PAPER – 2 : STRATEGIC FINANCIAL MANAGEMENT

QUESTION

Options

1. The following table provides the prices of options on equity shares of X Ltd. and Y Ltd. The risk free interest is 9%. You as a financial planner are required to spot any mispricing in the quotations of option premium and stock prices? Suppose, if you find any such mispricing then how you can take advantage of this pricing position.

Share	Time to exercise	Exercise price (Rs.)	Share price (Rs.)	Call Price (Rs.)	Put price (Rs.)
X Ltd.	6 months	100	160	56	4
Y Ltd	3 months	80	100	26	2

Swap

2. The following details are related to the borrowing requirements of two companies ABC Ltd. and DEF Ltd.

Company	Requirement	Fixed Rates Offered	Floating Rates Offered
ABC Ltd	Fixed Rupee Rate	4.5%	PLR + 2%
DEF Ltd.	Floating Rupee Rate	5.0%	PLR + 3%

Both Companies are in need of Rs. 2,50,00,000 for a period of 5 years. The interest rates on the floating rate loans are reset annually. The current PLR for various period maturities are as follows:

Maturity (Years)	PLR (%)
1	2.75
2	3.00
3	3.20
4	3.30
5	3.375

DEF Ltd. has bought an interest rate Cap at 5.625% at an upfront premium payment of 0.25%.

(a) You are required to exhibit how these two companies can reduce their borrowing cost by adopting swap assuming that gains resulting from swap shall be share equity among them.

(b) Further calculate cost of funding to these two companies assuming that expectation theory holds good for the 4 years.

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Commodity Derivatives

3. The following information is available about standard gold.

Spot Price (SP)	Rs. 15,600 per 10 gms.
Future Price (FP)	Rs. 17,100 for one year future contract
Risk free interest Rate (R_f)	8.5%
Present Value of Storage Cost	Rs. 900 per year

From the above information you are requested to calculate the Present Value of Convenience yield (PVC) of the standard gold.

Merger and Acquisition

4. The market value of two companies Sun Ltd. and Moon Ltd. are Rs.175 lac and Rs.75 lac respectively. The share capital of Sun Ltd. consists of 3.5 lac Rs. 10/- ordinary shares and that of Moon Ltd. consist of 2.2 lac ordinary shares of Rs. 10/- each

Sun Ltd. is proposing to takeover Moon Ltd. The pre-merger earnings are Rs.19 lac for Sun Ltd. and Rs. 10 lac for Moon Ltd. The merger is expected to result into a synergy gains of Rs.4 lac in the form of Post tax cost savings. The Pre-merger P/E Ratios are 10 for Sun Ltd. and 8 for Moon Ltd. The possible combined P/E Ratios are 9 and 10.

You are required to calculate.

(i) Minimum combined P/E ratio to justify the merger.

(ii) Exchange ratio of shares if combined P/E ratio is 9.

(iii) Exchange ratio of shares if combined P/E ratio is 10.

Portfolio Management

5. As on 1.4.10 ABC Ltd. is expecting net income and capital expenditure over the next five years (2010-11 to 2014-15) as follows:

Year	2010-11	2011-12	2012-13	2013-14	2014-15
Net Income	27,00,000	32,00,000	28,00,000	30,000,000	38,00,000
Capital	24,00,000	28,00,000	22,00,000	26,00,000	32,00,000

CEO of the company is planning to finance their capital outlay with debt and equity in the ratio of 1:1 Suppose you as a CFO advises for residual dividend policy then what will be the expected stream under the following approaches:

(i) Pure Residual Dividend Policy

(ii) Fixed Dividend Payout Ratio

6. Following information is available regarding expected return, standard deviation and beta of 6 share are available in the stock market.

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Security	Expected Return	Beta	S.D (%)
1	5	0.70	9
2	10	1.05	14
3	11	0.95	12
4	12.5	1.10	20
5	15	1.40	17.5
6	16	1.70	25

Suppose risk free rate of return is 4% and Market return is 6% and standard deviation is 10%. You are required to compute.

(i) Which security is undervalued and which is over valued.

(ii) Assuming that funds are equally invested these six stocks, then compute.

(a) Return of portfolio

(b) Risk of Portfolio

(iii) Suppose if above portfolio is invested in with margin of 40% and cost of borrowing is 4% then what will be the position.

Futures

7. ABC Technologic is expecting to receive a sum of US$400000 after 3 months. The company decided to go for future contract to hedge against the risk. The standard size of future contract available in the market is $1000. As on date spot and futures $ contract are quoting at Rs. 44.00 & Rs.45.00 respectively. Suppose after 3 months the company closes out its position futures are quoting at Rs.44.50 and spot rate is also quoting at Rs. 44.50. You are required to calculate effective realization for the company while selling the receivable. Also calculate how company has been benefitted by using the future option.

Real Option

8. XYZ Ltd is planning to invest in a project with an initial outlay Rs.3,00,00,000. The project is expected to generate cash flow for the next two years as follows:

Year 1		Year 2	
Cash flow	Probability	Cash Flow	Probability
Rs.2,00,00,000	0.30	Rs.1,00,00,000 Rs. 2,00,00,000 Rs. 3,00,00,000	0.30 0.50 0.20

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Rs. 3,00,00,000	0.40	Rs. 2,00,00,000 Rs. 3,00,00,000 Rs. 4,00,00,000	0.30 0.50 0.20
Rs. 4,00,00,000	0.30	Rs. 3,00,00,000 Rs. 4,00,00,000 Rs. 5,00,00,000	0.30 0.40 0.30

Assuming WACC as 14% you are required to compute

(a) The Expected NPV of the project.

