

## PAPER – 2: STRATEGIC FINANCIAL MANAGEMENT

### QUESTIONS

#### Project Planning and Capital Budgeting

1. Shivam Ltd. is considering two mutually exclusive projects A and B. Project A costs ₹ 36,000 and project B ₹30,000. You have been given below the net present value probability distribution for each project.

Project A		Project B	
NPV estimates (₹)	Probability	NPV estimates (₹)	Probability
15,000	0.2	15,000	0.1
12,000	0.3	12,000	0.4
6,000	0.3	6,000	0.4
3,000	0.2	3,000	0.1

- Compute the expected net present values of projects A and B.
- Compute the risk attached to each project i.e. standard deviation of each probability distribution.
- Compute the profitability index of each project.
- Which project do you recommend? State with reasons.

#### Leasing Decisions

2. The Finance manager of ABC Corporation is analyzing firm's policy regarding computers which are now being taken on lease on yearly basis on rental of ₹ 1,00,000 per year. The computers can be bought for ₹ 5,00,000. The purchase would be financed by 16% and the loan is repayable in 4 equal annual installments.

On account of rapid technological progress in the computer industry, it is suggested that a 4-year economic life should be used instead of a 10-year physical life. It is estimated that the computers would be sold for ₹ 2,00,000 at the end of 4 years.

The company uses the straight line method of depreciation. Corporate tax rate is 35%.

- Whether the equipment be bought or be taken on lease?
- Analyze the financial viability from the point of view of the lessor, assuming his cost of capital is 14%.
- Determine the minimum lease rent at which lessor would break even.

#### Dividend Decisions

3. RST Ltd. has a capital of ₹10,00,000 in equity shares of ₹100 each. The shares are currently quoted at par. The company proposes to declare a dividend of ₹ 10 per share at the end of the current financial year. The capitalization rate for the risk class of which the

company belongs is 12%. What will be the market price of the share at the end of the year, if

- (i) a dividend is not declared?
- (ii) a dividend is declared?
- (iii) assuming that the company pays the dividend and has net profits of ₹5,00,000 and makes new investments of ₹10,00,000 during the period, how many new shares must be issued? Use the MM model.

### Indian Capital Market

4. Calculate the price of 3 months PQR futures, if PQR (FV ₹ 10) quotes ₹ 220 on NSE and the three months future price quotes at ₹ 230 and the one month borrowing rate is given as 15 percent and the expected annual dividend is 25 percent per annum payable before expiry. Also examine arbitrage opportunities.
5. The equity share of VCC Ltd. is quoted at ₹ 210. A 3-month call option is available at a premium of ₹ 6 per share and a 3-month put option is available at a premium of ₹ 5 per share. Ascertain the net payoffs to the option holder of a call option and a put option.
  - (i) the strike price in both cases in ₹ 220; and
  - (ii) the share price on the exercise day is ₹ 200,210,220,230,240.

Also indicate the price range at which the call and the put options may be gainfully exercised.

6. Electraspace is consumer electronics wholesaler. The business of the firm is highly seasonal in nature. In 6 months of a year, firm has a huge cash deposits and especially near Christmas time and other 6 months firm cash crunch, leading to borrowing of money to cover up its exposures for running the business.

It is expected that firm shall borrow a sum of ₹50 million for the entire period of slack season in about 3 months.

A Bank has given the following quotations:

Spot	5.50% - 5.75%
3 × 6 FRA	5.59% - 5.82%
3 × 9 FRA	5.64% - 5.94%

3 month ₹50,000 future contract maturing in a period of 3 months is quoted at 94.15 (5.85%).

You are required to determine:

- (a) How a FRA, shall be useful if the actual interest rate after 3 months turnout to be:
  - (i) 4.5%
  - (ii) 6.5%

- (b) How 3 months Future contract shall be useful for company if interest rate turns out as mentioned in part (a) above.

### Security Analysis and Valuation

7. A hypothetical company ABC Ltd. issued a 10% Debenture (Face Value of ₹ 1000) of the duration of 10 years is currently trading at ₹ 850 per debenture. The bond is convertible into 50 equity shares being currently quoted at ₹ 17 per share.

If yield on equivalent comparable bond is 11.80%, then calculate the spread of yield of the above bond from this comparable bond.

The relevant present value table is as follows.

Present Values	t <sub>1</sub>	t <sub>2</sub>	t <sub>3</sub>	t <sub>4</sub>	t <sub>5</sub>	t <sub>6</sub>	t <sub>7</sub>	t <sub>8</sub>	t <sub>9</sub>	t <sub>10</sub>
PVIF <sub>0.11, t</sub>	0.901	0.812	0.731	0.659	0.593	0.535	0.482	0.434	0.391	0.352
PVIF <sub>0.13 t</sub>	0.885	0.783	0.693	0.613	0.543	0.480	0.425	0.376	0.333	0.295

8. Calculate the value of share from the following information:

Profit after tax of the company	₹ 290 crores
Equity capital of company	₹ 1,300 crores
Par value of share	₹ 40 each
Debt ratio of company (Debt/ Debt + Equity)	27%
Long run growth rate of the company	8%
Beta 0.1; risk free interest rate	8.7%
Market returns	10.3%
Capital expenditure per share	₹ 47
Depreciation per share	₹ 39
Change in Working capital	₹ 3.45 per share

### Portfolio Theory

9. Mr. Tempest has the following portfolio of four shares:

Name	Beta	Investment ₹ Lac.
Oxy Rin Ltd.	0.45	0.80
Boxed Ltd.	0.35	1.50
Square Ltd.	1.15	2.25
Ellipse Ltd.	1.85	4.50

The risk-free rate of return is 7% and the market rate of return is 14%.

Required.

