10 FOREIGN EXCHANGE EXPOSURE & RISK MANAGEMENT

Question 1

Mercy is a Forex Dealer with XYZ Bank. She notices following information relating to Canadian Dollar (CAD) and German Deutschmark (DEM):

Exchange rate – CAD 0.775 per DEM (Spot)

CAD 0.780 per DEM (3 months)

Interest rates – DEM 7% p.a.

CAD – 9% p.a.

(i) Assuming that there is no transaction cost determine does the Interest Rate Parity holds in above quotations.

(ii) If yes, then explain the steps that would be required to make an arbitrage profit if Mercy is authorized to work with CAD 1 million for the same purpose. Also determine the profit that would be made in CAD.

Note: Ignore the decimal points in the amounts.

(MTP 8 Marks Oct'19)

Answer:

(i) For 3 months, rCAD = 2.25% and rDEM = 1.75%. Since the exchange rate is in CAD/DEM term the appropriate equation for Interest Rate Parity is as follows:

$$\frac{F}{S} = \frac{(1+r_{CAD})}{(1+r_{DEM})}$$

$$\frac{0.780}{0.775} = \frac{(1+0.0225)}{(1+0.0175)}$$

$1.00645 \neq 1.00491$

Since both sides are not equal, Interest Rate Parity does not hold.

(ii) Since IRP does not hold there is an arbitrage opportunity. Interest Differential = 2.25% – 1.75% = 0.50%

$$\text{Premium} = \frac{0.780-0.775}{0.775} \times 100 = 0.645\%$$

Since the interest rate differential is smaller than the premium, it will be profitable to place money In Deutschmarks the currency whose 3-months interest is lower.

The following operations are carried out:

(i) Borrow CAD 1 million at 9 per cent for 3-months;

(ii) Change this sum into DEM at the spot rate = (1,000,000/0.775) = 1,290,323

(iii) Place DM 1,290,323 in the money market for 3 months to obtain a sum of DM

Principal:	1,290,323
Add: Interest @7% for 3 months	22,581
Total	1,312,904

(iv) Sell DEM at 3-months forward to obtain CAD = (1,312,904 × 0.780)
= CAD 1,024,065

(v) Refund the debt taken in CAD with the interest due on it, i.e., CAD

Principal:	1,000,000
Add: Interest @9% for 3 months	22,500
Total	1,022,500

Net arbitrage gain = CAD 1,024,065 – CAD 1,022,500
= CAD 1,565

Question 2

The Treasury desk of a global bank incorporated in UK wants to invest GBP 200 million on 1st January 2019 for a period of 6 months and has the following options:

(1) The Equity Trading desk in Japan wants to invest the entire GBP 200 million in high dividend yielding Japanese securities that would earn a dividend income of JPY 1,182 million. The dividends are declared and paid on 29th June. Post dividend, the securities are expected to quote at a 2% discount.

The desk also plans to earn JPY 10 million on a stock borrow lending activity because of this investment. The securities are to be sold on June 29 with a T+1 settlement and the amount remitted back to the Treasury in London.

(2) The Fixed Income desk of US proposed to invest the amount in 6-month G-Secs that provides a return of 5% p.a.

The exchange rates are as follows:

Currency Pair	1 Jan 2019 (Spot)	30 Jun 2019 (Forward)
GBP-JPY	148.0002	150.0000
GBP-USD	1.28000	1.30331

As a treasurer, advise the bank on the best investment option. What would be your decision from a risk perspective? You may ignore taxation.

(MTP 8 Marks May'20, MTP 10 Marks Mar'21)

Answer:

(1) Yield from Investment in Equity Trading Index in Japan

Conversion of GBP 200 million in JPY (148.0002)	JPY 29600.04 million
Dividend Income	JPY 1182.00 million
Stock Lending	JPY 10.00 million
Investment Value at End	JPY 29008.0392 million
Amount available at End	JPY 30200.0392 million
Forward Rate of 30.06.2019	JPY 150/GBP
Amount to be Remitted back to London	GBP 201.3336 million
Gain = 201.3336 – 200	GBP 1.3336 million

(2) Fixed Income Desk of US

Conversion of GBP 200 million in USD (1.28000)	USD 256.00 Million
Add: Interest @ 5% p.a. for 6 months	USD 6.40 Million
Amount available at End	USD 262.40 Million
Forward Rate of 30.06.2019	USD 1.30331/GBP
Amount to be Remitted back to London Gain = 201.3335 – 200	GBP 201.3335 million GBP 1.3335 million

Decision: Investment in Japanese Yen is preferred over the investment in USD G-Sec as there is a marginal gain. From a risk perspective, the company should go for Option-2 Investment in G-Secs as they are risk free

or

The equivalent amount at the end of 6 months shall be almost same in both the options. The bank can go for any of the options. However, from risk perspective, the investment in fixed income desk of US is more beneficial as the chance of variation in fixed income securities is less as compared to Equity Desk.

Question 3

XYZ Ltd. has imported goods to the extent of US$ 8 Million. The payment terms are as under:

(1) 1% discount if full amount is paid immediately or

(2) 60 days interest free credit. However, in case of a further delay up to 30 days, interest at the rate of 8% p.a. will be charged for additional days after 60 days. M/s XYZ Ltd. has ₹ 25 Lakh available and for remaining it has an offer from bank for a loan up to 90 days @ 9.0% p.a.

The quotes for foreign exchange are as follows:

Spot Rate INR/ US$ (buying)	₹ 66.98
60 days Forward Rate INR/ US$ (buying)	₹ 67.16
90 days Forward Rate INR/ US$ (buying)	₹ 68.03

Advise which one of the following options would be better for XYZ Ltd.

(i) Pay immediately after utilizing cash available and for balance amount take 90 days loan from bank.

(ii) Pay the supplier on 60th day and avail bank's loan (after utilizing cash) for 30 days.

(iii) Avail supplier offer of 90 days credit and utilize cash available.

Further presume that the cash available with XYZ Ltd. will fetch a return of 4% p.a. in India till It is utilized.

Assume year has 360 days. Ignore Taxation.

Compute your working up to four decimals and cash flows in ₹ In Crore.

(MTP 10 Marks Oct'20, RTP Nov'21)

Answer:

To evaluate which option would be better we shall compute the outflow under each option as follows:

(i) **Pay Immediately availing discount**

Particulars		
Spot Rate		₹ 66.98
Amount required in US$	[US$ 8 million (1–0.01)]	US$ 7.92 Million
Amount required in ₹	₹ 66.98 x US$ 7.92 Million)	₹ 53.0482 Crore
Cash Available		₹ 0.2500 Crore
Loan required		₹ 52.7982 Crore
Interest for 90 days @ 9%		₹ 1.1880 Crore
Total Outflow		₹ 53.9862 Crore

(ii) **Pay the supplier on 60th day and avail bank's loan (after utilizing cash) for 30 days.**

Particulars		
Applicable Forward Rate		₹ 67.16
Amount required in ₹	[₹ 67.16 x US$ 8 Million]	₹ 53.7280 Crore
Loan required	[₹ 53.7280 Crore – ₹ 0.25 Crore]	₹ 53.4780 Crore
Interest for 30 days @9%		₹ 0.4011 Crore
		₹ 53.8791 Crore
Interest earned on Cash for 60 days @ 4%		₹ 0.0017 Crore
Total Outflow		₹ 53.8774 Crore

(iii) **Avail supplier offer of 90 days credit and utilize cash available**

Particulars		
Amount Payable		US$ 8 Million
Interest for 30 days @ 8%		US$ 0.0533 Million
Amount required in ₹		US$ 8.0533 Million
Applicable Forward Rate		₹ 68.03
Amount required in ₹	[₹ 68.03 x US$ 8.0533 Million]	₹ 54.7866 Crore
Cash Available		₹ 0.2500 Crore
Interest earned on Cash for 90 days @ 4%		₹ 0.0025 Crore
Total Outfiow		₹ 54.5341 Crore

Decision: Cash outflow is least in case of Option (ii) same should be opted for.

