

PAPER – 2: STRATEGIC FINANCIAL MANAGEMENT

QUESTIONS

Portfolio Management

1. Assuming that two securities X and Y are correctly priced on SML and expected return from these securities are 9.40% (R_x) and 13.40% (R_y) respectively. The Beta of these securities are 0.80 and 1.30 respectively.

Mr. A, an investment manager states that the return on market index is 9%.

You are required to determine,

- (a) Whether the claim of Mr. A is right. If not then what is correct return on market index.
- (b) Risk Free Rate of Return

Foreign Exchange Management

2. The risk free rate of interest rate in USA is 8% p.a. and in UK is 5% p.a. The spot exchange rate between US \$ and UK £ is 1\$ = £ 0.75.

Assuming that interest is compounded on daily basis then at which forward rate of 2 year there will be no opportunity for arbitrage.

Further, show how an investor could make risk-less profit, if two year forward price is 1 \$ = 0.85 £.

Given $e^{0.06} = 0.9413$ & $e^{-0.16} = 0.852$, $e^{0.16} = 1.1735$, $e^{-0.1} = 0.9051$

3. True Blue Cosmetics Ltd. is an old line producer of cosmetics products made up of herbals. Their products are popular in India and all over the world but are more popular in Europe.

The company invoice in Indian Rupee when it exports to guard itself against the fluctuation in exchange rate. As the company is enjoying monopoly position, the buyer normally never objected to such invoices. However, recently, an order has been received from a whole-saler of France for FFr 80,00,000. The other conditions of the order are as follows:

- (a) The delivery shall be made within 3 months.
- (b) The invoice should be FFr.

Since, company is not interested in losing this contract only because of practice of invoicing in Indian Rupee. The Export Manger Mr. E approached the banker of Company seeking their guidance and further course of action.

The banker provided following information to Mr. E.

- (a) Spot rate 1 FFr = ₹ 6.60

(b) Forward rate (90 days) of 1 FFr = ₹ 6.50

(c) Interest rate in India is 9% and in France is 12%.

Mr. E entered in forward contract with banker for 90 days to sell FFr at above mentioned rate.

When the matter come for consideration before Mr. A, Accounts Manager of company, he approaches you.

You as a Forex consultant is required to comment on:

- (i) Whether there is an arbitrage opportunity exists or not.
- (ii) Whether the action taken by Mr. E is correct and if bank agrees for negotiation of rate, then at what forward rate company should sell FFr to bank.

Futures

4. On 31-7-2011, the value of stock index is ₹ 2,600. The risk free rate of return is 9% p.a. The dividend yield on this stock index is as follows:

Month	Dividend Paid
January	2%
February	5%
March	2%
April	2%
May	5%
June	2%
July	2%
August	5%
September	2%
October	2%
November	5%
December	2%

Assuming that interest is continuously compounded daily, then what will be future price of contract deliverable on 31-12-2011.

Given = $e^{0.02417} = 1.02446$.

Leasing

5. XBL leasing Ltd is considering a proposal to lease out a Van to a BPO. The cost of acquisition of Van is ₹ 5,00,000 and it can be leased out at annual rent of ₹ 1,25,000 for a period of 8 years. The lease rent will be received at the end of the year.

You are required to determine

- (a) The Internal Rate of Return of lease proposal.
- (b) If company is interested in earning a rate of return of 20% before taxes and expenses then how much lease rent it should charge from BPO?
- (c) Assuming that:
 - (i) Annual expenses of ₹ 50,000.
 - (ii) Scrap value of Van to be ₹ 1,00,000 after 8 years.
 - (iii) Straight Line Method of depreciation.
 - (iv) Tax rate @ 40%.

Then how much company should charge lease rent to earn a return of 20% (Post Tax).
 Given (PVAF 15%, 8) = 4.344 (PVAF 20%, 8) = 3.837

Economic Value Added

6. The following data pertains to XYZ Inc. engaged in software consultancy business as on 31 December 2010

\$ Million

Income from consultancy	935.00
EBIT	180.00
Less : Interest on Loan	<u>18.00</u>
EBT	162.00
Tax @ 35%	<u>56.70</u>
	<u>105.30</u>

Balance Sheet

(\$ Million)

Liabilities	Amount	Assets	Amount
Equity Stock (10 million share @ \$ 10 each)	100	Land and Building	200
Reserve & Surplus	325	Computers & Softwares	295
Loans	180	Current Assets:	
Current Liabilities	180	Debtors	150
		Bank	100
		Cash	<u>40</u>
	<u>785</u>		<u>290</u>
			<u>785</u>

With the above information and following assumption you are required to compute

- (a) Economic Value Added®
- (b) Market Value Added.

Assuming that:

- (i) WACC is 12%.
- (ii) The share of company currently quoted at \$ 50 each

Options

7. The current spot price of share of ABC Ltd. is ₹ 121.00 with strike price ₹ 125.00 and ₹ 130.00 are trading at a premium of ₹ 3.30 and ₹ 1.80 respectively. Mr. X, a speculator is bullish about the share price over next six months. However, he is also of belief that share price could also go down. He approaches to you for advice, you are required to:
- (a) Suggest a strategy that Mr. X can adopt which puts limit on his gain and loss.
 - (b) How much is maximum possible profit.
 - (c) Draw out a rough diagram of the strategy adopted.
 - (d) What will be break-even price of the share?
- [Assume – No brokerage fees and interest cost/gains].

Mergers and Acquisitions

8. AXE Ltd. is interested to acquire PB Ltd. AXE has 50,00,000 shares of ₹ 10 each, which are presently being quoted at ₹ 25 per share. On the other hand PB has 20,00,000 share of ₹ 10 each currently selling at ₹ 17. AXE and PB have EPS of ₹ 3.20 and ₹ 2.40 respectively.
- You are required to:
- (a) Show the impact of merger on EPS, in case if exchange ratio is based on relative proportion of EPS.
 - (b) Suppose, if AXE quote an offer of share exchange ratio of 1:1, then should PB accept the offer or not, assuming that there will be no change in PE ratio of AXE after the merger.
 - (c) The maximum ratio likely to acceptable to management of AXE.