- (i) Determine the portfolio return.
  - (ii) Calculate the portfolio Beta.
10. Mr. Nirmal Kumar has categorized all the available stock in the market into the following types:
- (i) Small cap growth stocks
  - (ii) Small cap value stocks
  - (iii) Large cap growth stocks
  - (iv) Large cap value stocks

Mr. Nirmal Kumar also estimated the weights of the above categories of stocks in the market index. Further, the sensitivity of returns on these categories of stocks to the three important factor are estimated to be:

Category of Stocks	Weight in the Market Index	Factor I (Beta)	Factor II (Book Price)	Factor III (Inflation)
Small cap growth	25%	0.80	1.39	1.35
Small cap value	10%	0.90	0.75	1.25
Large cap growth	50%	1.165	2.75	8.65
Large cap value	15%	0.85	2.05	6.75
Risk Premium		6.85%	-3.5%	0.65%

The rate of return on treasury bonds is 4.5%

Required:

- (a) Using Arbitrage Pricing Theory, determine the expected return on the market index.
- (b) Using Capital Asset Pricing Model (CAPM), determine the expected return on the market index.
- (c) Mr. Nirmal Kumar wants to construct a portfolio constituting only the 'small cap value' and 'large cap growth' stocks. If the target beta for the desired portfolio is 1, determine the composition of his portfolio.

### Financial Services

11. AC Co. Ltd. has a turnover of ₹ 1600 Lakhs and is expecting growth of 17.90% for the next year. Average credit period is 100 days. The Bad Debt losses are about 1.50% on sales. The administrative cost for collecting receivables is ₹ 8,00,000. The AC Co. Ltd. decides to make use of Factoring Services by FS Ltd. on terms as under:

- (i) that the factor will charge commission of 1.75%.
- (ii) 15% Risk with recourse and
- (iii) Pay an advance on receivables to AC Co. Ltd. at 14% p.a. interest after withholding 10% as reserve.

You are required to calculate the effective cost of factoring to AC Co. Ltd. for the year.

Show amount in Lakhs of ₹ with two decimal points. Assume 360 days in a year.

### Mutual Funds

12. On 1<sup>st</sup> 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 30<sup>th</sup> June.
13. ANP Plan, a hedge fund currently has assets of ₹ 20 crore. CA X, the manager of fund charges fee of 0.10% of portfolio asset. In addition to it he charges incentive fee of 2%. The incentive will be linked to gross return each year in excess of the portfolio maximum value since the inception of fund. The maximum value the fund achieved so far since inception of fund about one and half year ago was ₹ 21 crores.

You are required to compute the fee payable to CA X, if return on the fund this year turns out to be (a) 29%, (b) 4.5%, (c) -1.8%

### International Financial Management

14. A multinational company is planning to set up a subsidiary company in India (where hitherto it was exporting) in view of growing demand for its product and competition from other MNCs. The initial project cost (consisting of Plant and Machinery including installation) is

estimated to be US\$ 500 million. The net working capital requirements are estimated at US\$ 50 million. The company follows straight line method of depreciation. Presently, the company is exporting two million units every year at a unit price of US\$ 80, its variable cost per unit being US\$ 40.

The Chief Financial Officer has estimated the following operating cost and other data in respect of proposed project:

- (i) Variable operating cost will be US \$ 20 per unit of production;
- (ii) Additional cash fixed cost will be US \$ 30 million p.a. and project's share of allocated fixed cost will be US \$ 3 million p.a. based on principle of ability to share;
- (iii) Production capacity of the proposed project in India will be 5 million units;
- (iv) Expected useful life of the proposed plant is five years with no salvage value;
- (v) Existing working capital investment for production & sale of two million units through exports was US \$ 15 million;
- (vi) Export of the product in the coming year will decrease to 1.5 million units in case the company does not open subsidiary company in India, in view of the presence of competing MNCs that are in the process of setting up their subsidiaries in India;
- (vii) Applicable Corporate Income Tax rate is 35%, and
- (viii) Required rate of return for such project is 12%.

Assuming that there will be no variation in the exchange rate of two currencies and all profits will be repatriated, as there will be no withholding tax, estimate Net Present Value (NPV) of the proposed project in India.

Present Value Interest Factors (PVIF) @ 12% for five years are as below:

Year	1	2	3	4	5
PVIF	0.8929	0.7972	0.7118	0.6355	0.5674

### Foreign Exchange exposure and Risk Management

15. Following are the details of cash inflows and outflows in foreign currency denominations of MNP Co. an Indian export firm, which have no foreign subsidiaries:

Currency	Inflow	Outflow	Spot rate	Forward rate
US \$	4,00,00,000	2,00,00,000	48.01	48.82
French Franc (FFr)	2,00,00,000	80,00,000	7.45	8.12
U.K. £	3,00,00,000	2,00,00,000	75.57	75.98
Japanese Yen	1,50,00,000	2,50,00,000	3.20	2.40

- (i) Determine the net exposure of each foreign currency in terms of Rupees.

- (ii) Are any of the exposure positions offsetting to some extent?
16. On January 28, 2013 an importer customer requested a Bank to remit Singapore Dollar (SGD) 2,500,000 under an irrevocable Letter of Credit (LC). However, due to unavoidable factors, the Bank could effect the remittances only on February 4, 2013. The inter-bank market rates were as follows:

	January 28, 2013	February 4, 2013
US\$ 1=	₹ 45.85/45.90	₹ 45.91/45.97
GBP £ 1 =	US\$ 1.7840/1.7850	US\$ 1.7765/1.7775
GBP £ 1 =	SGD 3.1575/3.1590	SGD 3.1380/3.1390

The Bank wishes to retain an exchange margin of 0.125%

Required:

How much does the customer stand to gain or lose due to the delay?

**(Note: Calculate the rate in multiples of 0.0001)**

17. Sun Ltd. is planning to import equipment from Japan at a cost of 3,400 lakh yen. The company may avail loans at 18 percent per annum with quarterly rests with which it can import the equipment. The company has also an offer from Osaka branch of an India based bank extending credit of 180 days at 2 percent per annum against opening of an irrevocable letter of credit.

Additional information:

Present exchange rate ₹ 100 = 340 yen

180 days forward rate ₹ 100 = 345 yen

Commission charges for letter of credit at 2 per cent per 12 months.