(b) Value of abandonment of option assuming that there is an option to abandon the project after one year at sell off value of Rs.2,50,00,000 then.

Foreign Exchange Risk Management

9. Arnie operating a garment store in US has imported garments from Indian exporter of invoice amount of Rs. 1,38,00,000 (equivalent to US$ 3,00,000). The amount is payable in 3 months. It is expected that the exchange rate will decline by 5% over 3 months period. Arnie is interested to take appropriate action in foreign exchange market. The three month forward rate is quoted at Rs. 44.50.

You are required to calculate expected loss which Arnie would suffer due to this decline if risk is not hedged. If there is loss, then how he can hedge this risk.

Interest Rate Cap

10. XYZ plc borrows £ 20 million of 6 months LIBOR + 0.25% for a period of two years. Mr. Toby, Treasury Manager of XYZ anticipates a rise in LIBOR, hence proposed to buy a Cap option from a ABC Bank at strike rate of 7%. The lump sum premium is 1% for the whole of the three resets period and the fixed rate of interest is 6% p.a. The actual position of LIBOR during the forth coming reset period is as follows:

Reset Period	LIBOR
1	8.00%
2	8.50%
3	9.00%

You are required to show how far interest-rate risk is hedged through Cap option.

Bond Valuation

11. ABC Ltd. has the following outstanding Bonds.

Bond	Coupon	Maturity
Series X	8%	10 Years
Series Y	Variable changes annually comparable to prevailing rate	10 Years

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Initially these bonds were issued at face value of Rs. 10,000 with yield to maturity of 8%.

Assuming that:

(i) After 2 years from the date of issue, interest on comparable bonds is 10%, then what should be the price of each bond?

(ii) If after two additional years, the interest rate on comparable bond is 7%, then what should be the price of each bond?

(iii) What conclusions you can draw from the prices of Bonds, computed above.

12. Petfeed plc has outstanding, a high yield Bond with following features:

Face Value	£ 10,000
Coupon	10%
Maturity Period	6 Years
Special Feature	Company can extend the life of Bond to 12 years.

Presently the interest rate on equivalent Bond is 8%.

(a) If an investor expects that interest will be 8%, six years from now then how much he should pay for this bond now.

(b) Now suppose, on the basis of that expectation, he invests in the Bond, but interest rate turns out to be 12%, six years from now, then what will be his potential loss/ gain.

Venture Capital Financing

13. TMC is a venture capital financier. It received a proposal for financing requiring an investment of Rs.45 crore which returns Rs.600 crore after 6 years if succeeds. However, it may be possible that the project may fail at any time during the six years.

The following table provide the estimates of probabilities of the failure of the projects.

Year	1	2	3	4	5	6
Probability of Failure	0.28	0.25	0.22	0.18	0.18	0.10

In the above table the probability that the project fails in the second year is given that it has survived throughout year 1. Similarly for year 2 and so forth.

TMC is considering an equity investment in the project. The beta of this type of project is 7. The market return and risk free rate of return are 8% and 6% respectively. You are required to compute the expected NPV of the venture capital project and advice the TMC.

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Hedge Fund

14. ANP Plan, a hedge fund currently has assets of Rs. 20 crore. CA. X, the manager of fund charges fee of 0.10% of portfolio asset. In addition to it he charges incentive fee of 2%. The incentive will be linked to gross return each year in excess of the portfolio maximum value since the inception of fund. The maximum value the fund achieved so far since inception of fund about one and half year was Rs. 21 crores.

    You are required to compute the fee payable to CA. X, if return on the fund this year turns out to be

    (a) 29%, (b) 4.5%, (c) -1.8%

Economic Value Added

15. Calculate Economic Value Added (EVA) with the help of the following information of Hypothetical Limited:

Financial leverage	:	1.4 times
Capital structure	:	Equity Capital Rs. 170 lakhs
		Reserves and surplus Rs. 130 lakhs
		10% Debentures Rs. 400 lakhs
Cost of Equity	:	17.5%
Income Tax Rate	:	30%.

Netting

16. AMK Ltd. an Indian based company has subsidiaries in U.S. and U.K.

    Forecasts of surplus funds for the next 30 days from two subsidiaries are as below:

U.S.	$12.5 million
U.K.	£ 6 million

Following exchange rate informations are obtained:

	$/Rs.	£/Rs.
Spot	0.0215	0.0149
30 days forward	0.0217	0.0150

Annual borrowing/deposit rates (Simple) are available.

Rs.	6.4%/6.2%
$	1.6%/1.5%
£	3.9%/3.7%

The Indian operation is forecasting a cash deficit of Rs.500 million.

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It is assumed that interest rates are based on a year of 360 days.

(i) Calculate the cash balance at the end of 30 days period in Rs. for each company under each of the following scenarios ignoring transaction costs and taxes:

(a) Each company invests/finances its own cash balances/deficits in local currency independently.

(b) Cash balances are pooled immediately in India and the net balances are invested/borrowed for the 30 days period.

(ii) Which method do you think is preferable from the parent company's point of view?

Financial Services

17. A Ltd. has a total sales of Rs. 3.2 crores and its average collection period is 90 days. The past experience indicates that bad-debt losses are 1.5% on sales. The expenditure incurred by the firm in administering its receivable collection efforts are Rs. 5,00,000. A factor is prepared to buy the firm's receivables by charging 2% Commission. The factor will pay advance on receivables to the firm at an interest rate of 18% p.a. after withholding 10% as reserve.

Calculate the effective cost of factoring to the Firm.

Money Market Instrument

18. A share of Tension-free Economy Ltd. is currently quoted at, a price earning ratio of 7.5 times. The retained earning per share being 37.5% is Rs. 3 per share. Compute:

(1) The company's cost of equity, if investors expect annual growth rate of 12%.

