each company. Find out the following :

- (i) Swap ratio
- (ii) After merger, Promoter's holding %
- (iii) Post merger EPS
- (iv) Gain in Capital market Value of merged company , assuming Price Earning ratio will remain same

International Financial Market

21. An MNC company in USA has surplus funds to the tune of \$ 10 million for six months. The Finance Director of the company is interested in investing in DM for higher returns. There is a Double Tax Avoidance Agreement (DTAA) in force between USA and Germany. The company received the following information from London:

€/ \$ Spot	0.4040/41
6 months forward	67/65
Rate of interest for 6 months (p.a.)	5.95% – 6.15%
Withholding tax applicable for interest income	22%
Tax as per DTAA	10%

If the company invests in £, what is the gain for the company ?

22. BC Export Co are holding an Export bill in United States Dollar (USD) 1,00,000 due 60 days hence. Rate at which deal was finalized @ Rs.47.50 per USD. The Company is worried about the fluctuating exchange rate. The Firm's Bankers have agreed to make advance against the bill after deduction of interest 9% per annum and also quoted a 60-day forward rate of Rs.48.10. The cost of capital for the exporter is 15% p.a. Advise whether the exporter will agree to the banker's offer.

23. Spot rat 1 US \$ = Rs.47.7123

180 days Forward rate for 1 US \$ = Rs.48.6690

Interest rate in India = 12% p.a

Interest rate in USA = 8% p.a

An arbitrageur takes loan of Rs.40,00,000 from Indian Bank for 6 months and goes for arbitrage. What is his gain or loss ? (Take 1 year = 360 days)

24. An importer customer requested on January 31, 2009 his banker to remit Singapore Dollar (SGD) 30,00,000 under an irrevocable LC. However, due to bank strikes, the bank could effect the remittance only on February 6, 2009. The interbank market rates were as follows:

	January,31	February 6
Bombay US\$1	Rs.47.85/47.90	47.91/47.95

London Pound 1	US\$ 1.7840/1.7850	1.7765/1.7775
Pound 1	SGD 3.1575/3.1590	3.1380/3.1390

The bank wishes to retain an exchange margin of 0.125%. How much does the importer stand to gain or lose due to the delay in remittance ?

25. Write Short Note on a) Debt Securitization b) Insider Trading c) REPO and REVERSE REPO d) Foreign Exchange Rate Risk

SUGGESTED ANSWERS/HINTS

1.

Year	0	1	2	3	4	5	6	7	Total
Units of Production		1200	1200	1500	1600	2000	2000	1600	
	Rs. lakhs ----->								
Sales Value		180.0	180.0	225.0	240.0	300.0	300.0	240.0	
Variable Product cost		36.0	36.0	45.0	48.0	60.0	60.0	48.0	
Fixed product Overheads		15.0	15.0	15.0	15.0	15.0	15.0	15.0	
Sales Promotion exp		20.0	20.0	15.0	15.0	15.0	15.0	15.0	
Depreciation		104.0	83.2	66.6	53.2	42.6	34.1	27.3	
EBIT (Sales – Cost)		5.0	25.8	83.4	108.8	167.4	175.9	134.7	
Less Tax		0.0	9.0	29.2	38.1	58.6	61.6	47.2	
EAT		5.0	16.8	54.2	70.7	108.8	114.3	87.6	
Add : Depreciation		104.0	52.0	52.0	52.0	52.0	52.0	52.0	
Salvage Value								109.1	
Total Cash inflow		109.0	68.8	106.2	122.7	160.8	166.3	248.6	
Cash Out flow	600								
Net Cash Flow	-600	109.0	68.8	106.2	122.7	160.8	166.3	357.7	
DCF @ 12%	-600	97.3	54.8	75.6	78.0	91.2	84.3	161.8	43.1

As the net discounted cash flow has positive value, the project is to be accepted.

Working Note :

Rs Lakhs

Year	1	2	3	4	5	6	7
Machine Value	520	416	332.8	266.2	213	170.4	136.3
Depreciation	104	83.2	66.6	53.2	42.6	34.1	27.2
Salvage Value							109.1

2.

Present value (Rs. lakhs)

Cost of new Machine	=	9.0000
Repair cost @ Rs.1.00 lakhs (1x4.4873)	=	4,4873

Less Salvage value Rs.2.00 x 0.3269 = -0.6538

Total 12.8335

Equivalent annual cost for new machine for 8 years = $(12,8335/4.4873) = \text{Rs. } 2,86,000$

(Rs. lakhs)

Existing machine					
Depreciation	2.5	1	0.5	1	
Maintenance	1	2	3	4	
Total Cost	3.5	3	3.5	5	
PV factor	0.8696	0.7561	0.6575	0.5718	3.855
Present value (B)	3.04	2.27	2.30	7.61	15.23
EAV (=15.23/3.855)					3.94981

EAV of cost of existing machine is Rs.3,94,981 which is higher new one.

