QUESTIONS

Project Planning and Capital Budgeting

1. ABC Ltd. has an investment proposal with information as under:

	Amount in ₹
Existing Asset:	
Current Book-Value	6,00,000
Annual Revenue from this Asset	25,00,000
Annual Cash Outflow (expenses) on this Asset	18,00,000
Depreciation of this Assets per annum	1,50,000
New Asset to be purchased:	
Cost	27,00,000
Installation charges	3,00,000
Depreciation on 90% of ₹ 30,00,000 as under for new asset:	
Year 1	8,00,000
Year 2	7,00,000
Year 3	6,00,000
Year 4	6,00,000
Annual Revenue from this Asset (for each of four years)	70,00,000
Annual Cash Outflow (expenses) on this Asset	28,00,000
Additional Workings Capital required	5,00,000
The Scrap (Salvage) value of this Asset at the end of Year 4	8,00,000

The company has Tax Rate for both Revenues and Capital Gain/Loss of 34%. You are required to find Net Annual Incremental Cash Flows. Also, show computation of Terminal Cash flow.

Note: Show calculation of amount to the nearest Rupee.

2. Currently there exists an opportunity to invest ₹ 1 lakh for manufacturing a product. The estimated demand, sale price and variable cost will be 6,000 units, ₹ 10 per unit and ₹ 6 per unit respectively. If investment is deferred by one year the estimated demand, sale price and variable cost will be 8,000 units, ₹ 11 per unit and ₹ 5 per unit respectively. After 2 years due to sluggish demand and import tariff on the raw material the estimated demand, sale price and variable cost will be 5,000 unit, ₹ 9 per unit and ₹ 7.50 per unit respectively.

Assuming Cost of Capital of Company as 10%, you are required to advise the best course of investment. (Amount to be shown to the nearest rupee).

Leasing Decisions

3. Agrani Ltd. is in the business of manufacturing bearings. Some more product lines are being planned to be added to the existing system. The machinery required may be bought or may be taken on lease. The cost of machine is ₹ 40,00,000 having a useful life of 5 years with the salvage value of ₹ 8,00,000. The full purchase value of machine can be financed by 20% loan repayable in five equal instalments falling due at the end of each year. Alternatively, the machine can be procured on a 5 years lease, year-end lease rentals being ₹ 12,00,000 per annum. The Company follows the written down value method of depreciation at the rate of 25%. Company's tax rate is 35 per cent and cost of capital is 16 per cent:

   (i) Advise the company which option it should choose – lease or borrow.

   (ii) Assess the proposal from the lessor's point of view examining whether leasing the machine is financially viable at 14% cost of capital (Detailed working notes should be given. Calculations can be rounded off to ₹ lakhs).

Dividend Decisions

4. X Ltd. is a Shoes manufacturing company. It is all equity financed and has a paid-tip 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 payout ratio will increase to 50%.

   The other data related to the company are as follows:

Year	EPS (₹)	Net Dividend per share (₹)	Share Price (₹)
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 of capital is 15%.

By using the Dividend Valuation Model, calculate

(i) Expected Market Price per share

(ii) P/E Ratio.

Indian Capital Market

5. BSE   30,000

   Value of portfolio   ₹ 60,60,000

   Risk free interest rate   9% p.a.

   Dividend yield on Index   6% p.a.

   Beta of portfolio   1.5

   We assume that a future contract on the BSE index with four months maturity is used to hedge the value of portfolio over next three months. One future contract is for delivery of 50 times the index.

   Based on the above information calculate:

   (i) Price of future contract.

   (ii) The gain on short futures position if index turns out to be 27,000 in three months.

6. Two companies ABC Ltd. and XYZ Ltd. approach the DEF Bank for FRA (Forward Rate Agreement). They want to borrow a sum of ₹ 100 crores after 2 years for a period of 1 year. Bank has calculated Yield Curve of both companies as follows:

Year	XYZ Ltd.	ABC Ltd.*
1	3.86	4.12
2	4.20	5.48
3	4.48	5.78

   *The difference in yield curve is due to the lower credit rating of ABC Ltd. compared to XYZ Ltd.

   (i) You are required to calculate the rate of interest DEF Bank would quote under 2V3 FRA, using the company's yield information as quoted above.

   (ii) Suppose bank offers Interest Rate Guarantee for a premium of 0.1% of the amount of loan, you are required to calculate the interest payable by XYZ Ltd. if interest rate in 2 years turns out to be

   (a) 4.50%

   (b) 5.50%

Security Analysis and Valuation

7. 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

Calculate:

(i)   Stock value of bond.

(ii) The percentage of downside risk.

(iii) The conversion premium

(iv) The conversion parity price of the stock.

8.   A Ltd. has issued convertible bonds, which carries a coupon rate of 14%. Each bond is convertible into 20 equity shares of the company A Ltd. The prevailing interest rate for similar credit rating bond is 8%. The convertible bond has 5 years maturity. It is redeemable at par at ₹ 100.

The relevant present value table is as follows.