Question 4

On 1st February 2020, XYZ Ltd, a laptop manufacturer imported a particular type of Memory Chips from SKH Semiconductor of South Korea. The payment is due in one month from the date of Invoice, amounting to 1190 million South Korean Won (SKW). Following Spot Exchange Rates (1st February) are quoted in two different markets:

USD/INR	75.00/75.50	in Mumbai
USD/SKW	1190.00/1190.75	in New York

Since hedging of Foreign Exchange Risk was part of company's strategic policy and no contract for hedging in SKW was available at any in-shore market, it approached an off-shore Non- Deliverable Forward (NDF) Market for hedging the same risk.

In NDF Market a dealer quoted one-month USD/ SKW at 1190.00/1190.50 for notional amount of USD 100,000 to be settled at reference rate declared by Bank of Korea.

After 1 month (1st March 2020) the dealer agreed for SKW 1185/ USD as rate for settlement and on the same day the Spot Rates in the above markets were as follows:

USD/INR	75.50/75.75	in Mumbai
USD/SKW	1188.00/1188.50	in New York

Analyze the position of company under each of the following cases, comparing with Spot Position of 1st February:

(i) Do Nothing.

(ii) Opting for NDF Contract.

Note: Both ₹ / SKW Rate and final payment (to be computed in ₹ Lakh) to be rounded off up to 4 decimal points. **(MTP 10 Marks April'21)**

Answer:

(i) Do Nothing

We shall compute the cross rates in Spot Market on both days and shall compare the amount payable in INR on these two days.

On 1st February 2020

Rupee – Dollar selling rate	= ₹ 75.50
Dollar – SKW	= SKW 1190.00
Rupee – SKW cross rate	= ₹ 75.50 / 1190.00
	= ₹ 0.0634

Amount payable to Importer as per above rate (1190 million x ₹ 0.0634) ₹ 754.4600 Lakh On 1st March 2020

Rupee – Dollar selling rate	= ₹ 75.75
Dollar – SKW	= SKW 1188.00
Rupee – SKW cross rate	= ₹ 75.75 / 1188.00
	= ₹ 0.0638

Amount payable to Importer as per above rate (1190 million x ₹ 0.0638) ₹ 759.2200 Lakh

Thus, Exchange Rate Loss= (₹ 759.2200Lakh – ₹ 754.4600 Lakh) ₹ 4.7600 Lakh

(ii) Hedging in NDF

Since company needs SKW after one month it will take long position in SKW at quoted rate of SKW 1190/USD and after one-month it will reverse its position at fixing rate of SKW 1187/USD. The profit/loss position will be as follows:

Buy SKW 1190 million and sell USD (1190 million/1190)	USD 1,000,000
Sell SKW 1190 million and buy USD at Fixing Rate (1190 million/1185)	USD 1,004,219
Profit	USD 4,219

Final Position

Amount Payable in Spot Market (as computed earlier)	₹ 759.2200 Lakh
Less: Profit form NDF Market USD 4219 x 75.50	₹ 3.1853 Lakh
	₹ 756.0347 Lakh

Thus, Exchange Rate Loss (₹ 756.0347 Lakh – ₹ 754.4600 Lakh) ₹ 1.5747 Lakh

Decision: Since Exchange Loss is less in case of NDF same can be opted for.

Question 5

With relaxation of norms in India for investment in international market upto $ 2,50,000, Mr. X to hedge himself against the risk of declining Indian economy and weakening of Indian Rupee during last few years, decided to diversify in the International Market. Accordingly, Mr. X invested a sum of ₹ 1.58 crore on 1.1.20x1 in Standard & Poor Index.

On 1.1.20x2 Mr. X sold his investment. The other relevant data is given below:

	1.1.20x1	1.1.20x2
Index of Stock Market in India	7395	?
Standard & Poor Index	2028	1919
Exchange Rate (₹/$)	62.00/62.25	67.25/67.50

You are required to Calculate:

(i) The return for a US investor.

(ii) Holding Period Return to Mr. X.

(iii) The value of Index of Stock Market in India as on 1.1.20x2 at which Mr. X would be indifferent between investment in Standard & Poor Index and India Stock Market.

(MTP 7 Marks April'19)

Answer:

(i) Return of a US Investor

$$= \frac{\text{Ending Price} - \text{Intial Price}}{\text{Intial Price}} \times 100 = \frac{1919 - 2028}{2028} \times 100 = -5.37\%$$

(ii) Return of Mr. X

Initial Investment (₹)	1.58 Crore
Applicable Exchange Rate on 1.1.20 x 1	₹ 62.25
Equivalent US$	US$ 2,53,815.26
Purchase Price of Standard & Poor Index	2028
No. of Standard & Poor Indices Purchased	125.16
Ending Price of Standard & Poor Index	1919
Proceeds realized in US$ on sale of Standard & Poor Index	US$ 2,40,182.04
Applicable Exchange Rate on 1.1.20x2	₹ 67.25
Proceeds realized in INR on sale of Standard & Poor Index	₹ 1,61,52,242
Rate of Return $\frac{16152242-15800000}{15800000} \times 100$	2.23%

(iii) **Rate of Return had the amount been invested in india**

Initial Investment (₹)	1.58 Crore
Purchase Price of Indian Index	7395
No. of indian Indices Purchased	2136.58
Let Ending Price of Indian Index	X
Then to be indifferent with return in International Market	$\frac{2136.58 \times X - 1.58}{1.58} \times 100 = 2.23$
Price of Indian Index to be indifferent	7559.90 ay 7560

Question 6

Z has to remit USD $1,00,000 for her daughter's education on 4th April 2021. Accordingly, she has booked a forward contract with his bank on 4th January 2021@ ₹ 73.8775. The Bank has covered its position in the market @ ₹ 73.7575.

The exchange rates for USD $ in the interbank market on 4th, 7th and 14th April 2021 were:

	4th April ₹	7th April ₹	14th April ₹
Spot USD 1=	73.2775/73.2975	73.1575/73.1975	73.1375/73.1775
Spot/March	73.3975/73.4275	73.2775/73.3275	73.2575/73.3075
April	73.5275/73.5675	73.4075/73.4650	73.3875/73.4475
May	73.7775/73.8250	73.6575/73.7275	73.6375/73.7050
June	74.0700/74.1325	73.9575/74.0675	73.9500/74.0525

Exchange margin of 0.10 percent and interest outlay of funds @ 12 percent are applicable. The remitter, due to rescheduling of the semester, has requested on 14th April 2021 for extension of contract with due date on 14th June 2021.