Advise the company whether the offer from the foreign branch should be accepted.

### Mergers, Acquisitions and Restructuring

18. XYZ Ltd. wants to purchase ABC Ltd. by exchanging 0.7 of its share for each share of ABC Ltd. Relevant financial data are as follows:

Equity shares outstanding	10,00,000	4,00,000
EPS (₹)	40	28
Market price per share (₹)	250	160

- (i) Illustrate the impact of merger on EPS of both the companies.
- (ii) The management of ABC Ltd. has quoted a share exchange ratio of 1:1 for the merger. Assuming that P/E ratio of XYZ Ltd. will remain unchanged after the merger, what will be the gain from merger for ABC Ltd.?

- (iii) What will be the gain/loss to shareholders of XYZ Ltd.?  
 (iv) Determine the maximum exchange ratio acceptable to shareholders of XYZ Ltd.
19. The following is the Balance-sheet of Grape Fruit Company Ltd as at March 31<sup>st</sup>, 2011.

Liabilities	(₹ in lakhs)	Assets	(₹ in lakhs)
Equity shares of ₹ 100 each	600	Land and Building	200
14% preference shares of ₹ 100/- each	200	Plant and Machinery	300
13% Debentures	200	Furniture and Fixtures	50
Debenture interest accrued and payable	26	Inventory	150
Loan from bank	74	Sundry debtors	70
Trade creditors	340	Cash at bank	130
		Preliminary expenses	10
		Cost of issue of debentures	5
		Profit and Loss account	525
	1440		1440

The Company did not perform well and has suffered sizable losses during the last few years. However, it is felt that the company could be nursed back to health by proper financial restructuring. Consequently the following scheme of reconstruction has been drawn up:

- Equity shares are to be reduced to ₹ 25/- per share, fully paid up;
- Preference shares are to be reduced (with coupon rate of 10%) to equal number of shares of ₹ 50 each, fully paid up.
- Debenture holders have agreed to forgo the accrued interest due to them. In the future, the rate of interest on debentures is to be reduced to 9 percent.
- Trade creditors will forego 25 percent of the amount due to them.
- The company issues 6 lakh of equity shares at ₹ 25 each and the entire sum was to be paid on application. The entire amount was fully subscribed by promoters.
- Land and Building was to be revalued at ₹ 450 lakhs, Plant and Machinery was to be written down by ₹ 120 lakhs and a provision of ₹ 15 lakhs had to be made for bad and doubtful debts.

Required:

- Show the impact of financial restructuring on the company's activities.



- (ii) Prepare the fresh balance sheet after the reconstruction is completed on the basis of the above proposals.
20. Write short notes on:
- Reverse Stock Split
  - Money Market Mutual Fund
  - Processes of Strategic Decision Making
  - Asset Securitization
  - External Commercial Borrowings

### SUGGESTED ANSWERS/HINTS

1. (i) **Statement showing computation of expected net present value of Projects A and B:**

Project A			Project B		
NPV Estimate (₹)	Probability	Expected Value	NPV Estimate	Probability	Expected Value
15,000	0.2	3,000	15,000	0.1	1,500
12,000	0.3	3,600	12,000	0.4	4,800
6,000	0.3	1,800	6,000	0.4	2,400
3,000	0.2	600	3,000	0.1	300
	1.0	EV = 9,000		1.0	EV = 9,000

- (ii) **Computation of Standard deviation of each project**

#### Project A

P	X	(X – EV)	P (X-EV) <sup>2</sup>
0.2	15,000	6,000	72,00,000
0.3	12,000	3,000	27,00,000
0.3	6,000	- 3,000	27,00,000
0.2	3,000	- 6,000	72,00,000
			Variance = <u>1,98,00,000</u>

$$\text{Standard Deviation of Project A} = \sqrt{1,98,00,000} = ₹4,450$$

## Project B

P	X	(X – EV)	P (X-EV) <sup>2</sup>
0.1	15,000	6,000	36,00,000
0.4	12,000	3,000	36,00,000
0.4	6,000	- 3,000	36,00,000
0.1	3,000	- 6,000	36,00,000
			<u>Variance = 1,44,00,000</u>

Standard Deviation of Project A =  $\sqrt{1,44,00,000} = ₹3,795$

**(iii) Computation of profitability of each project**

Profitability index = Discount cash inflow / Initial outlay

$$\text{In case of Project A : PI} = \frac{9,000 + 36,000}{36,000} = \frac{45,000}{36,000} = 1.25$$

$$\text{In case of Project B: PI} = \frac{9,000 + 30,000}{30,000} = \frac{39,000}{30,000} = 1.30$$

**(iv)** Measurement of risk is made by the possible variation of outcomes around the expected value and the decision will be taken in view of the variation in the expected value where two projects have the same expected value, the decision will be the project which has smaller variation in expected value. In the selection of one of the two projects A and B, Project B is preferable because the possible profit which may occur is subject to less variation (or dispersion). Much higher risk is lying with project A.

2. **(i)** The loan amount is repayable together with the interest at the rate of 16% on loan amount and is repayable in equal installments at the end of each year. The PVAF at the rate of 16% for 4 years is 2.798, the amount payable will be

$$\text{Annual Payment} = \frac{₹ 5,00,000}{2.798} = ₹ 1,78,699 \text{ (rounded)}$$

**Schedule of Debt Repayment**

End of Year	Total Principal ₹	Interest ₹	Principal ₹	Principal Amount Outstanding ₹
1	5,00,000	80,000	98,699	4,01,301
2	4,01,301	64,208	1,14,491	2,86,810
3	2,86,810	45,890	1,32,809	1,54,001
4	1,54,001	24,698*	1,54,001	-----

\* Balancing Figure

**Tax Benefit on Interest and Depreciation**

Year	Interest	Depreciation	Total	Tax Benefit
1	80,000	75,000	1,55,000	54,250
2	64,208	75,000	1,39,208	48,723
3	45,890	75,000	1,20,890	42,312
4	24,698	75,000	99,698	34,894

**Present Value of Cash Flows under Borrow and Buying proposal**

Year	Installment ₹	Salvage Value (₹)	Tax Benefit (₹)	Net Flow (₹)	PVF @ 10.4%	PV (₹)
1	1,78,699		54,250	1,24,449	0.906	1,12,751
2	1,78,699		48,723	1,29,976	0.820	1,06,580
3	1,78,699		42,312	1,36,387	0.743	1,01,336
4	1,78,699	(2,00,000)	34,894	-56,195	0.673	-37,819
					3.142	2,82,848

**Present Value of Cash Flows under Leasing Option**

$$₹ 1,00,000 (1 - 0.35) \times 3.142 = ₹ 2,04,230$$

Hence leasing should be preferred as cash flow is least in this option.