Dividend Decision

9. X Ltd., just declared a dividend of ₹ 12.50 per share and continuously maintaining a growth rate of 7%. Mr. A is planning to purchase the share of X Ltd. because he is of opinion that growth rate will increase to 8% for next three year. Further, he expects that the market price of share will be ₹ 400 after 3 years.

You are required to determine:

- (a) The maximum amount he should pay for share, if he required a rate of return of 12%.
- (b) What is the maximum price he will be willing to pay for share, if he is of opinion that the 8% growth rate can be maintained indefinitely and require 12% return?
- (c) Suppose that 8% growth rate is achieved, what will be price of share at the end of 3 years, assuming other condition same as mentioned in (b) above.

Capital Budgeting with Risk

10. Neale Tech Plc proposes to launch a new product. The company appointed Kachy Consultants to conduct market study. The consultants suggested that the price of product can be set £36 or £38 or £40 per unit. The company intends to hire a machinery to manufacture the product at £400 000 per annum. However, if annual production exceeds 60 000 units, additional cost of £160 000 per annum will be incurred for hire of machinery. The following data is related to the estimated sale and possible selling prices.

Table I

Selling Price	£36		£38		£40	
	Units					
Pessimistic	70 000	0.3	60 000	0.1	30 000	0.4
Most likely	80 000	0.5	70 000	0.7	60 000	0.5
Optimistic	90 000	0.2	90 000	0.2	70 000	0.1

Table - II

Variable Cost	Prob.
£10	0.6
£12	0.4
	1.00

The company has committed publicity expenditure of £80 000 per annum.

You are required to analyse and advise which selling price shall lead to maximization of profit.

Simulation Analysis

11. A company manufactures 3000 units of 'Product P' per day. The sale of this product depends upon demand which has the following distribution.

Sales(Units)	2700	2800	2900	3000	3100	3200
Prob.	0.10	0.15	0.20	0.35	0.15	0.05

The production cost and sale price of each unit are ₹4 and ₹5 respectively. Any unsold product is to be disposed off at a loss of ₹1.50 per unit. There is a penalty of ₹0.50 per unit if demand is not met.

Using the following random numbers estimate total profits/loss for the company for next 10 days: 11,98,66,97,95, 01, 79,12,17,21.

If the company decides to produce 2900 items per day, what is profit/loss position of the company.

Mutual Fund

12. Mr. X, an investor purchased 200 units of ABC Mutual Fund at rate of ₹ 8.50 p.u., one year ago. Over the year Mr. X received ₹ 0.90 as dividend and had received a capital gains distribution of ₹ 0.75 per unit.

You are required to find out:

- Mr. X's holding period return assuming that this no load fund has a NAV of ₹ 9.10 as on today.
- Mr. X's holding period return, assuming all the dividends and capital gains distributions are reinvested into additional units at average price of ₹ 8.75 per unit.

Valuation

13. Following informations are available in respect of XYZ Ltd. which is expected to grow at a higher rate for 4 years after which growth rate will stabilize at a lower level:

Base year information:

Revenue	- ₹ 2,000 crores
EBIT	- ₹ 300 crores
Capital expenditure	- ₹ 280 crores
Depreciation	- ₹200 crores

Information for high growth and stable growth period are as follows:

	<u>High Growth</u>	<u>Stable Growth</u>
Growth in Revenue & EBIT	20%	10%
Growth in capital expenditure and depreciation	20%	Capital expenditure are offset by depreciation
Risk free rate	10%	9%
Equity beta	1.15	1
Market risk premium	6%	5%

Pre tax cost of debt	13%	12.86%
Debt equity ratio	1 : 1	2 : 3

For all time, working capital is 25% of revenue and corporate tax rate is 30%.

What is the value of the firm?

Valuation of Shares

14. AB Limited's shares are currently selling at ₹130 per share. There are 10,00,000 shares outstanding. The firm is planning to raise ₹2 crores to Finance new project.

Required

What is the ex-right price of shares and value of a right, if.

- (i) The firm offers one right share for every two shares held.
- (ii) The firm offers one right share for every four shares held.
- (iii) How does the shareholder's wealth change from (i) to (ii)? How does right issue increase shareholder's wealth.

Financial Services

15. The credit sales and receivables of M/s M Ltd. at the end of the year are estimated at ₹ 3,74,00,000 and ₹ 46,00,000 respectively.

The average variable overdraft interest rate is 5%. M Ltd. is considering a proposal for factoring its debts on a non-recourse basis at an annual fee of 3% on credit sales. As a result, M Ltd. will save ₹ 1,00,000 per year in administrative cost and ₹ 3,50,000 as bad debts. The factor will maintain a receivables collection period of 30 days and advance 80% of the face value thereof at an annual interest rate of 7%. Evaluate the viability of the proposal.

Bond Valuation

16. XL Ispat Ltd. has made an issue of 14 per cent non-convertible debentures on January 1, 2011. These debentures have a face value of ₹100 and is currently traded in the market at a price of ₹90.

Interest on these NCDs will be paid through post-dated cheques. Interest payments for the first 3 years will be paid in advance through post-dated cheques while for the last 2 years post-dated cheques will be issued at the third year. The bond is redeemable at par on December 31, 2015 at the end of 5 years.

Required :

- (i) Estimate the current yield at the YTM of the bond.
- (ii) Calculate the duration of the NCD.