Hence, the same is to be replaced.

3.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Proposal I : Buying						
Loan repayment (A)	10.00	10.00	10.00	10.00	10.00	
Interest (B)	7.50	6.00	4.50	3.00	1.50	
Depreciation (C)	12.50	9.38	7.03	5.27	3.96	
Tax advantage @ 40% on Int & Depr (D)	8.00	6.15	4.61	3.31	2.18	
Salvage value of machine (E)					6.00	
Net cash outflow (A+B -D -E)	9.50	9.85	9.89	9.69	3.32	
Present value factor	1.00	0.870	0.756	0.658	0.572	
Discounted Present value	9.50	8.57	7.48	6.38	1.90	33.82

Proposal II : Lease

Rent	12.00	12.00	12.00	12.00	12.00	
Tax advantages on rent	4.80	4.80	4.80	4.80	4.80	
Cash outflow	7.20	7.20	7.20	7.20	7.20	
Present value factor	1.00	0.870	0.756	0.658	0.572	
Discounted Present value	7.20	6.26	5.44	4.74	4.12	27.76

As the NPV of cash outflow in case of lease is lower, the proposal II may be accepted.

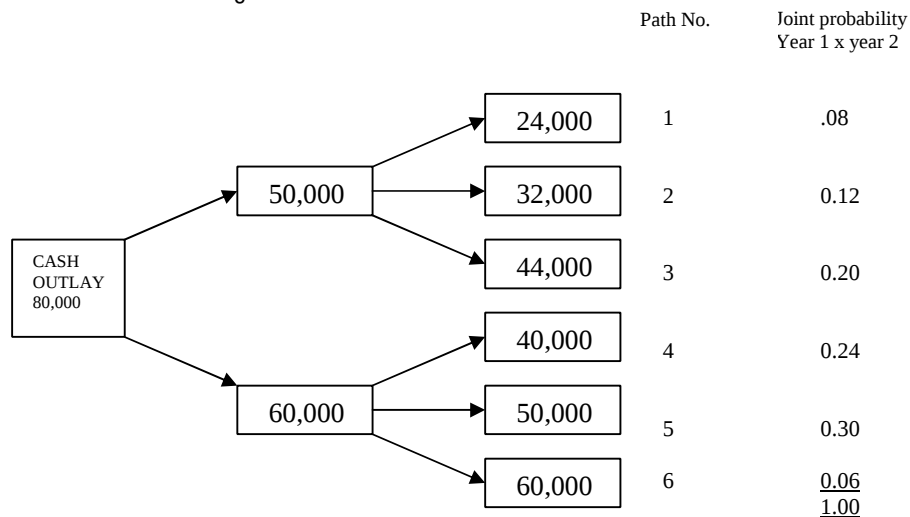
4.

	Year 0	Year 1	Year 2	Year 3	Total
In case of Purchase					
Sale price (A)	600				600
Depreciation		200	200	200	
Tax Shield @ 35%		70	70	70	
PV factor @ 10%		0.9091	0.8264	0.7513	
Present value (B)		63.64	57.85	52.59	174.08
If purchased, net cash outflow (A-B)					425.92
In case of Lease					
Lease rent		3x	2x	1x	
Post tax cash flow @ (1-35%) i.e 65%		1.95x	1.30x	0.65x	
Present Value		1.7727x	1.0743x	0.4884x	3.3354x

Thus, $3.3354x = 425.92$ i.e $x = 127.70$

Therefore, 3 years lease rent will be Rs.383.10, Rs.255.40, Rs.127.70

5. The decision tree diagram is presented in the chart, identifying various paths and outcomes, and the computation of various paths/outcomes and NPV of each path are presented in the following tables:



The Net Present Value (NPV) of each path at 10% discount rate is given below:

Path	Year 1 Cash Flows (Rs.)	Year 2 Cash Flows (PV) (Rs.)	Total Cash Inflows (Rs.)	Cash Inflows (Rs.)	NPV (Rs.)
1	$50,000 \times .909 = 45,450$	$24,000 \times .826 = 19,824$	65,274	80,000	- 14,726
2	45,450	$32,000 \times .826 = 26,432$	71,882	80,000	- 8,118
3	45,450	$44,000 \times .826 = 36,344$	81,794	80,000	1,794
4	$60,000 \times .909 = 54,540$	$40,000 \times .826 = 33,040$	87,580	80,000	7,580
5	54,540	$50,000 \times .826 = 41,300$	95,840	80,000	15,840
6	54,540	$60,000 \times .826 = 49,560$	1,04,100	80,000	24,100

Statement showing Expected Net Present Value Rs

	NPV(Rs.)	Joint Probability	Expected NPV
1	—14,726	0.08	—1,178.08
2	—8,118	0.12	—974.16
3	1,794	0.20	358.80
4	7,580	0.24	1,819.20
5	15,840	0.30	4,752.00
6	24,100	0.06	<u>1,446.00</u>
			<u>6,223.76</u>

Conclusions:

- (ii) If the worst outcome is realized the project will yield NPV of – Rs.14,726. The probability of occurrence of this NPV is 8% and a loss of Rs.1,178 (path 1).
- (iii) The best outcome will be path 5 when the NPV is at Rs.15,840. The probability of occurrence of this NPV is 30% and a expected profit of Rs.4,752.
- (iv) The project should be accepted because the expected NPV is positive at Rs.6,223.76 based on joint probability.

6.
$$YTM = \frac{\text{Coupon} + \text{pro} - \text{rated Discount or premium}}{(\text{Redemption price} + \text{Purchase Price})/2}$$

After Tax Coupon = $9 \times (1 - 0.30) = 6.3 \%$

After Tax redemption Price = $105 - (15 \times 0.10) = \text{Rs.}103.50$

After Tax Capital gain = $103.5 - 90 = \text{Rs.}13.5$

$$YTM = \frac{6.3 + 13.5/5}{(103.5 + 90)/2} = 9.00/96.75 = 9.30\%$$

7. Present state of affairs

EPS = Market Price / PE ratio = 300/20 = Rs 15 lakhs

Return on Equity = 7.5%

EAT = 15 lakhs

Debenture Interest = 72 lakhs

Let X = EBIT

$$(X - 72) \times 0.60 = 15$$

$$0.60 X = 15 + 72 \times 0.60$$

$$X = 25 + 72 = 97$$

After Expansion Programme :

Let New Equity issue = E

New Debenture issue = D

$$E + D = 300$$

New expected return on Equity = 7.5 (1.2) = 9%

$$\text{Equity Return} = (300 + E) \times 0.09 = 27 + 0.09E$$

$$\text{Debenture Interest} = (600 + D) \times 0.12 = 72 + 0.12 D$$

$$\text{New EBIT} = 97 + 60 = 157$$

$$\begin{aligned} \text{Or EAT} &= (157 - 72 - 0.12 D) \times 0.60 = (85 - 0.12 D) \times 0.60 \\ &= 51 - 0.072 D \end{aligned}$$

$$\text{Thus, } 51 - 0.072 D = 27 + 0.09 E$$

$$\text{Or } 24 - 0.072 D = 0.09 (300 - D)$$

$$\text{Or } 24 - 0.072 D = 27 - 0.09 D$$

$$\text{Or } 0.018 D = 3$$

$$\text{Or } D = 3 / 0.018 = 166.67 \text{ lakhs}$$

$$\text{Or } E = 133.33 \text{ lakhs}$$

Thus, proposed Equity Issue = Rs.133.33 and Debenture issue = Rs.166.67 lakhs

8. (i) According to Walter's model,

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

$$= [2.4 + (4 - 2.4) \times (0.15/0.12)] / 0.12 = 4.4 / 0.12 = \text{Rs } 36.67$$

(ii) Let Payout ratio is x

$$\text{Then, } 40 = \{4X + (4 - 4X) \times (0.15/0.12)\} / 0.12$$

Or $4.8 = 4X + 5 - 5X$

Or $X = 0.2$

Thus, required Payout ratio is 20%.

(i) According to Walter's model, when return on investment is more than the cost of equity price of share increases as dividend pay out ratio decreases. Hence, optimum pay out ratio in the present case should be nil.

(ii) At nil payout ratio, $P = \{ 4 \times 0.15 / 0.12 \} / 0.12 = \text{Rs } 41.66$

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

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

Or $150 = (P_1 + D_1) / (1 + K_e)$

Or $150 = (P_1 + 8) / (1 + 0.12)$

Or $168 = P_1 + 8$

Or $P_1 = 160$

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

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

Or $150 = (P_1 + 0) / (1 + K_e)$

Or $150 = (P_1) / (1 + 0.12)$

Or $P_1 = 168$

It is assumed that there is no retained fund. For raising fund, equity shares to be issued at fair price as calculated above.