(2) If anticipated growth rate is 13% p.a., calculate the indicated market price, with same cost of capital.

(3) If the company's cost of capital is 18% and anticipated growth rate is 15% p.a., calculate the market price per share, assuming other conditions remain the same.

Security Valuation

19. Given below is the Balance Sheet of S Ltd. as on 31.3.2010:

Liabilities	Rs. (in lakh)	Assets	Rs. (in lakh)
Share capital		Land and building	40
(share of Rs. 10)	100	Plant and machinery	80
		Investments	10
Reserves and surplus	40	Stock	20
Creditors	30	Debtors	15
		Cash at bank	5
	170		170

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You are required to work out the value of the Company's, shares on the basis of Net Assets method and Profit-earning capacity (capitalization) method and arrive at the fair price of the shares, by considering the following information:

(i) Profit for the current year Rs. 64 lakhs includes Rs. 4 lakhs extraordinary income and Rs. 1 lakh income from investments of surplus funds; such surplus funds are unlikely to recur.

(ii) In subsequent years, additional advertisement expenses of Rs. 5 lakhs are expected to be incurred each year.

(iii) Market value of Land and Building and Plant and Machinery have been ascertained at Rs. 96 lakhs and Rs. 100 lakhs respectively. This will entail additional depreciation of Rs. 6 lakhs each year.

(iv) Effective Income-tax rate is 30%.

(v) The capitalization rate applicable to similar businesses is 15%.

20. Distinguish between

(a) Cash and Derivative Market

(b) Systematic Risk and Unsystematic Risk

(c) Forfeiting and Factoring

(d) Forward and Future Contracts

SUGGESTED ANSWERS/HINTS

1. In order to find out any mispricing we shall use Put Call Parity theorem.

Accordingly,

Value of Call + PV (exercise price) = Value of Put + Share Price

Thus,

For share of X Ltd.

$56+ 100\ e^{-0.045} = 4 + 160$

56 + 95.60 = 164

Thus there is price mismatch.

The strategy to be adopted to take advantage of situation will be to buy call and sell put and share. The strategy will lead to cash flow position as follows:

	Inflow Rs.	Outflow Rs.
Buying the Call	__	56

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Selling the put	4	---
Short selling the share	160	
Total	164	56
Net inflow	---	108
	164	164

Invest Rs. 108 for 6 months and get Rs. 108 x $e^{0.045}$ (Rs.108 x1.046) Rs. 112.97

After 6 months: Inflow from investment Rs. 112.97

Out flow due to exercise of option Rs. 100.00

Net Gain Rs. 12.97

Similarly for Share of Y Ltd.

$26 + 80\ e^{-0.045} = 2 + 100$

$26 + 76.48 = 102$

$102.48 = 102$

Thus, there is a mismatch

The strategy to be adopted sell call and buy put and share. The position of cash flows on the strategy adopted will be as follows:

	Inflow Rs.	Out flow Rs.
Buy the Share	----	100
Buy the Put	----	2
Sell the Call	26	----
Total	26	102
Net inflow	76	----
	102	102

This amount shall be borrowed for 3 months. After the 3 months the position will be as follows:

Repayment of borrowings (76 x $e^{0.045}$) Rs. 79.50

Inflow due to exercise of option Rs. 80.00

Net Gain Rs. 0.50

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2. **(a)** The swap agreement will be as follows:

(i) ABC Ltd. will borrow at floating rate of PLR + 2% and shall lend it to DEF Ltd. at PLR +2% and shall borrow from DEF Ltd. at Fixed Rate of 4.25%.

(ii) DEF Ltd. shall borrow at 5% and lend it to ABC Ltd. at 4.25% and shall borrow from ABC Ltd at floating rate of PLR +2%.

Thus net result will be as follows:

Cost to ABC Ltd. = PLR + 2% - (PLR + 2%) + 4.25% = 4.25%

Cost to DEF Ltd = 5% - 4.25% + PLR + 2% = PLR +2.75%

(b) Suppose if theory of expectations hold good, the cost of fund to DEF Ltd. will be as follows:

Year	Expected Annual PLR Rate	Loading	Effective Rate	Effective rate under Cap
1	2.75%	2.75%	5.50%	5.50%
2	$(1.03^2 \div 1.0275) - 1 = 3.25\%$	2.75%	6.00%	5.625%
3	$(1.032^3 \div 1.03^2) - 1 = 3.60\%$	2.75%	6.35%	5.625%
4	$(1.033^4 \div 1.032^3) - 1 = 3.60\%$	2.75%	6.35%	5.625%

Effective Cost = $[(1.055)(1.05625)^3]^{1/4} - 1 = 5.60\%$

3. $$\frac{FP}{(1+r_f)^t} = SP + PVS - PVC$$

$$PVC = SP + PVS - \frac{FP}{(1+r_f)^t}$$

Accordingly,

$$= \text{Rs. } 15600 + \text{Rs. } 900 - \frac{\text{Rs.}17100}{(1+0.085)^1}$$

= Rs. 15600 + Rs. 900 – Rs. 15760

=Rs. 16500 – Rs. 15760 = Rs. 740

4. **(i)**

Total earnings after merger (Rs.19 lac +Rs.10 lac)	Rs.29 lac
Add: Synergy effect	Rs 4 lac
Post Merger earnings	Rs.33 lac
Total number of shares in merged entity (Rs. 3.5 Lac + Rs.2.2 Lac)	5.7 lac

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EPS (after merger) $= \frac{Rs.33\ lac}{5.7\ lac} = Rs.5.79$

Market Price of share of Sun Ltd before Merger $= \frac{Rs.175\ lac}{3.5\ lac} = Rs.50$ per share