Efficient Market Hypothesis

17. The closing value of Sensex for the month of October, 2011 is given below:

Date	Closing Sensex Value
1.10.11	2800
3.10.11	2780
4.10.11	2795
5.10.11	2830
7.10.11	2760
10.10.11	2790
11.10.11	2880
12.10.11	2960
13.10.11	2990
14.10.11	3200
17.10.11	3300
18.10.11	3450
19.10.11	3360
20.10.11	3290
21.10.11	3360
24.10.11	3340
25.10.11	3290
27.10.11	3240
28.10.11	3140
31.10.11	3260

You are required to test the weak form of efficient market hypothesis by applying the run test at 5% and 10% level of significance.

Following value can be used :

Value of t at 5% is 2.101 at 18 degrees of freedom

Value of t at 10% is 1.734 at 18 degrees of freedom

Value of t at 5% is 2.086 at 20 degrees of freedom.

Value of t at 10% is 1.725 at 20 degrees of freedom.

Swap

18. Derivative Bank entered into a plain vanilla swap through on OIS (Overnight Index Swap) on a principal of ₹10 crores and agreed to receive MIBOR overnight floating rate for a fixed payment on the principal. The swap was entered into on Monday, 2nd August, 2010 and was to commence on 3rd August, 2010 and run for a period of 7 days.

Respective MIBOR rates for Tuesday to Monday were:

7.75%, 8.15%, 8.12%, 7.95%, 7.98%, 8.15%.

If Derivative Bank received ₹ 317 net on settlement, calculate Fixed rate and interest under both legs.

Notes:

- (i) Sunday is Holiday.
- (ii) Work in rounded rupees and avoid decimal working.

Repurchase of Shares

19. Rahul Ltd. has surplus cash of ₹ 100 lakhs and wants to distribute 27% 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:

- (i) The price at which the shares can be re-purchased, if the market capitalization of the company should be ₹ 210 lakhs after buyback,
 - (ii) The number of shares that can be re-purchased, and
 - (iii) The impact of share re-purchase on the EPS, assuming that net income is the same.
20. Write a short note on
- (a) Financial Lease
 - (b) Difference between Stock Index Future and Equity Option
 - (c) Embedded Derivatives
 - (d) 100% Book Building Process
 - (e) Factors affecting Economic Analysis

SUGGESTED ANSWERS/HINTS

1. Since security market line is graphical present of CAPM. Accordingly,

$$R_p = R_f + \beta_p (R_m - R_f)$$

Where R_p = Return from particular security

β_p = Beta of security

R_m = Market Return

R_f = Risk free Rate of Return

Thus, $R_x = 9.40 = R_f + 0.80 (R_m - R_f)$ (1)

and

$$R_y = 13.40 = R_f + 1.30 (R_m - R_f) \quad (2)$$

Solving equation (1) & (2) we can find

$$R_f = 3\% \quad \text{and} \quad R_m = 11\%$$

(i) Thus, claim of Mr. A is not correct. The correct rate is 11%.

(ii) Risk Free Rate of Return is 3%.

2. 2 year Forward Rate will be calculated as follows:

$$F = S e^{(r_{UK} - r_{US})t}$$

Where F = Forward Rate

S = Spot Rate

r_{UK} = Risk Free Rate in UK

r_{US} = Risk Free Rate in US

t = Time

Accordingly,

$$\begin{aligned} F &= 0.75 e^{(0.05 - 0.08)2} \\ &= 0.75 \times 0.9413 \\ &= 0.706 \end{aligned}$$

Thus,

$$1 \text{ US \$} = \text{£ } 0.706$$

If forward rate is 1 UK \$ = 0.85\$ then an arbitrage opportunity exists. Take following steps.

- (a) Should borrow UK £
- (b) Buy US \$
- (c) Enter into a short forward contract on US \$

Accordingly,

The riskless profit would be

- (a) Say borrow £ $0.706e^{-(0.05)(2)} = £ 0.639$ and invest in UK for 2 years.
- (b) Now buy US \$ at US \$ $1e^{-(0.08)2} = US \$ 0.852$, so that after two year it can be used to close out the position.
- (c) After two year the investment in US \$ will become US \$ $0.852 e^{(0.08)(2)} = US \$ 0.852 \times 1.1735 = 1 US \$$
- (d) Sell this US \$ for £ 0.85 and repay loan of £ 0.639 along with interest i.e £ 0.706. Thus arbitrage profit will be
 $US\$ 0.85 - US\$ 0.706 = 0.144 \$$.

3. Invoice amount in Indian Rupee = FFr 80,00,000 x ₹ 6.60
 = ₹ 5,28,00,000

- (i) Interest Rate in India 9% p.a.

Interest Rate in France 12% p.a

The interest rate differential 9% - 12% = 3% (Positive Interest Differential)

$$\begin{aligned}
 \text{Forward Discount} &= \frac{\text{Forward Rate} - \text{Spot Rate}}{\text{Spot Rate}} \times \frac{12}{3} \times 100 \\
 &= \frac{6.50 - 6.60}{6.60} \times \frac{12}{3} \times 100 \\
 &= -6.061 \text{ (Forward Discount)}
 \end{aligned}$$

Since the forward discount is greater than interest rate differential there will be arbitrage inflow into the country (India).

- (ii) The decision taken by Mr. E was not correct because as per Interest Rate Parity Theory, forward rate for sale should be 1 FFr = ₹ 6.65, calculated as follows:

Let F be the forward rate, then as per Interest Rate Parity theory, it should have been as follows:

$$\begin{aligned}
 \frac{F - 6.6}{6.6} \times \frac{12}{3} \times 100 &= -3 \text{ (Interest Differential)} \\
 \frac{F - 6.6}{6.6} &= \frac{-3}{400}
 \end{aligned}$$

$$400F - 2640 = -19.8$$

$$400F = 2659.80$$

$$F = 6.6495 \text{ say } 6.65.$$

4. The duration of future contract is 5 months. The average yield during this period will be :

$$\frac{5\% + 2\% + 2\% + 5\% + 2\%}{5} = 3.2\%$$

As per Cost to Carry model the future price will be

$$F = Se^{(r_f - D)t}$$

Where S = Spot Price

r_f = Risk Free interest

D = Dividend Yield

t = Time Period

Accordingly, future price will be

$$₹ 2,600 e^{(0.09 - 0.032) \times 5/12}$$

$$= ₹ 2,600 e^{0.02417}$$

$$= ₹ 2,600 \times 1.02446$$

$$= ₹ 2663.60$$

5. (i) Let r = IRR then

$$- ₹ 5,00,000 + \sum_{t=1}^8 \frac{₹ 1,25,000}{(1+r)^t}$$

Let us discount the cash flows @ 16%

$$- ₹ 5,00,000 + ₹ 1,25,000 \times 4.344 = + ₹ 43,000$$

Since the value is positive

Let us discount cash flows @ 20%

$$₹ 5,00,000 + ₹ 1,25,000 \times 3.837 = - ₹ 20,375$$

$$\text{IRR (by interpolation)} = 16\% + \frac{43,000 (20\% - 16\%)}{(43,000 + 20,375)} =$$

$$16\% + \frac{43,000}{63,375} \times 4 = 18.71\%$$

- (ii) Desired lease rent (LR_D) = Cost of Van/PVIFA at 20 % for 8 years.

$$LR_D = ₹ 5,00,000/3.837 = ₹ 1,30,310.14$$

- (iii) Desired annual lease rent to earn 20% IRR after taxes:

Let annual lease rent be L

$$PV \text{ factor } [(L - E - D) (1 - t) + D] + (PV \text{ factor} \times SV) = CO$$

$$3.837 [(L - ₹ 50,000 - ₹ 50,000) \times 0.6 + ₹ 50,000] + (0.233 \times ₹ 1,00,000) = ₹ 5,00,000$$

$$3.837 [0.6 L - ₹ 60,000 + ₹ 50,000] + ₹ 23,300 = ₹ 5,00,000$$

$$2.3022 L - ₹ 38,370 + ₹ 23,300 = ₹ 5,00,000$$

$$2.3022 L = ₹ 5,00,000 + ₹ 38,370 - ₹ 23,300; L = ₹ 5,15,070/2.3022 = ₹ 2,23,729.47$$

6. (a) Determination of Economic value added (EVA)

	\$ Million
EBIT	180.00
Less: Taxes @ 35%	<u>63.00</u>
Net Operating Profit after Tax	117.00
Less : Cost of Capital Employed [W. No.1]	<u>72.60</u>
Economic Value Added	<u>44.40</u>

- (b)

	\$ Million
Market value of Equity Stock [W. No. 2]	500
Equity Fund [W. No. 3]	<u>425</u>
Market Value Added	<u>75</u>

Working Notes:

- (1) Total Capital Employed

Equity Stock \$ 100 Million

Reserve and Surplus \$ 325 Million

Loan \$ 180 Million

\$ 605 Million

WACC 12%

Cost of Capital employed \$ 605 Million x 12% \$ 72.60 Million

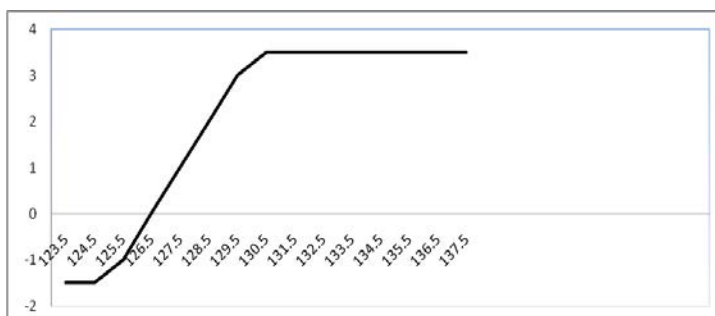
(2)	Market Price per equity share (A)	\$ 50
	No. of equity share outstanding (B)	10 Million
	Market value of equity stock (A) x (B)	\$ 500 Million
(3)	Equity Fund	
	Equity Stock	\$ 100 Million
	Reserve & Surplus	<u>\$ 325 Million</u>
		<u>\$ 425 Million</u>

7. (a) The best strategy for Mr. X would be Long Call Spread. It involves buying of one call option at price of ₹ 125 and selling call option at ₹ 130.
- (b) The pay-off position can be computed as follows.

Price on date of	Pay-off of Buying option	Pay-off of selling option	Net	Premium spread	Net Pay-off
123.50	-	-	-	(1.50)	(1.50)
124.50	-	-	-	(1.50)	(1.50)
125.50	0.50	-	0.50	(1.50)	(1.00)
126.50	1.50	-	1.50	(1.50)	-
127.50	2.50	-	2.50	(1.50)	1.00
128.50	3.50	-	3.50	(1.50)	2.00
129.50	4.50	-	4.50	(1.50)	3.00
130.50	5.50	(0.50)	5.00	(1.50)	3.50
131.50	6.50	(1.50)	5.00	(1.50)	3.50
132.50	7.50	(2.50)	5.00	(1.50)	3.50

Maximum Possible Profit ₹ 3.50

(c)



(d) Break up Price ₹ 126.50 (₹ 125.00 + ₹ 1.50).

$$8. \quad (a) \quad \text{Exchange Ratio} = \frac{\text{₹ 2.40 (EPS of PBLtd.)}}{\text{₹ 3.20 (EPS of AXE Ltd.)}} = 0.75$$

$$\text{Earning of AXE Ltd.} = \text{₹ 3.20} \times 50,00,000 = \text{₹ 1,60,00,000}$$

$$\text{Earning of PB Ltd.} = \text{₹ 2.40} \times 20,00,000 = \text{₹ 48,00,000}$$

$$\text{Combined earnings after merger} = \text{₹ 2,08,00,000}$$

$$\text{Total No. of shares to be issued to PB Ltd. } 0.75 \times 20,00,000 = 15,00,000$$

$$\text{Existing No. of Shares of AXE Ltd.} = \frac{50,00,000}{65,00,000}$$

$$\text{EPS after Merger} = \frac{208,00,000}{65,00,000} = \text{₹ 3.20}$$

Statement showing impact on EPS

	AXE Ltd. ₹	PB Ltd. ₹
EPS before merger	3.20	2.40
EPS after merger (Equivalent in case of PB Ltd.)	3.20	2.40

