CA FINAL EXAMINATION NOVEMBER 2017

STRATEGIC FINANCIAL MANAGEMENT

IMPORTANT QUESTIONS

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REPLACEMENT DECISIONS

Question 1

A machine used on a production line must be replaced at least every four years. Costs incurred to run the machine according to its age are:

Particulars	Age of Machine in years				
	0	1	2	3	4
Purchase price (in Rs)	60,000				
Maintenance (in Rs)		16,000	18,000	20,000	20,000
Repair (in Rs)		0	4,000	8,000	16,000
Scrap Value (in Rs)		32,000	24,000	16,000	8,000

Future replacement will be with identical machine with same cost. Revenue is unaffected by the age of the machine. Ignoring inflation and tax, determine the optimum replacement cycle at 15% cost of capital.

RISK ANALYSIS

Question 1

A-Z Automobiles Spares Limited is considering investment in one of the three mutually exclusive projects. The cashflows (₹ in lakhs) associated with the projects are as under:

Year	Janata	Sedan	Limousine
0	(11)	(15)	(19)
1	6	6	4
2	4	6	6
3	5	6	8
4	2	6	12

The company's cost of capital is 15% and income tax rate is 40%. The risk free rate is 10%. The risk index for the projects is as under:

	Janata	Sedan	Limousine
Risk Index	1.00	1.80	0.60

Evaluate the projects using risk adjusted discount rate.

DECISION TREE ANALYSIS

Question 1

Big Oil is wondering whether to drill for oil in Westchester Country. The prospectus is as follows:

Depth (Feet)	Total Cost USD Millions	Cumulative Probability of Finding Oil	PV of oil (if found) USD Millions
2,000	4	0.50	10
4,000	5	0.60	9
6,000	6	0.70	8

Draw a decision tree showing the successive drilling decisions to be made by Big Oil. How deep should it be prepared to drill?

CASH FLOW PROJECTIONS

Question 1

Following are the estimates of the net cash flows and probability of a new project of M/s X Ltd:

Particulars	Year	P = 0.3	P = 0.5	P = 0.2
Initial Investment	0	4,00,000	4,00,000	4,00,000
Estimated net after tax cash inflows p.a.	1 - 5	1,00,000	1,10,000	1,20,000
Estimated salvage value (after tax)	5	20,000	50,000	60,000

Required rate of return from the project is 10%.

Requirement:

i. Expected NPV of the project.
ii. Best and worst case NPVs.
iii. Probability of occurrence of the worst case, if the cash flows are
    a. Perfectly dependent overtime
    b. Independent overtime
iv. Standard deviation and Co-efficient of variation assuming that there are only three streams of cash flow, which are represented by each column of the table with the given probabilities.
v. Co-efficient of variation of X Ltd. on its average project is in the range of 0.95 to 1.00. If the co-efficient of variation of the project is found to be less risky than average, 100 basis points are deducted from the Company's cost of capital. Should the project be accepted by X. Ltd?

Question 2

Skylark Airways is planning to acquire a light commercial aircraft at an investment of ₹50,00,000/-. The expected cash flow after tax for the next three years is as follows:

Year 1		Year 2		Year 3	
CFAT	Probability	CFAT	Probability	CFAT	Probability
14,00,000	0.1	15,00,000	0.1	18,00,000	0.2
18,00,000	0.2	20,00,000	0.3	25,00,000	0.5
25,00,000	0.4	32,00,000	0.4	35,00,000	0.2
40,00,000	0.3	45,00,000	0.2	48,00,000	0.1

The company wishes to take into consideration all possible risk factors relating to an airline operation. The company wants to know:

i. The expected NPV of this venture assuming independent probability distribution with 6% discounting rate.
ii. The possible deviation in the expected value.
iii. How would standard deviation of the present value distribution help in capital budgeting decisions?

Question 3

The municipal corporation of a city with mass population is planning to construct a flyover that will replace the intersection of two busy highways X and Y. Average traffic per day is 10,000 vehicles on highway X and 8,000 vehicles on highway Y. 70% of the vehicles are private and rest are commercial vehicles. The flow of traffic across and between aforesaid highways is controlled by traffic lights. Due to heavy flow, 50% of traffic on each of the highways is delayed. Average loss of time due to delay is 1.3 minute in highway X and 1.2 minute in highway Y. The cost of time delayed is estimated to be ₹80 per hour for commercial vehicle and ₹30 for private vehicle. The cost of stop and start is estimated to be ₹1.20 for commercial vehicle and ₹0.80 for private vehicle. The cost of operating the traffic lights is ₹80,000 a year. One policeman is required to be posted for 3 hours a day at the crossing which costs ₹150 per hour.

Due to failure to obey traffic signals, eight fatal accidents and sixty non-fatal accidents occurred in last 4 years. On an average, insurance settlements per fatal and non-fatal accidents are ₹5,00,000 and ₹15,000 respectively. To eliminate the delay of traffic and the accidents caused due to traffic light violations, the flyover has been designed. It will add a quarter of kilometer to the distance of 20% of total traffic. No posting of policeman will be required at the flyover. The flyover will require investment of ₹3 crore. Extra maintenance would be ₹70,000 a year.

The incremental operating cost of commercial vehicle will be ₹5 per km and ₹2 for non-commercial vehicle. Expected economic life of the flyover is 30 years having no salvage value.

The cost of capital for the project is 8% (corresponding capital recovery rate is 0.0888). You are required to calculate:

i. Total net benefits to users,
ii. Annual cost to the state; and
iii. Benefit cost ratio

Question 4

Gretel Limited is setting up a project for manufacture of boats at a cost of ₹300 lakhs. It has to decide whether to locate the plant next to the sea shore (Area A) or in an inland area with no access to any waterway (Area B).

If the project is located in Area B then Gretel Limited receives a cash subsidy of ₹20 lakhs from the Central Government. Besides, the taxable profits to the extent of 20% is exempt for 10 years in Area B. The project envisages a borrowing of ₹200 lakhs in either case. The rate of interest per annum is 12% in Area A and 10% in Area B. The borrowing of principal has to be repaid in 4 equal instalments beginning from the end of the 4th year.

Earnings before Depreciation, Interest and Tax (₹ in lakhs) is as under:

Year	Area A	Area B
1	(6)	(50)
2	34	(50)
3	54	10
4	74	20
5	108	45
6	142	100
7	156	155
8	230	190
9	330	230
10	430	330

Assume straight line depreciation with no residual value, Income Tax Rate @ 50% and Required rate of return @ 15%.

15% discount factors are:

Year	1	2	3	4	5	6	7	8	9	10
d.f.	0.87	0.76	0.66	0.57	0.50	0.43	0.38	0.33	0.28	0.25

You are required to suggest the proper location for the project to the CEO of Gretel Limited.

Question 5

Helium Ltd has evolved a new sales strategy for the next 4 years.

The following information is given:

Income Statement	(₹'000)
Sales	40,000
Gross Margin at 30%	12,000
Administration & distribution expense at 15%	6,000
Profit before tax	6.000
Tax at 30%	1,800
Profit after tax	4,200
Balance sheet information	
Fixed Assets	10,000
Current Assets	6.000
Equity	15,000

As per the new strategy, sales will grow at 30% per year for the next four years. The gross margin ratio will increase to 35%.

The Assets turnover ratio and income tax rate will remain unchanged. Depreciation is to be at 15% on the value of the net fixed assets at the beginning of the year.

Company's target rate of return is 14%.

Determine whether the strategy is financially viable giving detailed workings.

LEASE

Question 1

Elite Builders, a leading construction company has been approached by a foreign embassy to build for them a block of six flats to be used as guesthouse. As per the terms of contract, the foreign embassy would provide Elite Builders the land costing ₹25 lakhs.

Elite Builders would build the flats at their own cost and lease them out to the foreign embassy for 15 years, at the end of which the flats would be transferred to the foreign embassy for a nominal value of ₹8 lakhs. Elite Builders estimate the cost of construction as follows:

Area per flat	1000 sq. ft.
Construction cost	₹400/- per sq. ft.
Registration costs	2.5% of the construction cost

The above costs are incurred immediately (beginning of year 1). The full cost of construction and registration will be written off under straight-line over 15 years. It may be assumed that this will be allowed for tax purposes. Elite Builders will also incur ₹4 lakhs each in years 14 and 15 towards repairs. These are incurred at the end of the respective years.

Elite Builders propose to charge the lease rentals at the end of each year as follows:

Years	Rental
1 to 5	Normal
6 to 10	120% of Normal
11 to 15	150% of Normal

Elite Builders expect a minimum return of 10% after tax. Their tax rate is 50%. Calculate the lease rental p.a. for years 1-5, 6-10 and 11-15.

Question 2

A company wants to acquire an additional computer to supplement its time-share computer services to clients. The co. has two options:

i. To purchase the computer for ₹22 lakhs. The company estimates that the computer under review will be worth ₹10 lakhs at the end of the third year. The company uses straight-line method to depreciate its assets. The company can borrow at 16% interest to finance the acquisition of the computer. Repayments are to be made according to the following schedule:

Year end	1	2	3
Principal (₹'000)	500	850	850
Interest (₹'000)	352	272	136

ii. To lease the computer for three years from a leasing company for ₹5 lakhs as annual lease rent plus 10% of gross time-share service revenue. The agreement also requires an additional payment of ₹6 lakhs at the end of third year. Lease rentals are payable at the year-end and the computer reverts to the lessor after the contract period.

Forecast revenues are:

Year	1	2	3
Amount (₹ in lakhs)	22.5	25.0	27.5

An amount of ₹1 lakh is to be incurred for startup and training costs at the beginning of the first year. Annual operating costs excluding depreciation / lease rental of computer are estimated at ₹9 lakhs. These costs are to be borne by the co.

Tax rate is 50%. The management approaches you to advice. Which alternative would you recommend and why?

Question 3

A company is planning to acquire a machine costing ₹5,00,000/-. Effective life of the machine is 5 years. The company is considering two options. One is to take the machine on lease and the other is to borrow ₹5,00,000/- from its bankers at 10% interest p.a. and purchase the asset. The principal amount of loan will be paid in 5 equal installments to be paid annually. The machine will be sold at ₹50,000/- at the end of 5th year.

The following information is given:

i. Principal, interest, lease rentals are payable on the last day of each year.
ii. The cost of the machine will be fully depreciated over its effective life.
iii. Tax rate is 30%.
iv. Cost of capital is 8%.

Compute the lease rentals payable which will make the company indifferent to the loan option.

Question 4

X Ltd. has one Water Pollution Control machine with no book value under IT. It is the only one in this type of block of asset as it was subject to 100% depreciation in the very first year of installation.

Due to funds crunch, X Ltd. decided to sell the machine. It can be sold in the market to anyone for 5,00,000. Y Ltd. came forward to buy the machine and lease it to X for lease rental of ₹ 90,000 p.a. for 5 years. X decided to invest the proceeds in a risk free deposit fetching yearly interest of 8.75% to generate some cash flow. It also decided to relook the entire issue after the said period of 5 years.

Another co. Z has approached X proposing to sell a similar machine for ₹ 4,00,000 and undertook to buy it back at the end of 5 years for 1,00,000 provided the maintenance were entrusted to Z for yearly charge of 15,000. X would utilize the sale proceeds of the old machine to fund this machine should it accept the offer.

The weighted average cost of capital is 12% and tax rate is 34%.

Which alternative would you recommend?