Calculate:

(i) Cancellation Rate;

(ii) Amount Payable on $ 100,000;

(iii) Swap loss;

(iv) Interest on outlay of funds, if any;

(v) New Contract Rate; and

(vi) Total Cost

Note: Rates must be rounded to 4 decimal places in multiples of 0.0025 and assume 365 days in a year.

(MTP 10 Marks Oct'21)

Answer:

(1) Cancellation Rate:

The forward sale contract shall be cancelled at Spot TT Purchase for $ prevailing on the date of cancellation as follows:

$/₹ Market Buying Rate	₹ 73.1575
Less: Exchange Margin @ 0.10%	₹ 0.0732
	₹ 73.0843

Rounded off to ₹ 73.0850

(ii) Amount payable on $ 1,00,000

Bank sells $1,00,000 @ ₹ 73.8775	₹ 73,87,750
Bank buys $1,00,000 @ ₹ 73.0850	₹ 73,08,500
Amount payable by customer	₹ 79,250

(iii) Swap Loss

On 4th April, the bank does a swap sale of $ at market buying rate of ₹ 73.4275 and forward purchase for April at market selling rate of ₹ 73.2775.

Bank buys at	₹ 73.4275
Bank sells at	₹ 73.2775
Amount payable by customer	₹ 0.1500

Swap Loss for $ 1,00,000 in ₹ = ₹ 15,000

(iv) Interest on Outlay of Funds

On 4th April, the bank receives delivery under cover contract at ₹ 73.7575 and sell spot at ₹ 73.2775.

Bank buys at	₹ 73.7575
Bank sells at	₹ 73.2775
Amount payable by customer	₹ 0.4800

Outlay for $ 1,00,000 in ₹ 48,000

Interest on ₹ 48,000 @ 12% for 3 days ₹ 47

(v) New Contract Rate

The contract will be extended at current rate

$/₹ Market forward selling Rate for June	₹ 74.0525
Add: Exchange Margin @ 0.10%	₹ 0.0741
	₹ 74.1266

Rounded off to ₹ 74.1275

(vi) Total Cost

Cancellation Charges	₹ 79,250.00
Swap Loss	₹ 15,000.00
Interest	₹ 47.00
	₹ 94,297.00

Question 7

Shanti exported 200 pieces of a designer jewellery to USA at $ 200 each. To manufacture and design this Jewellery she imported raw material from Japan of the cost of JP¥ 6000 for each piece.

The labour cost and variable overhead incurred in producing each piece of jewellery are ₹ 1,300 and ₹ 650 respectively.

Suppose Spot Rates are:

₹/US$	₹ 65.00 – ₹ 66.00
JP¥/US$	JP¥ 115 – JP¥ 120

Shanti is expecting that by the time the export remittance is received and payment of import is made the expected Spot Rates are likely to be as follows:

₹/US$	₹ 68.90 – ₹ 69.25
JP¥/US$	JP¥ 105 – JP¥ 112

You are required to calculate the resultant transaction exposure.

(MTP 6 Marks Oct'21)

Answer:

Profit as per Spot Rates

	₹
Sales Revenue (US$ 200 x 200 x ₹ 65)	26,00,000
Less: Cost of Imported Raw Material (200 x 6000/115 x ₹ 66)	6,88,696
Labour Cost (200 x ₹ 1,300)	2,60,000
Variable Overheads (200 x ₹ 650)	1,30,000
Profit	15,21,304

Profit as per expected Spot Rates

	₹
Sales Revenue (US$ 200 x 200 x ₹ 68.90)	27,56,000
Less: Cost of Imported Raw Material (200 x 6000/105 x ₹ 69.25)	7,91,429
Labour Cost (200 x ₹ 1,300)	2,60,000
Variable Overheads (200 x ₹ 650)	1,30,000
Profit	15,74,571

Increase / (Decrease) in Profit due to Transaction Exposure
= ₹ 53,267 (₹15,74,571-₹15,21,304)

Question 8

Mr. Mammen, an Indian investor invests in a listed bond in USA. If the price of the bond at the beginning of the year is USD 100 and it is USD 103 at the end of the year. The coupon rate is 3% payable annually. CALCULATE the return on investment in terms of home country currency if:

(i) USD is Flat.

(ii) USD appreciates during the year by 3%.

(iii) USD depreciates during the year by 3%.

(iv) Indian Rupee appreciates during the year by 5%.

(MTP 6 Marks Oct'22, RTP May'22)

Answer:

If USD is flat

$$\text{Return} = \frac{(\text{Price at end} - \text{Price at begining}) + \text{Interest}}{\text{Price at beginning}} = \frac{(103-100)+3}{100} = \frac{3+3}{100} = 0.06 \text{ say } 6\%$$

If USD appreciates by 3%

$(1+0.06)(1+0.03) - 1 = 1.06 \times 1.03 - 1 = 0.0918$ i.e. 9.18%

If USD depreciates by 3%

(1+0.06)(1−0.03) − 1 = 1.06 x 0.97 − 1 = 0.0282 i.e. 2.82%

If Indian Rupee is appreciated by 5%

(1+0.06)(1−0.05) − 1 = 1.06 x 0.95 − 1 = 0.007 i.e. 0.7%.

Question 9

An indian company needs $ funds for six months and it obtains the following quotes (₹/$)

Spot:	35.90/36.10	
3 − Months forward rate:	36.00/36.25	
6 − Months forward rate:	36.10/36.40	
$ or ₹ Interest rates:		
3 − Months interest rate:	₹ 12%,	$: 6%
6 − Months interest rate:	₹ 11.50%,	$: 5.5%

(i) Advise whether the company should borrow in INR or USD.

(ii) Evaluate the rate of interest after 3-months to make the company indifferent between 3- months borrowing and 6-months borrowing in the case of:

(i) Rupee borrowing

(ii) Dollar borrowing

Note: For the purpose of calculation, please take the units of dollar and rupee as 100 each.

(MTP 8 Marks March'21, PYP 8 Marks Nov'18)

Answer:

(i) if company borrows in $ then outflow would be as follows: Let company borrows $ 100	$ 100.00
Add: Interest for 6 months @ 5.5%	$ 2.75
Amount Repayable after 6 months	$ 102.75
Applicable 6-month forward rate	36.40
Amount of Cash outflow in Indian Rupees	₹ 3,740.10

If company borrows equivalent amount in Indian Rupee, then outflow would be as follows:

Equivalent ₹ amount ₹ 36.10 x 100	₹ 3,610.00
Add: Interest @11.50%	₹ 207.58
	₹ 3817.58

Since cash outflow is more in ₹ borrowing then borrowing should be made in $.

(ii) (a) Let 'ir' be the interest rate of ₹ borrowing make indifferent between 3 months borrowings and 6 months borrowing then

$(1 + 0.03)(1 + i_r) = (1 + 0.0575)$

i_r = 2.67% or 10.68% (on annualized basis)

(b) Let 'id' be the interest rate of $ borrowing after 3 months to make indifference between 3 months borrowings and 6 months borrowings.