Present values	t_1	t_2	t_3	t_4	t_5
$PVIF_{0.14, t}$	0.877	0.769	0.675	0.592	0.519
$PVIF_{0.08, t}$	0.926	0.857	0.794	0.735	0.681

You are required to estimate:

(Calculations be made upto 3 decimal places)

(i)   current market price of the bond, assuming it being equal to its fundamental value,

(ii) minimum market price of equity share at which bond holder should exercise conversion option; and

(iii) duration of the bond.

Portfolio Theory

9.   Expected returns on two stocks for particular market returns are given in the following table:

Market Return	Aggressive	Defensive
7%	4%	9%
25%	40%	18%

You are required to calculate:

(a) The Betas of the two stocks.

(b) Expected return of each stock, if the market return is equally likely to be 7% or 25%.

(c) The Security Market Line (SML), if the risk free rate is 7.5% and market return is equally likely to be 7% or 25%.

(d) The Alphas of the two stocks.

10. 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 this portfolio using:

♦ Sharpe method and

♦ Treynor's method

assuming the risk-free rate is 6%.

Financial Services

11. The credit sales and receivables of DEF Ltd. at the end of year are estimated at ₹ 561 lakhs and ₹ 69 lakhs respectively.

The average variable overdraft interest rate is 5% p.a.

DEF Ltd. 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 Ltd. 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.

Required:

Evaluate the viability of factoring proposal.

Mutual Funds

12. Mr. X on 1.7.2015, during the initial offer of some Mutual Fund invested in 10,000 units having face value of ₹10 for each unit. On 31.3.2016, the dividend paid by the M.F. was

10% and Mr. X found that his annualized yield was 153.33%. On 31.12.2017, 20% dividend was given. On 31.3.2018, Mr. X redeemed all his balance of 11,296.11 units when his annualized yield was 73.52%. What are the NAVs as on 31.3.2016, 31.3.2017 and 31.3.2018?

13. On 1st April, an open-ended scheme of mutual fund had 300 lakh units outstanding with Net Assets 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 are available:

	₹ in lakh
Portfolio value appreciation	425.47
Income of 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.

International Financial Management

14. The directors of Implant Inc. wishes to make an equity issue to finance a $10 m (million) expansion scheme which has an excepted Net Present Value of $2.2m and to re-finance an existing $6 m 15% Bonds due for maturity in 5 years time. For early redemption of these bonds there is a $3,50,000 penalty charges. The Co. has also obtained approval to suspend these pre-emptive rights and make a $15 m placement of shares which will be at a price of $0.5 per share. The floatation cost of issue will be 4% of Gross proceeds. Any surplus funds from issue will be invested in IDRs which is currently yielding 10% per year.

The Present capital structure of Co. is as under:

	$'000
Ordinary Share ($1 per share)	7,000
Share Premium	10,500
Free Reserves	25,500
	43,000

15% Term Bonds	6,000
11% Debenture (2012-2020)	8,000
	57,000

Current share price is $2 per share and debenture price is $ 103 per debenture. Cost of capital of Co. is 10%. It may be further presumed that stock market is semi-strong form efficient and no information about the proposed use of funds from the issue has been made available to the public. You are required to calculate expected share price of company once full details of the placement and to which the finance is to be put, are announced.

Foreign Exchange exposure and Risk Management

15. XYZ Bank, Amsterdam, wants to purchase ₹ 25 million against £ for funding their Nostro account and they have credited LORO account with Bank of London, London.

    Calculate the amount of £'s credited. Ongoing inter-bank rates are per $, ₹ 61.3625/3700 & per £, $ 1.5260/70.

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

	Spot	2-months forward
₹/US $	₹46.00/₹46.25	₹47.00/₹47.50

    Required:

    (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?

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

    You are required to:

    (a) Construct a swap that will help the Drilldip to reduce the exchange rate risk.

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

Mergers, Acquisitions and Reconstructing

18. Eagle Ltd. reported a profit of ₹ 77 lakhs after 30% tax for the financial year 2017-18. An analysis of the accounts revealed that the income included extraordinary items of ₹ 8 lakhs and an extraordinary loss of ₹10 lakhs. The existing operations, except for the extraordinary items, are expected to continue in the future. In addition, the results of the launch of a new product are expected to be as follows:

	₹ In lakhs
Sales	70
Material costs	20
Labour costs	12
Fixed costs	10

You are required to:

(i)   Calculate the value of the business, given that the capitalization rate is 14%.

(ii) Determine the market price per equity share, with Eagle Ltd.'s share capital being comprised of 1,00,000 13% preference shares of ₹ 100 each and 50,00,000 equity shares of ₹ 10 each and the P/E ratio being 10 times.

19. K. Ltd. is considering acquiring N. Ltd., the following information is available :

Company	Profit after Tax	Number of Equity shares	Market value per share
K. Ltd.	50,00,000	10,00,000	200.00
N. Ltd.	15,00,000	2,50,000	160.00

Exchange of equity shares for acquisition is based on current market value as above. There is no synergy advantage available:

Find the earning per share for company K. Ltd. after merger.

Find the exchange ratio so that shareholders of N. Ltd. would not be at a loss.

20. Write a short note on:

(a) Side Pocketing in Mutual Funds

(b) Linking of financial policy to strategic management

(c) Co-location /proximity hosting.

(d) Difference between Money Market and Capital Market.

(e) Exposure Netting.