**(ii) Analyzing financial viability from Lessor's point of view****(a) Determination of Cash Flow after Tax**

	₹
Annual Rent	1,00,000
Less: Depreciation	75,000
EBT	25,000
Less: Tax @ 35%	8,750
Profit after Tax	16,250
Add: Depreciation	75,000
	91,250

**(b) Computation of Net Present Value**

	₹
Present Value of Cash inflow (₹ 91,250 x 2.914)	2,65,903
Add: PV of Salvage Value (₹ 2,00,000 x 0.592)	1,18,400

	3,84,303
Purchase Price	(5,00,000)
NPV	(1,15,697)

Thus proposal is not financially viable from lessor's point of view.

**(iii) Break Even Lease Rent**

	₹
Cost of Computer	5,00,000
Less: PV of Salvage Value (₹ 2,00,000 x 0.592)	1,18,400
	3,81,600
PVIAF (14%,4)	2.914
CFAT Desired (3,81,600/ 2.914)	1,30,954
Less: Depreciation	75,000
EAT	55,954
Add: Taxes	30,129
EBT	86,083
Add: Depreciation	75,000
Lease Rental (Desired)	1,61,083

3. As per MM model, the current market price of equity share is:

$$P_0 = \frac{1}{1+k_e} \times (D_1 + P_1)$$

**(i) If the dividend is not declared:**

$$100 = \frac{1}{1+0.12} (0 + P_1)$$

$$100 = \frac{P_1}{1.12}$$

$$P_1 = ₹ 112$$

The Market price of the equity share at the end of the year would be ₹ 112.

**(ii) If the dividend is declared:**

$$100 = \frac{1}{1+0.12} \times (10 + P_1)$$

$$100 = \frac{10 + P_1}{1.12}$$

$$112 = 10 + P_1$$

$$P_1 = 112 - 10 = ₹ 102$$

The market price of the equity share at the end of the year would be ₹ 102.

- (iii) In case the firm pays dividend of ₹ 10 per share out of total profits of ₹ 5,00,000 and plans to make new investment of ₹ 10,00,000, the number of shares to be issued may be found as follows:

Total Earnings	₹ 5,00,000
- Dividends paid	<u>1,00,000</u>
Retained earnings	4,00,000
Total funds required	<u>10,00,000</u>
Fresh funds to be raised	<u>6,00,000</u>
Market price of the share	102
Number of shares to be issued (₹6,00,000 / 102)	5,882.35

or, the firm would issue 5,883 shares at the rate of ₹102

4. Future's Price = Spot + cost of carry – Dividend

$$F = 220 + 220 \times 0.15 \times 0.25 - 0.25^{**} \times 10 = 225.75$$

\*\* Entire 25% dividend is payable before expiry, which is ₹2.50.

Thus we see that futures price by calculation is ₹ 225.75 which is quoted at ₹ 230 in the exchange.

#### Analysis:

Fair value of Futures less than Actual futures Price:

Futures Overvalued Hence it is advised to sell. Also do Arbitraging by buying stock in the cash market.

#### Step I

He will buy PQR Stock at ₹220 by borrowing at 15% for 3 months. Therefore, his outflows are:

Cost of Stock	220.00
Add: Interest @ 15 % for 3 months i.e. 0.25 years (220 × 0.15 × 0.25)	<u>8.25</u>
Total Outflows (A)	<u>228.25</u>

**Step II**

He will sell March 2000 futures at ₹230. Meanwhile he would receive dividend for his stock.

Hence his inflows are	230.00
Sale proceeds of March 2000 futures	<u>2.50</u>
Total inflows (B)	<u>232.50</u>

Inflow – Outflow = Profit earned by Arbitrageur  
 = 232.50 – 228.25 = 4.25

**5. Net payoff for the holder of the call option**

	(₹)				
Share price on exercise day	200	210	220	230	240
Option exercise	No	No	No	Yes	Yes
Outflow (Strike price)	Nil	Nil	Nil	220	220
Out flow (premium)	6	6	6	6	6
Total Outflow	6	6	6	226	226
Less inflow (Sales proceeds)	-	-	-	230	240
Net payoff	-6	-6	-6	4	14

**Net payoff for the holder of the put option**

	(₹)				
Share price on exercise day	200	210	220	230	240
Option exercise	Yes	Yes	No	No	No
Inflow (strike price)	220	220	Nil	Nil	Nil
Less outflow (purchase price)	200	210	-	-	-
Less outflow (premium)	5	5	5	5	5
Net Payoff	15	5	-5	-5	-5

The call option can be exercised gainfully for any price above ₹ 226 (₹ 220 + ₹ 6) and put option for any price below ₹ 215 (₹ 220 - ₹ 5).