FACTORING

Question 1

M/s Atlantic Company Limited with a turnover of ₹4.80 crores is expecting growth of 25% for the forthcoming year. Average credit period is 90 days. The past experience shows that bad debt losses are 1.75% on sales. The company's administering cost for collecting receivables is ₹6,00,000.

It has decided to take factoring services of Pacific Factors on terms that factor will buy receivables by charging 2% commission and 20% risk with recourse. The Factor will pay advance on receivables to the firm at 16% interest rate per annum after withholding 10% as reserve.

Calculate the effective cost of factoring to the firm.
(Assume 360 days in a year)

Question 2

The credit sales and receivables of DEF Limited at the end of the year are estimated at ₹561 lakhs and ₹69 lakhs respectively. The average variable overdraft interest rate is 5% p.a. DEF Limited is considering a factoring proposal for its receivables on a non-recourse basis at an annual fee of 1.25% of credit sales. As a result, DEF Limited will save ₹1.5 lakhs p.a. in administrative cost and ₹5.25 lakhs p.a. as bad debts. The factor will maintain a receivables collection period of 30 days and will provide 80% of receivables as advance at an interest rate of 7% p.a.

You may take 365 days in a year for the purpose of calculation of receivables. Evaluate the viability of factoring proposal.

Question 3

Beanstalk Limited manages its accounts receivable internally by its sales and credit department. The cost of sales ledger administration stands at ₹10 crores annually. The company has a credit policy of 2/10, net 30. Past experience of the company has been that on an average, 40% of the customers avail of the discount by paying within 10 days while the balance of the receivables are collected on average 90 days after the invoice date. Bad debts of the company are currently 1.5% of total sales. The projected sales for the next year are ₹1000 crores.

Beanstalk Limited finances its investment in debtors through a mix of bank credit and own long term funds in the ratio of 70:30. The current cost of bank credit and long term funds are 13% and 15% respectively.

With escalating cost associated with the in house management of debtors coupled with the need to unburden the management with the task so as to focus on sales promotion, the company is examining the possibility of outsourcing its factoring service for managing its receivable and has two proposals on hand with a guaranteed payment within 30 days.

The main elements of the Proposal I from Finebank Factors Limited are:

- Advance, 88 percent and 84 percent for the recourse and non recourse arrangements.
- Discount charge in advance, 21 percent for with recourse and 22 percent without recourse.
- Commission, 4.5 percent without recourse and 2.5 percent with recourse.

The main elements of the Proposal II from Roughbank Factors Limited are:

- Advance, 84 percent with recourse and 80 percent without recourse respectively.
- Discount charge upfront without recourse 21 percent and with recourse 20 percent.
- Commission upfront, without recourse 3.6 percent and with recourse 1.8 percent.

The opinion of the Chief Marketing Manager is that in the context of the factoring arrangement, his staff would be able exclusively focus on sales promotion which would result in additional sales of 10% of projected sales.

What advice would you give? Why?

PORTFOLIO MANAGEMENT

Question 1

Pastel Ltd. is considering two major new investment opportunities – project 1 & project 2. Each project would require an immediate outlay of ₹ 10,00,000/- and would generate cash inflows at the end of the year. Pastel Ltd. expects to have available resources to undertake only one of them. The directors of Pastel Ltd. believe that returns from existing activities and from the new projects will depend on the economic environment prevailing during the forthcoming year.

They estimate the cash inflows and the probabilities for the forthcoming year as under:

Environment Condition	A	B	C
Probability of environment	0.3	0.4	0.3
Cash Inflows from Project 1	12,50,000	12,50,000	9,50,000
Cash Inflows from Project 2	10,00,000	11,75,000	13,00,000
Cash I.F. from existing activities	90,00,000	120,00,000	130,00,000

The investment in existing activities is ₹ 100 lakhs. The risk free return is 10% p.a.

The directors have decided to use CAPM for appraisal of their two projects. Advise the company regarding selection of the project using Net Present Value & Internal Rate of Return. Which technique is better?

Question 2

X Co. Ltd. invested on 01.04.2005 in certain equity shares as below:

Name of Co.	No. of shares	Cost (₹)
M Ltd.	1000 (₹ 100/- each)	2,00,000
N Ltd.	500 (₹ 10/- each)	1,50,000

In September 2005, 10% dividend was paid out by M Ltd. and in October 2005, 30% dividend paid out by N Ltd. On 31.03.2006 market quotations showed a value of ₹ 220/- and ₹ 290/- per share for M Ltd. and N Ltd. respectively.

On 01.04.2006, investment advisors indicate that the dividends from M Ltd. and N Ltd. for the year ending 31.03.2007 are likely to be 20% and 35% respectively and the probabilities of market quotations on 31.03.2007 are as below:

Probability	Price/Share of M Ltd.	Price/Share of N Ltd.
0.2	220	290
0.5	250	310
0.3	280	330

Requirement:

i. Calculate the average return from the portfolio for the year-ended 31.03.2006.

ii. Calculate the expected average return from the portfolio for the year ended 31.03.07.

iii. Advise X Co. Ltd. of the comparative risk in the two investments by calculating the standard deviation in each case.

Question 3

The following are the rate of returns on Xenith and the Market Index for a 5 year period:

Year	Xenith	Index
1	0.44	(0.15)
2	0.47	0.36
3	0.15	0.17
4	0.09	(0.12)
5	(0.10)	0.05

Requirement:

i. What is the regression equation for the above returns of Xenith & Index?

ii. Find the total variance for Xenith and indicate how much of that is explained and unexplained by the Index.

Question 4

A study by a Mutual fund has revealed the following data in respect of three securities:

Security	σ (%)	Correlation
A	20	0.60
B	18	0.95
C	12	0.75

The standard deviation of market portfolio (BSE Sensex) is 15%.

Requirement:

i. What is the sensitivity of returns of each stock with respect to the market?
ii. What are the co variances among the various stocks?
iii. What would be the risk of portfolio consisting of all the three stocks equally?
iv. What is the Beta of the portfolio consisting of equal investment in each stock?
v. What is the total unsystematic and systematic risk of the portfolio in (iv)?

Question 5

Consider the following information:

Security	Expected Return (%)	Beta	Standard Deviation (%)
A	32	1.70	50
B	30	1.40	35
C	25	1.10	40
D	22	0.95	24
E	20	1.05	28
F	10	0.70	18
Stock Index	12	1.00	20
Treasury Bills	8	0.00	0

Requirement:

i. Identify the securities that are underpriced.
ii. Find expected return for an investor who has invested in a portfolio comprising all 6 securities in equal proportions with a) 100% own funds b) 40% of own funds as borrowings with a cost of 8%?
iii. Find systematic, unsystematic and total risk of the portfolio.

Question 6

Consider the following information relating to four stocks:

Stock	Expected Return	Alpha	Variance($\%^2$)	
			Systematic	Unsystematic
1	17%	(0.06)	5	4
2	13%	0.10	2	6
3	9%	0	3	1
4	7%	(0.14)	3	2

The market variance is $6\%^2$.

The correlation between the securities and the market is as under:

	2	3	4	Market
1	0.40	0.70	0.20	0.74
2		0.60	0.50	0.50
3			0.90	0.87
4				0.78

Requirement:

i. What is the return and risk of a portfolio of equal proportions of the four stocks?

ii. If the market return is 12%, what will be the return and risk of a portfolio containing stocks 1 and 3 in equal proportions?

Question 7

Consider the following information relating to two stocks, A & B.

Particulars	A	B
Expected Return	15	20
Expected Variance	9	16

The covariance between the returns on the two securities is 8. Will an investor gain due to diversification if he invests partly in A and partly in B?

Question 8

Ms. Sunitha is working with an MNC at Mumbai. She is well versant with the portfolio management techniques and wants to test one of the techniques on an equity fund she has constructed and compare the gains and losses from the technique with those from a passive buy and hold strategy.

The fund consists of equities only and the ending NAVs of the fund she constructed for the last 10 months are given below:

Month	Ending NAV (₹/unit)	Month	Ending NAV (₹/unit)
December	40.00	May	37.00
January	25.00	June	42.00
February	36.00	July	43.00
March	32.00	August	50.00
April	38.00	September	52.00

Assume Sunidhi had invested a notional amount of ₹2 lakhs equally in the equity fund and a conservative portfolio (of bonds) in the beginning of December and the total portfolio was being rebalanced each time the NAV of the fund increased or decreased by 15%.

You are required to determine the value of the portfolio for each level of NAV following the Constant Ratio Plan.

DIVIDEND POLICY

Question 1

ABC Ltd. was started a year back with a paid up equity capital of ₹40,00,000/-. The other details are as under:

Earnings of the Company	₹4,00,000
Dividend paid	₹3,20,000
Price-earnings ratio	12.5
Number of shares	40,000

You are required to find out whether the company's dividend payout ratio is optimal, using Walter's formula.

Question 2

The following table gives details regarding three companies.

Particulars	A Ltd.	B Ltd.	C Ltd.
Return	15%	10%	8%
Cost of equity	10%	10%	10%
EPS	₹10	₹10	₹10

Requirement:

i. Calculate the value of an equity share of each of these three companies using Walter's model when dividend payout ratio is:
   20%
   50%
   0%
   100%
ii. Comment on the results drawn.

Question 3

X Ltd has an internal rate of return 20%. It has declared dividend @ 18% on its equity shares, having face value of 10 each. The payout ratio is 36% and Price Earnings Ratio is 7.25.

Find cost of equity using Earnings Price Approach. Determine the limiting value of its shares as per Walter's model.

Question 4

Best buy Auto Ltd. has 1,20,000 shares selling at ₹20/- per share. The company hopes to make a net income of ₹3,50,000/- during the year ended 31st March.

The Company is considering paying dividend of ₹2/- per share at the end of the current year. The capitalization rate for risk class of this company has been estimated to be 15%.

Answer the questions listed below on the basis of the Modigliani Miller Dividend Valuation Model:

i. What will be the price of a share at 31st March if the dividend is paid?
ii. What will be the price of a share at 31st March if the dividend is not paid?
iii. How many new shares must the company issue if the dividend is paid and the company needs ₹7,40,000/- for an approved investment expenditure during the year?

Question 5

Buenos Aires Limited has 10 lakh equity shares outstanding at the beginning of the year 2013. The current market price per share is ₹150. The company is contemplating a dividend of ₹9 per share. The rate of capitalization, appropriate to its risk class is 10%.

Requirement:

(i) Based on MM approach, calculate the market price of the share of the company when:
   a. Dividend is declared
   b. Dividend is not declared
(ii) How many new shares are to be issued by the company, under both the above options, if the Company is planning to invest ₹500 lakhs assuming a net income of ₹200 lakhs by the end of the year?

BUY BACK

Question 1

The following information is available for an equity share in respect of market condition, market price after one year and dividend for the year:

Market Condition	Probability	Market Price	Dividend per share (₹)
Good	0.25	115	9
Normal	0.50	107	5
Bad	0.25	97	3

Existing market price of equity share is ₹106/- (F.V. Re.1), which is cum 10% bonus debenture of ₹6/- each, per share. The company has offered buy-back of debentures at face value.

Requirement:

i. Find expected return & variability of returns of the equity shares.
ii. Also advise whether to accept buyback offer.

Question 2

A Ltd. has a surplus cash of ₹90 lakhs and wants to distribute 30% of it to its shareholders and decides to buy back 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/-.

Requirement:

i. Determine the price at which shares can be repurchased, if market capitalisation of company should be ₹200 lakhs after buyback.
ii. Calculate the number of shares to be repurchased.
iii. Show the impact of share repurchase on EPS, assuming same net income.

