INTEREST RATE RISK MANAGEMENT

IMPORTANT QUESTIONS

CLASS WORK QUESTIONS

Question 1:

Two companies ABC Ltd. and XYZ Ltd. approach the DEF Bank for FRA (Forward Rate Agreement). Both companies 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

Required:

i. Identify at least one reason for difference in the Yield Curve for the companies.

ii. Calculate the rate of interest DEF Bank would quote under 2V3 FRA, using the company's yield information as quoted above.

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

1. 4.50%
2. 5.50%

(Source: ICAI)

Question 2:

TM Fincorp has bought a 6 x 9 Rs. 100 crore Forward Rate Agreement (FRA) at 5.25%. On fixing date reference rate i.e. MIBOR turns out be as follows:

Period	Rate (%)
3 months	5.50
6 months	5.70
9 months	5.85

You are required to calculate:

i. Profit/Loss to TM Fincorp. in terms of basis points.

ii. The settlement amount.

(Assume 360 days in a year) ***(Source: ICAI)***

Question 3:

Espacesplc 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 £25 million for the entire period of slack season in about 3 months.

The banker of the firm has given the following quotations for Forward Rate Agreement (FRA):

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.

You are required to:

a. Advise the position to be taken in Future Market by the firm to hedge its interest rate risk and demonstrate how 3 months Future contract shall be useful for the firm, if later interest rate turns out to be (i) 4.5% and (ii) 6.5%
b. Evaluate whether the interest cost to Espaceplc shall be less had it adopted the route of FRA instead of Future Contract.

Note:- Ignore the time value of money in settlement amount for future contract.

(Source: ICAI)

Question 6:

Suppose a dealer quotes 'All-in-cost' for a generic swap at 8% against six month LIBOR flat. If the notional principal amount of swap is ₹ 5,00,000.

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.

(Source: ICAI)

Question 7:

Derivative Bank entered into a swap arrangement 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, 19th August, 2019 and was to commence on 20th August, 2019 and run for a period of 7 days.

Respective MIBOR rates for Tuesday to Monday were: 8.15%, 7.98%, 7.95%, 8.12%, 8.15%, 7.75%.

If Fixed Rate of Interest is 8%, then evaluate

i. the nature of this Swap arrangement.
ii. the Net Settlement amount.

Notes:

1. Sunday is Holiday.
2. Work in rounded rupees and avoid decimal working.
3. Consider 365 days in a year.

(Source: ICAI)

Question 11:

The borrowing requirements of two companies APCO Ltd. and PATCO Ltd. as well as the lending terms available to them in different markets are given as under:

Firm	Objective	Lending term available		Maturity
		Fixed interest	Floating interest	
APCO	US$ 100 mln. at fixed rate	9%	6m LIBOR + 0.75%	5 years
PATCO	US$ 100 mln. at floating rate	8%	6m LIBOR + 0.25%	5 years

You are required to

Explain how to go about a swap in order to reduce their borrowing cost.

(Source: ICAI)

Question 13:

CavinCally Ltd., a large export house from India entered into a five-year interest rate swap with the ICICI Bank, under which it has contracted to pay 8% and receive six-month LIBOR semi-annually, on a notional principal amount of US $ 25 million. This deal was set-up on April 01, 2003. On April 01, 2005, after the swap payments were settled, the Treasurer of CavinCally suggested that the swap be cancelled as the rates in the market have dropped considerably. He approached the bank, which agreed to cancel the deal at 6%, which is also the current rate for the 3 years swap deal for fixed vs LIBOR.

You are required to find out the following:

If the deal was to be cancelled on April 1, 2005, what amount of money would be required to be paid? By whom?

(Source: ICAI)

Question 15:

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

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 – ¼% for remaining two years.

Given a three year swap rate of 8%, suggest the method by which the bank should achieve fixed rate funding.

(Source: ICAI)

HOME WORK QUESTION

Question 1:

The following market 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.

Required:

i. Calculate 3 months FRA rate at 3 months forward?
ii. Recommend arbitrage strategy, when 6 & 12 months LIBORS are 5% & 6.5%respectively and X Ltd. bank is quoting 6/12 USD FRA at 6.50 – 6.75%.?

(Source: ICAI)

Question 7:

A Inc. and B Inc. intend to borrow $200,000 and $200,000 in ¥ 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 in a currency swap under which it is agreed that B Inc will pay A Inc @ 1% over the ¥ Loan interest rate which the later 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 component of the ultimate outcome, resulting from the designed currency swap.

(Source: ICAI)

Question 8:

White Ltd. and Black Ltd. both wish to borrow $100 million for five years and have been offered the following rates:

Firm	Lending term available		Maturity
	Fixed interest	Floating interest	
White Ltd.	5%	6m LIBOR + 0.25%	5 years
Black Ltd.	4%	6m LIBOR + 0.75%	5 years

White Ltd. requires a fixed rate loan while Black Ltd. requires a floating rate loan.

You are required to

Design a swap that will net a bank, acting as an intermediary 0.20 percent per annum and that will appear equally attractive to both companies.

(Source: ICAI)

Question 9:

A corporation enters into a $10 million notional principal interest rate swap. The swap calls for a corporation to pay fixed rate and receive floating rate on LIBOR. The payment will be made every 90 days for one year and will be based on the adjustment factor 90/360. The term structure of LIBOR when the swap is initiated is as follows:

Days	90	180	270	360
Rate (%)	7.00	7.25	7.45	7.55

Note that at the initiation of the swap, the fixed rate is set at such a rate that the value of the swap is zero.

You are required to:

i. Determine the fixed rate on the swap.

ii. Calculate the first net payment on the swap.

(Source: ICAI)