Then, $(1 + 0.015)(1 + i_d) = (1 + 0.0275)$

I_D = 1.232% or 4.93% (on annualized basis)

Question 10

ZX Ltd. has made purchases worth USD 80,000 on 1st May 2020 for which it has to make a payment on 1st November 2020. The present exchange rate is INR/USD 75. The company can purchase forward dollars at INR/USD 74. The company will have to make an upfront premium @ 1 per cent of the forward amount purchased. The cost of funds to ZX Ltd. is 10 per cent per annum.

The company can hedge its position with the following expected rate of USD in foreign exchange market on 1st May 2020:

Exchange Rate	Probability
(i) INR/USD 77	0.15
(ii) INR/USD 71	0.25
(iii) INR/USD 79	0.20
(iv) INR/USD 74	0.40

You are required to advise the company for a suitable cover for risk.

(MTP 8 Marks March'23, PYP 8 Marks Nov'20)

Answer:

(i) **If ZX Ltd. does not take forward (Unhedged Position):**

Expected Rate = ₹ 77 x 0.15 + ₹ 71 x 0.25 + ₹ 79 x 0.20 + ₹ 74 x 0.40

= ₹ 11.55 + ₹ 17.75 + ₹ 15.80 + ₹ 29.60

= ₹ 74,70

Expected Amount Payable = USD 80,000 x ₹ 74.70

= ₹ 59,76,000

(ii) **If the ZX Ltd. hedge its position in the forward market:**

Particulars	Amount (₹)
If company purchases US$ 80,000 forward premium is (80000 x 74 x 1%)	59,200
Interest on ₹ 59,200 for 6 months at 10%	2,960
Total hedging cost (a)	62,160
Amount to be paid for US$ 80,000 @ ₹ 74.00 (b)	59,20,000
Total Cost (a) + (b)	59,82,160

Advice: Since cashflow is less in case of unhedged position company should opt for the same.

Question 11

XP Pharma Ltd., has acquired an export order for ₹ 10 million for formulations to a European company. The Company has also planned to import bulk drugs worth ₹ 5 million from a company in UK. The proceeds of exports will be realized in 3 months from now and the payments for imports will be due after 6 months from now. The invoicing of these exports and imports can be done in any currency i.e. Dollar, Euro or Pounds sterling at company's choice. The following market quotes are available.

	Spot Rate	Annualized Premium
₹/$	67.10/67.20	$ – 7%
₹/Euro	63.15/63.20	Euro – 6%
₹/Pound	88.65/88.75	Pound – 5%

Advice XP Pharma Ltd. about invoicing in which currency.

(Calculation should be up to three decimal places).

(MTP 10 Marks Oct'23, PYP 8 Marks July'21)

Answer:

(i) Proceeds of Exports in INR = ₹ 10 Million

Position of Inflow under three currencies will be as follows:

Currency	Invoice at Spot Rate	Expected Rate after 3 – months	Conversion in INR after 3 – months
$	₹ 100,00,000/ ₹ 67.10 = $ 149031.297	₹ 67.10 (1 + 0.07/4) = ₹ 68.27	₹ 68.27 x $ 149031.297 = ₹ 1,01,74,367
€	₹ 100,00,000/ ₹ 63.15 = € 1,58,353.127	₹ 63.15 (1 + 0.06/4) = ₹ 64.10	₹ 64.10 x € 1,58,353.127 = ₹ 1,01,50,435
£	₹ 100,00,000/ ₹ 88.65 = £ 1,12,803.158	₹ 88.65 (1 + 0.05/4) = ₹ 89.76	₹ 89.76 x £ 1,12,803.158 = ₹ 1,01,25,211

(ii) Payment of Import in INR = ₹ 5 Million

Position of outflow under three currencies will be as follows.

Currency	Invoice at Spot Rate	Expected Rate after 6 – months	Conversion in INR after 6 – months
$	₹ 50,00,000/ ₹ 67.20 = $ 74404.762	₹ 67.20 (1 + 0.07/2) = ₹ 69.55	₹ 69.55 x $ 74404.762 = ₹ 51,74,851
€	₹ 50,00,000/ ₹ 63.20 = € 79,113.924	₹ 63.20 (1 + 0.06/2) = ₹ 65.10	₹ 65.10 x € 79,113.924 = ₹ 51,50,316
£	₹ 50,00,000/ ₹ 88.75 = £ 56,338.028	₹ 88.75 (1 + 0.05/2) = ₹ 90.97	₹ 90.97 x £ 56,338.028 = ₹ 51,25,070

Advice: Since cash inflow is highest (1,01,74,367) in case of $ hence invoicing for Export should be in $.

However, cash outflow is least (51,25,070) in case of £ the invoicing for import should be in £.

EXAMINERS' COMMENTS ON THE PERFORMANCE OF EXAMINEES:

Below average performance has been observed in this question on Foreign Exchange Exposure and Risk Management.

Following common mistakes have been noticed in most of the answers:

(i) Despite the clear-cut instructions given in the question students have not calculated rates upto 3 decimal points.

(ii) Confusion between Spot Rates and Forwards Rates.

(iii) Some students ignored difference in the timings of payment for Import bill and realization of Export proceeds rather merged both and advised based on netting.

Question 12

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

In Singapore market, Swiss Francs were quoted against dollars as under:

Spot	USD 1 = Sw. Fcs.	1.5076/1.5120
One month forward		1.5150/1.5160
Two months forward		1.5250/1.5270
Three months forward		1.5415/1.5445
and in the interbank market US dollars were quoted as under:		
Spot	USD 1 = ₹	49.4302/4455
Spot / April		4100/4200
Spot / May		4300/4400
Spot / June		4500/4600

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

(MTP 6 Marks Oct'23, Old & New SM)

Answer:

First the contract will be cancelled at TT Selling Rate

USD/ Rupee Spot Selling Rate	₹ 49.4455	
Add: Premium for April	₹ 0.4200	
	₹ 49.8655	
Add: Exchange Margin @ 0.10%	₹ 0.04987	
	₹ 49.91537	Or 49.9154
USD/Sw. Fcs One Month Buying Rate	Sw. Fcs. 1.5150	
Sw. Fcs. Spot Selling Rate (₹ 49.91537/1.5150)	₹ 32.9474	
Rounded Off	₹ 32.9475	
Bank buys Sw. Fcs. Under original contract	₹ 32,4000	
Bank Sells under Cancellation	₹ 32.9475	
Difference payable by customer	₹00.5475	

Exchange difference of Sw. Fcs. 1,00,000 payables by customer ₹ 54,750

(Sw. Fcs. 1,00,000 x ₹ 0,5475)

Question 13

Nitrogen Ltd, a UK company is in the process of negotiating an order amounting to €4 million with a large German retailer on 6 months credit. If successful, this will be the first time that Nitrogen Ltd has exported goods into the highly competitive German market.

The following three alternatives are being considered for managing the transaction risk before the order is finalized.

(i) Invoice the German firm in Sterling using the current exchange rate to calculate the invoice amount.

(ii) Alternative of invoicing the German firm in € and using a forward foreign exchange contract to hedge the transaction risk.