SUGGESTED ANSWERS/HINTS

1. **Working note:**

   (i) **(A) Annual Cash inflow from the Existing Asset:**

	₹
Annual Revenue	25,00,000
Less: Annual Cash Outflow (expenses)	18,00,000
Gross Revenue	7,00,000
Less: Depreciation	1,50,000
Profit Before Tax (PBT)	5,50,000
Less Tax @ 34%	1,87,000
Add back depreciation	1,50,000
Annual Net Cash Inflow	5,13,000

   (B)

Year	1	2	3	4
Particulars	₹	₹	₹	₹
New Assets:				
Annual Revenue	70,00,000	70,00,000	70,00,000	70,00,000
Less: Cash outflow	28,00,000	28,00,000	28,00,000	28,00,000
Profit before depreciation and tax	42,00,000	42,00,000	42,00,000	42,00,000
Less: Depreciation	8,00,000	7,00,000	6,00,000	6,00,000
Profit before tax (PBT)	34,00,000	35,00,000	36,00,000	36,00,000
Less: Tax 34%	11,56,000	11,90,000	12,24,000	12,24,000
Profit after Tax (PAT)	22,44,000	23,10,000	23,76,000	23,76,000
Add back depreciation	8,00,000	7,00,000	6,00,000	6,00,000
Annual Cash Inflow	30,44,000	30,10,000	29,76,000	29,76,000
Less: Cash Inflow from Existing Assets:	5,13,000	5,13,000	5,13,000	5,13,000
Annual New Incremental Cash Inflows	25,31,000	24,97,000	24,63,000	24,63,000

(ii) Computation of Terminal Cash Inflow:

Particulars		₹
Salvage Value (as given)	(A)	8,00,000
Less: Book Value		3,00,000
Gain on Sale		5,00,000
Tax 34%	(B)	1,70,000
$\therefore$ Net Cash Inflow (A-B)		6,30,000
Plus: Working Capital released		5,00,000
Sub-total		11,30,000
Plus: Annual Net Incremental Cash Inflow at the end of 4 year		24,63,000
Total Terminal Cash Inflow		35,93,000

Note: Alternatively, ₹ 11,30,000 can also be treated as Terminal Value.

2. $R_i = R_f + \beta(R_m - R_f)$

$0.14 = R_f + 0.04$

$R_f = 0.10$ or 10 percent

NPV_0 = Quantity X (Sale Price-Variable Cost)/Risk Free Rate-Initial Investment

= [6000 X (10-6)/0.10] - ₹ 1,00,000 = ₹ 1,40,000

$$NPV_1 = \frac{[8,000 \times (11 - 5)/0.10 - 100000]}{1.10} = ₹\ 3,45,454$$

$$NPV_2 = \frac{[5,000 \times (9 - 7.50)/0.10 - 1,00,000]}{(1.10)^2} = -₹\ 20,661$$

It is better to defer the investment by 1 year and not by 2 years

3. (i) P.V. of Cash outflow under lease option

(in ₹)

Year	Lease Rental after tax	PVIFA @ 13%	Total P.V.
1 – 5	12,00,000 (I – T) = 7,80,000	20% (I – T) 3.517	27,43,260

Cash Outflow under borrowing option

5 equal instalments

₹ 40,00,000 ÷ 2.991 (PVIFA 20%) = 13,37,345

Tax Advantage

Year	Loan Instalments	On Interest	On Depreciation	Net Cash Outflow	PVIF 13%	Total PV
1	13,37,345	2,80,000	3,50,000	7,07,345	.885	6,26,000
2	13,37,345	2,48,386	2,62,500	8,26,459	.783	6,47,117
3	13,37,345	1,97,249	1,96,875	9,43,221	.693	6,53,652
4	13,37,345	1,43,085	1,47,656	10,46,604	.613	6,41,568
5	13,37,345	77,635	1,10,742	11,48,968	.543	6,23,890
						31,92,227

Total PV	31,92,227
Less: PV Salvage value adjusted for Tax savings on loss of sale of machinery (₹ 8,00,000 × .543 = ₹ 4,34,400) + (₹ 28,359) (See Working Note on Depreciation) 9,49,219 – 8,00,000 = 1,49,219 × .35 × .543 = 28,359	4,62,759
Total present value of cash outflow	27,29,468

Decision: PV of cash outflow of lease option is greater than borrow option and hence borrow option is recommended.

Working Notes:

1. **Debt and Interest Payments**

Year	Loan Instalments	Loan at the beginning of the year	Interest	Principal	Balance at the end of year
1	13,37,345	40,00,000	8,00,000	5,37,345	34,62,655
2	13,37,345	34,62,655	6,92,531	6,44,814	28,17,841
3	13,37,345	28,17,841	5,63,568	7,73,777	20,44,064
4	13,37,345	20,44,064	4,08,813	9,28,532	11,15,532
5	13,37,345	11,15,532	2,21,813*	11,15,532	-

   * Balancing Figure

2. | *Year* | | *Depreciation* |
    |--------|---------------|----------------|
    | 1 | 40,00,000 × .25 | 10,00,000 |
    | 2 | 30,00,000 × .25 | 7,50,000 |

3	22,50,000 × .25	5,62,500
4	16,87,500 × .25	4,21,875
5	12,65,625 × .25	3,16,406

B.V. of machine = 12,65,625 – 3,16,406 = 9,49,219.