6. (a) By entering into an FRA, firm shall effectively lock in interest rate for a specified future in the given it is 6 months. Since, the period of 6 months is starting in 3 months, the firm shall opt for 3 × 9 FRA locking borrowing rate at 5.94%. In the given scenarios, the net outcome shall be as follows:

	If the rate turns out to be 4.50%	If the rate turns out to be 6.50%
FRA Rate	5.94%	5.94%
Actual Interest Rate	4.50%	6.50%
Loss/ (Gain)	1.44%	(0.56%)
FRA Payment / (Receipts)	€50 m × 1.44% × ½ = €360,000	€50m × 0.56% × ½ = (€140,000)
Interest after 6 months on €50 Million at actual rates	= €50m × 4.5% × ½ = €1,125,000	= €50m × 6.5% × ½ = €1,625,000
Net Out Flow	€ 1,485,000	€1,485,000

Thus, by entering into FRA, the firm has committed itself to a rate of 5.94% as follows:

$$\frac{€ 1,485,000}{€ 50,000,000} \times 100 \times \frac{12}{6} = 5.94\%$$

- (b) Since firm is a borrower it will like to off-set interest cost by profit on Future Contract. Accordingly, if interest rate rises it will gain hence it should sell interest rate futures.

$$\begin{aligned} \text{No. of Contracts} &= \frac{\text{Amount of Borrowing}}{\text{Contract Size}} \times \frac{\text{Duration of Loan}}{3 \text{ months}} \\ &= \frac{€ 50,000,000}{€ 50,000} \times \frac{6}{3} = 2000 \text{ Contracts} \end{aligned}$$

The final outcome in the given two scenarios shall be as follows:

	If the interest rate turns out to be 4.5%	If the interest rate turns out to be 6.5%
<i>Future Course Action :</i>		
Sell to open	94.15	94.15
Buy to close	95.50 (100 - 4.5)	93.50 (100 - 6.5)
Loss/ (Gain)	1.35%	(0.65%)
Cash Payment (Receipt) for Future Settlement	€50,000 × 2000 × 1.35% × 3/12 = €337,500	€50,000 × 2000 × 0.65% × 3/12 = (€162,500)
Interest for 6 months on €50 million at actual rates	€50 million × 4.5% × ½ = €11,25,000	€50 million × 6.5% × ½ = €16,25,000
	€1,462,500	€1,462,500

Thus, the firm locked itself in interest rate  $\frac{€1,462,500}{€50,000,000} \times 100 \times \frac{12}{6} = 5.85\%$

7. Conversion Price = ₹ 50 x 17 = ₹ 850

Intrinsic Value = ₹ 850

Accordingly the yield (r) on the bond shall be :

$$₹ 850 = ₹ 100 \text{ PVA} (r, 10) + ₹ 1000 \text{ PV} (r, 10)$$

Let us discount the cash flows by 11%

$$850 = 100 \text{ PVA} (11\%, 10) + 1000 \text{ PV} (11\%, 10)$$

$$850 = 100 \times 5.890 + 1000 \times 0.352 = 91$$

Now let us discount the cash flows by 13%

$$850 = 100 \text{ PVA} (13\%, 10) + 1000 \text{ PV} (13\%, 10)$$

$$850 = 100 \times 5.426 + 1000 \times 0.295 = -12.40$$

Accordingly, IRR

$$11\% + \frac{90.90}{90.90 - (-12.40)} \times (13\% - 11\%)$$

$$11\% + \frac{90.90}{103.30} \times (13\% - 11\%)$$

$$= 12.76\%$$

The spread from comparable bond = 12.76% - 11.80% = 0.96%

8. No. of Shares =  $\frac{₹ 1,300 \text{ crores}}{₹ 40} = 32.5 \text{ Crores}$

$$\text{EPS} = \frac{\text{PAT}}{\text{No. of shares}}$$

$$\text{EPS} = \frac{₹ 290 \text{ crores}}{32.5 \text{ crores}} = ₹ 8.923$$

$$\text{FCFE} = \text{Net income} - [(1-b) (\text{capex} - \text{dep}) + (1-b) (\Delta \text{WC})]$$

$$\text{FCFE} = 8.923 - [(1-0.27) (47-39) + (1-0.27) (3.45)]$$

$$= 8.923 - [5.84 + 2.5185] = 0.5645$$

$$\text{Cost of Equity} = R_f + \beta (R_m - R_f)$$

$$= 8.7 + 0.1 (10.3 - 8.7) = 8.86\%$$



$$P_0 = \frac{FCFE(1+g)}{K_e - g} = \frac{0.5645(1.08)}{0.0886 - .08} = \frac{0.60966}{0.0086} = ₹ 70.89$$

9. Market Risk Premium (A) = 14% – 7% = 7%

Share	Beta	Risk Premium (Beta x A) %	Risk Free Return %	Return %	Return ₹
Oxy Rin Ltd.	0.45	3.15	7	10.15	8,120
Boxed Ltd.	0.35	2.45	7	9.45	14,175
Square Ltd.	1.15	8.05	7	15.05	33,863
Ellipse Ltd.	1.85	12.95	7	19.95	89,775
Total Return					<u>1,45,933</u>

Total Investment ₹ 9,05,000

(i) Portfolio Return =  $\frac{₹ 1,45,933}{₹ 9,05,000} \times 100 = 16.13\%$

- (ii) Portfolio Beta

$$\text{Portfolio Return} = \text{Risk Free Rate} + \text{Risk Premium} \times \beta = 16.13\%$$

$$7\% + 7\beta = 16.13\%$$

$$\beta = 1.30$$

### Alternative Approach

First we shall compute Portfolio Beta using the weighted average method as follows:

$$\text{Beta}_P = 0.45 \times \frac{0.80}{9.05} + 0.35 \times \frac{1.50}{9.05} + 1.15 \times \frac{2.25}{9.05} + 1.85 \times \frac{4.50}{9.05}$$

$$= 0.45 \times 0.0884 + 0.35 \times 0.1657 + 1.15 \times 0.2486 + 1.85 \times 0.4972 = 0.0398 + 0.058 + 0.2859 + 0.9198 = 1.3035$$