Question 3

Skylark Ltd. Is contemplating whether to pay out ₹4,00,000 excess cash in the form of an extra dividend or go in for share repurchase. Current earnings are ₹2 per share and the stock sells for ₹20. The market value balance sheet currently is as follows:

Balance Sheet

Liabilities	Amount	Assets	Amount
Equity	17,00,000	Other than cash	19,00,000
Debt	6,00,000	Cash	4,00,000

Requirement:

i. Evaluate the two alternatives in terms of the effect on the price per share and EPS.
ii. Which alternative is better? Why?

Question 4

Lokesh Ltd. earned ₹65 lakh as net income in the current year and has a target payout ratio of 40%. There are 13 lakh shares outstanding at a market price of ₹25 per share. The company could either buy back shares or pay out dividends.

Requirement:

i. At what price the shares should be bought to equate the wealth of all shareholders?
ii. How many shares can be bought back?
iii. Impact of buyback on EPS and expected market price after repurchase.

You may assume that the P/E of the company is unaffected in both the alternatives.

EQUITY – Analysis & Valuation

Question 1

AB Co.'s share was sold for ₹146 per share. A long-term earnings growth rate of 7.5% is anticipated. AB Co. is expected to pay dividend of ₹3.36 per share.

Requirement:

i. What rate of return can an investor expect to earn assuming that dividends are expected to grow along with earnings at 7.5% per year in perpetuity?

ii. It is expected that AB Co. will earn about 10% on book equity and shall retain 60% of earnings. In this case, will there be any change in growth rate and cost of equity?

Question 2

X Ltd., is a Shoes manufacturing company. It is all equity financed and has a paid-up capital of ₹10,00,000 (₹10 per share). X Ltd., has hired Swastika Consultants to analyse the future earnings. The report of Swastika Consultants states as follows:

i. The earnings and dividend will grow at 25% for the next two years.
ii. Earnings are likely to grow at the rate of 10% from 3rd year and onwards.
iii. Further, if there is reduction in earnings growth, dividend pay-out ratio will increase to 50%.

The other data related to the company are as follows:

Year	EPS	DPS	MPS
2010	6.30	2.52	63.00
2011	7.00	2.80	46.00
2012	7.70	3.08	63.75
2013	8.40	3.36	68.75
2014	9.60	3.84	93.00

You may assume that the tax rate is 30% (not expected to change in future) and post-tax cost capital is 15%.

By using the Dividend Valuation Model, calculate

i. Expected Market Price per share
ii. P/E Ratio.

Question 3

A company expects to pay a dividend of ₹2/- per share with a growth rate of 7%. The risk free rate is 9% and the market rate of return is 13%. The company has a beta factor of 1.5. However, due to a decision of the Finance Manager, the beta is likely to increase to 1.75.

Find out the present as well as the likely value of the share after the decision.

Question 4

Abhinash is holding 5,000 shares of Future Group Limited. Presently the rate of dividend being paid by the company is ₹5.00 per share and the share is being sold at ₹50.00 per share in the market.

However, several factors are likely to change during the course of the year as indicated below:

Particulars	Existing	Revised
Risk free rate	12.50%	10.00%
Market risk premium	6.00%	4.80%
Expected Growth Rate	5.00%	8.00%
Beta Value	1.50	1.25

In view of the above factors, should Abhinash buy, hold or sell the shares? Narrate the reason for the decision to be taken.

Question 5

The risk-free rate of return is 9 percent. The expected rate of return on the market portfolio is 13 percent. The expected rate of growth for the dividend of Platinum Limited is 7 percent. The last dividend paid on the equity was ₹2. The equity beta of Platinum Limited is 1.2.

Requirement:

i. What is the equilibrium price of the equity stock of Platinum Limited?
ii. How would the equilibrium price change when
    a. The inflation premium increases by 2 percent? &
    b. The expected growth rate increases by 3 percent? &
    c. The equity beta of Platinum Limited rises to 1.3?

Question 6

XYZ Ltd., paid a dividend of ₹2 for the current year. The dividend is expected to grow at 40% p.a. for the next 5 years and at 15% p.a. thereafter. The return on 182 days T-bills is 11% p.a. and the market return is expected to be around 18% with a variance of 24%. The co-variance of XYZ's return with that of the market is 30%. Calculate the required rate of return and intrinsic value of the stock.

Question 7

Capital structure of Sun Limited as at 31.3.2005 was as under:

Particulars	(₹in lakhs)
Equity Share Capital	80
8% Preference share capital	40
12% Debentures	64
Reserves	32

Sun Limited, earns EBIT of ₹32 lakhs annually. Sun Ltd. has been regularly paying an equity dividend of 8%. Tax rate is 35%.

Normal expected yield on Equity Share Capital of similar companies is 9.6% provided:

i. Profit after tax covers fixed interest & dividend at least three times.
ii. Debt Equity ratio is 0.75.

Yield on Share Capital is calculated at 50% of profits distributed to Equity Shareholders and at 5% on undistributed profits.

Compute the value per equity share of the company.

Question 8

Mr. A is contemplating purchase of 1,000 equity shares of a company. His expectation of return is 10% before tax by way of dividend with an annual growth of 5%. The company's last dividend was ₹2/- per share.

Even as he is contemplating, Mr. A suddenly finds that, due to a budget announcement, dividends have been exempted from tax in the hands of recipients. But the imposition of dividend distribution tax on the company is likely to lead to a fall in dividend of 20 paise per share. A's marginal tax rate is 30%. Calculate share price estimate before & after budget announcement.

Question 9

SAM Ltd., has just paid a dividend of ₹2 per share and it is expected to grow @ 6% p.a. After paying dividend, the Board declared to take up a project by retaining the next three annual dividends. It is expected that this project is of same risk as the existing projects.

The results of this project will start coming from the 4th year onward from now. The dividends will then be ₹2.50 per share and will grow @ 7% p.a.

An investor has 1,000 shares in SAM Ltd., and wants a receipt of at least ₹2,000 p.a. from this investment.

Show that the market value of the share is affected by the decision of the Board. Also, show as to how the investor can maintain his target receipt from the investment for first 3 years and improved income thereafter, given that the cost of capital of the firm is 8%.

Question 10

Trupti Co. Limited, promoted by a Multinational group "International Inc." is listed on a Stock Exchange holding 84% i.e. 63 lakh shares. Profit after Tax is ₹4.80 crores. Free Float Market Capitalization is ₹19.20 crores.
As per the SEBI guidelines promoters have to restrict their holding to 75% to avoid delisting from the stock exchange. Board of Directors has decided not to delist the share but to comply with the SEBI guidelines by issuing Bonus shares to minority shareholders while maintaining the same P.E ratio.

Calculate

i. PE Ratio
ii. Bonus Ratio
iii. Market price of share before and after the issue of bonus shares
iv. Free Float Market capitalization of the company after the bonus shares.

Question 11

ABC Ltd.'s shares are currently selling at ₹13/- per share. There are 10,00,000 shares outstanding. The company is planning to raise ₹20,00,000/- to finance a new project.

Requirement:

i. What is the ex-right price of shares and the value of a right, if
   a) The company offers one right share for every two shares held.
   b) The company offers one right share for every four shares held.
ii. How does shareholders' wealth change from (a) to (b)? How does right issue increase shareholder's wealth?

Question 12

Following financial information is available for PQR Ltd. for the year ended 31st March 2008:

Particulars	
8% Debentures (₹ in lakh)	125
10% Bonds (₹ in lakh)	50
Equity Share Capital (₹10 each) (₹ in lakh)	100
Reserves and Surplus (₹ in lakh)	300
Total Assets (₹ in lakh)	600
Assets Turnovers ratio	1.10
Effective interest rate	8.00%
Effective tax rate	40.00%
Operating margin	10.00%
Dividend payout ratio	16.67%
Current market Price of Share (₹)	14.00
Required rate of return of investors	15%

Requirement:

i. Draw income statement.
ii. Calculate sustainable growth rate.
iii. Calculate the fair price of the Company's share using dividend discount model.
iv. What is your opinion on investment in the company's share at current price?

Question 13

Dividend paid per share	₹6.90
Dividend pay-out ratio	0.47
Cost of equity	13.00%
Growth of company in long term	8.50%
Capital Expenditure per share	₹13.00
Depreciation per share	₹10.50
Increase in working capital per share	₹3.31
Debt ratio	0.39

Calculate the intrinsic value of the share.

Question 14

Calculate the value of share from the following information:

Profit of the company	₹290 crores
Equity capital of company	₹1,300 crores
Par value of share	₹40.00 each
Debt ratio of company	27.00%
Long run growth rate of the Co.	8.00%
Beta	0.10
Risk free interest rate	8.70%
Market returns	10.30%
Capital expenditure per share	₹47.00
Depreciation per share	₹39.00
Change in working capital per share	₹3.45

MUTUAL FUNDS

Question 1

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

Co.	No. of shares	Market price on 01/02/12	Market price on 02/02/12
L	20,000	20.00	20.50
M	30,000	312.40	360.00
N	20,000	361.20	383.10
P	60,000	505.10	503.90

Total No. of units outstanding is 6,00,000.

Requirement:

(i) Calculate Net Assets Value of the Fund.

(ii) If on 01/02/12 Mr. A makes a payment of Rs 30,00,000 to the Mutual Fund and the Fund manager purchases 8,000 shares of M Ltd; and the balance amount is held in Bank. In such a case, what would be the position of the Fund?

(iii) Find new NAV of the Fund as on 02/02/12.

Question 2

On 1st April, an open ended scheme of Mutual Fund had 300 lakh units outstanding with Net Asset Value (NAV) of ₹18.75. At the end of April, it issued 6 lakh units at opening NAV plus 2% load, adjusted for dividend equalization. At the end of May, 3 Lakh units were repurchased at opening NAV less 2% exit load adjusted for dividend equalization. At the end of June, 70% of its available income was distributed. In respect of April – June quarter, the following additional information is available:

	₹ in lakh
Portfolio value appreciation	425.47
Income for April	22.950
Income for May	34.425
Income for June	45.450

You are required to calculate:

(i) Income available for distribution

(ii) Issue price at the end of April

(iii) Repurchase price at the end of May and

(iv) Net asset Value (NAV) as on 30th June.

Question 3

Mr. X on 1.7.2000 during the initial offer of some mutual fund invested in 10,000 units having face value of ₹10/- per unit. On 31.3.2001, the dividend offered by the Mutual Fund was 10% and Mr. X found that his annualized yield was 153.33%. On 31.03.2002, 20% dividend was given. On 31.3.2003, Mr. X redeemed all his balance of 11296.11 units when his annualized yield was 73.52%.

What are the NAVs as on 31.3.2001, 31.3.2002 and 31.3.2003?

Question 4

A mutual fund had a net asset value of ₹20/- at the beginning of a month. It made income distribution of ₹0.0375 and capital gain distribution of ₹0.03 per share respectively during the month. The net asset value at the end of the month was ₹20.06. Calculate the return.

Question 5

Orange purchased 200 units of Oxygen Mutual Fund at Rs 45 per unit on 31st December, 2009. In 2010, he received Rs 1.00 as dividend per unit and a capital gains distribution of Rs 2 per unit.

Requirement:

(i) Calculate the return for the period of one year assuming that the NAV as on 31st December 2010 was Rs 48 per unit.