Thus, there is will be no change in EPS for shareholder of both companies

(b) No. of shares to be issued to AB Ltd. (1:1) 20,00,000

	AXE Ltd.	PB Ltd.
EAT (₹) (A)	160,00,000	48,00,000
No. of Shares (B)	50,00,000	20,00,000
EPS (A)/(B)	3.20	2.40
Market Price Per Share	25	17
PE Ratio	7.8125	7.0833
Market Value of Company AXE Ltd. (50,00,000 x ₹ 25)	₹ 1250 lakh	
PB Ltd. (20,00,000 x ₹ 17)		₹ 340 lakh

Position after Merger

EAT after Merger (₹160 + ₹ 48) lakhs (C)	208,00,000
No. of Shares (50,00,000 +20,00,000) (D)	70,00,000
EPS after merger (C)/(D) =(E)	208/70
PE Ratio of merger company consuming same as a AXE Ltd. (F)	7.8125
MPS (E) x(F) = (G)	23.21
Market Value of Merged Entity = (G) x(D) =(H)	₹1624.70 lakh
Gain from Merger [(H) - ₹1250 lakhs - ₹ 340 lakhs]	34.70 lakhs

Gain to Shareholders of PB Ltd.

	₹ in lakh
Post Merger Value of PB Ltd (20,00,000 x ₹ 23.21)	464.20
Less: Pre Merger Value	340.00
Gain to Shareholders of PB Ltd.	124.20

Thus PB Ltd. should accept the offer.

(c) Maximum share ratio acceptable to AXE Ltd.

	₹ in lakhs
Total market value of merged entity	1625
Less: Minimum value acceptable to AXE Ltd.	<u>1250</u>
Post merger value of PB Ltd.	<u>375</u>
Since post merger value of PB Ltd. remains unchanged, thus ₹ 25 (MPS) to remain intact	
Thus, number of equity shares to be issued to PB Ltd. $\left(\frac{₹ 375 \text{ lakhs}}{₹ 25} \right)$	15,00,000
Existing number of share of PB Ltd.	20,00,000
Share exchange ratio	0.75 : 1

Thus, the maximum exchange ratio acceptable to share holders of AXE Ltd. is 0.75 shares for every share of PB Ltd.

9. (a) Expected dividend for next 3 years.

Year 1 (D_1) ₹ 12.50 (1.08) = ₹ 13.50

Year 2 (D_2) ₹ 12.50 (1.08)² = ₹ 14.58

Year 3 (D_3) ₹ 12.50 (1.08)³ = ₹ 15.75

Required rate of return = 12% (K_e)

Market price of share after 3 years = (P_1) = ₹ 400

The present value of share

$$P_0 = \frac{D_1}{(1+K_e)} + \frac{D_2}{(1+K_e)^2} + \frac{D_3}{(1+K_e)^3} + \frac{P_1}{(1+K_e)^3}$$

$$P_0 = \frac{13.50}{(1+0.12)} + \frac{14.58}{(1+0.12)^2} + \frac{15.75}{(1+0.12)^3} + \frac{400}{(1+0.12)^3}$$

$$P_0 = 13.50(0.893) + 14.58(0.797) + 15.75(0.712) + 400(0.712)$$

$$P_0 = 12.06 + 11.62 + 11.21 + 284.80$$

$$P_0 = ₹ 319.69$$

- (b) If growth rate 8% is achieved for indefinite period, then maximum price of share should Mr. A willing to pay

$$P_0 = \frac{D_1}{(k_e - g)} = \frac{₹ 13.50}{0.12 - 0.08} = \frac{₹ 13.50}{0.04} = ₹ 337.50$$

- (c) Assuming that conditions mentioned above remains same, the price after (expected) 3 year will be:

$$P_3 = \frac{D_4}{k_e - g} = \frac{D_3(1.08)}{0.12 - 0.08} = \frac{15.75 \times 1.08}{0.04} = \frac{17.01}{0.04} = ₹ 425.25$$

10. In the given case, the selling price may be £36 or £38 or £40, and the variable cost of production may be £10 or £12. This would affect the contribution per unit. The entire information can be presented as follows:

If Variable Cost = £10, then contribution is £26 or £28 or £30

If Variable Cost = £12, then contribution £24 or £26 or £28.

The total expenses are: £400 000 + £80 000 = £480 000

or, : £400 000 + £160 000 + £80 000 = £640 000.

Units	Contribution per unit	Total Contribution	Expenses	Net Income	Probability	Exp. Value of Contribution
Selling price £36:		£	£	£		£
70 000	26	1 820 000	640 000	1 180 000	0.3×0.6=0.18	212 400
	24	1 680 000	640 000	1 040 000	0.3×0.4=0.12	124 800
80 000	26	2 080 000	640 000	1 440 000	0.5×0.6=0.30	432 000
	24	1 920 000	640 000	1 280 000	0.5×0.4=0.20	256 000
90 000	26	2 340 000	640 000	1 700 000	0.2×0.6=0.12	204 000
	24	2 160 000	640 000	1 520 000	0.2×0.4=0.08	121 600
						<u>1 350 800</u>
Selling price £38:						
60 000	28	1 680 000	480 000	1 200 000	0.1×0.6=0.06	72 000
	26	1 560 000	480 000	1 080 000	0.1×0.4=0.04	43 200
70 000	28	1 960 000	640 000	1 320 000	0.7×0.6=0.42	554 400
	26	1 820 000	640 000	1 180 000	0.7×0.4=0.28	330 400