Minimum PE ratio to justify merger $= \frac{Rs.50}{Rs.\ 5.79} = 8.64$

(ii) Let x be the number of shares issued after merger

The new EPS $= \frac{Rs.33\ lac}{3.5\ lac + x}$

If PE ratio is 9 then market price of share after merger $= \frac{Rs.33\ lac}{3.5\ lac + x} \times 9$

$= \frac{Rs.297\ lac}{3.5\ lac + x}$

Since, pre merger market price of share of Sun Ltd. = Rs. 50

Thus ,

$50 = \frac{Rs.297\ lac}{3.5\ lac + x}$

x = 2.44 lac shares

(iii) If PE ratio is 10 then market price of share after merger $\frac{Rs.33\ lac}{3.5\ lac + x} \times 10$

$= \frac{Rs.330\ lac}{3.5\ lac + x}$

Accordingly $Rs.50 = \frac{Rs.330\ lac}{3.5\ lac + x} = 3.1$ lac shares

5. As per planed financing of capital expenditures in equal proportions by debt and equity , the retained earning to support capital expenditure over the period of 2010-11 to 2014-15 will be as follows:

$\frac{24,00,000 + 28,00,000 + 22,00,000 + 26,00,000 + 32,00,000}{2} = 66,00,000$

The expected stream of net income over the period will be

27,00,000+32,00,000+28,00,000+30,00,000+38,00,000 = 1,55,00,000

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Thus, the total amount of dividend expected to paid over the period forthcoming is expected to be

Rs. 1,55,00,00 – Rs. 66,00,000= Rs. 89,00,000

And expected average dividend payout will be:

$$= \frac{\text{Rs.89,00,000}}{\text{Rs.1,55,00,000}} = 0.5742 \text{ say } 57\%$$

Accordingly expected dividend stream under the two approaches will be as follows:

	2010 – 11	2011–12	2012–13	2013–14	2014–15	Total
Net Income	27,00,000	32,00,000	28,00,000	30,00,000	38,00,000	1,55,00,000
Capital Outlay	24,00,000	28,00,000	22,00,000	26,00,000	32,00,000	1,32,00,000
Equity Financing	12,00,000	14,00,000	11,00,000	13,00,000	16,00,000	66,00,000
Pure Residual dividend	15,00,000	18,00,000	17,00,000	17,00,000	22,00,000	89,00,000
Fixed Dividend Payout (as per payout ratio of 0.57)	15,39,000	18,24,000	15,96,000	17,10,000	21,66,000	88,35,000

6. Using capital Assets Pricing Model (CAPM) we shall find out which security is under-valued and which security is over -valued.

Required Rate of Return = $R_f + \beta (R_m - R_f)$

R_f = Risk Free Rate

β = Beta of Security

R_m = Market Return

Security	Required Rate of Return (%)	Expected Return (%)	Status
1	4 + 0.70(6 – 4) = 5.4	5	Over valued
2	4+1.05(6 – 4) = 6.10	10	Under Valued
3	4+0.95(6 – 4)=5.90	11	Under Valued
4	4+1.10(6 – 4)=6.20	12.5	Under Valued
5	4+1.40(6 – 4)=6.80	15	Under Valued
6	4+1.70(6 – 4)=7.40	16	Under Valued

Securities 2 to 6 are under- valued because their required rate of return is less than the expected rate of return. Security 1 is over-valued as its expected return is less than required rate of return.

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(ii) (a) Expected Rate of return (R_p) = $\sum_{i=1}^{n} w_i r_i$

Where w_i = Proportion of each security in portfolio

r_i = Expected return from each security

Thus Portfolios return = $\frac{1}{6}$ x 16 + $\frac{1}{6}$ x 15 + $\frac{1}{6}$ x 12.5 + $\frac{1}{6}$ x 11 + $\frac{1}{6}$ x 10 + $\frac{1}{6}$ x 5 = 11.58%

Portfolio Beta = (0.7 + 1.05 + 0.95 + 1.10 + 1.4 + 1.7)/6=1.15

$\sigma_P^2 = [\sum_{i=1}^{n} x_i\beta_i\ ]^2\ \sigma^2_m + \sum_{i=1}^{n} x_i e_i$

Where

x_i = Proportion of fund invested in each security

β_i = Beta of security n

σ^2_m = Variation of market return

e^2_i = Unsystematic Risk

Stock	Total Variance (1)	Systematic Risk (2)	Unsystematic Risk e_i^2 = (1) – (2)	$x_i^2\ e_i^2$
1	0.0081	$(0.70)^2$ x$(0.10)^2$ =0.0049	0.0032	0.00009
2	0.0196	$(1.05)^2$x$(0.10)^2$ = 0.011025	0.008575	0.00024
3	0.0144	$(0.95)^2$x$(0.10)^2$ =0.009025	0.005375	0.00015
4	0.04	$(1.10)^2$x$(0.10)^2$= 0.0121	0.0279	0.00077
5	0.030625	$(1.40)^2$x $(0.10)^2$=0.0196	0.011025	0.00031
6	0.0625	$(1.70)^2$x$(0.10)^2$=0.0289	0.0336	0.00093
				0.00249

Portfolio Systematic Risk = [$\frac{1}{6}\times 0.70$ + $\frac{1}{6}\times 1.05$ + $\frac{1}{6}\times 0.95$ + $\frac{1}{6}\times 1.10$ + $\frac{1}{6}\times 1.40$ + $\frac{1}{6}\times 1.70$] $\times (0.10)^2$ = 0.0115