(ii) **Proposal from the View Point of Lessor**

Lessor's Cash Flow

	1	*2*	*3*	*4*	*5*
Lease Rentals	12,00,000	12,00,000	12,00,000	12,00,000	12,00,000
Less: Dep. (A)	10,00,000	7,50,000	5,62,500	4,21,875	Nil
EBT	2,00,000	4,50,000	6,37,500	7,78,125	12,00,000
Less: Tax @ 35%	70,000	1,57,500	2,23,125	2,72,344	4,20,000
EAT (B)	1,30,000	2,92,500	4,14,375	5,05,781	7,80,000
CFAT	11,30,000	10,42,500	9,76,875	9,27,656	7,80,000
PV factor @ 14%	0.877	0.769	0.675	0.592	0.519
PV	9,91,010	8,01,683	6,59,391	5,49,172	4,04,820

PV of Lease Rent	34,06,076
Add: PV of Salvage Value	4,15,200
Add: PV of Tax Saving on loss of sale of asset	84,581
Total PV of cash inflow	39,05,857
Cost of Machine	40,00,000
NPV	(94,143)

Decision: Lease rate is not financially viable. Hence, not recommended.

4. **(a)** The formula for the Dividend valuation Model is

$$P_0 = \frac{D_1}{K_e - g}$$

K_e = Cost of Capital

g = Growth rate

D_1= Dividend at the end of year 1

On the basis of the information given, the following projection can be made:

Year	EPS (₹)	DPS (₹)	PVF @15%	PV of DPS (₹)
2015	12.00 (9.60 x 125%)	4.80 (3.84 x 125%)	0.870	4.176
2016	15.00 (12.00 x 125%)	6.00 (4.80 x 125%)	0.756	4.536
2017	16.50 (15.00 x 110%)	8.25* (50% of ₹16.50)	0.658	5.429
				14.141

*Payout Ratio changed to 50%.

After 2017, the perpetuity value assuming 10% constant annual growth is:

D_1 = ₹ 8.25 × 110% = ₹ 9.075

Therefore P_o from the end of 2017

$$\frac{₹\,9.075}{0.15 - 0.10} = ₹\,181.50$$

This must be discounted back to the present value, using the 3 year discount factor after 15%.

	₹
Present Value of P_0 (₹ 181.50 × 0.658)	119.43
Add: PV of Dividends 2015 to 2017	14.14
Expected Market Price of Share	133.57

(b) P/E Ratio

$$\text{P/E Ratio} = \frac{\text{Expected Market Price of Share} \left(P_1\right)}{\text{EPS}}$$

$$= \frac{₹\,133.57}{₹\,9.60} = ₹\,13.91$$

5. (i) Current future price of the index = $30{,}000 + 30{,}000\,(0.09\text{-}0.06)\dfrac{4}{12}$

= 30,000 + 300 = 30,300

∴ Price of the future contract = ₹ 50 x 30,300 = ₹ 15,15,000

(ii)   Hedge ratio = $\dfrac{60,60,000}{15,15,000} \times 1.5$ = 6 contracts

Index after there months turns out to be 27,000

Future price will be = 27,000 + 27,000 (0.09-0.06) $\times \dfrac{1}{12}$ = 27,067.50

Therefore, Gain from the short futures position is = 6 x (30,300 – 27,067.50) x 50

= ₹9,69,750

Note: Alternatively, we can also use daily compounding (exponential) formula.

6. (i)   DEF Bank will fix interest rate for 2V3 FRA after 2 years as follows:

<u>XYZ Ltd.</u>

$(1+r)(1+0.0420)^2$	=	$(1+0.0448)^3$
$(1+r)(1.0420)^2$	=	$(1.0448)^3$
r	=	5.04%

Bank will quote 5.04% for a 2V3 FRA.

<u>ABC Ltd.</u>

$(1+r)(1+0.0548)^2$	=	$(1+0.0578)^3$
$(1+r)(1.0548)^2$	=	$(1.0578)^3$
r	=	6.38%

Bank will quote 6.38% for a 2V3 FRA.

(ii)

		4.50%- Allow to Lapse	5.50%- Exercise
Interest	₹ 100 crores X 4.50%	₹ 4.50 crores	-
	₹ 100 crores X 5.04%	-	₹ 5.04 crores
Premium (Cost of Option)	₹ 100 crores X 0.1%	₹ 0.10 crores	₹ 0.10 crores
		4.60 crores	5.14 crores

7. (i) Stock value or conversion value of bond

12 × 20 = ₹ 240

(ii) Percentage of the downside risk

$\dfrac{₹\ 265 - ₹\ 235}{₹\ 235}$ = 0.1277 or 12.77%   or $\dfrac{₹\ 265 - ₹\ 235}{₹\ 265}$ = 0.1132 or 11.32%

This ratio gives the percentage price decline experienced by the bond if the stock becomes worthless.