90,000	{	28	2 520 000	640 000	1 880 000	$0.2 \times 0.6 = 0.12$	225 600
		26	2 340 000	640 000	1 700 000	$0.2 \times 0.4 = 0.08$	136 000
							<u>1 361 600</u>
Selling Price £40:							
30 000	{	30	900 000	480 000	420 000	$0.4 \times 0.6 = 0.24$	100 800
		28	840 000	480 000	360 000	$0.4 \times 0.4 = 0.16$	57 600
60 000	{	30	1 800 000	480 000	1 320 000	$0.5 \times 0.6 = 0.30$	396 000
		28	1 680 000	480 000	1 200 000	$0.5 \times 0.4 = 0.20$	240 000
70 000	{	30	2 100 000	640 000	1 460 000	$0.1 \times 0.6 = 0.06$	87 600
		28	1 960 000	640 000	1 320 000	$0.1 \times 0.4 = 0.04$	52 800
							<u>9,34,800</u>

The expected value of profit is maximum at the selling price of £38. So the firm should fix up the price at £38.

11. Assignment of Random Number.

Sales (Units)	Prob.	Cumulative Prob.	Random Number assigned.
2700	0.10	0.10	00-09
2800	0.15	0.25	10-24
2900	0.20	0.45	25-44
3000	0.35	0.80	45-79
3100	0.15	0.95	80-94
3200	0.05	1.00	95-99

Statement Showing Profit/Loss position on Producing 3000 items and 2900 items per day.

Day	Random Number	Estimated Sales	Profit/Loss today when production = 3000 per day	Profit/loss per day when Production = 2900 item per day
1	11	2800	$2800 \times 1 - 200 \times 1.50 = 2500$	$2800 \times 1 - 100 \times 1.50 = 2650$
2	98	3200	$3000 \times 1 - 200 \times 0.50 = 2900$	$2900 \times 1 - 300 \times 0.50 = 2750$
3	66	3000	$3000 \times 1 = 3000$	$2900 \times 1 - 100 \times 0.50 = 2850$
4	97	3200	$3000 \times 1 - 200 \times 0.50 = 2900$	$2900 \times 1 - 300 \times 0.50 = 2750$
5	95	3200	$3000 \times 1 - 200 \times 0.50 = 2900$	$2900 \times 1 - 300 \times 0.50 = 2750$
6	01	2700	$2700 \times 1 - 300 \times 1.50 = 2250$	$2700 \times 1 - 200 \times 1.50 = 2400$
7	79	3000	$3000 \times 1 = 3000$	$2900 \times 1 - 100 \times 0.50 = 2850$
8	12	2800	$2800 \times 1 - 200 \times 1.50 = 2500$	$2800 \times 1 - 100 \times 1.50 = 2650$
9	17	2800	$2800 \times 1 - 200 \times 1.50 = 2500$	$2800 \times 1 - 100 \times 1.50 = 2650$
10	21	2800	$2800 \times 1 - 200 \times 1.50 = 2500$	$2800 \times 1 - 100 \times 1.50 = 2650$
			<u>26,950</u>	<u>26,950</u>

The total profit for next 10 days will be ₹26,950, if company manufactures 3000 items per day. In case company decides to produce 2900 items per day profit shall remain unchanged.

12. (a) Return for the year (all changes on a per unit basis):

Change in Price (₹9.10-₹ 8.50)	₹ 0.60
Dividends received	₹ 0.90
Capital gains distributions	<u>₹ 0.75</u>
Total return	<u>₹ 2.25</u>
Holding period return =	$\frac{₹ 2.25}{₹ 8.50} = 26.47\%$

- (b) When all dividends and capital gains distributions are reinvested into additional units of the fund (₹ 8.75/unit):

Dividends and capital gains per unit: ₹ 0.90 + ₹ 0.75 = ₹ 1.65

Total amount received from 200 units: ₹ 1.65 X 200 = ₹ 330.00

Additional units added: ₹ 330/₹ 8.75 = 37.71 units

Value of 237.71 units held at end of year: 237.71 units X ₹ 9.10 = ₹ 2,163

Price paid for 200 units at beginning of year 200 units X ₹ 8.50 = ₹ 1,700

Thus, the Holding Period Return would be:

$$= \frac{(\text{No. of units at end of Period} \times \text{Ending Price}) - (\text{No. of units at beginning of Period} \times \text{Initial Price})}{\text{No. of units at beginning of Period} \times \text{Initial Price}}$$

$$\text{H.P.R.} = \frac{₹ 2,163 - ₹ 1,700}{₹ 1,700} = \frac{₹ 463}{₹ 1,700} = 27.24\%$$

13. High growth phase:

$$k_e = 0.10 + 1.15 \times 0.06 = 0.169 \text{ or } 16.9\%.$$

$$k_d = 0.13 \times (1 - 0.3) = 0.091 \text{ or } 9.1\%.$$

$$\text{Cost of capital} = 0.5 \times 0.169 + 0.5 \times 0.091 = 0.13 \text{ or } 13\%.$$

Stable growth phase :

$$k_e = 0.09 + 1.0 \times 0.05 = 0.14 \text{ or } 14\%.$$

$$k_d = 0.1286 \times (1 - 0.3) = 0.09 \text{ or } 9\%.$$

$$\text{Cost of capital} = 0.6 \times 0.14 + 0.4 \times 0.09 = 0.12 \text{ or } 12\%.$$

Determination of forecasted Free Cash Flow of the Firm (FCFF)

(₹ in crores)					
	Yr. 1	Yr. 2	Yr 3	Yr. 4	Terminal Year
Revenue	2,400	2,880	3,456	4,147.20	4,561.92
EBIT	360	432	518.40	622.08	684.29
EAT	252	302.40	362.88	435.46	479.00
Capital Expenditure					-
less Depreciation	96	115.20	138.24	165.89	
Δ Working Capital	<u>100.00</u>	<u>120.00</u>	<u>144.00</u>	<u>172.80</u>	<u>103.68</u>
Free Cash Flow (FCF)	<u>56.00</u>	<u>67.20</u>	<u>80.64</u>	<u>96.77</u>	<u>375.32</u>

