FOREX
a) FOREIGN EXCHANGE EXPOSURE AND RISK MANAGEMENT

1. Bank A in India quotes ₹/ $ = 45.10/ 46.00
   a. An Indian firm has imported goods from US and needs to pay $ 10, 00,000. What amount of ₹ would be required?
   b. An American student has to pay ₹ 5, 00,000 for an Indian course. What amount of $ would be required?
   c. An Indian company has surplus funds of ₹ 40, 00,000 and wants to invest in US. It therefore needs to convert Rupee into $. What amount of $ will it get?

2. Bank A, B & C provide the following quotes

Bank A	₹/ £	91.40/ 91.70
Bank B	₹/ $	42.50/ 43.10
Bank C	$/ £	2.1040/ 2.1070

Show the process of **3 way arbitrage** which starts by selling ₹ 10000 to Bank A.

3. Given the following:

$/£	1.3670/1.3708
SFr/DM	1.0030/1.0078
$/SFr	0.8790/0.8803

And if, DM/£ in the market are 1.5560/1.5576, find out if any arbitrage opportunity exist. If so, how can $ 10000 available with you be used to generate risk-less profit?

4. Consider the following quotations by 3 banks.

A	$/ £	2.1050/ 2.1090
B	€/ £	1.8950/ 1.9010
C	$/ €	1.0150/1.0180

Check for **3 way arbitrage** and carry out the same using £ 10000. (Use Cross rates)

5. Based on six month forward rate of ₹ 42.60, the annualised forward discount on $ happens to be 10%. Find out the spot rate.

6. Based on three month forward rate of $ 2.1020/ £. The annualised forward premium on $ against £ happens to be 12%. Find out the spot rate.

7. Given spot ₹/ $ = 42
6 month forward ₹/ $ = 42.80
   a. Find out the annualised forward premium/ discount on $ against ₹
   b. Find out the annualised forward premium/ discount on ₹ against $.

8. Based on the 3 month forward rate of ₹ 85.70/ £, the annualised forward premium on £ against ₹ Happens to be 9%.
Find out the annualised forward premium/ discount against £ based on 6 month forward rate of ₹ 89/ £.

9. Based on the 3 month forward rate of ₹ 51.65/ €, the annualised forward premium on € against ₹ Happened to be 4%. Find out the 6 month forward rate (₹/ €) given that the annualised discount on ₹ against € based on 6 month forward rate is 7%.

10. An Indian firm has imported goods from Europe and has a payable of € 40000, 3 months from now. To cover the payable, in the forward market, it approaches its banker. The banker informs that ₹/ € rates are not directly available in India. So the bank decides to arrange a synthetic ₹/ € rate with the help of the rates quoted in Mumbai and New York.

Mumbai Spot ₹/ $	42.50/ 20
3 month swap points	80/ 90
New York Spot $/ €	1.1050/80
3 month swap points	120/ 110

Find out the synthetic 3 month forward rate ₹/ € rate that will be quoted to the Indian firm if the bank requires an exchange margin of 0.3%.

11. An Indian company based at Mumbai needs short term funds of ₹ 50 million for a period of 3 months. The company collected the following information from its banker:

₹ / $	₹ /£	
Spot	48.50/ 55	74.05/ 10
3 month forward	45/ 50	85/ 90

3-month interest rates p.a.

₹ 9%

$ 4%

£ 6%

You are required to calculate the annualized effective cost of borrowing,

a. If the company borrows in USD and
- Covers the exchange rate risk through forward market
- Keeps the position open and the spot rate after 3 months turns out to be ₹/ $ 48.90/ 95.

b. If the company borrows in pounds and
- Covers the exchange rate risk through forward market
- Keeps the position open and spot rate after 3 months turns out to be ₹/ £ 74.75/ 80.

12. Spot rate is ₹ 52/ € and annualised forward premium on € against ₹ based on 6 month forward happens to be 8%. If six month € interest rate is 5% p.a. Find out the ₹ interest rate.

13. Given 3 month forward rate ₹ 52/ €.

3 month interest rates

₹	8% p.a.
€	4% p.a.

Find out the spot rate.

14. Based on 3 month forward rate of ₹ 86/ £, the annualised forward discount on ₹ against £ happens to be 5%. Find out the £ interest rate given that 3 month ₹ interest rate is 9% p.a.

15. Given Spot rate ₹ 42.50/ $

6 month forward rate ₹ 43.10/ $

6 month ₹ interest rate 10% p.a.
Find out the dollar interest rate as per IRP.

16. Given Spot rate ₹ 42/ $
3 month forward rate ₹ 42.7/ $
Three month interest rate p.a.
₹ 12%
$ 7%
Check for IRP and carry out **covered Interest arbitrage** using $1000 or ₹ 42000.

17. Given Spot (₹/ $) = 46.2
3 month forward rate = 47.2
3 month ₹ interest rate = 8% p.a.
3 month $ interest rate = 2 %
Check for **covered interest rate arbitrage** opportunity for the Indian investor and the US investor.

18. Spot rate ₹/ $ 42.20/ 42.55
6 month forward rate ₹/ $ 42.70/ 42.95
6 month interest rate (p.a.)
₹ 11%/ 12%
$ 6%/ 7%
Check for arbitrage from both the Indian and US investor's point of view. Begin with 10000 units of currency.

19. An Indian firm has $ 100000 payable and £ 200000 receivable 3 months from now.
Given spot ₹/ $ 43.50/ 43.80
3 month swap points 20/ 30
Spot $/ £ 2.1045/ 2.1065
3 month swap points 110/ 90

3 month interest rates p.a.
₹ 10%/ 11%
£ 7%/ 8%
$ 4%/ 5%
How should the firm hedge the payable and receivable – **Forward Cover or Money market Cover?**

20. An importer in UK has a payable of Euro 500,000 after 3 months. He has collected the following information from his banker.
Euro/ £ Spot: 1.4200/ 1.4210
3 month forward: 1.4245/ 1.4256
3 month interest rates p.a.
Euro: 2.60% - 2.80%
£ 3.00% - 3.20%
Which of the following would you recommend for covering the exposure through?
a. Forward market
b. Money market