(iii) Conversion Premium

$$\frac{\text{Market Price} - \text{Conversion Value}}{\text{Conversion Value}} \times 100$$

$$\frac{₹265 - ₹240}{₹240} \times 100 = 10.42\%$$

(iv) Conversion Parity Price

$$\frac{\text{Bond Price}}{\text{No. of Shares on Conversion}}$$

$$\frac{₹265}{20} = ₹13.25$$

This indicates that if the price of shares rises to ₹ 13.25 from ₹ 12 the investor will neither gain nor lose on buying the bond and exercising it. Observe that ₹ 1.25 (₹ 13.25 – ₹ 12.00) is 10.42% of ₹ 12, the Conversion Premium.

8. (i) Current Market Price of Bond

Time	CF	PVIF 8% PV (CF)	PV (CF)
1	14	0.926	12.964
2	14	0.857	11.998
3	14	0.794	11.116
4	14	0.735	10.290
5	114	0.681	77.634
		$\sum$ PV (CF) i.e. P_0 =	124.002

Say   ₹ 124.00

(ii) Minimum Market Price of Equity Shares at which Bondholder should exercise conversion option:

$$\frac{124.00}{20.00} = ₹\ 6.20$$

(iii) Duration of the Bond

Year	Cash flow	P.V. @ 8%		Proportion of bond value	Proportion of bond value x time (years)
1	14	0.926	12.964	0.105	0.105

2	14	0.857	11.998	0.097	0.194
3	14	0.794	11.116	0.089	0.267
4	14	0.735	10.290	0.083	0.332
5	114	0.681	<u>77.634</u>	<u>0.626</u>	<u>3.130</u>
			<u>124.002</u>	<u>1.000</u>	<u>4.028</u>

9. **(a)** The Betas of two stocks:

Aggressive stock   -   40% - 4%/25% - 7% = 2

Defensive stock   -   18% - 9%/25% - 7% = 0.50

Alternatively, it can also be solved by using the Characteristic Line Relationship as follows:

$R_s = \alpha + \beta R_m$

Where

    α = Alpha

    β = Beta

    R_m = Market Return

For Aggressive Stock

    4% = α + β(7%)

    40% = α + β(25%)

    36% = β(18%)

    β = 2

For Defensive Stock

    9% = α + β(7%)

    18% = α + β(25%)

    9% = β(18%)

    β = 0.50

(b) Expected returns of the two stocks:-

Aggressive stock   -   0.5 x 4% + 0.5 x 40% = 22%

Defensive stock   -   0.5 x 9% + 0.5 x 18% = 13.5%

(c) Expected return of market portfolio = 0.5 x 7% + 0.5% x 25% = 16%

∴ Market risk prem. = 16% - 7.5% = 8.5%

∴ SML is, required return = 7.5% + βi 8.5%

(d) $R_s = \alpha + \beta R_m$

For Aggressive Stock

$22\% = \alpha_A + 2(16\%)$

$\alpha_A = -10\%$

For Defensive Stock

$13.5\% = \alpha_D + 0.50(16\%)$

$\alpha_D = 5.5\%$

10. Sharpe Ratio $\qquad S = (R_p - R_f)/\sigma_p$

Treynor Ratio $\qquad T = (R_p - R_f)/\beta_p$

Where,

$\quad R_p \quad = \quad$ Return on Fund

$\quad R_f \quad = \quad$ Risk-free rate

$\quad \sigma_p \quad = \quad$ Standard deviation of Fund

$\quad \beta_p \quad = \quad$ Beta of Fund

Reward to Variability (Sharpe Ratio)

Mutual Fund	R_p	R_f	$R_p - R_f$	σ_p	Reward to Variability	Ranking
A	15	6	9	7	1.285	2
B	18	6	12	10	1.20	3
C	14	6	8	5	1.60	1
D	12	6	6	6	1.00	5
E	16	6	10	9	1.11	4

Reward to Volatility (Treynor Ratio)

Mutual Fund	R_p	R_f	$R_p - R_f$	β_p	Reward to Volatility	Ranking
A	15	6	9	1.25	7.2	2
B	18	6	12	0.75	16	1
C	14	6	8	1.40	5.71	5
D	12	6	6	0.98	6.12	4
E	16	6	10	1.50	6.67	3

11.

Particulars	₹
Estimated Receivables	69,00,000
Estimated Receivables under Factor $\left(5,61,00,000 \times \dfrac{30}{365}\right)$	46,10,959
Reduction in Receivables (₹ 69,00,000 – ₹ 46,10,959)	22,89,041

Total Savings

Reduction in finance costs	₹ 22,89,041 @ 5%	1,14,452
Saving of Administration costs		1,50,000
Saving of Bad debts		5,25,000
Total (A)		7,89,452

Total Cost of Factoring

Interest on advances by Factor		
Advances 46,10,959 @ 80%	₹ 36,88,767	
Interest on ₹ 36,88,767 @ 7%	₹ 2,58,214	
Overdraft Interest rate 5%	(₹ 1,84,438)	73,776
Charges payable to Factor (₹ 5,61,00,000 @ 1.25%)		7,01,250
Total (B)		7,75,026

Net Saving (A) – (B)   ₹ 14,426

Since Net Saving is positive the proposal is viable and can be accepted.