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

FCFF (₹ in crores)	PVF @ 13%	PV (₹ in crores)
56.00	0.885	49.56
67.20	0.783	52.62
80.64	0.693	55.88
96.77	0.613	<u>59.32</u>
		<u>217.38</u>

PV of the terminal, value is:

$$\frac{375.32}{0.12 - 0.09} \times \frac{1}{(1.13)^4} = ₹ 12,510.67 \text{ Crores} \times 0.613318 = ₹ 7,673.02 \text{ Crores}$$

The value of the firm is : ₹ 217.38 Crores + ₹ 7,673.02 Crores = ₹ 7,890.40 Crores

14.

	Offer I	Offer II
Amount to be raised (A)	₹200,00,000	₹200,00,000
Offer Ratio	1:2	1:4
Existing shares	10,00,000	10,00,000
New Shares (B) 10,00,000/2 and 10,00,000/4	5,00,000	2,50,000
Right Price (A÷B) [OP]	₹40	₹80
Existing value @selling price i.e. ₹ 130	₹260	₹520
Total wealth	₹300	₹600
No. of Shares (Total)	3	5
Ex-right Price	100	120
Value of Right (MP _{ER} – OP) ÷ No.	₹ 30	₹ 10

15.

	₹
Estimated Receivables	46,00,000
Estimated Receivables under Factor $\left(3,74,00,000 \times \frac{30}{365} \right)$	30,73,973
Reduction in Receivables (₹ 46,00,000 – ₹ 30,73,973)	15,26,027

Total Savings (A)

Reduction in finance costs	₹ 15,26,027 @ 5%	76,301
Saving of Administration costs		1,00,000
Saving of Bad debts		3,50,000
Total		<u>5,26,301</u>

Total Cost of Factoring (B)

Interest on advances by Factor		
Advances 30,73,973 @ 80%	₹ 24,59,178	
Interest on ₹ 24,59,178 @ 7%	₹ 1,72,142	
Overdraft Interest on ₹ 24,59,178 @ 5%	<u>(₹ 1,22,959)</u>	49,183
Charges payable to Factor (Rs 3,74,00,000 @ 3%)		<u>11,22,000</u>
Total		<u>11,71,183</u>
Net Saving (A) – (B)		(6,44,882)

Since Net Saving is negative the proposal is not viable and hence should not be accepted.

16. (i) Current yield = $\frac{14}{90} = 0.1555$ or 15.55%

YTM can be determined from the following equation

$$14 \times PVIFA(YTM, 5) + 100 \times PVIF(YTM, 5) = 90$$

$$YTM = 17.14\%$$

- (ii) The duration can be calculated as follows:

Year	Cash Flow	PV at 17.14%	Proportion of NCD value	Proportion of NCD value × time
1	14	11.952	0.1328	0.1328
2	14	10.203	0.1134	0.2268
3	14	8.710	0.0968	0.2904

4	14	7.435	0.0826	0.3304
5	114	<u>51.685</u>	0.5744	<u>2.8720</u>
		<u>89.985</u>		<u>3.8524</u>

Duration = 3.8524 years.

17.

Date	Closing Sensex	Sign of Price Charge
1.10.11	2800	
3.10.11	2780	-
4.10.11	2795	+
5.10.11	2830	+
7.10.11	2760	-
10.10.11	2790	+
11.10.11	2880	+
12.10.11	2960	+
13.10.11	2990	+
14.10.11	3200	+
17.10.11	3300	+
18.10.11	3450	+
19.10.11	3360	-
20.10.11	3290	-
21.10.11	3360	+
24.10.11	3340	-
25.10.11	3290	-
27.10.11	3240	-
28.10.11	3140	-
31.10.11	3260	+

Total of price changes (r) = 08

No. of Positive changes = n_1 = 11

No. of Negative changes = n_2 = 08

$$\mu_r = \frac{2n_1n_2}{n_1 + n_2} + 1$$

$$\mu = \frac{2 \times 11 \times 8}{11 + 8} + 1 = 176/19 + 1 = 10.26$$

$$\hat{\sigma}_r = \sqrt{\frac{2n_1n_2(2n_1n_2 - n_1 - n_2)}{(n_1 + n_2)^2(n_1 + n_2 - 1)}}$$

$$\hat{\sigma}_r = \sqrt{\frac{(2 \times 11 \times 8)(2 \times 11 \times 8 - 11 - 8)}{(11 + 8)^2(11 + 8 - 1)}} = \sqrt{\frac{176 \times 157}{(19)^2(18)}} = \sqrt{4.252} = 2.06$$

Since too few runs in the case would indicate that the movement of prices is not random. We employ a two- tailed test the randomness of prices.

Test at 5% level of significance at 18 degrees of freedom using the table.

$$\text{The lower limit} = \mu - t \times \hat{\sigma}_r = 10.26 - 2.101 \times 2.06 = 5.932$$

$$\text{Upper limit} = \mu + t \times \hat{\sigma}_r = 10.26 + 2.101 \times 2.06 = 14.588$$

At 10% level of significance at 18 degrees of freedom

$$\text{Lower limit} = 10.26 - 1.734 \times 2.06 = 6.688$$

$$\text{Upper limit} = 10.26 + 1.734 \times 2.06 = 13.832$$

As seen r lies between these limits. Hence, the market exhibits weak form of efficiency

18.