(ii) Fund required = Rs.(500 -180) = Rs.320 lakhs

(a) If dividend is declared

No of shares to be issued = $320,00,00,000 / 168 = 1,90,476$

(b) If dividend is not declared

No of shares to be issued = $320,00,000 / 160 = 2,00,000$

10.

Rs.

Average level of Receivables = $900,00,00,000 \times 0.80 \times 30/360$	60,00,000
Interest on advance @ 1% per month	60,000
Factoring Commission fees = $60,00,000 \times 2/100$	1,20,000
Average amount available as advance	58,20,000

Annual Cost of Factoring to the Firm:

Factoring commission 720,00,000 x 2%	14,40,000
Interest charges 58,20,000 x 12%	6,98,400
Total Cost	21,38,400
Firm's Savings on taking Factoring Service:	Rs.
Cost of credit administration	5,00,000
Cost of Bad Debts 1 % of Rs.720,00,000	7,20,000
Total Saving	12,20,000

Net cost to the Firm 9,18,400

Effective rate of interest = 9,18,400/58,20,000 15.78%

As the effective rate is less than interest rate on working capital from bank is higher, the offer from factor should be accepted.

$$11. \text{ Effective interest rate} = \frac{F - P}{P} \times \frac{12}{M} \times 100$$

Where, F = Value of the fund

P = Price

M = Maturity period in months

$$= [(1,00,000 - 97,000) / 97000] \times 12/3 \times 100 = 12.37\%$$

Cost of Fund = Effective interest rate + brokerage + Rating + Stamp duty

$$= 12.37 + 0.12 + 0.50 + 0.12 = 13.11 \%$$

$$12. \text{ Yield for 9 months (01.07.2005 to 31.03.2006)} = 140 \times 9/12 = 105 \%$$

Amount receivable as on 31.03.2006 = Rs.1,00,000 x 2.05 = Rs.2,05,000

Dividend paid = Rs.10,000

Therefore NAV as on 31.03.2006 = Rs.(2,05,000 – 10,000) / 10,000 = Rs.19.50

Units as on 31.03.2006 = 2,05,000/19.50 = 10,512.82

Dividend received on 31.03.2007 = 10512.82 x 10 x 0.20 = Rs.21025.64

Therefore NAV as on 31.03.2007 = Rs.21025.64 / (11,270.56 - 10512.82)

$$= \text{Rs.27.75}$$

NAV as on 31.03.2008 = Rs.{1,00,000 + (1,00,000 x 75.45 x 33/12)} / 11,270.56

$$= \text{Rs.27.28}$$

13 (i) For Share A

Prob p	Return (RA)	of A R = RA x p	Deviation DA = RA -R	DA ²	DA ² x p
0.05	6	0.3	-13	169	8.45
0.20	12	2.4	-7	49	9.80
0.50	20	10.0	1	1	0.50
0.20	24	4.8	5	25	5.00
0.05	30	1.5	11	121	6.05
Total		19.0			29.80

Std Deviation = $\sqrt{29.80} = 5.46 \%$

For A : Expected Return = 19%, Std Deviation = 5.46 %

For Share B :

Prob p	Return of B (RB)	R = RB x p	Deviation DB = RB -R	DB ²	DB ² x p
0.05	8	0.4	-19	361	18.05
0.20	18	3.6	-9	81	16.20
0.50	28	14.0	1	1	0.50
0.20	34	6.8	7	49	9.80
0.05	44	2.2	17	289	14.45
Total		27.0			59.00

Std Deviation = $\sqrt{59.00} = 7.68 \%$

For B : Expected Return = 27%, Std Deviation = 7.68%

Prob p	DA	DB	DA x DB	PX DA x DB
0.05	-13	-19	247	12.35
0.20	-7	-9	63	12.60
0.50	1	1	1	0.50
0.20	5	7	35	7.00
0.05	11	17	187	9.35
Total				Cov _{AB} =41.80

$$\text{Corr}_{AB} = \text{Cov}_{AB} / (\sigma_A \times \sigma_B) = 41.80 / (5.46 \times 7.68) = 41.80 / 41.9328 = 0.9968$$