12. Yield for 9 months = (153.33 x 9/12)   = 115%

Market value of Investments as on 31.03.2016   = 1,00,000/- + (1,00,000x 115%)

                                                                = ₹2,15,000/-

Therefore, NAV as on 31.03.2016   = (2,15,000-10,000)/10,000= ₹20.50

(NAV would stand reduced to the extent of dividend payout, being (10,000x10x10%) = ₹10,000)

Since dividend was reinvested by Mr. X, additional units acquired $= \dfrac{₹10,000}{₹\,20.50}$ = 487.80 units

Therefore, units as on 31.03.2016   = 10, 000+ 487.80 = 10,487.80

[Alternately, units as on 31.03.2016   = (2,15,000/20.50) = 10,487.80]

Dividend as on 31.03.2017   = 10,487.80 x 10 x 0.2 = ₹20,975.60

Let X be the NAV on 31.03.2017, then number of new units reinvested will be ₹ 20,975.60/X. Accordingly 11296.11 units shall consist of reinvested units and 10487.80 (as on 31.03.2016). Thus, by way of equation it can be shown as follows:

$$11296.11 = \frac{20975.60}{X} + 10487.80$$

Therefore, NAV as on 31.03.2017   = 20,975.60/(11,296.11- 10,487.80)

                                      = ₹ 25.95

NAV as on 31.03.2018   = ₹ 1,00,000 (1+0.7352x33/12)/11296.11

                                        = ₹ 26.75

13.   **Calculation of Income available for Distribution**

	Units (Lakh)	Per Unit (₹)	Total (₹ In lakh)
Income from April	300	0.0765	22.9500
Add: Dividend equalization collected on issue	6	0.0765	0.4590
	306	0.0765	23.4090
Add: Income from May		0.1125	34.4250
	306	0.1890	57.8340
Less: Dividend equalization paid on repurchase	3	0.1890	(0.5670)
	303	0.1890	57.2670
Add: Income from June		0.1500	45.4500
	303	0.3390	102.7170
Less: Dividend Paid		0.2373	(71.9019)
	303	0.1017	30.8151

Calculation of Issue Price at the end of April

	₹
Opening NAV	18.750
Add: Entry Load 2% of ₹ 18.750	(0.375)
	19.125
Add: Dividend Equalization paid on Issue Price	0.0765
	19.2015

Calculation of Repurchase Price at the end of May

	₹
Opening NAV	18.750
Less: Exit Load 2% of ₹ 18.750	(0.375)
	18.375
Add: Dividend Equalization paid on Issue Price	0.1890
	18.564

Closing NAV

		₹ (Lakh)
Opening Net Asset Value (₹ 18.75 × 300)		5625.0000
Portfolio Value Appreciation		425.4700
Issue of Fresh Units (6 × 19.2015)		115.2090
Income Received		102.8250
(22.950 + 34.425 + 45.450)		
		6268.504
Less: Units repurchased (3 × 18.564)	-55.692	
Income Distributed	-71.9019	(-127.5939)
Closing Net Asset Value		6140.9101
Closing Units (300 + 6 – 3) lakh		303 lakh
∴ Closing NAV as on 30th June		₹ 20.2670

14. In semi-strong form of stock market, the share price should accurately reflect new relevant information when it is made publicly available including Implant Inc. expansion scheme and redemption of the term loan.

The existing Market Value $ 2 x 7,000,000		$ 14,000,000
The new investment has an expected NPV		$ 2,200,000
Proceeds of New Issue		$ 15,000,000
Issue Cost of		($ 600,000)
PV of Benefit of early redemption		
Interest of $ 900,000 ($,6,000,000 x 15 %)x 3.791	3,411,900	
PV of Repayment in 5 years $ 6,000,000 x 0.621	3,726,000	
	7,137,900	
Redemption Cost Now	(6,000,000)	

Penalty charges	(350,000)	787,900
Expected Total Market value		31,387,900
New No. of shares (30 Million + 7 Million)		37,00,000
Expected Share Price of Company		$ 0.848

15. To purchase Rupee, XYZ Bank shall first sell £ and purchase $ and then sell $ to purchase Rupee. Accordingly, following rate shall be used:

(£/₹)$_{ask}$

The available rates are as follows:

($/£)$_{bid}$ = $1.5260

($/£)$_{ask}$ = $1.5270

(₹/$)$_{bid}$ = ₹ 61.3625

(₹/$)$_{ask}$ = ₹ 61.3700

From above available rates we can compute required rate as follows:

(£/₹)$_{ask}$ = (£/$)$_{ask}$ x ($/₹)$_{ask}$

= (1/1.5260) x (1/61.3625)

= £ 0.01068 or £ 0.0107

Thus amount of £ to be credited

= ₹ 25,000,000 x £ 0.0107

= £ 267,500

16. **(i)** US $ required to get ₹ 25 lakhs after 2 months at the Rate of ₹ 47/$

$\therefore \dfrac{₹\,25,00,000}{₹\,47}$ = US $ 53191.489

(ii) ₹ required to get US$ 2,00,000 now at the rate of ₹ 46.25/$

∴ US $ 200,000 × ₹ 46.25 = ₹ 92,50,000

(iii) Encashing US $ 69000 Now Vs 2 month later

Proceed if we can encash in open mkt ($ 69000 × ₹46)	₹ 31,74,000
Opportunity gain	
= $31,74,000 \times \dfrac{10}{100} \times \dfrac{2}{12}$	₹ 52,900
Likely sum at end of 2 months	₹ 32,26,900

Proceeds if we can encash by forward rate :

$ 69000 × ₹47.00   ₹ 32,43,000

It is better to encash the proceeds after 2 months and get opportunity gain.