Day	Principal (₹)	MIBOR (%)	Interest (₹)
Tuesday	10,00,00,000	7.75	21,233
Wednesday	10,00,21,233	8.15	22,334
Thursday	10,00,43,567	8.12	22,256
Friday	10,00,65,823	7.95	21,795
Saturday & Sunday (*)	10,00,87,618	7.98	43,764
Monday	10,01,31,382	8.15	<u>22,358</u>
Total Interest @ Floating			1,53,740
Less: Net Received			<u>317</u>
Expected Interest @ fixed			<u>1,53,423</u>
Thus Fixed Rate of Interest			0.07999914%
Approx.			8%

(*) i.e. interest for two days.

Note: Alternatively, answer can also be calculated on the basis of 360 days in a year.

19. (i) Let P be the buyback price decided by Rahul Ltd.

Market Capitalisation after Buyback

1.1P (Original Shares – Shares Bought Back)

$$= 1.1P \left(10 \text{ lakhs} - \frac{27\% \text{ of } 100 \text{ lakhs}}{P} \right) = 11 \text{ lakhs} \times P - 27 \text{ lakhs} \times 1.1$$

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

Again, $11 \text{ lakhs } P - 29.7 \text{ lakhs}$

$$\text{or } 11 \text{ lakhs } P = 210 \text{ lakhs} + 29.7 \text{ lakhs}$$

$$\text{or } P = \frac{239.7}{11} = ₹ 21.79 \text{ per share}$$

- (ii) **Number of Shares to be Bought Back :-**

$$\frac{₹ 27 \text{ lakhs}}{₹ 21.79} = 1.24 \text{ lakhs (Approx.) or } 123910 \text{ share}$$

- (iii) **New Equity Shares :-**

$$10 \text{ lakhs} - 1.24 \text{ lakhs} = 8.76 \text{ lakhs or } 1000000 - 123910 = 876090 \text{ shares}$$

$$\therefore \text{EPS} = \frac{3 \times 10 \text{ lakhs}}{8.76 \text{ lakhs}} = ₹ 3.42$$

Thus, EPS of Rahul Ltd., increases to ₹ 3.42.

20. (a) **Financial Lease:** Financial lease agreement is a long-term arrangement, which is irrevocable during the primary lease period which is generally the full economic life of the leased asset. Under this arrangement lessor is assured to realize the cost of purchasing the leased asset, cost of financing it and other administrative expenses as well as his profit by way of lease rent during the initial (primary) period of leasing itself. Financial lease involves transferring almost all the risks incidental to ownership and benefits arising there from except the legal title to the lessee against his irrevocable undertaking to make unconditional payments to the lessor as per agreed schedule. This is a closed end arrangement with no option to lessee to terminate the lease agreement subsequently. In such lease, the lessee has to bear insurance, maintenance and other related costs. The choice of asset and its supplier is generally left to the lessee in such transactions. The variants under financial lease are as under:

- Lease with purchase option-where the lessee has the right to purchase the leased assets after the expiry of initial lease period at an agreed price.

- Lease with lessee having residual benefits-where the lessee has the right to share the sale proceeds of the asset after expiry of initial lease period and/or to renew the lease agreement at a lower rental.
- (b) **Difference between Stock Index Future and Equity Option:** Investing in stock futures differs from investing in equity options contracts in several ways:
- In a long options position, the investor has the right but not the obligation to purchase or deliver stock. In a long future position, the investor is obligated to deliver the stock.
 - Options traders use a mathematical factor, the delta that measures the relationship between the options premium and the price of the underlying stock. At times, an options contract's value may fluctuate independently of the stock price. By contrast, the future contract will much more closely follow the movement of the underlying stock.
- (c) **Embedded Derivatives:** An embedded derivative is a derivative instrument that is embedded in another contract – the host contract. The host contract might be a debt or equity instrument, a lease, an insurance contract or a sale or purchase contract. Derivatives require to be marked-to-market through the income statement, other than qualifying hedging instruments. This requirement on embedded derivatives are designed to ensure that mark-to-market through the income statement cannot be avoided by including - embedding - a derivative in another contract or financial instrument that is not marked-to market through the income statement.
- An embedded derivative can arise from deliberate financial engineering and intentional shifting of certain risks between parties. Many embedded derivatives, however, arise inadvertently through market practices and common contracting arrangements. Even purchase and sale contracts that qualify for executory contract treatment may contain embedded derivatives. An embedded derivative causes modification to a contract's cash flow, based on changes in a specified variable.
- (d) **100% Book Building Process:** In an issue of securities to the public through a prospectus, the option for 100% book building is available to any issuer company. The issue of capital should be ₹ 25 crore and above.
- Reservation for firm allotment to the extent of the percentage specified in the relevant SEBI guidelines can be made only to promoters, 'permanent employees of the issuer company and in the case of new company to the permanent employees of the promoting company'. It can also be made to shareholders of the promoting companies, in the case of new company and shareholders of group companies in the case of existing company either on a competitive basis or on a firm allotment basis.
- (e) **Factors affecting Economic Analysis:** Some of the economy wide factors are discussed as under:

- (i) Growth Rates of National Income and Related Measures: For most purposes, what is important is the difference between the nominal growth rate quoted by GDP and the 'real' growth after taking inflation into account. The estimated growth rate of the economy would be a pointer to the prospects for the industrial sector, and therefore to the returns investors can expect from investment in shares.
- (ii) Growth Rates of Industrial Sector: This can be further broken down into growth rates of various industries or groups of industries if required. The growth rates in various industries are estimated based on the estimated demand for its products.
- (iii) Inflation: Inflation is measured in terms of either wholesale prices (the Wholesale Price Index or WPI) or retail prices (Consumer Price Index or CPI). The demand in some industries, particularly the consumer products industries, is significantly influenced by the inflation rate.

Therefore, firms in these industries make continuous assessment about inflation rates likely to prevail in the near future so as to fine-tune their pricing, distribution and promotion policies to the anticipated impact of inflation on demand for their products.
- (iv) Monsoon: Because of the strong forward and backward linkages, monsoon is of great concern to investors in the stock market too.