Accordingly,

- (i) Portfolio Return using CAPM formula will be as follows:

$$R_P = R_F + \text{Beta}_P(R_M - R_F)$$

$$= 7\% + 1.3035(14\% - 7\%) = 7\% + 1.3035(7\%)$$

$$= 7\% + 9.1245\% = 16.1245\%$$

- (ii) Portfolio Beta

As calculated above 1.3035

**10. (a) Method I**

Stock's return

$$\text{Small cap growth} = 4.5 + 0.80 \times 6.85 + 1.39 \times (-3.5) + 1.35 \times 0.65 = 5.9925\%$$

$$\text{Small cap value} = 4.5 + 0.90 \times 6.85 + 0.75 \times (-3.5) + 1.25 \times 0.65 = 8.8525\%$$

$$\text{Large cap growth} = 4.5 + 1.165 \times 6.85 + 2.75 \times (-3.5) + 8.65 \times 0.65 = 8.478\%$$

$$\text{Large cap value} = 4.5 + 0.85 \times 6.85 + 2.05 \times (-3.5) + 6.75 \times 0.65 = 7.535\%$$

Expected return on market index

$$0.25 \times 5.9925 + 0.10 \times 8.8525 + 0.50 \times 8.478 + 0.15 \times 7.535 = 7.7526\%$$

**Method II**

Expected return on the market index

$$= 4.5\% + [0.1 \times 0.9 + 0.25 \times 0.8 + 0.15 \times 0.85 + 0.50 \times 1.165] \times 6.85 + [(0.75 \times 0.10 + 1.39 \times 0.25 + 2.05 \times 0.15 + 2.75 \times 0.5)] \times (-3.5) + [(1.25 \times 0.10 + 1.35 \times 0.25 + 6.75 \times 0.15 + 8.65 \times 0.50)] \times 0.65$$

$$= 4.5 + 6.85 + (-7.3675) + 3.77 = 7.7525\%$$

**(b) Using CAPM,**

$$\text{Small cap growth} = 4.5 + 6.85 \times 0.80 = 9.98\%$$

$$\text{Small cap value} = 4.5 + 6.85 \times 0.90 = 10.665\%$$

$$\text{Large cap growth} = 4.5 + 6.85 \times 1.165 = 12.48\%$$

$$\text{Large cap value} = 4.5 + 6.85 \times 0.85 = 10.3225\%$$

Expected return on market index

$$= 0.25 \times 9.98 + 0.10 \times 10.665 + 0.50 \times 12.45 + 0.15 \times 10.3225 = 11.33\%$$

**(c) Let us assume that Mr. Nirmal will invest X1% in small cap value stock and X2% in large cap growth stock**

$$X_1 + X_2 = 1$$

$$0.90 X_1 + 1.165 X_2 = 1$$

$$0.90 X_1 + 1.165(1 - X_1) = 1$$

$$0.90 X_1 + 1.165 - 1.165 X_1 = 1$$

$$0.165 = 0.265 X_1$$

$$\frac{0.165}{0.265} = X_1$$

$$0.623 = X_1, X_2 = 0.377$$

62.3% in small cap value

37.7% in large cap growth.

11. Expected Turnover = ₹ 1600 lakhs + ₹ 286.40 = ₹ 1886.40 lakhs

	₹ in Lacs	₹ in Lacs
Advance to be given:		
Debtors ₹1886.40 lakhs x 100/360	524.00	
Less: 10% withholding	<u>52.40</u>	471.60
Less: Commission 1.75%		<u>9.17</u>
Net payment		462.43
Less: Interest @14% for 100 days on ₹ 462.43 lacs		<u>17.98</u>
		<u>444.45</u>

Calculation of Average Cost:		
Total Commission ₹1886.40 lakhs x 1.75%		33.01
Total Interest ₹ 17.98 lacs x 360/100		<u>64.73</u>
		97.74
Less: Admin. Cost	8.00	
Saving in Bad Debts (₹1886.40 lacs x 1.50% x 85%)	<u>24.05</u>	<u>32.05</u>
		<u>65.69</u>
Effective Cost of Factoring = 65.69/444.45 x 100		14.78%

12. 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 (22.950 + 34.425 + 45.450)		102.8250
		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 30 <sup>th</sup> June		₹ 20.2670

13. (a) If return is 29%

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

(b) If return is 4.5%

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

(c) If return is (-1.8%)

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

14. Financial Analysis whether to set up the manufacturing units in India or not may be carried using NPV technique as follows:

I. Incremental Cash Outflows

	\$ Million
Cost of Plant and Machinery	500.00
Working Capital	50.00
Release of existing Working Capital	(15.00)
	535.00

II. Incremental Cash Inflow after Tax (CFAT)

(a) Generated by investment in India for 5 years

	\$ Million
Sales Revenue (5 Million x \$80)	400.00
Less: Costs	
Variable Cost (5 Million x \$20)	100.00

Fixed Cost	30.00
Depreciation (\$500 Million/5)	100.00
EBIT	170.00
Taxes@35%	59.50
EAT	110.50
Add: Depreciation	100.00
CFAT (1-5 years)	210.50
Cash flow at the end of the 5 years (Release of Working Capital)	35.00

## (b) Cash generation by exports (Opportunity Cost)

	\$ Million
Sales Revenue (1.5 Million x \$80)	120.00
Less: Variable Cost (1.5 Million x \$40)	60.00
Contribution before tax	60.00
Tax@35%	21.00
CFAT (1-5 years)	39.00

## (c) Additional CFAT attributable to Foreign Investment

	\$ Million
Through setting up subsidiary in India	210.50
Through Exports in India	39.00
CFAT (1-5 years)	171.50

## III. Determination of NPV

Year	CFAT (\$ Million)	PVF@12%	PV(\$ Million)
1-5	171.50	3.6048	618.2232
5	35	0.5674	19.8590
			638.0822
Less: Initial Outflow			535.0000
			103.0822

Since NPV is positive the proposal should be accepted.