(ii) Calculate the return for the period of one year assuming that the NAV as on 31st December 2010 was Rs 48 per unit and all dividends and capital gains distributions has been reinvested at an average price of Rs 46.00 per unit.

Ignore taxation.

Question 6

Mr X earns 10% on his investments in equity shares. He is considering a recently floated scheme of a Mutual Fund where the initial expenses are 6% and annual recurring expenses are expected to be 2%.

How much should the Mutual Fund scheme earn to provide a return of 10% to Mr X?

Question 7

Sun Moon Mutual Fund (approved mutual fund) sponsored open-ended equity oriented scheme “Chanakya Opportunity Fund”. There were three plans (Face value ₹10/-) viz.

‘A’ Dividend Reinvestment Plan
‘B’ Bonus Plan
‘C’ Growth Plan

At the time of new fund offer on 1.4.95, Mr. Anand, Mr. Bachan and Mrs. Charu invested ₹ 1,00,000/- each in funds ‘B’, ’C’ & ‘A’ respectively.

The history of the fund is as follows:

Date	Dividend %	Bonus Ratio	Net Asset value per unit (₹)		
			A	B	C
28.07.99	20		30.70	31.40	33.42
31.03.00	70	5: 4	58.42	31.05	70.05
31.10.03	40		42.18	25.02	56.15
15.03.04	25		46.45	29.10	64.28
31.03.04		1: 3	42.18	20.05	60.12
24.03.05	40	1: 4	48.10	19.95	72.40
31.07.05			53.75	22.98	82.07

On 31st July 2005 all three investors redeemed all the balance units.

Calculate annual rate of return to each of the investors.

i. Long term capital gains is exempt from income tax.
ii. Short term capital gains is subject to 10% income tax.
iii. Security transaction tax 0.2% on sale or redemption of units.
iv. Ignore education cess.

Model III : Evaluation

Question 8

The following are the data on five mutual funds:

Fund	Return	Standard Deviation	Beta
A	15	7	1.25
B	18	10	0.75
C	14	5	1.40
D	12	6	0.98
E	16	9	1.50

You are required to compute Reward to Volatility Ratio and rank these portfolio using Sharpe Method and Treynor's Method assuming that the risk free rate is 6%.

Question 9

There are two Mutual Funds viz., D Mutual Fund Ltd., and K Mutual Fund Ltd., each having close ended equity schemes.

NAV as on 31-12-2014 of equity schemes of D Mutual Fund Ltd. is ₹70.71 (consisting 99% equity and remaining cash balance) and that of K Mutual Fund Ltd. is ₹62.50 (consisting 96% equity and balance in cash).

Other information:

Particulars	D	K
Sharpe Ratio	2.00	3.30
Treynor Ratio	15.00	15.00
Standard Deviation	11.25	5.00

There is no change in portfolio during the next month and annual average cost is ₹3 per unit for the schemes of both the Mutual Funds. If share market goes down by 5% within a month, calculate expected NAV after a month for the schemes of both the Mutual Funds.

For calculation consider 12 months in a year and ignore number of days for particular month.

MERGERS & ACQUISITIONS

Question 1

Elrond Limited plans to acquire Doom Limited. The relevant financial details of the two firms prior to the merger announcement are:

	Elron Ltd.	Doom Ltd.
Market price per share	₹50	₹25
Number of outstanding shares	20 lakhs	10 lakhs

The merger is expected to generate gains, which have a present value of ₹200 lakhs. The exchange ratio agreed to is 0.5.

What is the true cost of the merger from the point of view of Elrond Limited?

Question 2

Co. A wishes to take over Co. B. Financial details of the 2 cos. are given:

Particulars	A Ltd.	B Ltd.
EAT (₹)	1,40,000	37,500
No. of Equity shares	20,000	7,500
P/E Ratio	10	8

Company A wishes to acquire B, exchanging its one share for every 1.5 shares of B Ltd. Show the extent of gain based on market value accruing to shareholders of the two companies as a result of the merger. Are they better off or worse than before the merger?

Question 3

International Ltd. is keen on acquiring National Ltd. The following financial data are given:

Particulars	International	National
Market price per share	₹20/-	₹12/-
No. of shares	1,00,000	1,00,000
Price Earning Ratio	10	6

Requirement:

i. What exchange ratio will raise the post-merger earnings per share of International Ltd. to ₹2.50?
ii. What should be the exchange ratio based on earnings per share?
iii. What should be the exchange ratio based on market price?

Question 4

XYZ Ltd. is considering merger with ABC Ltd. The following financial details are given:

Particulars	XYZ	ABC
No. of shares	2,50,000	1,25,000
Market price (₹)	20	10
EAT(₹)	5,00,000	1,25,000

The merger will be effected by means of a stock swap (exchange). ABC Ltd. has agreed to a plan under which XYZ Ltd., will offer the current market value of ABC Ltd.'s shares.

Requirement:

i. What is the pre-merger earnings per share and P/E ratio of both the Companies?

ii. If ABC Ltd.'s P/E ratio is 6.4, what is its current market price? What is the exchange ratio? What will XYZ Ltd.'s post-merger EPS be?

iii. What should be the exchange ratio, if XYZ Ltd.'s pre-merger and post-merger EPS are the same?

Question 5

M/s Tiger Limited wants to acquire M/s Leopard Limited. The balance sheet of leopard Limited as on 31st March, 2012 is as follows:

Liabilities	₹	Assets	₹
Equity Capital (70,000 shares)	7,00,000	Cash	50,000
Retained earnings	3,00,000	Debtors	70,000
12% Debentures	3,00,000	Inventories	2,00,000
Creditors & liabilities	3,20,000	Plant & Equipment	13,00,000
	16,20,000		16,20,000

Additional information:

(i) Shareholders of Leopard Limited will get one share in Tiger Limited for every two shares. Creditors & liabilities are expected to be settled at ₹5,00,000. Shares of Tiger Limited would be issued at its current price of ₹15 per share. Debenture holders will get 13% convertible debentures in the purchasing company for the same amount. Debtors and inventories are expected to realize ₹2,00,000.

(ii) Tiger Limited has decided to operate the business of Leopard Limited as a separate division. The division is likely to give cash

flows (after tax) to the extent of ₹5,00,000 per year for 6 years. Tiger Limited has planned that, after 6 years, this division would be demerged and disposed off for ₹2,00,000.

(iii) The company's cost of capital is 16%.

Make a report to the Board of the company advising them about the financial feasibility of this acquisition.

Question 6

Balance sheet (₹ in lakhs) of XYZ Limited as on March 31(current year) is as follows:

Liabilities		Assets	
Equity share capital (10 lakh shares of ₹20/- each)	200	Plant & Machinery	250
Retained earnings	50	Furniture & fittings	5
13% debentures	100	Inventories	90
Creditors & liabilities	30	Debtors	25
		Bank	10
	380		380

Additional information:

i. The company is to be absorbed by ABC Limited on the above date. The consideration for absorption is the discharge of debentures at a premium 10%, paying the liability in respect of sundry creditors and other current liabilities and payment of ₹14/- in cash and one share of ₹10/- in ABC Limited, at the market price of ₹16/- per share, in exchange for one share in XYZ Limited. The cost of dissolution of ₹10 lakh is to be met by the purchasing company.

ii. Expected incremental annual cash flows for 5 years are as follows:

Year-end	Rs in lakhs
1	100
2	135
3	175
4	200
5	80

iii. Cash flows of XYZ Ltd. are expected to be constant after 5 years.

iv. Cost of capital is 14%.

Based on the above information, comment on the financial soundness of ABC's decision regarding merger.

Question 7

The summarised Balance Sheet (₹ in lakhs) of Target Ltd. as on 31st March 2005 is as follows:

Liabilities	Amount	Assets	Amount
Equity share capital	500	Land & Buildings	300
General reserve	250	Plant & Machinery	580
Profit and loss account	120	Inventories	70
13% debentures	100	Debtors	35
Current liabilities	30	Bank	15
	1000		1000

Additional information:

i. Prospective Ltd. agrees to take over all the current assets at their book value but the fixed assets were to be revalued as under:
   Land & Buildings ₹500 lakh
   Plant & Machinery ₹500 lakh
   These sums apart, Prospective Ltd. should also pay a sum of ₹50 lakh as goodwill.

ii. Purchase consideration is to be paid as ₹130 lakhs in cash, to pay for 13% debentures and other liabilities. The balance is to be paid by way of shares of Prospective Ltd.

iii. Expected incremental cash flows accruing to Prospective Ltd. are as follows:

(₹in lakhs)

Year 1	Year 2	Year 3	Year 4	Year 5
200	300	260	200	100

   Thereafter, it is estimated that the cash flows will grow at 5% per annum.

iv. Cost of capital for the purpose of analysis is to be 15%

Prospective Ltd. is contemplating taking over the business of Target Ltd. Will Prospective Ltd. benefit?

Question 8

The earnings available to equity shareholders (₹ in crores) of A Ltd. and equity shareholders of AB Ltd. after A Ltd. merged with B Ltd. are given below:

Year	A	AB
1	100	160
2	110	180
3	118	205
4	124	215
5	130	225

Thereafter, the earnings of A Ltd. are expected to grow at a compound rate of 5% p.a.; the earnings of AB Ltd. are expected to grow at a compound rate of 6% p.a.

The no. of outstanding equity shares of A & B before merger were 1,00,000 shares and 2,00,000 shares respectively. The exchange ratio for shareholders of B Ltd. was decided as 0.3 share for every 1 share.

Evaluate the merger proposal. Use 15% discount rate.

Question 9

P Ltd. promoted two companies A Ltd. and T Ltd. The following information is available:

Particulars	A Ltd.	T Ltd.
Share Capital (₹ in lakhs)	200	100
Free Reserves & Surplus (₹ in lakhs)	800	500
Paid up value per share (₹)	100	10
Free Float market capitalization (₹ in lakhs)	400	128
P/E ratio	10	4
Promoter's Holding	50%	60%

A Ltd. wants to acquire T Ltd. and P Ltd. wants to be fair to shareholders of both the companies. The following weights have been agreed for the swap ratio:

Parameter	Weight
Earnings per share	50%
Market Price	25%
Book Value	25%

Requirement:

i. What is the swap ratio based on above weights?
ii. What is the EPS, expected market price and book value of A Ltd. after acquisition of T Ltd.? Assume PE ratio of A Ltd. remains unchanged after acquisition and all assets and liabilities of T Ltd. are taken over at book value.
iii. What is the promoter's revised holding in A Ltd.?
iv. What is the free float market capitalisation of A Ltd.?
v. After acquisition, A Ltd. decides to issue bonus shares in the ratio 1:2 and split the stock as ₹5 each fully paid. Calculate the no. of shares, EPS and book value of A Ltd.

Question 10

Personal Computer Division of Distress Ltd., a computer hardware manufacturing company has started facing financial difficulties for the last 2 to 3 years. The management of the division headed by Mr. Smith is interested in a buyout on 1 April 2013. However, to make this buy-out successful there is an urgent need to attract substantial funds from venture capitalists.

Ven Cap, a European venture capitalist firm has shown its interest to finance the proposed buy-out. Distress Ltd., is interested to sell the division for ₹180 crore and Mr. Smith is of opinion that an additional amount of ₹85 crore shall be required to make this division viable.

The expected financing pattern shall be as follows:

Source	Mode	Amount (₹ Crore)
Management	Equity Shares of ₹10 each	60.00
VenCap VC	Equity Shares of ₹10 each	22.50
	9% Debentures with attached warrant of ₹100 each	22.50
	8% Loan	160.00
Total		265.00

The warrants can be exercised any time after 4 years from now for 10 equity shares @ ₹120 per share.