(iii) Invoice the German first in € and use sufficient 6 months sterling future contracts (to the nearly whole number) to hedge the transaction risk.

Following data is available:

Spot Rate	€1.1750 – €1.1770/£
6 months forward premium	0.55 – 0.60 Euro Cents
6 months future contract is currently trading at	€1.1760/£
6 months future contract size is	£62500
Spot rate and 6 months future rate	€1.1785/£

Required:

(a) Calculate to the nearest £ the receipt for Nitrogen Ltd, under each of the three proposals.

(b) In your opinion, which alternative would you consider to be the most appropriate and the reason thereof. **(RTP May'20) (Old & New SM)**

Answer:

(1) Receipt under three proposals

(a) Invoicing in Sterling

Invoicing in £ will produce = $\frac{€4 \text{ million}}{1.1770}$ = £3398471

(b) Use of Forward Contract

Forward Rate = € 1.1770 + 0.0060 = 1.1830

Using Forward Market hedge Sterling receipt would be

$\frac{€4 \text{ million}}{1.1830}$ = £3381234

(c) Use of Future Contract

The equivalent sterling of the order placed based on future price (€1.1760)

€4.00 million/1.1760 = £3401360

Number of Contracts = $\frac{£3401360}{62,500}$ =54 Contracts (to the nearest whole number)

Thus, € amount hedged by future contract will be = 54 x £62,500 = £3375000

Buy Future at	€ 1.18
Sell Future at	€ 1.18
Total profit on Future Contract = 54 x £ 62,500 × €0.0025 = €8438	€ 0.00
After 6 months	
Amount Received	€ 40,00,000
Add: Profit on Future Contracts	€ 8,438
	€ 40,08,438
Sterling Receipts	

On sale of € at spot = $\frac{€\ 4008438}{1.1785}$ = €3401305

(ii) Proposal of option (c) is preferable because the option (a) & (b) produces least receipts.

Question 14

Citi Bank quotes JPY/USD 105.00–106.50 and Honk Kong Bank quotes USD/JPY 0.0090–0.0093.

(a) Are these quotes identical if not then how they are different?

(b) Is there a possibility of arbitrage?

(c) If there is an arbitrage opportunity, then show how would you make profit from the given quotation in both cases if you are having JPY 1,00,000 or US$ 1,000.

(RTP Nov'20)

Answer:

(a) No, while CitiBank's quote is a Direct Quote for JPY(i.e.forJapan) the Hong Kong Bank quote is a Direct Quote for USD (i.e. for USA).

(b) Since Citi Bank quote imply USD/JPY 0.0094-0.0095 and both rates exceed those offered by Hong Kong Bank, there is an arbitrage opportunity.

Alternatively, it can also be said that Hong Kong Bank quote imply JPY/USD 107.53 – 111.11 and both rates exceed quote by Citi Bank, there is an arbitrage e opportunity.

(c) Let us how arbitrage profit can be made.

Convert US$ 1,000 into JPY by buying from Hong Kong Bank Sell these JPY to Citi Bank at JPY/USD 106.50	JPY 1,07,530
and convert in US$	US$ 1009.67

Thus, arbitrage gain (US$ 1009.67 - US$ 1000.00)	US$ 9.67
Convert JPY 1,00,000 into USD by buying from Citi Bank at JPY/USD 106.50	US$ 938.97
Sell these US$ to Hong Kong Bank at JPY/USD 107.53 and convert in US$	JPY 100967.44
Thus, arbitrage gain (JPY 1,00,967.44 – JPY 1,00,000)	JPY 967.44

Question 15

(a) Given:

US$1 = ¥ 107.31

£ 1 = US$ 1.26

A$ 1 = US$ 0.70

(i) Calculate the cross rate for Pound in Yen terms

(ii) Calculate the cross rate for Australian Dollar in Yen terms

(iii) Calculate the cross rate for Pounds in Australian Dollar terms

(b) The current spot exchange rate is $1.35/£ and the three-month forward rate is $1.30/£. According to your analysis of the exchange rate, you are quite confident that the spot exchange rate will be $1.32/£ after 3 months.

(i) Suppose you want to speculate in the forward market then what course of action would be required and what is the expected dollar Profit (Loss) from this speculation?

(ii) What would be your Profit (Loss) in Dollar terms on the position taken as per your speculation if the spot exchange rate turns out to be $1.26/£.

(c) Assume that you would like to buy or sell £1,000,000.

(RTP Nov'20)

Answer:

(i) Calculate the Cross rate for Pounds in Yeh terms

1£ = ? ¥

US$ 1 = ¥ 107.31

£1 = US$ 1.26

$$\frac{¥}{\$} \times \frac{\$}{£} = \frac{¥}{£}$$

$$\frac{¥}{£} = 107.31 \times 1.26$$

£1 = ¥ 135.21

(ii) Calculate the Cross rate for Australian Dollar in Yen terms

A$ 1 = ¥ ?

US$1 = ¥ 107.31

A$ 1 = US$ 0.70

$$\frac{¥}{\$} \times \frac{\$}{A\$} = \frac{¥}{A\$}$$

$$\frac{¥}{A\$} = 107.31 \times 0.70$$

A$ 1 = ¥ 75.12

(iii) Calculate the cross rate for Pounds in Australian Dollar terms

£ 1 = A$?

A$1 = US$ 0.70

US$ 1 = A$ 1.4286

£1 = US$1.26

$$\frac{A\$}{\$} \times \frac{\$}{£} = \frac{A\$}{£}$$

$$\frac{A\$}{£} = 1.4286 \times 1.26 = 1.80$$

£1 = A$ 1.80

(i) If you believe the spot exchange rate will be $ 1.32/£ in three months, you should buy £ 1,000,000 forward $1.30/£ and sell at $ 1.32/£ 3 months hence.
Your expected profit will be: £1,000,000 x ($1.32 – $1.30) = $20,000

(ii) If the spot exchange rate turns out to be $1.26/£ in three months, your loss from the long position in Forward Market will be:-
£1,000,000 x ($1.26 – $1.30) = $40,000

Question 16

Tele real Trillium, a UK Company is in the process of negotiating an order amounting €5.5 million with a large German retailer on 6 month's credit. If successful, this will be first time for Tele real Trillium has exported goods into the highly competitive German Market. The Tele real Trillium is considering following 3 alternatives for managing the transaction risk before the order is finalized.

(i) Mr. Grand, the Marketing head has suggested that in order to remove transaction risk completely Tele real Trillium should invoice the German firm in Sterling using the current €/£ average spot rate to calculate the invoice amount.

(ii) Mr. John, CE is doubtful about Mr. Grand's proposal and suggested an alternative of invoicing the German firm in € and using a forward exchange contract to hedge the transaction risk.

(iii) Ms. Royce, CFO is agreed with the proposal of Mr. John to invoice the German first in €, but she is of opinion that Tele real Trillium should use sufficient 6 month sterling future contracts (to the nearest whole number) to hedge the transaction risk.

Following data is available

Spot Rate	€1.1980 – €1.1990/£
6 months forward points	0.60 – 0.55 Euro Cents.
6-month future contract is currently trading at	€1.1943/£
6-month future contract size is	£70,500
After 6-month Spot rate and future rate	€1.1873/£

You are required to

(a) Advise the alternative you consider to be most appropriate.