15. (i) Net exposure of each foreign currency in Rupees

	Inflow	Outflow	Net Inflow	Spread	Net Exposure
	(Millions)	(Millions)	(Millions)		(Millions)
US\$	40	20	20	0.81	16.20
FFr	20	8	12	0.67	8.04
UK£	30	20	10	0.41	4.10
Japan Yen	15	25	-10	-0.80	8.00

(ii) The exposure of Japanese yen position is being offset by a better forward rate

16. On January 28, 2013 the importer customer requested to remit SGD 25 lakhs.

To consider sell rate for the bank:

US \$	=	₹ 45.90
Pound 1	=	US\$ 1.7850
Pound 1	=	SGD 3.1575
Therefore, SGD 1	=	$\frac{₹ 45.90 * 1.7850}{SGD 3.1575}$
SGD 1	=	₹ 25.9482
Add: Exchange margin (0.125%)		<u>₹ 0.0324</u>
		<u>₹ 25.9806</u>

On February 4, 2013 the rates are

US \$	=	₹ 45.97
Pound 1	=	US\$ 1.7775
Pound 1	=	SGD 3.1380
Therefore, SGD 1	=	$\frac{₹ 45.97 * 1.7775}{SGD 3.1380}$
SGD 1	=	₹ 26.0394
Add: Exchange margin (0.125%)		<u>₹ 0.0325</u>
		<u>₹ 26.0719</u>

Hence, loss to the importer

$$= \text{SGD } 25,00,000 (\text{₹ } 26.0719 - \text{₹ } 25.9806) = \text{₹ } 2,28,250$$

## 17. Option I (To finance the purchases by availing loan at 18% per annum):

Cost of equipment	₹ in lakhs
3400 lakh yen at ₹100 = 340 yen	1,000.00
Add: Interest at 4.5% I Quarter	45.00
Add: Interest at 4.5% II Quarter (on ₹1045 lakhs)	47.03
Total outflow in Rupees	1,092.03
Alternatively, interest may also be calculated on compounded basis, i.e., ₹1000 × [1.045] <sup>2</sup>	₹1092.03

## Option II (To accept the offer from foreign branch):

Cost of letter of credit	
At 1 % on 3400 lakhs yen at ₹100 = 340 yen	₹ 10.00 lakhs
Add: Interest for 2 Quarters	₹ 0.90 lakhs
(A)	₹ 10.90 lakhs
Payment at the end of 180 days:	
Cost	3400.00 lakhs yen
Interest at 2% p.a. [3400 × 2/100 × 180/365]	33.53 lakhs yen
	3433.53 lakhs yen
Conversion at ₹100 = 345 yen [3433.53 / 345 × 100] (B)	₹ 995.23 lakhs
Total Cost: (A) + (B)	₹ 1006.13 lakhs

**Advise:** Option 2 is cheaper by (1092.03 – 1006.13) lakh or ₹ 85.90 lakh. Hence, the offer may be accepted.

## 18. Working Notes

(a)

	XYZ Ltd.	ABC Ltd.
Equity shares outstanding (Nos.)	10,00,000	4,00,000
EPS	₹ 40	₹ 28
Profit	₹ 400,00,000	₹ 112,00,000
PE Ratio	6.25	5.71
Market price per share	₹ 250	₹ 160



**(b) EPS after merger**

No. of shares to be issued (4,00,000 x 0.70)	2,80,000
Existing Equity shares outstanding	10,00,000
Equity shares outstanding after merger	12,80,000
Total Profit (₹ 400,00,000 + ₹ 112,00,000)	₹ 512,00,000
EPS	₹ 40

**(i) Impact of merger on EPS of both the companies**

	XYZ Ltd.	ABC Ltd.
EPS after Merger	₹ 40	₹ 28
EPS before Merger	₹ 40	₹ 28*
	Nil	Nil

\* ₹ 40 x 0.70

**(ii) Gain from the Merger if exchange ratio is 1: 1**

No. of shares to be issued	4,00,000
Existing Equity shares outstanding	10,00,000
Equity shares outstanding after merger	14,00,000
Total Profit (₹ 400,00,000 + ₹ 112,00,000)	₹ 512,00,000
EPS	₹ 36.57
Market Price of Share (₹ 36.57 x 6.25)	₹ 228.56
Market Price of Share before Merger	₹ 160.00
Impact (Increase/ Gain)	₹ 68.56

**(iii) Gain/ loss from the Merger to the shareholders of XYZ Ltd.**

Market Price of Share	₹ 228.56
Market Price of Share before Merger	₹ 250.00
Loss from the merger (per share)	₹ 21.44

**(iv) Maximum Exchange Ratio acceptable to XYZ Ltd. shareholders**

	₹ Lakhs
Market Value of Merged Entity (₹ 228.57 x 1400000)	3199.98
Less: Value acceptable to shareholders of XYZ Ltd.	2500.00
Value of merged entity available to shareholders of ABC Ltd.	699.98

Market Price Per Share	250
No. of shares to be issued to the shareholders of ABC Ltd. (lakhs)	2.80

Thus maximum ratio of issue shall be 2.80 : 4.00 or 0.70 share of XYZ Ltd. for one share of ABC Ltd.

Alternatively, it can also be computed as follows:

Earning after Merger (40 x 1000000 + 28 x 400000)	₹ 512 lakhs
PE Ratio of XYZ Ltd.	6.25
Market Value of Firm after Merger (512 x 6.25)	₹ 3200 lakhs
Existing Value of Shareholders of XYZ Ltd.	₹ 2500 lakhs
Value of Merged entity available to Shareholders of ABC Ltd.	₹ 700 lakhs
Market Price per Share	₹ 250
Total No. of shares to be issued	2.8 lakh

Thus, maximum acceptable ratio shall be 2.80:4.00 i.e. 0.70 share of XYZ Ltd. for one share of ABC Ltd.

### 19. Impact of Financial Restructuring

(i) Benefits to Grape Fruit Ltd.

(a) *Reduction of liabilities payable*

	₹ in lakhs
Reduction in equity share capital (6 lakh shares x ₹75 per share)	450
Reduction in preference share capital (2 lakh shares x ₹50 per share)	100
Waiver of outstanding debenture Interest	26
Waiver from trade creditors (₹340 lakhs x 0.25)	<u>85</u>
	<u>661</u>
(b) <i>Revaluation of Assets</i>	
Appreciation of Land and Building (₹450 lakhs - ₹200 lakhs)	<u>250</u>
Total (A)	<u>911</u>

(ii) Amount of ₹911 lakhs utilized to write off losses, fictitious assets and over-valued assets.