(ii) Risk of the portfolio at 70:30 ratio =

$$\begin{aligned}
 &= \sigma_p = \sqrt{X_A^2 \sigma_A^2 + X_B^2 \sigma_B^2 + 2X_A X_B (\sigma_A \sigma_B \sigma_{AB})} \\
 &= [(0.7)^2 (5.46)^2 + (0.3)^2 (7.68)^2 + 2 \times (5.46) \times (7.68) (0.9968)]^{0.5} \\
 &= [29.80 \times 0.49 + 59 \times 0.09 + 2 \times 8.778] = 37.468^{0.5} = 6.12
 \end{aligned}$$

14 (i)

Security	No of Shares	Price / Share	Beta (B)	Market Value (Rs'000)	Weight (W)	W x B
A	10000	50	1.2	500	0.5	0.60
B	5000	20	2.0	100	0.1	0.20
C	8000	25	0.7	200	0.2	0.14
D	10000	100	1.0	100	0.1	0.10
E	500	200	1.3	100	0.1	0.13
Total				1000	1.0	1.17

Portfolio beta = 1.17

(ii) To bring portfolio beta = 0.8

Let the additional investment in risk-free securities with weight W_r i.e Total weight = $(1 + W_r)$

Then we have,

$$[W_A \times 1.2 + W_B \times 2.0 + W_C \times 0.7 + W_D \times 1.0 + W_E \times 1.3] / (1 + W_r) + W_r \times 0 / (1 + W_r) = 0.8$$

$$\text{Or } 1.17 / (1 + W_r) = 0.8$$

$$\text{Or } 1.17 = 0.8 (1 + W_r)$$

$$\text{Or } 0.8 W_r = 0.37$$

$$\text{Or } W_r = 0.4625$$

Thus additional investment required in Risk free security is Rs 462,500

(iii) To bring portfolio beta = 1.4

Let the additional investment in security B with weight W_b i.e total weight = $(1 + W_b)$

Then we have,

$$[W_A \times 1.2 + (W_B + W_b) \times 2.0 + W_C \times 0.7 + W_D \times 1.0 + W_E \times 1.3] / (1 + W_b) = 1.4$$

$$\text{Or } \{(W_A \times 1.2 + W_B \times 2.0 + W_C \times 0.7 + W_D \times 1.0 + W_E \times 1.3)\} / (1 + W_b) + (W_b \times 2.0) / (1 + W_b) = 1.4$$

$$\text{Or } 0.17 + W_b \times 2.0 = 1.4 (1 + W_b)$$

$$\text{Or } 0.6 W_b = 0.23$$

$$\text{Or } W_b = 0.383334$$

Additional investment required in Security B = Rs 383,334

(iv) This Rupee value is to be hedged.

$$\text{Rupee Value of one Future contract} = \text{Index Value} \times \text{multiplier} = 2700 \times 50 = 135000$$

No of Future Contracts

$$= (\text{Beta of portfolio} \times \text{additional investment}) / \text{Rupee Value of Future contract}$$

$$= 1.17 \times 383,334 / 135000$$

$$= 3 \text{ (rounded)}$$

15.

Shares	Cost (Rs)	Dividend (Rs)	Market Value (Rs)	Capital Gain (Rs.)	
A	30,000	5000	33,000	3,000	0.7
B	40,000	4000	42,000	2,000	0.8
C	20,000	2000	23,000	3,000	0.9
D	15,000	2250	14,000	-1,000	1.1
Govt. bond	50,000	5000	52,000	2,000	1.0
Total	165,000	18250	1,74,000	9,000	4.5

$$\text{Expected Return} = \frac{-\text{Dividend} + \text{Capital Appreciation}}{\text{Investment}}$$

$$= (18250 + 9,000) / 165000 = 16.52 \%$$

$$\text{Average beta} = 0.90$$

$$\text{Avg. Return} = \text{Risk free return} + \text{Avg. Beta} (\text{Expected Return} - \text{Risk free Return})$$

$$\text{Or } 0.14 = R_f + 0.90 (0.1652 - R_f)$$

$$\text{Or } 0.10 R_f = 0.1486 - 0.14$$

$$\text{Or } R_f = 8.6 \%$$

$$\text{Expected Rate of Return of Individual security} = K_e = R_f + \beta (K_m - R_f)$$

A	$8.6 + 0.7 (16.52 - 8.6) =$	14.45
B	$8.6 + 0.8 (16.52 - 8.6) =$	14.94
C	$8.6 + 0.9 (16.52 - 8.6) =$	15.73
D	$8.6 + 1.1 (16.52 - 8.6) =$	17.71
Govt. bond	$8.6 + 1.0 (16.52 - 8.6) =$	16.52
Expected return of the Portfolio = 15.81 %		