(b) Interpret the proposal of Mr. Grand from non-financial point of view.

Note: Calculate (to the nearest £) the £ receipt.

(RTP May'21) (Same concept different figures Old & New SM)

Answer:

Receipt under three proposals

(a) Proposal of Mr. Grand

Invoicing in £ will produce = $\frac{€5.5 \text{ million}}{1,1990}$ = £ 45,87,156

(b) Proposal of Mr. John

Forward Rate = €1.1990 – 0.0055 = 1.1935

Using Forward Market Hedge Sterling receipt would be = $\frac{€5.5 \text{ million}}{1,1935}$ = £ 46,08,295

(c) Proposal of Ms. Royce

The equivalent sterling of the order placed based on future price (€1.1943)

= $\frac{€5.5 \text{ million}}{1,1943}$

= £ 46,05,208 (rounded off)

Thus, € amount	hedged by future contract will be = 65 x £70,500 = £45,82,500
Buy Future at	€1.1943
Sell Future at	€1.1873
	€0.0070

Number of Contracts = $\frac{£\ 46,05,208}{70,500}$ = 65 Contracts (to the nearest whole number)

Total loss on Future Contracts = 65 x £70,500 x €0.0070
= €32,078

After 6 months

Amount Received	€55,00,000
Less: Loss on Future Contracts	€ 32,078
	€ 54,67,922

Sterling Receipts

On sale of € at spot = $\frac{£54,67,922}{1.1873}$
= £46,05,342

Proposal of option (ii) is preferable because the option (i) & (iii) produces least receipts.

Further, in case of proposal (i) there must be a doubt as to whether this would be acceptable to German firm as it is described as a competitive market and Tele real Trillium is moving into it first time.

Question 17

A US Investor chose to invest in Sensex for a period of one year. The relevant information is given below.

Size of investment ($)	20,00,000
Spot rate 1 year ago (₹/$)	42.50/60
Spot rate now (₹/$)	43.85/90
Sensex 1 year ago	3,256
Senex now	3,765
Inflation in US	5%
Inflation in India	9%

(i) Compute the nominal rate of return to the US investor.

(ii) Compute the real depreciation / appreciation of Rupee.

(iii) What should be the exchange rate if relevant purchasing power parity holds good?

(iv) What will be the real return to an Indian investor in Sensex?

(RTP May'22)

Answer:

(i) Nominal rate of return to the US investor

Size of investment ($)	20,00,000
Size of investment (₹) ($ 20,00,000 x 42.50)	8,50,00,000
Sensex at to	3,256
No.of units of Sensex that can be purchased at to (₹ 8,50,00,000/3,256)	26,105
Sensex at T1	3,765
Sale of Sensex (26,105 x 3,765)	9,82,85,325
US$ at T1	₹ 43.90
Equivalent Amount in US$	22,38,846
Gain in US$ [22,38,846 – 20,00,000]	2,38,846
Nominal rate to US investor	11.94%

(i) Real Appreciation/Depreciation of Rupee

$$\text{Real Exchange Rate (Buying)} = 43.85 \frac{(1+0.05)}{(1+0.09)} = 42.24$$

Real Appreciation of ₹ = 42.50 – 42.24 / 42.50 x 100 = 0.61%

(ii) Exchange rate if relevant purchasing power parity holds Buying

$$\text{Rate} = 42.50 \frac{(1+0.09)}{(1+0.05)} = 44.12$$

$$\text{Selling rate} = 42.60 \frac{(1+0.09)}{(1+0.05)} = 44.22$$

$$\text{Exchange rate} = \frac{44.12}{44.22}$$

(iv) Real return to Indian Investor in Sensex

$$\text{Nominal Return} = \frac{3,765 - 3,256}{3,256 \times 100} = 15.63\%$$

$$\text{Real return} = \frac{(1.1563)}{(1.09) - 1} = 0.0608 \text{ or } 6.08\%$$

Question 18

XYZ has taken a six-month loan from its foreign collaborator for USD 2 million. Interest is payable on maturity @ LIBOR plus 1%. The following information is available:

Spot Rate	INR/USD	68.5275
6 months Forward rate	INR/USD	68.4575
6 months LIBOR for USD	2%	
6 months LIBOR for INR	6%	

You are required to:

(i) Calculate Rupee requirements if forward cover is taken.

(ii) Advise the company on the forward cover.

What will be your opinion if spot rate of INR/USD is 68.4275

(RTP May'23)

Answer:

In (i) Rupee requirement if forward cover is taken:

6 Month Forward rate	68.4575
Interest amount ($20,00,000 \times 3\%^* \times \frac{6}{12}$)	US$ 30,000
Principal amount	US$ 20,00,000
	US$ 20,30,000

Rupee Requirement = INR 68.4575 × US$ 20,30,000 = INR 13,89,68,725

*LIBOR + 1%

(ii) Forward Rate as per Interest Rate Parity after 6 months is expected to be:

$$= 68.5275 \times \frac{(1.03)}{(1.01)} = 69.8845/US\$$$

The company should take forward cover because as per Interest Rate Parity, the rate after 6 months is expected to be higher than forward rate.

However, if spot rate is 68.4275, the expected rate as per Interest Rate Parity shall be:

$$= 68.4275 \times \frac{(1.03)}{(1.01)} = 69.7825/US\$$$

Thus, still the company should take forward cover.

Question 19

Suppose you are a treasurer of XYZ pic in the UK. XYZ have two overseas subsidiaries, one based in Amsterdam and one in Switzerland. The Dutch subsidiary has surplus Euros in the amount of 725,000 which it does not need for the next three months but which will be needed at the end of that period (91 days). The Swiss subsidiary has a surplus of Swiss Francs in the amount of 998,077 that, again, it will need on day 91.

The XYZ pic in UK has a net balance of £75,000 that is not needed for the foreseeable future.

Given the rates below, what is the advantage of swapping Euros and Swiss Francs into Sterling?

Spot Rate (€)	£0.6858 – 0.6869
91-day Pts	0.0037 0.0040
Spot Rate (£)	CHF 2.3295 – 2.3326
91-day Pts	0.0242 0.0228

Interest rates for the Deposits

Amount of Currency	91-day Interest Rate % pa		
	£	€	CHF
0 – 100,000	1	¼	0
100,001 – 500,000	2	1½	¼
500,001 – 1,000,000	4	2	½
Over 1,000,000	5.375	3	1

Note: For calculation purpose use 360 Days a year.