The loan is repayable in one go at the end of 8th year. The debentures are repayable in equal annual installment consisting of both principal and interest amount over a period of 6 years.

Mr. Smith is of view that the proposed dividend shall not be kept more than 12.5% of distributable profit for the first 4 years. The forecasted EBIT after the proposed buyout is as follows:

Year	2013-14	2014-15	2015-16	2016-17
EBIT (₹ Crore)	48	57	68	82

Applicable tax rate is 35% and it is expected that it shall remain unchanged at least for 5 to 6 years. In order to attract VenCap, Mr. Smith stated that book value of equity shall increase by 20% during above 4 years. Although, VenCap has shown their interest in investment but are doubtful about the projections of growth in the value as per projections of Mr. Smith. Further VenCap also demanded that warrants should be convertible in 18 shares instead of 10 as proposed by Mr. Smith.

You are required to determine whether or not the book value of equity is expected to grow by 20% per year. Further if you have been appointed by Mr. Smith as advisor then whether you would suggest accepting the demand of VenCap of 18 shares instead of 10 or not.

Business Analysis & Valuation

Question 1

A well-known analyst has estimated a value of ₹500 lakhs for a company, based on the expected free cash flow of ₹20 lakhs for next year and an expected growth rate of 5%. While going through the valuation procedure, you found that the analyst has made the mistake of using the book values of debt and equity in his calculation.

You do not know the book value weights he used, you have been provided the following information to estimate the value of the company

i. Company has a cost of equity of 12%.
ii. After tax cost of debt is 6%.
iii. The market value of equity is three times the book value of equity, while the market value of debt is equal to the book value of debt.

Question 2

The valuation of Hansel Limited has been done by an investment analyst. Based on an expected free cash flow of ₹54 lakhs for the following year and an expected growth rate of 9 percent, the analyst has estimated the value of Hansel Limited to be ₹1800 lakh.

However, he committed the mistake of using the book values of debt and equity. The book value weights employed by the analyst are not known, but you know that Hansel Limited has cost of equity of 20 percent and post-tax cost of debt of 10 percent. The market value of equity is thrice its book value, whereas the market value of its debt is nine-tenths of its book value.

What is the correct value of Hansel Limited?

Question 3

Delta Ltd's current financial year's income statement reports its net income as ₹15,00,000. Delta's marginal rate of tax is 40% and its interest expense for the year was ₹15,00,000.

The company has ₹1,00,00,000 of invested capital, of which 60% is debt. Delta Ltd tries to maintain a weighted average cost of capital of 12.6%.

Requirement:

i. Compute the operating income or EBIT earned by Delta Ltd in the current year.
ii. What is Delta Ltd's Economic Value Added for the current year?
iii. Delta Ltd has 2,50,000 equity shares outstanding. According to the EVA you computed in (ii), how much can Delta pay in dividend per share before the value of the company starts to decrease?
iv. If delta does not pay any dividends, what would you expect to happen to the value of the company?

Question 4

The following information is given for 3 companies that are identical except for their capital structure:

Particulars	Orange	Grape	Apple
Total Invested Capital	1,00,000	1,00,000	1,00,000
Debt / Assets Ratio	0.8	0.5	0.2
Shares Outstanding	6,100	8,300	10,000
Pre Tax Cost of Debt	16%	13%	15%
Cost of Equity	26%	22%	20%
Operating Income (EBIT)	25,000	25,000	25,000
Net Income	8,970	12,350	14,950

The Tax rate is 35% in all cases.

Requirement:

i. Compute the weighted average cost of capital for each company
ii. Compute the Economic Value Added (EVA) for each company
iii. Based on EVA, which company would be considered as the best investment? Give reasons.
iv. If the Industry PE Ratio is 11X, estimate the price for the share of each company.
v. Calculate the estimated market capitalization for each of the companies.

Question 5

The following information is given in respect of WXY Ltd., which is expected to grow at a rate of 20% p.a. for the next three years, after which the growth rate will stabilize at 8% p.a. normal level, to perpetuity.

Particulars	Year ended 31st March, 2014
Revenues	₹7,500 Crores
Cost of Goods Sold (COGS)	₹3,000 Crores
Operating Expenses	₹2,250 Crores
Capital Expenditure	₹750 Crores
Depreciation (included in COGS & Operating Expenses)	₹600 Crores

During high growth period, revenues and Earnings before Interest & Tax (EBIT) will grow at 20% p.a. and capital expenditure net of depreciation will grow at 15% p.a. From year 4 onwards, i.e. normal growth period revenues and EBIT will grow at 8% p.a. and incremental capital expenditure will be offset by the depreciation. During both high growth period & normal growth period, net working capital requirement will be 25% of revenues.

The Weighted Average Cost of Capital (WACC) of WXY Limited is 15%. Corporate Income Tax rate will be 30%.

Estimate the value of WXY Limited using Free Cash Flows to Firm.

Question 6

The following information is available for XYZ Ltd., which is expected to grow at a higher rate for next 4 years after which growth rate will stabilize at a lower level.

Base Year Information:

Particulars	₹(crores)
Revenue	2,000
EBIT	300
Capital Expenditure	280
Depreciation	200

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

Particulars	High Growth	Stable Growth
Growth in Revenue & EBIT	20%	10%
Growth in Capital Expenditure & Depreciation	20%	Capital Exp. offset by Depn.
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 the periods, the working capital is 25% of revenue and corporate tax is 30%.

Estimate the value of the co.

Question 7

T Ltd., recently made a profit of ₹50 crore and paid out ₹40 crore (slightly higher than the average paid in the industry to which it pertains). The average PE ratio of this industry is 9.

As per Balance Sheet of T Ltd., the shareholder's fund is ₹225 crore and number of shares is 10 crore. In case company is liquidated, building would fetch ₹100 crore more than book value and stock would realize ₹25 crore less.

The other data for the industry is as follows:

Projected Dividend Growth	4%
Risk Free Rate of Return	6%
Market Rate of Return	11%
Average Dividend Yield	6%

The estimated beta of T Ltd., is 1.2.

You are required to calculate valuation of T Ltd., using

i. P/E Ratio
ii. Dividend Yield
iii. Valuation as per:
    a. Dividend Growth Model
    b. Book Value
    c. Net Realizable Value

Question 8

True Value Ltd. is planning to raise funds through issue of common stock for the first time. However, the management of the company is not sure about the value of the company and therefore it attempts to study similar companies in the same line which are comparable to True value in most of the aspects.

From the following information (₹in crores), you are required to compute the value of True Value Ltd. using the Comparable Firms Approach.

Particulars	True Value	Jewel Value	Real Value	Unique Value
Sales	250	190	210	270
Profit after tax	40	30	44	50
Book value	100	96	110	128
Market value		230	290	440

The valuer feels that 50% weightage should be given to earnings in the valuation process; sales and book value may be given equal weightage.

Question 9

The following financial information (₹million) regarding companies in the IT sector is provided. Softech Solutions had a book value of ₹1349 million. Estimate the value of Softech Solution Ltd.

Company	Market value	Price/Book Ratio	Revenue	R&D Expenses	Net Income
Infotech	8,096.71	5.6	1,571.00	307.00	406.00
Wiprotech	1,379.00	3.6	152.00	101.00	15.00
Satyatech	2,233.00	4.6	413.00	158.00	28.00
Relitech	925.00	2.5	138.00	109.00	-7.00
Goldtech	588.53	4.5	151.00	81.00	-34.00
Softech	?	?	795.40	314.30	124.40

MONEY MARKET

Question 1

ABC Ltd. is planning a Commercial Paper issue. From the following particulars, calculate effective interest rate and total cost of funds p.a.

Issue price of CP	₹97350/-
Face Value	₹1,00,000/-
Maturity Period	3 months
Issue Expenses:	
Brokerage	0.125% for 3 months
Rating Charges	0.5% p.a.
Stamp Duty	0.125% for 3 months

Question 2

AXY Limited is able to issue commercial paper of ₹50,00,000 every 4 months at a rate of 12.5% p.a. The cost of placement of commercial paper issue is ₹2,500 per issue. AXY Limited is required to maintain line of credit ₹1,50,000 in bank balance. The applicable income tax rate of AXY Limited is 30%.

What is the cost of funds (after taxes) to AXY Limited for commercial paper issue? The maturity of commercial paper is four months.

Question 3

Bank A enters into a Repo at a rate of 5.25% for 14 days with Bank B in 12% GOI Bonds 2017 for Rs.5 Crore. The clean price of the bond is ₹99.42 and no. of days of accrued interest is 292 days. Initial margin is 2%.

You are required to determine:

i. Dirty Price
ii. Start Proceeds (First Leg)
iii. Repayment at Maturity (Second Leg)

Note: Number of days in a year is 360.

BOND – Analysis & Valuation

Question 1

An Investor is considering the purchase of the following Bond:

Face value	₹100
Coupon rate	11%
Maturity	3 years

Requirement:

i. If the investor wants a yield of 13%, what is the maximum price he can pay?
ii. If the Bond is selling for ₹97.60, what would be his yield?

Question 2

Based on the credit rating of bonds, Mr. Z has decided to apply the following discount rates for valuing bonds:

Credit Rating	Discount Rate
AAA	364 day T bill rate + 3% spread
AA	AAA + 2% spread
A	AAA + 3% spread

He is considering to invest in AA rated, ₹1,000 face value bond currently selling at ₹1,025.86. The bond has five years to maturity and the coupon rate on the bond is 15% p.a. payable annually. The next interest payment is due one year from today and the bond is redeemable at par. (Assume the 364 day T-bill rate to be 9%).

Requirement:

i. Calculate the intrinsic value of the bond for Mr. Z.
ii. Should he invest in the bond?
iii. Calculate the current yield and the yield to maturity.

Question 3

MP Ltd. Issued a new series of bonds on January 1, 2000. The bonds were sold at par (₹1,000) having a coupon rate of 10% p.a. and mature on 31st December 2015. Coupon payments are made semiannually on 30th June and 31st December each year. Assume that you purchased an outstanding MP Bond on 1st March 2008 when the going interest rate was 12%.

Requirement:

i. What was the YTM of MP Bond on January 1, 2000?
ii. What amount should you pay to complete the transaction? Of that amount how much should be accrued interest and how much would represent bonds basic value?

Question 4

The following details regarding a bond are made available to you:

Face value	₹1,000/-
Coupon rate	16%
Redemption Value	₹1,000/-
Years to Maturity	6
Yield to Maturity	17%

Requirement:

i. What are the current market price, duration & volatility of the bond?
ii. Calculate the expected market price, if there is an increase in required yield by 75 basis points.

Question 5

The face value of a bond is ₹1,00,000. It is redeemable after 6 years maturity with yield to maturity at 16% payable annually. The duration of the bond is 4.3202 years. Find the current market price of the bond.

Question 6

The current market price of a 10% debenture (face value ₹100/-) is ₹95/. The interest is payable annually. It has a term to maturity of 6 years. The redemption of the debenture will be at ₹40/- at the end of the fifth year and ₹60/- at the end of the sixth year.

Requirement:
i. Find Current Yield.
ii. Compute Yield to Maturity.
iii. Duration.
iv. Price of the debenture if rate of interest increases by 100 basis points.