16. Existing Return rate = $R_f + \text{Beta} (R_m - R_f) = 12 + 1.3(5) = 18.5 \%$

Expected Return rate in changed one = $R_f + \text{Beta} (R_m - R_f) = 10 + 1.4 (4) = 15.6 \%$

Price of the share at current market condition = $P_0 = D (1+g) / (K_e - g)$

$$= 2 \times 1.09 / (.185 - .09) = 2.18 / 0.095 = \text{Rs.}22.95$$

Price of the share at changed market condition = $P_0 = D (1+g) / (K_e - g)$

$$= 1.8 \times 1.07 / (.156 - .07) = 1.93 / 0.086 = \text{Rs.}22.44$$

Market Price of share of Rs.30 is higher in comparison to possible current equilibrium price of Rs.22.95 and revised equilibrium price of Rs.22.44.

Under the situation, investor should sell the shares.

17. Applying the Black Scholes Formula,

Value of the Call option now:

The Formula $C = SN(d_1) - K_e^{(-rt)} N(d_2)$

$$d_1 = \ln(S/K) + (r + \sigma^2 / 2)t$$

$$d_2 = d_1 - \sigma \sqrt{t}$$

Where,

C = Theoretical call premium

S = Current stock price = 80

t = time until option expiration = 0.5

K = option striking price = 75

r = risk-free interest rate = 12%

N = Cumulative standard normal distribution

e = exponential term

σ = Standard deviation of continuously compounded annual return.

ln = natural logarithm

$$d_1 = \frac{\ln(1.0667) + (12\% + (0.08)^{0.5})}{.40\sqrt{0.5}}$$

$$= \frac{0.0645 + (0.2)^{0.5}}{0.40 \times 0.7071}$$

$$= \frac{0.1645}{0.2828} = 0.5817$$

$$d_2 = 0.5817 - 0.2828 = 0.2989$$

$$\text{Price} = SN(d_1) - K_e^{(-rt)} N(d_2)$$

$$Nd_1 = N(0.5817) = 0.7190 + 0.000578 = 0.7195$$

$$Nd_2 = N(0.2989) = 0.6141 + 0.003382 = 0.6175$$

$$\begin{aligned} \text{Value of call option} &= 80 \times 0.7195 - (75 / 1.0060) \times 0.6175 \\ &= 57.56 - 74.55 \times 0.6175 \\ &= 57.56 - 46.04 = \text{Rs.11.52} \end{aligned}$$

18. (i) Pre-merger EPS and P/E ratios of X Ltd. and Y Ltd.

Particulars	X Ltd.	Y Ltd.
EAT	8,00,000	3,00,000
Number of shares outstanding	4,00,000	2,00,000
EPS	2	1.5
Market Price per share	30	15
P/E Ratio (times)	15	10

- (ii) Y Ltd will be issues 1 share for each 2 shares.

$$\text{Post merger, No of Shares of XY Ltd} = (4,00,000 + 2,00,000 \times \frac{1}{2}) = 5,00,000$$

$$\text{Post merger EPS} = (\text{Rs } 11,00,000 / 5,00,000) = 2.20$$

- (iii) To keep Post merger EPS same with pre merger EPS, desired exchange ratio is as follows :

$$\begin{aligned} \text{Total number of shares in post-merged company should be} &= 11,00,000 / 2 \\ &= 5,50,000 \end{aligned}$$

$$\text{Number of shares required to be issued to Y Ltd} = 5,50,000 - 4,00,000 = 1,50,000$$

$$\text{Therefore, the exchange ratio is } 1,50,000 : 2,00,000 = 0.75$$

- 19.

	<u>R Ltd.</u>	<u>S Ltd.</u>
No of Shares (Lakhs)	10	6
EPS (Rs.)	3	2

Earning	30	12
P/E ratio	10	5
Market Price per share (Rs)	30	10
Total Market Value (Rs)	3,00,00,000	60,00,000

Port Merger

No of Shares to be issued to Shareholders of S Ltd. = $6,00,000/3 = 2,00,000$.

Total no. of Shares (Lakh) = 12

Total earning Rs. Lakh = $30 + 12 = 42$

EPS = $\frac{42}{12} = 3.5$

If P/E ratio remains the same value

P/E ratio = 10

Price of Share = 35

Market value of R Ltd. = $12 \text{ lakh} \times \text{Rs.}35 = 420 \text{ lakhs}$.