(RTP Nov'23)

Answer:

Individual Basis

	Interest	Amt. after 91 days	Conversion in £
Holland € 725,000 x 0.02 x 91/360 =	€ 3,665.28	€ 728,665.28	£502,414.71 (728,665.28 x 0.6895)
Switzerland CHF 998,077 x 0.005 x 91/360 =	CHF 1,261.46	CHF 999,338.46	£432,651.51 (999,338,46 ÷ 2.3098)
UK € 75,000 x 0.01 x 91/360 =	£ 189.58	€ 75,189.58	£ 75,189.58
Total GBP at 91 days			£ 1,010,255.80

Swap to Sterling

Sell € 7,25,000 (Spot at 0.6858) buy £	£ 4,97,205.00
Sell CHF 9,98,077(Spot at 2.3326) buy £	£ 4,27,881.76
Independent GBP amount	£ 75,000.00
	£ 1,000,086.76
Interest (£ 1,000,086.76 x 0.05375 x 91/360)	£ 13,587.98
Total GBP at 91 days	£ 1,013,674,74
Less: Total GBP at 91 days as per individual basis	£ 1,010,255.80
Net Gain	£ 3,418.94

Question 20

On 1st January 2019 Global Ltd., an exporter entered into a forward contract with BBC Bank to sell US$ 2,00,000 on 31st March 2019 at ₹ 71.50/$. However, due to the request of the importer, Global Ltd. received the amount on 28 February 2019. Global Ltd. requested the Bank to take delivery of the remittance on 2nd March 2019.

The Inter-banking rates on 28th February were as follows:

Spot Rate	₹ 71.20/71.25
One month premium	5/10

If Bank agrees to take early delivery, then what will be the net inflow to Global Ltd. assuming that the prevailing prime lending rate is 15%. Assume 365 days in a year.

(PYP 8 Marks May'19)

Answer:

On 28th February 2019 bank would purchase form the exporter US$ 200000 at the agreed rate i.e. ₹ 71.50/$. However, bank will charge for this early delivery consisting of Swap Difference and Interest on outlay of funds.

(1) Swap Difference

Bank sells at	₹ 71.20
It buys at	₹ 71,35
Swap loss per US$	₹ 0.15 Swap loss for $
200000 is ₹ 30,000	

(ii) Interest on Outlay of funds

On February Bank sell $ in Market	₹ 71.20
Bank buys from customer	₹ 71.50
Outlay per US $	₹ 0.30
Outlay of funds for US$ 200000	₹ 60,000

Interest of outlay of funds on ₹ 60,000 for 31 days (1st March 2019 to 31st March 2019) at 15% p.a. l.e., ₹ 764

(iii) Charges for early delivery

Swap Loss	₹ 30,000
Interest on Outlay of Funds	₹ 764
	₹ 30,764

(iv) Net Inflow to Global Ltd.

Proceed of US $ 200000 @ ₹ 71.50	₹ 1,43,00,000
Less: Charges for early delivery	₹ 30,764
Net Inflow	₹ 1,42,69,236

EXAMINERS' COMMENTS ON THE PERFORMANCE OF EXAMINEES:

Problem of Forex was solved well and performance of the examinees was above average in this question. However, some examinees got confused in Sell and Buy rate. Further, many examinees could not calculate the swap loss and the bank buy/sale rates properly. Also, the examinees exhibit lack of knowledge about the question on early delivery. Therefore, only few examinees could calculate the net inflow to Global Ltd. after calculating Swap difference and interest on outlay of Funds.

Question 21

USD 10,000 is lying idle in your Bank Account. You are able to get the following quotes from the dealers:

	Dealer	Quote
A	EUR/USD	1.1539
B	EUR/GBP	0.9094
C	GBP/USD	1.2752

Is there an opportunity of gain from these quotes?

(PYP 4 Marks Nov'20)

Answer:

The arbitrageur can proceed as stated below to realize arbitrage gains.

(i) Buy € from US$ 10,000 from Dealer A $\frac{10,000}{1.1539}$ = € 8,666.26

(ii) Convert these € to £ by selling to Dealer B (€ 8,666.26 x 0.9094) = £ 7,881.09

(iii) Convert £ to US$ by selling to Dealer C (£ 7,881.09 x 1.2752) = US$ 10,049.97

There is net gain of US$ 10,049.97 less US$ 10,000 l.e., US$ 49.97 or US$ 50.00.

Question 22

M/s. Sky products Ltd., of Mumbai, an exporter of sea foods has submitted a 60 days bill for EUR 5,00,000 drawn under an irrevocable Letter of Credit for negotiation. The company has desired to keep 50% of the bill amount under the Exchange Earners Foreign Currency Account (EEFC). The rates for ₹ /USD and USD/EUR in inter-bank market are quoted as follows:

	₹/USD	USD/EUR
Spot	67.8000 – 67.8100	1.0775 – 1.8000
1 month forward	10/11 Paise	0.20/0.25 Cents
2 months forward	21/22 Paise	0.40/0.45 Cents
3 months forward	32/33 Palse	0.70/0.75 Cents

Transit Period is 20 days. Interest on post shipment credit is 8% p.a. Exchange Margin is 0.1%. Assume 365 days in a year.

You are required to calculate:

(i) Exchange rate quoted to the company

(ii) Cash inflow to the company

(iii) Interest amount to be paid to bank by the company.

(PYP 8 Marks Jan'21)

Answer:

(i) Transit and usance period is 80 days. It will be rounded off to the lower of months and @months forward bid rate is to be taken

₹/USD	₹ 67,8000
Add: Premium for 2 months	₹ 0.2100
	₹ 68.0100

Less: Exchange margin @ 0.1%	₹ 0.0680
Bid rate for USD	₹ 67.9420
USD/EUR	USD 1.0775
Add: Premium	USD 0.0040
	USD 1.0815
₹/EUR Rate (67.942 x 1.0815)	₹ 73.4793
Amount of Export Bill	EUR 5,00,000
Less: EEFC	EUR 2,50,000
	EUR 2,50,000
Exchange Rate	₹ 73.4793

(ii) Cash Inflow = ₹ 1,83,69,825

(iii) Interest for 80 days @ 8% = ₹ 3,22,101

Question 23

TT Ltd. is planning to hedge its foreign exchange risk. It has made a purchase on 1st April 2021 for which it has to make a payment of US $ 1 Lakh on 30/09/2021. The present exchange rate is 1US $ – ₹ 73. It can purchase forward 1US $ at ₹ 74, TT Ltd. will have to make an upfront premium @ 1% of the forward amount purchased.

The cost of the funds to the company is 10% p.a. In the following situations, compute the Gain/(Loss) of the TT Ltd. will make if they hedge with exchange rate on 30/09/2021 as:

(i) ₹ 76/US $

(ii) ₹ 70/US $

(iii) ₹ 79/US $

Note: Calculation to be done on monthly basis.

(PYP 8 Marks Dec'21)

Answer:

	(₹)
Present Exchange Rate ₹ 73 = 1 US$	
If company purchases US$ 100,000 forward premium is	
100,000 x 74 x 1%	74,000
Interest on ₹ 74,000 for 6 months at 10%	3,700
Total hedging cost	77,700
if exchange rate is ₹ 76	

Then gain (₹ 76 - ₹ 74) for US$ 100,000	2,00,000
Less: Hedging cost	77,700
Net gain	1,22,300
If US$ = ₹ 70	
Then loss (₹ 70 – ₹ 74) for US$ 100,000	4,00,000
Add: Hedging Cost	77,700
Total Loss	4,77,700
If US$ = ₹ 79	
Then Gain (₹ 79 – ₹ 74) for US$ 100,000	5,00,000
Less: Hedging Cost	77,700
Total Gain	4,22,300

EXAMINERS' COMMENTS ON THE PERFORMANCE OF EXAMINEES:
Though above average performance has been noticed in this question on Forex but some students got confused in considering Total Hedging Cost.