Question 7

XL Ispat Ltd. has made an issue of 14 per cent non-convertible debentures on January 1, 2007. These debentures have a face value of ₹100 and are currently traded in the market at a price of ₹90. Interest on these NCDs will be paid through post-dated cheques dated June 30 and December 31.

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, 2011 at the end of 5 years.

Requirement:
i. Estimate the current yield and the YTM of the bond.
ii. Calculate the duration of the NCD.
iii. Assuming that intermediate coupon payments are not available for reinvestment calculate the realised yield on the NCD.

Question 8

Mr. A will need ₹1,00,000 after two years for which he wants to make a one-time necessary investment now. He has a choice of two types of bonds. Their details are as below:

	Bond X	Bond Y
Face Value	₹1,000	₹1,000
Coupon	7% payable annually	8% payable annually
Years to maturity	1	4
Current Price	₹972.73	₹936.52
Current Yield	10%	10%

Advise Mr. A whether he should invest all his money in one type of bond or whether he should buy both the bonds and if so, in what quantity?

Assume that there will not be any call risk or default risk.

Question 9

From the following information estimate the NAV of a debt fund:

Security	Face Value	Cost	Maturity Date	No. of Securities	Coupon Date	Duration
10.71% GOI 2028	100	104.78	31/03/28	1,00,000	31st Mar	7.3494
10.00% GOI 2023	100	100.00	31/03/23	50,000	31st Mar & 30th Sep	5.0860
9.50% GOI 2021	100	97.93	31/12/21	40,000	30th Jun & 31st Dec	4.3949
8.50% SGL 2025	100	91.36	31/06/25	20,000	30th Jun	6.5205

The fund has 1,00,000 units (face value ₹10 each)

All securities were purchased when YTM applicable was 10%. On NAV date, the required yield increased by 75 basis points.

Cash in hand and accrued expenses were ₹6,72,800 and ₹2,37,400 respectively.

Question 10

The data given below relates to a convertible bond:

Face value	₹250
Coupon rate	12%
No. of shares per bond	20
Market price of share	₹12
Straight value of bond	₹235
Market price of convertible bond	₹265

Compute:

i. Stock value of bond.
ii. The percentage of downside risk.
iii. The conversion premium.
iv. The conversion parity price of the stock.

Question 11

M/s Transindia Ltd. is contemplating calling ₹3 crores of 30 years, ₹1,000/- bond issued 5 years ago with a coupon interest rate of 14%. The bonds have a call price of ₹1,140/-. Initially the company had collected proceeds of ₹2.91 crores due to a discount of ₹30/- per bond. The initial floating cost was ₹3,60,000/-.

The co. intends to sell ₹3 crores 12% coupon rate 25-years bonds to raise funds for retiring the old bonds. It wants to sell the new bonds at the par value of ₹1,000/-. The estimated floatation cost is ₹4 lakhs.

The co. is paying 40% tax. It's after tax cost of debt is 8%. As the new bonds must first be sold and the proceeds then used to retire old bonds, the co. expects a two-month period of overlapping interest during which interest must be paid on both the old and new bonds.

What is the feasibility of refunding bonds?

Question 12

The following is the Yield structure of AAA rated debenture:

Period	Yield (%)
3 months	8.50
6 months	9.25
1 year	10.50
2 years	11.25
3 years & above	12.00

Requirement:

i. Based on the expectation theory calculate the implicit one-year forward rates in year 2 and year 3.

ii. If the interest rate increases by 50 basis points, what will be the percentage change in the price of the bond having a maturity of 5 years? At present, the bond is fairly priced at face value of ₹1,000/-

Question 13

From the following data for Government securities, calculate the forward interest rates:

Face Value (₹)	Interest Rate (%)	Maturity (Years)	Current Price (₹)
1,00,000	0	1	91,000
1,00,000	10.5	2	99,000
1,00,000	11.0	3	99,500
1,00,000	11.5	4	99,900

Question 14

ABC Limited issued 9%, 5 year Bonds of ₹1,000 each having a maturity of 3 years. The present rate of interest is 12% for one year tenure. It is expected that Forward rate of interest for one year tenure is going to fall by 75 basis points and further by 50 basis points for every next year in future for the same tenure. This bond has a beta value of 1.02 and is more popular in the market due to less credit risk.

Calculate intrinsic value of the bond & expected price of the bond in the market.

DERIVATIVES

Question 1

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

Market price of stock	₹ 55
Market price of call	₹ 9
Market price of put	Re. 1

Calculate the expiration date cash flow, investment value, and net profit from:
(i) Buy 1 call
(ii) Write 1 call
(iii) Buy 1 put
(iv) Write 1 put
for expiration date stock prices of ₹ 50, ₹ 55, ₹ 60, ₹ 65, ₹ 70.

Question 2

An investor has purchased a 3-month call option on the equity share of a company for ₹5/-. It has a present market price per share of ₹112/-, exercise price of ₹120/-.

At the end of 3 months, investor expects the price of share to be in the following range of ₹100/- to ₹170/- with varying probabilities.

Stock price	₹100/-	₹110/-	₹125/-	₹150/-	₹170/-
Probability	0.10	0.25	0.30	0.25	0.10

Requirement:

i. What is the expected share price 3-months hence? What is the value of call option at its expiration if the expected share price prevails at the end of 3 months?
ii. Determine the expected value of option at maturity, assuming that the call option is held to this time. Why does it differ from the option value determined in (i)?
iii. What is the theoretical value of the option, at the beginning of 3-month period? Give comments on the market value of the call option in relation to its theoretical value.

Question 3

The current market price of an equity share of Penchant Ltd. is ₹420. Within a period of three months, the maximum and minimum price of it is expected to be ₹500 and ₹400 respectively. If the risk free rate of interest be 8% p.a., what should be the value of a three month's call option under the 'Risk neutral' method at the strike rate of ₹450?

Given $e^{0.02}$= 1.0202

Question 4

Sumana wanted to buy shares of EIL a month later. It has a range of ₹411 to ₹592. The current market price per share is ₹ 421.

Her broker informs her that the price of this share can soar beyond ₹ 522 within a month or so and that she should buy a one month Call. In order to be prudent in buying the call, the share price should be more than or at least ₹ 522 the assurance of which could not be given by her broker.

Though she understands the uncertainty of the market, she wants to know the probability of attaining the share price ₹592 so that buying of a one-month call of EIL at exercise price of ₹522 is justified. Advise her. Take the risk free interest to be 3.60% and $e^{0.036}$ = 1.037.

Question 5

A mutual fund is holding the following assets (₹ in Crores):

Investment in diversified equity shares	90.00
Cash and bank balances	10.00

The Beta of equity portfolio is 1.1. The index future is at 4300. The fund manager apprehends that the index will fall at the most by 10%. How many index futures should he short for perfect hedging? One index future consists of 50 units. Substantiate your answer assuming the Fund Manager's apprehension materializes.

Question 6

Fresh Bakery Ltd.'s share price has suddenly started moving both upward and downward on a rumor that the company is going to have a collaboration agreement with a multinational company in bakery business. If the rumor turns to be true, then the stock price will go up but if the rumor turns to be false, then the market price of the share will crash.

To protect from this, an investor has purchased the following call and put option:

i. One 3 months' call with a striking price of ₹52 for ₹2 premium per share.
ii. One 3 months put with a striking price of ₹50 for ₹1 premium per share.

Assuming a lot size of 50 shares, determine the following:

i. The investor's position, if the collaboration agreement pushes the share price to ₹53 in 3 months.
ii. The investor's ending position, if the collaboration agreement fails and the price crashes to ₹46 in 3months time.

Question 7

Ram buys 10,000 shares of X Limited at a price of ₹22 per share whose beta value is 1.5 and sells 5,000 shares of A Limited at a price of ₹40 per share having a beta value of 2.

He obtains a complete hedge by Nifty futures at ₹1,000 each. He closes out his position at the closing price of the next day when the share of X Limited dropped by 2%, share of A Limited appreciated by 3% and Nifty futures dropped by 1.5%.

What is the overall profit/loss to Ram?

Question 8

Mr. Dayal is interested in purchasing equity shares of ABC Limited which are currently selling at ₹600 each. He expects that the price of the share may go upto ₹780 or may go down to ₹480 in three months. The chances of such variations occurring are 60% and 40% respectively. A call option on the shares of ABC Limited can be exercised at the end of three months with a strike price of ₹630.

Requirement:

(i) What combination of share and option should Mr. Dayal select if he wants a perfect hedge?

(ii) What should be the value of the option today (the risk free rate is 10% p.a.)?

(iii) What is the expected rate of return on the option?

Question 9

On April 1, 2015, an investor has a portfolio consisting of eight securities as shown below:

Security	Market Price	No. of Shares	Beta
A	29.40	400	0.59
B	318.70	800	1.32
C	660.20	150	0.87
D	5.20	300	0.35
E	281.90	400	1.16
F	275.40	750	1.24
G	514.60	300	1.05
H	170.50	900	0.76

The cost of capital for the investor is 20% p.a. continuously compounded. The investor fears a fall in the prices of the shares in the near future. Accordingly, he approaches you for the advice to protect the interest of his portfolio.

You can make use of the following information:

(i) The current NIFTY value is 8500.

(ii) NIFTY futures can be traded in units of 25 only.

(iii) Futures for May are currently quoted at 8700 and Futures for June are being quoted at 8850.

You are required to calculate:

(i) The beta of his portfolio.

(ii) The theoretical value of the futures contract for contracts expiring in May and June. (Given $e^{0.03} = 1.03045$, $e^{0.04} = 1.04081$, $e^{0.05} = 1.05127$)

(iii) The number of NIFTY contracts that he would have to sell if he desires to hedge until June in each of the following cases:

a. His total portfolio

b. 50% of his portfolio

c. 120% of his portfolio

FOREIGN DIRECT INVESTMENT

Question 1

XYZ Limited, a company based in India, manufactures very high quality modern furniture and sells to a small number of retail outlets in India and Nepal. It is facing tough competition. Recent studies on marketability of products have clearly indicated that the customer is now more interested in variety and choice rather than exclusivity and exceptional quality. Since the cost of quality wood in India is very high, the company is reviewing the proposal for import of woods in bulk from a Nepalese supplier.

The estimate of net Indian (₹) and Nepalese Currency (NC) cash flows for this proposal is shown below:

Net Cash Flows (in millions)				
Year	0	1	2	3
NC	-25.000	2.600	3.800	4.100
Indian (₹)	0	2.869	4.200	4.600

The following information is relevant:

(i) XYZ Limited evaluates all investments by using a discount rate of 9% p.a. All Nepalese customers are invoiced in NC. NC cash flows are converted to Indian (₹) at the forward rate and discounted at the Indian rate.
(ii) Inflation rates in Nepal and India are expected to be 9% and 8% p.a. respectively. The current exchange rate is ₹1 = NC 1.6

Assuming that you are the finance manager of XYZ Limited., calculate the Net Present Value (NPV) and Modified Internal Rate of Return (MIRR) of the proposal.

Question 2

XY Limited is engaged in large retail business in India. It is contemplating expanding into a country in Africa by acquiring a group of stores having the same line of operation as that of India. The Exchange Rate for the Currency of the proposed African Country is extremely volatile. Rate of Inflation is presently 40% in a year. Inflation in India is currently 10% a year. Management of XY Limited expects these rates to continue for the foreseeable future.