Gain in market value of merger Company = $420 - 360 = 60 \text{ lakh}$.

Share value of Shareholders of R Ltd = $2 \text{ lakhs} \times \text{Rs.}35 = \text{Rs.}70 \text{ lakhs}$.

Gain of shareholders of R Ltd = $\text{Rs.}(70-60) \text{ lakhs} = \text{Rs.}10 \text{ lakhs}$

% gain of shareholders of R Ltd = $10/60 = 16.67 \%$

20.

	X Ltd.	Y Ltd.
No. of shares (lakhs)	3	2
Share Capital (Rs Lakhs)	30	20
P/E ratio	5	4
Market Price per share (Rs)	30	20
EPS (Rs)	6	5
Profit (Rs lakhs)	18	10
Reserves and surplus (Rs lakhs)	30	20
Share Capital + Reserve & Surplus	60	40
Book Value per share (Rs)	20	20
Market Capitalization value (Rs lakhs)	90	40

Swap ratio :

Weight for X Ltd = $6 \times 0.30 + 20 \times 0.30 + 30 \times 0.40 = 19.8$

Weight for Y Ltd = $5 \times 0.30 + 20 \times 0.30 + 20 \times 0.40 = 15.5$

Thus, the Swap ratio is 29.8 : 15.5

Shares to be issued to shareholders of Y Ltd = $(2,00,000 \times 15.5 / 19.8)$
 = 1,56,566 shares

Total shares after merger = $3,00,000 + 1,56,566 = 4,56,566$

No of shares to be received by promoters of Y Ltd = $75,000 \times 15.5 / 19.8 = 58,712$

Promoter's holding : No of shares = $(1,00,000 + 58,712) = 1,58,712$

Promoter's holding % = $1,58,712 / 4,56,566 = 34.76\%$

EPS = Total Profit / No of shares = $(18,00,000 + 10,00,000) / 4,56,566 = 6.13$

Market Capitalization of A Ltd (after acquisition) = Price per share x No of shares

= EPS x PE ratio x No of shares

= $6.13 \times 5 \times 4,56,566 = \text{Rs.} 1,39,93,748$

Premarmer market capitalization value of both firms = 130 lakhs

Gain in market capitalization = Rs.9,93,748

21. \$ 10 million converted @ € 0.4040/\$ = $\$10,000,000 \times 0.4040 = \text{€ } 4,040,000$ and invested @ 5.95% for 6 months in Luxemburg will fetch :

€ 4,040,000 $(1 + 0.0595/2)$ = € 4,160,190

Interest earned = € $(4,160,190 - 4,040,000) = \text{€} 120,190$

Withholding Tax @ 10% (in view of DTAA) = €12,019

Net interest eligible for repatriation = €108,171

Amount repatriated after 6 months = €108,171 + €4,040,000 = €4,148,171

Amount received at the forward rate of € 0.3976/\$ = $\text{€} 4,148,171 / 0.3976 = \$10,433,026$

Additional amount fetched = $\$10,433,026 - \$10,000,000 = \$ 433,026$.

22. Rs.

Value of the export in INR	47,50,000
Interest @ 1.5% for 60 days	71,250
Net Amount to be received	46,78,750
Cost of the fund @ 15% p.a for 2 months	1,42,362
Net Saving (cost of fund – interest)	71,112
Difference to be paid after 60 days at forward rate $(48.10 - 47.50) \times 1,00,000$	60,000

Hence the exporter should agree to the offer of his banker.

23.

Amount he receives in dollar = $40,00,000/47.7123$	\$ 83,835.82
Interest earned by him @ 8%	\$ 33,53.43
Net Amount received by him after six months	\$ 87,189.25
After conversion he will receive in Rupees @ Rs.48.6690	Rs.42,43,414
Amount to be paid to Indian Banker with interest for six months	Rs.42,40,000
Gain to the arbitrageur	Rs.3,414

24. Conversion Rate between INR and SGD on 31 January, 2009 :

Pound 1	=	Rs.(1.7850 x 47.90)
Pound 1	=	SGD 3.1575
SGD 1	=	Rs.(1.7850 x 47.90) / 3.1575 = Rs.27.0789
Amount for SGD 30,00,000	=	Rs.8,12,36,700
Add: Exchange margin (0.125%)		Rs.1,01,546
Amount was to be paid on 31 January (a)		Rs.8,13,38,246

Conversion Rate between INR and SGD on 6 February, 2009 :