Writing off profit and loss account	525
Cost of issue of debentures	5
Preliminary expenses	10

Provision for bad and doubtful debts	15
Revaluation of Plant and Machinery (₹300 lakhs – ₹180 lakhs)	120
Total (B)	<u>675</u>
Capital Reserve (A) – (B)	236

(ii) Balance sheet of Grape Fruit Ltd as at 31<sup>st</sup> March 2011 (after re-construction)

(₹ in lakhs)

	Amount	Assets		Amount
12 lakhs equity shares of ₹ 25/- each	300	Land & Building		450
10% Preference shares of ₹ 50/- each	100	Plant & Machinery		180
Capital Reserve	236	Furnitures & Fixtures		50
9% debentures	200	Inventory		150
Loan from Bank	74	Sundry debtors	70	
Trade Creditors	255	Prov. for Doubtful Debts	<u>-15</u>	55
		Cash-at-Bank (Balancing figure)*		280
	<u>1165</u>			<u>1165</u>

\*Opening Balance of ₹130/- lakhs + Sale proceeds from issue of new equity shares ₹150/- lakhs.

20. (a) A 'Reverse Stock Split' is a process whereby a company decreases the number of shares outstanding by combining current shares into fewer or lesser number of shares. For example, in a 5 : 1 reverse split, a company would take back 5 shares and will replace them with one share.

Although, reverse stock split does not result in change in Market value or Market Capitalization of the company but it results in increase in price per share.

Considering above mentioned ratio, if company has 100 million shares outstanding before split up, the number of shares would be equal to 20 million after the reverse split up.

#### Reasons for Reverse Split Up

Generally, company carries out reverse split up due to following reasons:

- (i) Avoiding delisting from stock exchange: Sometimes as per the stock exchange regulation if the price of shares of a company goes below a limit it can be delisted. To avoid such delisting company may resort to reverse stock split up.

- (ii) Avoiding removal from constituents of Index: If company's share is one of the constituents of market index then to avoid their removal of scrip from this list, the company may take reverse split up route.
- (iii) To avoid the tag of "Penny Stock": If the price of shares of a company goes below a limit it may be called "Penny Stock". In order to improve the image of the company and avoiding this stage, the company may go for Reverse Stock Split.
- (iv) To attract Institutional Investors and Mutual Funds: It might be possible that institutional investors may be shying away from acquiring low value shares to attract these investors the company may adopt the route of "Reverse Stock Split" to increase the price per share.
- (b) An important part of financial market is Money market. It is a market for short-term money. It plays a crucial role in maintaining the equilibrium between the short-term demand and supply of money. Such schemes invest in safe highly liquid instruments included in commercial papers certificates of deposits and government securities.
- Accordingly, the Money Market Mutual Fund (MMMF) schemes generally provide high returns and highest safety to the ordinary investors. MMMF schemes are active players of the money market. They channelize the idle short funds, particularly of corporate world, to those who require such funds. This process helps those who have idle funds to earn some income without taking any risk and with surety that whenever they will need their funds, they will get (generally in maximum three hours of time) the same. Short-term/emergency requirements of various firms are met by such Mutual Funds. Participation of such Mutual Funds provide a boost to money market and help in controlling the volatility.
- (c) Capital investment is the springboard for wealth creation. In a world of economic uncertainty, the investors want to maximize their wealth by selecting optimum investment and financial opportunities that will give them maximum expected returns at minimum risk. Since management is ultimately responsible to the investors, the objective of corporate financial management should implement investment and financing decisions which should satisfy the shareholders by placing them all in an equal, optimum financial position. The satisfaction of the interests of the shareholders should be perceived as a means to an end, namely maximization of shareholders' wealth. Since capital is the limiting factor, the problem that the management will face is the strategic allocation of limited funds between alternative uses in such a manner, that the companies have the ability to sustain or increase investor returns through a continual search for investment opportunities that generate funds for their business and are more favorable for the investors. Therefore, all businesses need to have the following three fundamental essential elements:
- A clear and realistic strategy,

- The financial resources, controls and systems to see it through and

The right management team and processes to make it happen.

- (d) **Asset Securitization:** Securitization is a process of transformation of illiquid asset into security which may be traded later in the open market. It is the process of transformation of the assets of a lending institution into negotiable instruments. The term 'securitization' refers to both switching away from bank intermediation to direct financing via capital market and/or money market, and the transformation of a previously illiquid asset like automobile loans, mortgage loans, trade receivables, etc. into marketable instruments.

This is a method of recycling of funds. It is beneficial to financial intermediaries, as it helps in enhancing lending funds. Future receivables, EMLs and annuities are pooled together and transferred to a special purpose vehicle (SPV). These receivables of the future are shifted to mutual funds and bigger financial institutions. This process is similar to that of commercial banks seeking refinance with NABARD, IDBI, etc.

- (e) ECB includes bank loans, supplier credit, securitized instruments, credit from export credit agencies and borrowings from multilateral financial institutions. These securitized instruments may be FRNs, FRBs etc. Indian corporate sector is permitted to raise finance through ECBs within the framework of the policies and procedures prescribed by the Central Government. Multilateral financial institutions like IFC, ADB, AFIC, CDC are providing such facilities while the ECB policy provides flexibility in borrowing consistent with maintenance of prudential limits for total external borrowings, its guiding principles are to keep borrowing maturities long, costs low and encourage infrastructure/core and export sector financing which are crucial for overall growth of the economy. The government of India, from time to time changes the guidelines and limits for which the ECB alternative as a source of finance is pursued by the corporate sector. During past decade the government has streamlined the ECB policy and procedure to enable the Indian companies to have their better access to the international financial markets.

The government permits the ECB route for variety of purposes namely expansion of existing capacity as well as for fresh investment. But ECB can be raised through internationally recognized sources. There are caps and ceilings on ECBs so that macro economy goals are better achieved. Units in SEZ are permitted to use ECBs under a special window.