Question 24

M/s. Daksh Ltd is planning to import multipurpose machine from USA at a cost of $15000. The company can avail loans at 19% Interest per annum with quarterly rests with which it can import the machine.

However, there is an offer from New York branch of an Indian based bank extending credit of 180 days at 2% per annum against opening of an irrevocable letter of credit. Other Information:

Spot rate US$ 1 = ₹ 75

180 days forward rate US $ 1 = ₹ 77

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

(i) Justify why the offer from the foreign branch should be accepted?

(ii) Based on the present market condition company is not interested to take the risk of currency fluctuations and wanted to hedge with an additional expense of ₹ 30,000, if so, what is your advice to the company?

Assume 360 days in the year.

(PYP 8 Marks May'22)

Answer:

Option I (To finance the purchases by availing loan at 19% per annum):

	Amount
Cost of equipment ($ 15,000 at US$ 1 = ₹ 75)	₹ 11,25,000
Add: Interest at 4.75% I Quarter	53,438
Add: Interest at 4.75% II Quarter (on ₹ 11,78,438)	55,976
Total outflow in Rupees	12,34,414
Alternatively, interest may also be calculated on compounded basis i.e. ₹ 1,12,5000 × $[1.0475]^2$	₹ 12,34,413

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

	Amount
Cost of letter of credit at 1% on US$ 15,000 at US$ 1 = ₹ 75	₹ 11,250
Add: Interest for 180 days (₹ 11,250 x 19% x 180/360)	₹ 1,069
(A)	₹ 12,319
Payment at the end of 180 days	
Cost	US$ 15,000
Interest at 2% p.a. (15000 × 2/100 x 180/360]	US$ 150
	US$ 15,150
Conversion at US$ 1 = ₹ 77 [15150 x ₹ 77] (B)	₹ 11.66,550
Total Cost: (A) + (B)	₹ 11,78,869

Advise: Option 2 is cheaper by (₹ 12,34,413 – ₹ 11,78,869) lakh or ₹ 55,544. Hence, the offer may be accepted.

(ii) If company is not interested to take the risk of currency fluctuations and wanted to hedge with an additional expense of ₹ 30,000 then it can do so because even taking forward position is resulting in increased cash outflow by the same amount.

Question 25

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

	Spot	2-months spread
₹/US $	74.00/74.25	1.00/1.25

(i) You are required to calculate:

(a) 2 months forward rates.

(b) How many US dollars should the firm sell to get ₹ 10 lakhs in the spot market and after 2 months?

(c) How many Rupees is the firm required to pay to obtain US $ 80,000 in the spot market and after 2 months?

(ii) Assume the firm has US $ 27,600 in current account earning no interest. ROI on Rupee investment is 10% p.a. Should the firm encase the US $ now or after 2 months?

(PVP 8 Marks Nov'22)

Answer:

(a) Two Month Forward Rates:

Buying Rate ₹ 74.00 + ₹ 1.00 = 75.00 Selling Rate ₹ 74.25 + ₹ 1.25 = ₹ 75.50

(b) (1) To get ₹ 10 lakh at Spot Market the firm should sell

= ₹ 10,00,000/ ₹ 74.00 = US $ 13,513.51

(2) To get ₹ 10 lakh after 2 month the firm should sell

= ₹ 10,00,000/ ₹ 75.00 = US $ 13,333.33

(c) (1) Rupees required to obtain US $ 80,000 in Spot Market: US $ 80,000 × ₹ 74.25 = ₹ 59,40,000

(2) Rupees required to obtain US $ 80,000 after 2 months:

US $ 80,000 × ₹ 75.50 = ₹ 60,40,000

(ii) If US$ are converted in ₹ now and get invested in India, then fund position after 2 months will be as follows:

US$ 27,600 × ₹ 74.00	₹ 20,42,400
ROI @ 10% p.a. for 2 months	₹ 34,040
Amount after 2 months	₹ 20,76,440

If US$ are converted after 2 months, then fund position will be:

= $ 27,600 × ₹ 75.00

= ₹ 20,70,000

Thus, it is better to get converted US$ into ₹ now and get them invested in India.

Alternatively, this sub part can also be answered as follows:

Computation of Annual Premium on US $ = (1.00/74.00) x (12/2) x 100 = 8,108% or 8.11% Since, the premium on US $ in lesser than ROI on Indian ₹, it is better to convert US $ in Indian ₹ now and get them invested in India.

Question 26

Hopeful Ltd., an Indian MNC is executing a plant in Nepal. It has raised ₹ 400 Billion. Half of the amount will be required after six months' time. Hopeful Ltd. is looking for an opportunity to invest this amount for a period of six months. It is considering following two options:

Market	UK	Europe
Nature of Investment	Index Fund (GBP)	Treasury Bills (Euro)
Dividend (GBP in Billions)	0.1369	–
Income from stock lending (GBP in Billions)	0.0007	–
Discount on the investment value at the end	2%	–
Interest	–	7.8 percent per annum
Exchange Rate (Spot)	GBP/INR 0.0099	EUR/INR 0.011
Exchange Rate (6 month Forward)	GBPI INR 0.0100	EUR/INR 0.011

As an Investment manager advise the best option to invest.

(PYP 7 Marks May'23) (Same concept different figures PYP 8 Marks Nov'20)

Answer:

Investment in UK Market **(in billions)**

Particulars	Currency INR	ER	Currency GBP
Available amount	200	0.0099	1.98
Dividend Income			0.1369
Stock Lending Income			0.0007
Investment value at the end after discount @2%			1.9404
Amount available at the end of 6-months			2.078
Conversion after 6 months		0.01	₹ 207.80
Gain			₹ 7.80

Investment in Europe (in billions)

Particulars	Currency INR	ER	EUR
Available amount	200	0.011	2.2
Interest for 6 months @ 7.80% p.a.			0.0858
Amount available at the end			2.2858
Amount available at the end of 6-months			
Conversion after 6 months		0.011	₹ 207.80
Gain			7.80

The gain amount is same in both the options so Hopeful Ltd. is indifferent. However, Treasury Bills are risk free, so investment in Treasury Bills (Euro) is suggested.

Alternative Solution

(i) if investment is made in Index Fund (GBP)

Initial Investment (₹ 200 Billion x 0.0099)	GBP 1.9800 billion
Dividend Income	GBP 0.1369 billion
Income from Stock Lending	GBP 0.0007 billion
Discount	(GBP 0.0396 billion)
Value of Investment after 6 months	GBP 2.0780 billion
Value of Investment after 6 months in ₹ @ GBP / INR	₹ 207.8000 billions

(ii) If investment is made in Treasury Bills (Europe)

Initial Investment (₹ 200 Billion x 0.011)	EUR 2.2000 billion
Interest for 6 months @ 7.8% p.a.	EUR 0.0858 billion
Value of Investment after 6 months	EUR 2.2858 billion
Value of Investment after 6 months in ₹ @ EUR/INR 0.011	₹ 207.8000 billions

The equivalent amount is same in both the options so Hopeful Ltd. is indifferent. However, Treasury Bills are risk free, so investment in Treasury Bills (EUR) is suggested.