Pound 1	=	Rs.(1.7775 x 47.95)
Pound 1	=	SGD 3.1380
SGD 1	=	Rs.(1.7775x48.07)/3.1380 = Rs.27.16097
Amount for SGD 30,00,000	=	Rs.8,14,82,911
Add: Exchange margin (0.125%)	=	Rs.1,01,854
Amount paid on 6 February (b)	=	Rs.8,15,84,765
Net loss (b – a)	=	Rs.2,46,519 which is 3.03 %

25. (a) Debt Securitization

Debt Securitization is a process by which financial assets like loan receivables, mortgage backed receivables, credit card balances, hire purchase debtors, lease receivables, trade debtors etc are transformed into securities. It is basically a method of recycling of funds. Assets generating steady cash flow are packaged together and against this asset pools market securities are issues. The process involved three functions :

- (i) Origination : Against a loan, security of this kind of set of assets are placed to the financing company. However, credit worthiness of repayment of loan over its life are to be structured depending on the varying volume of each ingredients in the pool of asset.

- (ii) Pooling : Similar loans or receivables are clubbed together to create an underlying pool of assets. This pool is transferred in favour of SPV (Special purpose vehicle), which acts as a trustee for the investor. Once, the assets are transferred they are held in the organizers portfolio.
- (iii) Securitization : It is job of SPV to structure and issue the securities on the basis of asset pool. The securities carry coupon and expected maturity which can be asset based or mortgage based. These are generally sold to investors through merchant bankers. The investors interested in this type of securities are generally institutional investors like mutual fund, insurance companies etc.
- (b) Insider Trading : Insider trading is buying or selling or dealing in securities of a listed company, by a director, member of management, an employee or any other person such as internal or statutory auditor, agent, analyst consultant etc who have knowledge of material, inside information not available to general public.

The insider trading is illegal as the person concerned, by dint of his access to inside information about the company because of his direct or indirect involvement in the affairs of the company either at operation level or analysis level, makes profit in dealing with shares and other securities on the basis of secret information. This profit is considered to be illegal as the same is at the cost of general investors in the securities of the company and the persons involved in this kind of practice is punishable.

This unethical practice has caused serious concern in India and elsewhere in the world for the investors as the same results in huge losses to common investors and driving them away from capital market. In other words, loss of confidence of investors caused by insider trading has a damaging effect on creation of capital for the growth of corporate world.

(c) REPO and REVERSE REPO

There are money market transactions entered into by players in the money market such as commercial banks, financial institutions, large players like mutual fund but are in restricted use because of policy guidelines of RBI. The word REPO is abbreviation of a repurchase option. An agreement by which a borrower sells certain acceptable securities to a lender against fund received and agrees to reverse the transaction at an agreed future date is the essential feature of a REPO transaction. In essence it is a contract of lending and difference between the prices of securities on two dates will represent the cost of fund which the borrower agrees to bear.

A single transaction as described above is a 'REPO' transaction when viewed from the point of the borrower-seller of securities ; the same transaction when viewed from the point of view of lender-buyer is understood as a 'REVERSE REPO'. Hence,

essentially, there is no difference between “repo” and ‘REVERSE REPO’ transaction excepting that the identification is from a different point of view.

The essential feature of Repo transaction are :

- (i) A financial institution places certain securities (presently restricted to Treasury bills) with the buyer and borrows a certain amount of money.
 - (ii) On a given date specified in advance (between 14 days to 1 year) the entire transaction is reversed.
 - (iii) The difference between the purchase and sale price is the interest or gain to the buyer. Sometimes the seller may also gain from a transaction. This is when the buyer is in need of securities and initiates the transaction.
- (d) Foreign Exchange Rate Risk: This risk relates to the uncertainty attached to the exchange rates between two currencies. For example, the amount borrowed in foreign currency is to be repaid in the same currency or in some other acceptable currency.

Thus if the foreign currency becomes stronger than (say) Indian rupees, the Indian borrower has to repay the loan in terms of more rupees than the rupees he obtained by way of loan. The extra rupees he pays is not due to an increase in interest rate but because of unfavourable exchange rate. Conversely he will gain if the rupee is stronger. The fluctuation in the exchange rate causes uncertainty and this uncertainty gives rise to exchange rate risk.

The following tools are available to cover exchange rate risk:

- (i) Spot contracts.
- (ii) Rupee forward contract.
- (iii) Rupee roll over contract.
- (iv) Cross-currency forward contract.
- (v) Cross currency roll over contract.
- (vi) Cross currency options.
- (vii) Currency futures.
- (viii) Currency and interest rate swaps.
- (ix) Arbitrage.