Portfolio Risk = $(\sigma_P)^2$ = 0.0115 + 0.00249 = 0.01399 say 0.014

σ_P= 0.1183=11.83%

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(iii) Where portfolio was margined out 40% with cost of borrowings at 4% the position expected return and risk will be as follow:

$R_P = 1.40(0.1158) + (-0.4)(0.04) = 0.14612$

Risk = $\sigma_P = 1.4\sigma_m = 1.4 \times 0.1183 = 0.16562 = 16.56\%$

7. The company can hedge position by selling future contracts as it will receive amount from outside.

$$\text{Number of Contracts} = \frac{\$4,00,000}{\$1,000} = 40 \text{ contracts}$$

Gain by trading in futures = (Rs.45 - Rs.44.50) 4,00,000 = Rs.2,00,000

Net Inflow after after 3 months = Rs. 44.50 x Rs.4,00,000 + 2,00,000 = Rs.1,80,00,000

$$\text{Effective Price realization} = \frac{\text{Rs.1,80,00,000}}{\$4,00,000} = \text{Rs.45 Per US\$}$$

8. **(a)** The expected NPV of the project shall be calculated by using the joint probability for nine different possible outcomes as follows:

Outcomes	Present Value (1)	Joint Prob. (2)	PV (1) x (2)
1	$\frac{2,00,00,000}{(1+0.14)} + \frac{1,00,00,000}{(1+0.14)^2}$	0.09	22,71,468
2	$\frac{2,00,00,000}{(1+0.14)} + \frac{2,00,00,000}{(1+0.14)^2}$	0.15	49,39,982
3	$\frac{2,00,00,000}{(1+0.14)} + \frac{3,00,00,000}{(1+0.14)^2}$	0.06	24,37,673
4	$\frac{3,00,00,000}{(1+0.14)} + \frac{2,00,00,000}{(1+0.14)^2}$	0.12	50,04,617
5	$\frac{3,00,00,000}{(1+0.14)} + \frac{3,00,00,000}{(1+0.14)^2}$	0.20	98,79,963
6	$\frac{3,00,00,000}{(1+0.14)} + \frac{4,00,00,000}{(1+0.14)^2}$	0.08	45,67,559
7	$\frac{4,00,00,000}{(1+0.14)} + \frac{3,00,00,000}{(1+0.14)^2}$	0.09	52,35,457

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8	$\frac{4,00,00,000}{(1+0.14)} + \frac{4,00,00,000}{(1+0.14)^2}$	0.12	79,03,970
9	$\frac{4,00,00,000}{(1+0.14)} + \frac{5,00,00,000}{(1+0.14)^2}$	0.09	66,20,499
			4,88,61,188
	Less : Initial Outflow		3,00,00,000
	ENPV		1,88,61,188

(b) The Value of abandonment of option depends on first year's cash flow. Accordingly,

(i) If first year's cash inflow is Rs.2,00,00,000, then expected cash inflow in 2 years will be

EV= Rs. 1,00,00,000(0.3) + Rs. 2,00,00,000(0.5) + Rs. 3,00,00,000(0.2)

= Rs.1,90,00,000

Expected Present value of year = $\frac{Rs.1,90,00,000}{(1.14)}$ = Rs.1,66,66,667

Thus if XYZ abandon the project after the one year it can get more i.e Rs. 2,50,00,000 then keep running the project .

Thus, the NPV of the project will be

NPV= -300,00,000+ $\frac{2,00,00,000}{(1+0.14)^1} + \frac{2,50,00,000}{(1+0.14)^1}$

= – 3,00,00,000 + Rs. 1,75,43,860 + Rs. 2,19,29,825

= Rs. 94,73,685

(ii) If the first year's expected cash inflow is Rs. 3,00,00,000 then expected cash flow in year 2 will be

Expected cash inflow= Rs. 2,00,00,000(0.3) + Rs. 3,00,00,000(0.5) + Rs. 4,00,00,000(0.20) = Rs. 2,90,00,000

Expected Present Value of year 1 = $\frac{2,90,00,000}{(1.14)^1}$ = Rs.2,54,38,596

Since, the value exceeds Rs.2,50,00,000 XYZ shall keep project running. NPV of the project will be as follows:

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$$NPV = -3,00,00,000 + \frac{3,00,00,000}{(1+0.14)^1} + \frac{2,90,00,000}{(1+0.14)^2}$$

= – 3,00,00,000 + 2,63,15,789 + 2,23,14,558 = Rs.1,86,30,347

(iii) If first year's expected cash inflow is Rs.4,00,00,000, then expected cash inflow in year 2 will be

= Rs.3,00,00,000(0.3) + Rs.4,00,00,000(0.4) + Rs.5,00,00,000(0.3)

= Rs.4,00,00,000

Thus XYZ shall keep project running and NPV of the project will be

$$= -Rs.3,00,00,000 + \frac{Rs.4,00,00,000}{(1+0.14)^1} + \frac{Rs.4,00,00,000}{(1+0.14)^2}$$

= – Rs.3,00,00,000 + Rs.3,50,87,719 + Rs.3,07,78,701

= Rs.3,58,66,420

With the three possible outcomes and given probability for each cash the expected NPV of the project is

ENPV = (0.3)(Rs.94,73,685) +(0.4)(Rs.1,86,30,347) + (0.3)(Rs.3,58,66,420)

= Rs.2,10,54,170

Since this value is greater than ENPV (without option to abandon) the value of option to abandon is shall be

Rs. 2,10,54,170 - Rs.1,88,61,188 = Rs.21,92,982

9.