17. (a) The following swap arrangement can be entered by Drilldip.

    (i)   Swap a US$ loan today at an agreed rate with any party to obtain Indian Rupees (₹) to make initial investment.

    (ii)   After one year swap back the Indian Rupees with US$ at the agreed rate. In such case the company is exposed only on the profit earned from the project.

(b)   **With the swap**

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

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

Without the swap

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

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

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

18. (i)   **Computation of Business Value**

	(₹Lakhs)
Profit before tax $\dfrac{77}{1-0.30}$	110
Less: Extraordinary income	(8)

Add: Extraordinary losses			<u>10</u>
			112
Profit from new product		(₹ Lakhs)	
Sales		70	
Less: Material costs	20		
Labour costs	12		
Fixed costs	<u>10</u>	(<u>42</u>)	<u>28</u>
			140.00
Less: Taxes @30%			<u>42.00</u>
Future Maintainable Profit after taxes			<u>98.00</u>
Relevant Capitalisation Factor			0.14
Value of Business (₹98/0.14)			700

(ii) Determination of Market Price of Equity Share

Future maintainable profits (After Tax)	₹ 98,00,000
Less: Preference share dividends 1,00,000 shares of ₹ 100 @ 13%	₹ 13,00,000
Earnings available for Equity Shareholders	₹ 85,00,000
No. of Equity Shares	50,00,000
Earning per share = $\dfrac{₹\ 85,00,000}{50,00,000}$ =	₹ 1.70
PE ratio	10
Market price per share	₹ 17

19. (i) Earning per share for company K. Ltd. after Merger:

Exchange Ratio 160 : 200 = 4: 5

That is 4 shares of K. Ltd. for every 5 shares of N. Ltd.

∴ Total number of shares to be issued = $\dfrac{4}{5}$ × 2,50,000   = 2,00,000 shares

∴ Total number of shares of K. Ltd. and N. Ltd.   = 10,00,000 K. Ltd.

                                      + <u>2,00,000</u> N. Ltd

                                      <u>12,00,000</u>

Total profit after Tax =   ₹ 50,00,000   K. Ltd.

                              ₹ <u>15,00,000</u>   N Ltd.

                              ₹ <u>65,00,000</u>

∴ E.P.S. (Earning per share) of K. Ltd. after Merger

$$= \frac{₹\,65,00,000}{12,00,000} = ₹\ 5.42\ \text{Per Share}$$

(ii) To find the Exchange Ratio so that shareholders of N. Ltd. would not be at a Loss:

Present Earnings per share for company K. Ltd.

$$= \frac{₹\,50,00,000}{₹\,10,00,000} = ₹\ 5.00$$

Present Earnings Per share for company N. Ltd.

$$= \frac{₹\,15,00,000}{₹\,2,50,000} = ₹\ 6.00$$

∴ Exchange Ratio should be 6 shares of K. Ltd. for every 5 shares of N Ltd.

∴ Shares to be issued to N. Ltd.

$$= \frac{2,50,000 \times 6}{5} = 3,00,000\ \text{Shares}$$

∴ Total No. of Shares of K.Ltd. and N. Ltd.

= 10,00,000   K. Ltd.

+   3,00,000   N. Ltd

   13,00,000

∴ E.P.S. After Merger $\dfrac{65,00,000}{13,00,000}$ = ₹ 5.00 Per Share

Total Earnings Available to Shareholders of N. Ltd. after Merger = ₹ 3,00,000 shares × ₹ 5.00 = ₹ 15,00,000

This is equal to Earnings prior Merger for N. Ltd.

∴ Exchange Ratio on the Basis of Earnings per Share is recommended.

20. (a) In simple words, a Side Pocketing in Mutual Funds leads to separation of risky assets from other investments and cash holdings. The purpose is to make sure that money invested in a mutual fund, which is linked to stressed assets, gets locked, until the fund recovers the money from the company or could avoid distress selling of illiquid securities.

The modus operandi is simple. Whenever, the rating of a mutual fund decreases, the fund shifts the illiquid assets into a side pocket so that current shareholders can be benefitted from the liquid assets. Consequently, the Net Asset Value (NAV) of the fund will then reflect the actual value of the liquid assets.

Side Pocketing is beneficial for those investors who wish to hold on to the units of the main funds for long term. Therefore, the process of Side Pocketing ensures that liquidity is not the problem even in the circumstances of frequent allotments and redemptions.

Side Pocketing is quite common internationally. However, Side Pocketing has also been resorted to bereft the investors of genuine returns.

In India recent fiasco in the Infrastructure Leasing and Financial Services (IL&FS) has led to many discussions on the concept of side pocketing as IL&FS and its subsidiaries have failed to fulfill its repayments obligations due to severe liquidity crisis.