Estimated projected Cash flows (in'000), in real terms, in India as well as African Country for the first three years of the project are as follows:

Particulars	Year 0	Year 1	Year 2	Year 3
Cash flows (₹'000)	– 50,000	– 1,500	– 2,000	– 2,500
Cash flows (Rands '000)	– 2,00,000	+ 50,000	+ 70,000	+ 90,000

XY Ltd assumes the year 3 Nominal Cash flows will continue to be earned each year indefinitely.

The present exchange rate is African Rand 6 to Re.1.

Find NPV of the project using Domestic Currency Approach at Risk Adjusted Discount Rate of 20%. Ignore taxation.

FOREX

Question 1

During a year, the price of British Gilts (face value £ 100) rose from £105 to £110, while paying a coupon rate of 8%. At the same time, the exchange rate moved from $/£ 1.80 to 1.70.

What is the rate of return to an investor in USA who invested in this security?

Question 2

The price of a bond just before a year of maturity is $5,000. Its redemption value is $5,250 at the end of the period. Interest is $350 p.a. The Dollar appreciates by 2% during the period.

Calculate the rate of return.

Question 3

The rate of inflation in USA is likely to be 3% per annum and in India it is likely to be 6.5%. The current spot rate of US $ in India is ₹43.40. Find the expected rate of US $ in India after one year, two years and 3 years from now using Purchasing Power Parity theory.

Question 4

On 1st April, 3 months' interest rate in the US and Germany are 6.5% and 4.5% per annum respectively. The spot rate is 1 DM = 0.6560 USD. What would be the forward rate for DM for delivery on 30th June?

Question 5

The United States Dollar is selling in India at ₹45.50. The interest rate for a six-month borrowing in India is 8% per annum and the corresponding rate in USA is 2%.

Requirement:

i. Do you expect the US $ to be at a premium or at a discount in the Indian forward market?
ii. What is the expected six-month forward rate for US $ in India?
iii. What is the rate of forward premium or discount?

Question 6

The following information is available:

Exchange rates	Canadian dollar 0.665 per DM (spot)
	Canadian dollar 0.670 per DM (3 months)
Interest rates	DM 7% p.a.
	Canadian dollar 9% p.a.

What operations should be carried out by a Canadian to take the possible arbitrage gains?

Question 7

The following information is given:

Spot Rate	1US$ = ₹48.0123
180 days Forward Rate	1US$ = ₹48.8190

Annualised interest rate for 6 months:

₹	12%
$	8%

Requirement:

i. Is there any arbitrage opportunity?

ii. If yes, how can an Indian arbitrageur take advantage of the situation, if he is willing to borrow ₹40,00,000/- or $83,312?

Question 8

The following 2-way quotes appear in the foreign exchange market:

Spot	2 months forward
₹ 46.00/₹ 46.25	₹ 47.00/₹ 47.50

Requirement:

i. How many US dollars should a firm sell to get ₹25 lakhs after 2 months?
ii. How many Rupees is the firm required to pay to obtain US $ 2,00,000 in the spot market?
iii. Assume the firm has US$ 69,000 in current account earning no interest. ROI on rupee investment is 10% p.a. Should the firm encash the US$ now or 2 months later?

Question 9

On 1st March, the Multinational Industries makes the following assessment of dollar rates per British pound to prevail as on 1st September:

$/Pound	Probability
1.60	0.15
1.70	0.20
1.80	0.25
1.90	0.20
2.00	0.20

Requirement:

i. What is the expected spot rate for 1st September?
ii. If, as of 1st March, the 6-month forward rate is $1.80, should the firm sell forward its pound receivables due in September?

Question 10

ABC Co. has taken a 6-month loan from their foreign collaborators for US Dollars 2 million. Interest payable on maturity is at LIBOR plus 1.0%. Current 6-month LIBOR is 2%. Enquiries regarding exchange rates with their bank elicit the following information:

Spot USD 1 ₹48.5275
6 months forward ₹48.4575

i. What would be their total commitment in Rupees, if they enter into a forward contract?
ii. What would you advise them to do? Explain giving reasons.

Question 11

A co. is contemplating import of a consignment from USA for 10,000 US Dollars. The co. requires 90 days to make payment. The supplier has offered 60 days' interest-free credit and is willing to offer additional 30 days' credit at an interest rate of 6% p.a. The co. can get a bank loan at 9% p.a. for 30 days.

The foreign exchange quotations are as under:

Spot	1 USD = ₹46.00
60 days forward	1 USD = ₹46.20
90 days forward	1 USD = ₹46.35

Advise the co. whether it should pay the supplier in 60 days or avail the supplier's offer of 90 days credit.

Question 12

Gibraltar Limited has imported 5,000 bottles of shampoo at landed cost in Mumbai, of US$ 20 each. The company has the choice for paying for the goods immediately or in 3 months' time. It has a clean overdraft limit where 14% p.a. rate of interest is charged.

Calculate which of the following methods would be cheaper to Gibraltar Limited:

(i) Pay in 3 months' time with interest @ 10% and cover risk forward for 3 months.
(ii) Settle now at a current spot rate and pay interest of the overdraft for 3 months.

The rates are as follows:

Mumbai ₹/$ spot : 60.25 – 60.55
3 months swap points: 35/25

Question 13

NP and Co. has imported goods for US $7,00,000. The amount is payable after three months.

The company has also exported goods for US $4,50,000 and this amount is receivable in two months. For receivable amount a forward contract is already taken at ₹ 48.90.

The market rates for ₹ and Dollar are as under:

Spot	₹ 48.50/70
Two months	25/30 points
Three months	40/45 points

The company wants to cover the risk and it has two options as under:

i. To cover payables in the forward market and
ii. To lag the receivables by one month and cover the risk only for the net amount. No interest for delaying the receivables is earned.

Evaluate both the options if the cost of rupee funds is 12%. Which option is preferable?

Question 14

An Indian importer has imported machinery from Canada. The invoice amount is 13,750 Canadian Dollars to be paid after 3 months. Today's spot rate is 0.0275 per Re.1.

The co. anticipates that the rupee will depreciate by 5% over the three-month period. In order to hedge against foreign exchange risk, the importer proposes to take appropriate action. The three-month forward rate is quoted at 0.0273 per Re.1.

You are required to calculate the expected loss and show how it can be hedged by forward contract.

Question 15

Exporters plc, a UK co. is due to receive 8 million US dollars in six months' time for goods supplied. The co. decides to hedge its currency exposure by using the forward market. The short-term interest rate in the UK is 12%p.a. and the equivalent rate in US is 15% p.a. The spot rate of exchange is Pound Sterling 1= US Dollar 1.5.

Requirement:
Calculate the actual gain or loss for Exporters plc, as a result of the hedging transaction if, at the end of six months, sterling in relation to the US Dollar, has

i. Gained 4%,
ii. lost 2% or
iii. Remained stable.

Question 16

The finance director of Prudence Ltd. has been studying the exchange rates and interest rates in India and USA. Prudence Ltd. has purchased goods from a US Co., at a cost of $ 5.1 million payable in $ in three months' time.

In order to maintain profit margins, the finance director wishes to adopt if possible a risk free strategy that will ensure that the cost of goods to Prudence Ltd. is no more than ₹22 crores.

The following information is available:

₹/$ (Spot)	40/42
₹/$ (1 month forward)	41/43
₹/$ (3 month forward)	42/45

Time period	India (Rates in %)		USA (Rates in %)	
	Deposit	Lending	Deposit	Lending
1 month	13.00	15.00	7.00	10.00
3 months	13.00	16.00	8.00	11.00

Calculate whether it is possible for Prudence Ltd. to achieve a cost directly associated with transaction no more than ₹22 crores, by means of a forward market hedge or money market hedge.

Question 17

Litmus Industries has imported chemicals from U.K. and an amount of £100,000 is payable after three months. The following information has been obtained from bankers:

Exchange Rates:

Spot ₹ / £	73.14 / 15
3 month forward	11 / 10

Annual Interest Rates:

£ (3 months)	3.60% / 3.80%
₹ (3 months)	6.00% / 8.00%

The seller has offered a cash discount of £2,000 if the payable is settled immediately.

The CFO is considering the following alternatives:

i. Forward Market.
ii Money Market.
iii. Settle the payable by taking a loan in India and avail cash discount.

Question 18

A UK co. is tendering for the sale of equipment to a US co. for 3 million US dollars and the settlement is due in three months' time. The current spot rate is Pound Sterling 1= US Dollar 1.58.

The co. is worried about the dollar weakening against the pound, thus making the sale less profitable. The co. has been offered a three-month put option on US dollars at Pound Sterling 1= US Dollar 1.6, costing 0.02 dollars per pound.

What is the company's position regarding exercise of option?

Question 19

ABC Textiles Limited places an order to buy textile machinery with an American company. As per the agreement, ABC Textiles Limited will be paying US $ 200,000 after 180 days.

As the fluctuation in the spot rate of the US dollar over next 180 days will impact the rupee cost of import, the Board of ABC Textiles Limited asks its finance manager to collect data from the currency forward market, money market, currency option market etc. The board also asks a consultant to assess various possible dollar spot rates after six months.

The various findings are as follows:

i. Possible spot rate of dollar after six months, as forecasted by the consultant, is ₹ 47.25, ₹ 47.75, ₹ 48, ₹ 48.50, ₹ 48.90.
ii. Spot rate of dollar is ₹ 48/US $.
iii. 180 day forward rate of dollar as of today is ₹ 48.48/US $.
iv. Interest rates are as follows:

Particulars	India	USA
For 180 day deposit rate (per annum)	7.5%	1.5%
For 180 day borrowing rate (per annum)	8.0%	2.0%

v. A call option on the dollar, which expires in 180 days, has an exercise price of ₹ 48/US $ and premium ₹ 0.52/US $.
vi. A put option on dollar, which expires in 180 days, has an exercise of ₹ 48/US $ and premium of ₹ 0.04/US $.

Prepare a statement showing comparative analysis of the various outcomes (rupee cost of import) under the following:

i. Not hedging
ii. Forward hedging
iii. Money market hedging and
iv. Option hedging.

Question 20

ABC Limited, a US Firm, will need GBP 5,00,000 in 180 days. In this connection, the following information is available:

Spot Rate	1 GBP = $ 2.00
180 days forward rate of GBP as of today	$ 1.96

Interest rates are as follows:

	US	UK
180 days deposit rate	5.0%	4.5%
180 days borrowing rate	5.5%	5.0%

A call option on GBP that expires in 180 days has an exercise price of $ 1.97 and a premium of $ 0.04.

ABC Limited has forecasted the spot rates of 180 days as below:

Future rate	Probability
$ 1.91	30%
$ 1.95	50%
$ 2.05	20%

Which of the following strategies would be cheaper to ABC Limited?

(i) Forward Contract;
(ii) A money market hedge;
(iii) A call option contract; and
(iv) No hedging option

Question 21

XYZ, an Indian firm, will need to pay JPY 5,00,000 on 30th June. In order to hedge the risk involved in foreign currency transaction, the firm is considering two alternative methods i.e. forward market cover and currency option contract.

On 1st April, the following quotations (JPY/INR) are made available:

Spot	3 Months forward
1.9516/1.9711	1.9726/1.9923

The prices for forex currency option on purchase are as follows:

Strike Price	JPY 2.125
Call option (June)	JPY 0.047
Put option (June)	JPY 0.098

For excess or balance of JPY covered, the firm would use forward rate as future spot rate. You are required to recommend cheaper hedging alternative for XYZ.

Question 22

An American firm is under obligation to pay interests of CAD 1,010,000 and CAD705,000 on 31st July and 30th September respectively. The firm is risk averse and its policy is to hedge the risks involved in all foreign currency transactions. The Finance Manager of the Firm is thinking of hedging the risk considering two methods i.e. fixed forward or option contracts.