Spot rate of US$ against Indian Rupee	$= \frac{Rs.1,38,00,000}{US\$3,00,000} = Rs.\ 46/\$$
3 month forward rate of US$ 1 against Rupee	= Rs. 44.50
Anticipate decline in Exchange Rate	= 5%
Expected spot rate after 3 months	= Rs. 46 - Rs. 2.30 = Rs. 43.70

Expected Loss

	US$
Present cost of Rs. 138 lakh.	3,00,000
Cost after 3 months Rs. 138 lakh/Rs. 43.70	3,15,789
	15,789

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Hedging of Risk (Using Forward Contract)

	US$
Present cost	3,00,000
Cost if forward contract is taken at Rs. 44.50/$	3,10,112
	10,112

Thus, from above it can be seen that though the risk of decline in exchange rate cannot be completely avoided but it can be reduced by taking forward contract. Hence, taking forward contract is suggested.

10. First of all we shall calculate premium payable to bank as follows:

$$= \frac{0.01}{(1/0.03) - \frac{1}{0.03 \times 1.03^4}} \times £20,000,000$$

= £ 53,908

Now we see the net payment received from bank

Reset Period	Additional interest due to rise in interest rate	Amount received from bank	Premium paid to bank	Net Amt. received from bank
1	£ 100,000	£ 100,000	£ 53,908	£46,092
2	£ 150,000	£ 150,000	£ 53,908	£96,092
3	£ 200,000	£ 200,000	£ 53,908	£146,092
TOTAL	£ 450,000	£ 450,000	£161,724	£ 288,276

Thus, from above it can be seen that interest rate risk amount of £ 450,000 reduced to £ 288,276 by using of Cap option.

11. Here we shall compare two bonds, one with fixed copoun rate and another as per with prevailing interest rate.

(i) After 2 Years passed (8 years remaining) Value of Bond Series – X

= Rs. 800 PVIAF (10% ,8) + Rs.10,000 PVIF (10%, 8)

= Rs. 800 x 5.335 + Rs.10,000 x 0.467

= Rs. 4,268 + Rs. 4,670 = Rs. 8,938

Since Bond-Series Y has a variable interest rates, so the interest amount will increase and decrease with the movement of interest rates. As given presently rate of interest is 10%, the value of Bond will be:

= Rs.1,000 PVIAF (10%, 8) + Rs.10,000 PVIF (10%, 8)

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= Rs.1,000 x 5.335 + Rs.10,000 x 0.467

= Rs.5,335 + Rs.4,670 = Rs.10,005

(ii) After 2 additional years at the yield rate of 7%, the value of Bond shall be as follows:

Bond-Series X

= Rs.800 PVIAF (7%, 6) + Rs.10,000 PVIF (7%, 6)

= Rs.800 x 4.767 + Rs.10,000 x 0.666

= Rs. 3,814 + Rs. 6,660 = Rs. 10,474

Bond-Series Y

= Rs.700 PVIF (7%, 6) + Rs.10,000 PVIF (7%, 6)

= Rs.700 x 4.767 + Rs. 10,000 x 0.666

= Rs. 3,337 + Rs. 6,660 = Rs. 9,997

(iii) From above prices it can be concluded that price of Bond-Series X moves inversely with change in interest rate. Whereas, the price of Bond Series Y does not fluctuate, reason being its interest (coupon) adjusted according to change in interest rates.

12. (i) If the current interest rate is 8%, the company will not extent the duration of Bond and the maximum amount the investor would ready to pay will be:

= £ 1,000 PVIAF (8%, 6) + £ 10,000 PVIF (8%, 6)

= £ 1,000 x 4.623 + £ 10,000 x 0.630

= £ 4,623 + £ 6,300

= £ 10,923

(ii) If the current interest rate is 12%, the company will extent the duration of Bond. After six years the value of Bond will be

= £ 1,000 PVIAF (12%, 6) + £ 10,000 PVIF (12%, 6)

= £ 1,000 x 4.111 + £ 10,000 x 0.507

= £ 4,111 + £ 5,070

= £ 9,181

Thus, potential loss will be £ 9,181 - £ 10,923 = £1,742

13. (i) First we shall find out the probability the venture capital project survives to the end of six years.

Year	Probability Project survives
1	(1– 0.28) = 0.72

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2	(1– 0.28)(1– 0.25)=0.72×0.75=0.54
3	(1– 0.28)(1– 0.25)(1-0.22)=0.72×0.75×0.78=0.4212
4	(1– 0.28)(1– 0.25)(1– 0.22)(1– 0.18)=0.72×0.75×0.78×0.82=0.3454
5	(1– 0.28)(1– 0.25)(1– 0.22)(1– 0.18)(1– 0.18)=0.72×0.75×0.78×0.82×0.82=0.2832
6	(1– 0.28)(1– 0.25)(1– 0.22)(1– 0.18)(1– 0.18) (1– 0.10)=0.72×0.75×0.78×0.82×0.82×0.90=0.255

Thus, probability of project will fail = 1 – 0.255 = 0.745

(ii) Next using CAPM we shall compute the cost of equity to compute the Present Value of Cash Flows

$K_e = R_f + \beta (R_m - R_f)$

= 6% +7 (8% – 6%) = 20%

(iii) Now we shall compute the net present value of the project

The present value of cash inflow after 6 years

(Rs.600 Crore ×PVIF 20%)	Rs. 201 Crore
Less:- Present value of Cash outflow	Rs. 45 Crore
	Rs.156 Crore
Net Present Value of project if it fails	Rs. 45 Crores
And expected NPV = (0.255)(156) + (0.745)(-45)	Rs.6.255 Crores

Since expected NPV of the project is positive it should be accepted.