The Mutual Funds have given negative returns because they have completely written off their exposure to IL&FS instruments.

(b) The success of any business is measured in financial terms. Maximizing value to the shareholders is the ultimate objective. For this to happen, at every stage of its operations including policy-making, the firm should be taking strategic steps with value-maximization objective. This is the basis of financial policy being linked to strategic management.

The linkage can be clearly seen in respect of many business decisions. For example:

(i) Manner of raising capital as source of finance and capital structure are the most important dimensions of strategic plan.

(ii) Cut-off rate (opportunity cost of capital) for acceptance of investment decisions.

(iii) Investment and fund allocation is another important dimension of interface of strategic management and financial policy.

(iv) Foreign Exchange exposure and risk management.

(v) Liquidity management

(vi) A dividend policy decision deals with the extent of earnings to be distributed and a close interface is needed to frame the policy so that the policy should be beneficial for all.

(vii) Issue of bonus share is another dimension involving the strategic decision.

Thus, from above discussions it can be said that financial policy of a company cannot be worked out in isolation to other functional policies. It has a wider appeal and closer link with the overall organizational performance and direction of growth.

(c) The co-location or proximity hosting is a facility which is offered by the stock exchanges to stock brokers and data vendors whereby their trading or data-vending systems are allowed to be located within or at close proximity to the premises of the

stock exchanges, and are allowed to connect to the trading platform of stock exchanges through direct and private network.

Moreover, pursuant to the recommendations of the Technical Advisory Committee (TAC) of SEBI, stock exchanges are advised to allow direct connectivity between co-location facility of one recognized stock exchange and the colocation facility of other recognized stock exchanges. Stock exchanges are also advised to allow direct connectivity between servers of a stock broker placed in colocation facility of a recognized stock exchange and servers of the same stock broker placed in colocation facility of a different recognized stock exchange. This facility should be available to all the co-located brokers, who are desirous to avail such connectivity, in a fair and equitable manner.

Further, in light of the public comments received and in consultation with Technical Advisory Committee (TAC) of SEBI and Secondary Market Advisory Committee (SMAC) of SEBI and in order to facilitate small and medium sized Members, who otherwise find it difficult to avail colocation facility, due to various reasons including but not limited to high cost, lack of expertise in maintenance and troubleshooting, etc. to avail co-location facility, SEBI has directed the stock exchanges to introduce **'Managed Co-location Services'**. Under this facility, space/rack in co-location facility shall be allotted to eligible vendors by the stock exchange along with provision for receiving market data for further dissemination of the same to their client members and the facility.

(d) The capital market deals in financial assets. Financial assets comprises of shares, debentures, mutual funds etc. The capital market is also known as stock market.

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

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

	Money Market	*Capital Market*
(i)	There is no classification between primary market and secondary market	There is a classification between primary market and secondary market.
(ii)	It deals for funds of short-term requirement (less than a year).	It deals with funds of long-term requirement (more than 1 year).
(iii)	Money market instruments include interbank call money, notice money upto 14 days, short-term deposits upto three months, commercial paper, 91 days treasury bills.	Capital Market instruments are shares and debt instruments.

(iv)	Money market participants are banks, financial institution, RBI and Government.	Capital Market participants include retail investors, institutional investors like Mutual Funds, Financial Institutions, corporate and banks.
(v)	Supplies funds for working capital requirement.	Supplies funds for fixed capital requirements.
(vi)	Each single instrument is of a large amount.	Each single instrument is of a small amount.
(vii)	Risk involved in money market is less due to smaller term of maturity. In short term the risk of default is less.	Risk is higher
(viii)	Transactions take place over phone calls. Hence there is no formal place for transactions.	Transactions are at a formal place viz. the stock exchange.
(ix)	The basic role of money market is liquidity adjustment.	The basic role of capital market includes putting capital to work, preferably to long term, secure and productive employment.
(x)	Closely and directly linked with the Central Bank of India	The Capital market feels the influence of the Central Bank but only indirectly and through the money market
(xi)	Commercial Banks are closely regulated.	The institutions are not much regulated.

(e) Exposure Netting refers to offsetting exposures in one currency with Exposures in the same or another currency, where exchange rates are expected to move in such a way that losses or gains on the first exposed position should be offset by gains or losses on the second currency exposure.

The objective of the exercise is to offset the likely loss in one exposure by likely gain in another. This is a manner of hedging foreign exchange exposures though different from forward and option contracts. This method is similar to portfolio approach in handling systematic risk.

For example, let us assume that a company has an export receivables of US$ 10,000 due 3 months hence, if not covered by forward contract, here is a currency exposure to US$.

Further, the same company imports US$ 10,000 worth of goods/commodities and therefore also builds up a reverse exposure. The company may strategically decide

to leave both exposures open and not covered by forward; it would be doing an exercise in exposure netting.

Despite the difficulties in managing currency risk, corporates can now take some concrete steps towards implementing risk mitigating measures, which will reduce both actual and future exposures. For years now, banking transactions have been based on the principle of netting, where only the difference of the summed transactions between the parties is actually transferred. This is called settlement netting. Strictly speaking in banking terms this is known as settlement risk. Exposure netting occurs where outstanding positions are netted against one another in the event of counter party default.