It is now June 30th. Following quotations regarding rates of exchange, US$ per CAD, from the firm's bank were obtained:

Spot	1 Month Forward	3 Month Forward
0.9284-0.9288	0.9301	0.9356

Price for a CAD/ US$ option on a U.S stock exchange (cents per CAD, payable on purchase of the option, contract size CAD 50,000) are as follows:

Strike Price (US$/CAD)	Calls		Puts	
	July	Sept	July	Sept
0.93	1.56	2.56	0.88	1.75
0.94	1.02	NA	NA	NA
0.95	0.65	1.64	1.92	2.34

According to the suggestion of finance manager if options are to be used, one-month option should be bought at a strike price of 95 cents and for the remainder uncovered by the options the firm would bear the risk. For this, it would use Forward rate as the best estimate of spot. Transaction costs are ignored. Give your recommendation.

Question 23

A Ltd. of U.K. has imported some chemicals worth USD 364,897 from one of the U.S. suppliers. The amount is payable in six months' time.

The relevant spot and forward rates are:

Spot rate	USD 1.5617- 1.5673
6 months' forward rate	USD 1.5455 - 1.5609

The borrowing rates in U.K. and U.S. are 7% and 6% respectively and the deposit rates are 5.5% and 4.5% respectively.

Currency options are available under which one option contract is for GBP 12,500. The option premium for GBP at a strike price of USD 1.70/GBP is USD 0.037 (call option) and USD 0.096 (put option) for 6 months period.

The company is considering 3 alternatives:

i. Forward Cover
ii. Money Market Hedge
iii. Currency Option

Which of the alternative is preferable for the company?

Question 24

Siemens A.G., a German company proposes to set up a plant in India for manufacturing of electrical switchgears for which the company wants to import the plant from U.S.A. at a cost of $10 million. The payment to the supplier will be made on 15.03.15.

The current market quotes (as on 15.12.2014) are given below:

$ / € Spot	1.2230
March LIFFE Euro Futures	1.2250
3 months $ / € Forward Rate	1.2235

The standard size of a futures contract is € 125,000. You are required to advise the company in order to hedge the currency risk.

Determine the effective cost in Euro if the following rates materialize as on March 15, 2015.

$ / € Spot	1.2218
March LIFFE Euro Futures	1.2232

Question 25

Your forex dealer had entered into a cross currency deal and had sold US $ 10,00,000 against EURO at US $ I = EUR 1.4400 for spot delivery.

However, later during the day, the market became volatile and the dealer in compliance with his management's guidelines had to square up the position when the quotations were:

Spot USD 1	INR 31.4300/4500
1 month margin	25/20
2 months margin	45/35
Spot US $ 1	EURO 1.4400/4450
1 month forward	1.4425/4490
2 months forward	1.4460/4530

What will be the gain or loss in the transaction?

Question 26

A Bank sold Hong Kong Dollar 40,00,000 value spot to its customer at ₹7.15 and covered itself in London Market on the same day, when the Exchange Rates were US $ 1 = HK $ 7.9250/7.9290. Local Inter-Bank Market Rates for US $ were Spot US $1 = ₹ 55.00/55.20.

Calculate Cover Rate and ascertain the Profit or Loss in the transaction. Ignore Brokerage.

Question 27

Edelweiss Bank Limited sold Hong Kong dollar 2 crores spot to its customer at ₹8.025 and covered itself in the London market on the same day, when the exchange rates were:

US$1 = HK $7.5880 – 7.5920

Local interbank market rates for US$ were

Spot US$1 = ₹60.70 – 61.00

Calculate the cover rate and ascertain the profit or loss on the transaction. Ignore brokerage.

Question 28

A bank enters into a forward purchase TT covering an export bill for Swiss Francs 1,00,000 at ₹32.4000 due on 25th April and covered itself for same delivery in the local inter-bank market at ₹32.4200. However, on 25th March, exporter sought for cancellation of the contract as the tenor of the bill is changed.

In Singapore Market, Swiss Francs were quoted against US Dollars as under:

Spot	USD 1 – CHF 1.5076/1.5120
One Month forward	1.5150/1.5160
Two Months forward	1.5250/1.5270
Three Months forward	1.5415/1.5445

And in the interbank market US Dollars were quoted as under:

Spot	USD 1 = ₹49.4302/.4455
Spot/April	.4100/.4200
Spot/May	.4300/.4400
Spot/June	.4500/.4600

Calculate the cancellation charges, payable by the customer if exchange margin required by the bank is 0.10% on buying and selling.

Question 29

You, a foreign exchange dealer of your bank, are informed that your bank has sold a TT on Copenhagen for Danish Kroner 10,00,000 at the rate of Danish Kroner 1 = ₹6.5150.

You are required to cover the transaction either in London or New York market. The rates on that date are as under:

Mumbai – London	₹74.3000	₹74.3200
London - New York	₹49.2500	₹49.2625
London – Copenhagen	DKK 11.4200	DKK 11.4350
New York – Copenhagen	DKK 07.5670	DKK 07.5840

Requirement:

i. In which market will you cover the transaction, London or New York?
ii. What will be the exchange profit or loss on the transaction?

Question 30

Your bank's London office has surplus funds to the extent of US$ 5,00,000 for a period of 3 months. The cost of funds to the bank is 4% p.a. It proposes to invest these funds in London, New York or Frankfurt and obtain the best yield, without any exchange risk to the bank.

The following rates of interest are available at the three centres for investment of domestic funds there for a period of 3 months.

London	5 % p.a.
New York	8 % p.a.
Frankfurt	3% p.a.

The market rates in London for US dollars and EURO are as under:

London on New York

Spot	1.5350/90
1 month	15/18
2 months	30/35
3 months	80/85

London on Frankfurt

Spot	1.8260/90
1 month	60/55
2 months	95/90
3 months	145/140

At which centre, will the investment be made & what will be the net gain (to the nearest pound) to the bank on the invested funds?

INTEREST RATE DERIVATIVES

Question 1

M/s Parker & Company is contemplating borrowing an amount of ₹60 crores for a period of 3 months 6 months' time from now. The current rate of Interest is 9% p.a. but it may go up in 6 months' time. The Company wants to hedge itself against the likely increase in Interest rate.

The Company' Bankers quoted an FRA (Forward Rate Agreement) at 9.30% p.a.

What will be the effect of FRA if the actual rate of Interest after 6 months is (i) 9.60% p.a. and (ii) 8.80% p.a.?

Question 2

Enfield Ltd.'s financial projections show an expected cash deficit of 8 million USD in two months' time. A 2-5 FRA at 5.00-4.70 is agreed. Calculate interest if in two months' time the market rate is (a) 7% (b) 4%.

Question 3

The following data is available: Spot USD-JPY 116.00

Deposit rates p.a.	USD	JPY
3 months	4.50%	0.25%
6 months	5.00%	0.25%

Forward Rate agreement (FRA) for Yen is NIL.

1. What would be 3 months FRA rate at 3 months forward?
2. The 6 & 12 months LIBORS are 5% and 6.5% respectively. A bank is quoting 6/12 USD FRA at 6.50 - 6.75%. Is there any arbitrage opportunity available?

Question 4

Suppose a dealer quotes 'All-in-cost' for a generic swap at 8% against six month libor flat. Notional Principal amount of swap is 5 lakhs.

Requirement:
(i) Calculate semi-annual fixed payment
(ii) Find the first floating rate payment for (i) above if the six month period from the effective date of swap to the settlement date comprises 181 days and that the corresponding libor was 6% on the effective date of swap.
(iii) In (ii) above, if the settlement is on 'Net' basis, how much the fixed rate payer would pay to the floating rate payer?
Generic Swap is based on 30/360 days basis.

Question 5

Suppose a dealer quotes 'All-in-cost' for a generic swap at 8% against six month libor flat. Notional Principal amount of swap is 6 lakhs.

Requirement:
(i) Calculate semi-annual fixed payment
(ii) Find the first floating rate payment for (i) above if the six month period from the effective date of swap to the settlement date comprises 181 days and that the corresponding libor was 6% on the effective date of swap.
(iii) In (ii) above, if the settlement is on 'Net' basis, how much the fixed rate payer would pay to the floating rate payer?
Generic Swap is based on 30/360 days basis.

Question 6

Derivative Bank entered a plain vanilla swap through on OIS (Overnight Interest 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 .

Question 7

ABC Bank is seeking fixed rate funding. It is able to finance at a cost of six months LIBOR + 1/4% for Rs.200 million for 5 years. The bank is able to swap into a fixed rate of 7.5% versus six month LIBOR treating six months as exactly half a year.

Requirement:
(i) What will be the "all in cost" funds to ABC Bank?
(ii) Another possibility being considered is the issue of a hybrid instrument which pays 7.5% for first three years and LIBOR -0.25% for remaining two years.
(iii) Given a three-year swap rate of 8%, suggest the method by which the bank should achieve fixed rate funding.

Question 8

A Inc. and B Inc. Intend to borrow $200,000 and $200,000 in Yen respectively for a time horizon of one year.

The prevalent interest rates are as follows:

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

The prevalent exchange rate is $1 = ¥120.

They entered into a currency swap under which it is agreed that B Inc will pay A Inc @ 1% over the loan interest rate which the latter will have to pay as a result of the agreed currency swap whereas A Inc will reimburse interest to B Inc only to the extent of 9%.

Keeping the exchange rate invariant, quantify the opportunity gain or loss as a result of the currency swap.

REAL OPTIONS

Question 1

Rama Chemical is in production Line of Chemicals and considering a proposal of building new plant to produce pesticides. The Present Value (PV) of new proposal is ₹150 crores (After considering scrap value at the end of life of project).

Since this is a new product market, survey indicates following variation in Present Value (PV):

Condition in first year	Change in PV from original estimate
Favourable	PV will increase 30%
Sluggish	PV will decrease by 40%

In addition, Rama Chemical has an option to abandon the project at the end of Year and dispose it at ₹100 crores. If risk free rate of interest is 8%, what will be present value of put option?

Question 2

You own an unused Gold mine that will cost ₹ 10,00,000 to reopen.

If you open the mine, you expect to be able to extract 1,000 ounces of Gold a year for each of three years. After that, the deposit will be exhausted. The Gold price is currently ₹5,000 an ounce, and each year the price is equally likely to rise or fall by ₹500 from its level at the start of the year. The extraction cost is ₹4,600 an ounce.

The discount rate is 10%.

Required:

i. Should you open the mine now or delay one year in the hope of a rise in the Gold price?

ii. What difference would it make to your decision if you could costlessly (but irreversibly) shut down the mine at any stage? Show the value of abandonment option.

Question 3

Ramesh owns a plot of land on which he intends to construct apartment units for sale. No. of apartment units to be constructed may be either 10 or 15. Total construction costs for these alternatives are estimated to be ₹600 lakhs or ₹1025 lakhs respectively. Current market price for each apartment unit is ₹80 lakhs.

The market price after a year for apartment units will depend upon the conditions of market. If the market is buoyant, each apartment unit will be sold for ₹91 lakhs, if it is sluggish, the sale price for the same will be ₹75 lakhs. Determine the current value of vacant plot of land.

Should Ramesh start construction now or keep the land vacant? The yearly rental per apartment unit is ₹7 lakhs and the risk free interest rate is 10% p.a. Assume that the construction cost will remain unchanged.