14. (a) If return is 29%

Fixed fee (A) 0.10% of Rs.20 crore	Rs.2,00,000
New Fund Value (1.29 x Rs. 20 crore)	Rs.25.80 crore
Excess Value of best achieved (25.8 crore – 21.0 crore)	Rs.4.80 crore
Incentive Fee (2% of 4.80 crores) (B)	Rs.9,60,000
Total Fee (A)+(B)	Rs.11,60,000

(b) If return is 4.5%

Fixed (A) 0.10% of Rs.20 crore	Rs.2,00,000
New Fund Value (1.045 x Rs.20 crore)	Rs.20.90 crore
Excess Value of best achieved (20.90 crore – 21.00 crore)	(Rs. 0.10 crore)
Incentive Fee (as does not exceed best achieved) (B)	Nil
Total Fee (A) + (B)	2,00,000

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(c) If return is (-1.8%)

No incentive only fixed fee of Rs.2,00,000 will be paid

15. Financial Leverage = PBIT/PBT

1.4 = PBIT / (PBIT – Interest)

1.4 = PBIT / (PBIT – 40)

1.4 (PBIT – 40) = PBIT

1.4 PBIT – 56 = PBIT

1.4 PBIT – PBIT = 56

0.4 PBIT = 56

or $PBIT = \frac{56}{0.4} = Rs.140\,lakhs$

NOPAT = PBIT – Tax = Rs. 140 lakhs (1 – 0.30) = Rs. 98 lakhs.

Weighted average cost of capital (WACC) = 17.5% × (300 / 700)+ (1 – 0.30) × (10%) × (400 / 700) = 11.5%

EVA = NOPAT – (WACC × Total Capital)

= Rs. 98 lakhs – 0.115 × Rs. 700 lakhs

= Rs. 17.5 lakhs

16. Cash Balances:

Acting independently

			'000
	Capital	Interest	Rs. in 30 days
India	–5,00,000	–2,666.67	–5,02,667
U.S.	12,500	15.63	5,76,757
U.K.	6,000	18.50	4,01,233
			4,75,323

Immediate Cash pooling

		Rs. '000
India	–	5,00,000
U.S. $\frac{12,500}{0.0215}$	=	5,81,395

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U.K. $\frac{6,000}{0.0149}$ = 4,02,685

4,84,080

Immediate cash pooling is preferable as it maximizes interest earnings

Note: If the company decides to invest pooled amount of Rs.4,84,080,000/- @ 6.2% p.a. for 30 days an interest of Rs.2,501,080/- will accrue.

17.

	Rs.
Average level of Receivables = Rs. 3,20,00,000 × 90/360	80,00,000
Factoring commission = Rs. 80,00,000 × 2/100	1,60,000
Factoring reserve = Rs. 80,00,000 × 10/100	8,00,000
Amount available for advance = Rs. 80,00,000 – (1,60,000 + 8,00,000)	70,40,000
Factor will deduct his interest @ 18%:-	
$\text{Interest} = \frac{\text{Rs. } 70,40,000 \times 18 \times 90}{100 \times 360}$	= Rs. 3,16,800

∴ Advance to be paid = Rs. 70,40,000 – Rs. 3,16,800 = Rs. 67,23,200

Annual Cost of Factoring to the Firm:	*Rs.*
Factoring commission (Rs. 1,60,000 × 360/90)	6,40,000
Interest charges (Rs. 3,16,800 × 360/90)	12,67,200
Total (A)	19,07,200
Firm's Savings on taking Factoring Service:	*Rs.*
Cost of credit administration saved	5,00,000
Cost of Bad Debts (Rs. 3,20,00,000 × 1.5/100) avoided	4,80,000
Total (B)	9,80,000
Net cost to the Firm (Rs. 19,07,200 – Rs. 9,80,000) (A – B)	9,27,200
Effective rate of interest to the firm = $\frac{\text{Rs. } 9,27,200 \times 100}{67,23,200}$	13.79%

Note: The number of days in a year have been assumed to be 360 days.

18. (1) Calculation of cost of capital

Retained earnings	37.5%	Rs. 3 per share
Dividend*	62.5%	Rs. 5 per share
EPS	100.0%	Rs. 8 per share

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P/E ratio times 7.5

Market price is Rs. 7.5×8 = Rs. 60 per share

Cost of equity capital = (Dividend/price $\times$ 100) + growth %

= (5/60 $\times$ 100) + 12% = 20.33%.

* $\left(\frac{\text{Rs. } 3}{37.5} \times 62.5 = \text{Rs. } 5\right)$

(2) Market price = Dividend/(cost of equity capital % – growth rate %) = 5/(20.33% – 13%) = 5/7.33% = Rs. 68.21 per share.

(3) Market price = Dividend/(cost of equity capital % – growth rate %) = 5/(18% – 15%) = 5/3% = Rs. 166.66 per share.

19.

	Rs. lakhs
Net Assets Method	
Assets: Land & Buildings	96
Plant & Machinery	100
Investments	10
Stocks	20
Debtors	15
Cash & Bank	5
Total Assets	246
Less: Creditors	30
Net Assets	216

Value per share

(a) Number of shares $\frac{1,00,00,000}{10} = 10,00,000$

(b) Net Assets Rs.2,16,00,000

$\frac{\text{Rs.}2,16,00,000}{10,00,000} = \text{Rs.}21.60$

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Profit-earning Capacity Method		
Profit before tax		64.00
Less: Extraordinary income	4.00	
Investment income (not likely to recur)	1.00	5.00
		59.00
Less: Additional expenses in forthcoming years		
Advertisement	5.00	
Depreciation	6.00	11.00
Expected earnings before taxes		48.00
Less: Income-tax @ 30%		14.40
Future maintainable profits (after taxes)		33.60
Value of business		
Capitalisation factor	$\frac{33.60}{0.15}=$	224
Less:External Liabilities (creditors)		30
		194

Value per share

$= \frac{1,94,00,000}{10,00,000} = Rs.19.40$

Fair Price of share	Rs.
Value as per Net Assets Method	21.60
Value as per Profit earning capacity (Capitalisation) method	19.40
Fair Price= $\frac{21.60+19.40}{2}=\frac{41}{2}=Rs.20.50$	

20. (a) Following are main differences between Cash Market and Derivative Market.

(i) In cash market tangible assets are traded whereas in derivative market contracts based on tangible or intangibles assets like index or rates are traded.

(ii) In cash market, we can purchase even one share whereas in Futures and Options minimum lots are fixed.

(iii) Cash market is more risky than Futures and Options segment because in "Futures and Options" risk is limited upto 20%.

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(iv) Cash assets may be meant for consumption or investment. Derivative contracts are for hedging, arbitrage or speculation.

(v) The value of derivative contract is always based on and linked to the underlying security. Though this linkage may not be on point-to-point basis.

(vi) In the cash market, a customer must open securities trading account with a securities depository whereas to trade futures a customer must open a future trading account with a derivative broker.

(vii) Buying securities in cash market involves putting up all the money upfront whereas buying futures simply involves putting up the margin money.

(viii) With the purchase of shares of the company in cash market, the holder becomes part owner of the company. While in future it does not happen.

(b) Systematic risk refers to the variability of return on stocks or portfolio associated with changes in return on the market as a whole. It arises due to risk factors that affect the overall market such as changes in the nations' economy, tax reform by the Government or a change in the world energy situation. These are risks that affect securities overall and, consequently, cannot be diversified away. This is the risk which is common to an entire class of assets or liabilities. The value of investments may decline over a given time period simply because of economic changes or other events that impact large portions of the market. Asset allocation and diversification can protect against systematic risk because different portions of the market tend to under perform at different times. This is also called market risk.

Unsystematic risk however, refers to risk unique to a particular company or industry. It is avoidable through diversification. This is the risk of price change due to the unique circumstances of a specific security as opposed to the over all market. This risk can be virtually eliminated from a portfolio through diversification.

(c) Forfeiting was developed to finance medium to long term contracts for financing capital goods. Forfeiting is a mechanism of financing exports. This is a form of fixed rate finance which involves the purchase by the forfeiture of trade receivables normally in the form of trade bills of exchange or promissory notes, accepted by the buyer with the endorsement or guarantee of a bank in the buyer's country.

The benefits are that the exporter can obtain full value of his export contract on or near shipment without recourse. The importer on the other hand has extended payment terms at fixed rate finance.

The forfeiture takes over the buyer and country risks. Forfeiting provides a real alternative to the government backed export finance schemes.

Factoring can however, broadly be defined as an agreement in which receivables arising out of sale of goods/services are sold by a "firm" (client) to the "factor" (a financial intermediary) as a result of which the title to the goods/services represented by the said receivables passes on to the factor. Henceforth, the factor

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becomes responsible for all credit control, sales accounting and debt collection from the buyer(s). In a full service factoring concept (without recourse facility) if any of the debtors fails to pay the dues as a result of his financial instability/insolvency/bankruptcy, the factor has to absorb the losses.

Some of the points of distinction between forfeiting and factoring have been outlined in the following table.

Factoring	Forfeiting
This may be with recourse or without recourse to the supplier.	This is without recourse to the exporter. The risks are borne by the forfeiter.
It usually involves trade receivables of short maturities.	It usually deals in trade receivables of medium and long term maturities.
It does not involve dealing in negotiable instruments.	It involves dealing in negotiable instrument like bill of exchange and promissory note.
The seller (client) bears the cost of factoring.	The overseas buyer bears the cost of forfeiting.
Usually it involves purchase of all book debts or all classes of book debts.	Forfeiting is generally transaction or project based. Its structuring and costing is case to case basis.
Factoring tends to be a 'case of' sell of debt obligation to the factor, with no secondary market.	There exists a secondary market in forfeiting. This adds depth and liquidity to forfeiting.

(d) Distinction between forward and futures contracts

1. Trading: Forward contracts are traded on personal basis or on telephone or otherwise.

   Futures contracts are traded in a competitive arena.

2. Size of contract: Forward contracts are individually tailored and have no standardised size.

   Futures contracts are standardised in terms of quantity or amount as the case may be.

3. Organised exchanges: Forward contracts are traded in an over the counter market.

   Futures contracts are traded on organised exchanges with a designated physical location.

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4. Settlement: Forward contracts settlement takes place on the date agreed upon between the parties.

   Futures contracts settlements are made daily via exchange's clearing house.

5. Delivery date: Forward contracts may be delivered on the dates agreed upon and in terms of actual delivery.

   Futures contracts delivery dates are fixed on cyclical basis and hardly takes place. However, it does not mean that there is no actual delivery.

6. Transaction costs: Cost of forward contracts is based on bid – ask spread.

   Futures contracts entail brokerage fees for buy and sell orders.

7. Marking to market: Forward contracts are not subject to marking to market. Futures contracts are subject to marking to market in which the loss profit is debited or credited in the margin account on daily basis due to change in price.

8. Margins: Margins are not required in forward contract.

   In futures contracts every participant is subject to maintain margin as decided by the exchange authorities.

9. Credit Risk: In forward contracts credit risk is borne by each party and, therefore, every party has to bother for the creditworthiness of the counter – party.

   In futures contracts the transaction is a two way transaction, hence the parties need not to bother for the creditworthiness of each party.

10. Liability extent: In forward contracts the liability happens to be unlimited because market fluctuation may be wide.

    In Futures Contract the extent of loss/profit is known every next day and depending on the risk taking capacity of the party, exposure may be limited.

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