

***FOREX***

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***IMPORTANT QUESTIONS***

## CLASS WORK QUESTIONS

### Question 5:

$$\text{GBP/USD} = 0.7650 / 0.7670$$

$$\text{SFR/SAR} = 0.3540 / 0.3610$$

$$\text{SP/MP} = 15.3250 / 15.3290$$

i. Amt of GBP that will be receivable on conversion =  $0.7650 \times 90,000 = \text{GBP } 68,850$

ii. Amt of MP required to settle the payment  $\frac{90,000}{15.3250} = \text{MP } 5872.76$

iii. Amt of SFR that will be invested =  $0.3540 \times 4,00,000 = \text{SFR } 1,41,600$

### Question 13:

- 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
	<b>₹ 68.0100</b>
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
	<b>EUR 2,50,000</b>
Exchange Rate	₹ 73.4793

ii. Cash Inflow ₹ 1,83,69,825

iii. Interest for 80 days @ 8% ₹ 3,22,101

### Question 15:

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

- i. Buy GBP from USD 1,000,000 At New York 1,000,000/ 1.3231 GBP 755,801
- ii. Convert these GBP to Rs. at London (755,801 x 95.80) Rs. 72,405,736
- iii. Convert Rs. to USD at Mumbai Rs. 72,405,736/ 68.30 USD 1,060,113.26

There is net gain of USD 1,060,113.26 less USD 10,000,000 i.e. USD 60,113.26

**Question 26:**

**i. Swap Points for 2 months and 15 days**

	<b>Bid</b>	<b>Ask</b>
Swap Points for 2 months (a)	70	90
Swap Points for 3 months (b)	160	186
Swap Points for 30 days (c) = (b) – (a)	90	96
Swap Points for 15 days (d) = (c)/2	45	48
Swap Points for 2 months & 15 days (e) = (a) + (d)	115	138

**ii. Foreign Exchange Rates for 20th June 2016**

	<b>Bid</b>	<b>Ask</b>
Spot Rate (a)	66.2525	67.5945
Swap Points for 2 months & 15 days (b)	0.0115	0.0138
	<b>66.2640</b>	<b>67.6083</b>

**iii. Annual Rate of Premium**

	<b>Bid</b>	<b>Ask</b>
Spot Rate (a)	66.2525	67.5945
Foreign Exchange Rates for 20th June 2016 (b)	66.2640	67.6083
Premium (c)	0.0115	0.0138
Total (d) = (a) + (b)	132.5165	135.2028
Average (d) / 2	66.2583	67.6014
	$\frac{0.0115}{66.2583} \times \frac{12}{2.5} \times 100$ = 0.0833%	$\frac{0.0138}{67.6014} \times \frac{12}{2.5} \times 100$ = 0.0980%

**Question 27:**

USD/ ₹ on 3rd September	49.3800
Swap Point for October	0.1300
	49.5100
Add: Exchange Margin	0.0500
	49.5600
USD/ SGD on 3rd September	1.7058
Swap Point for 2nd month Forward	0.0096
	1.7154

Cross Rate for SGD/ ₹ of 30th October

USD/ ₹ selling rate = ₹ 49.5600  
 SGD/ ₹ buying rate = SGD 1.7154  
 SGD/ ₹ cross rate = ₹ 49.5600 / 1.7154  
 = ₹ 28.8912

**Question 30:**

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 payable by customer	₹ 54,750

(Sw. Fcs. 1,00,000 x ₹ 0.5475)

**Question 31:**

This extension of forward Contract involves following steps

1. Cancel the contract at TT buying rate.
2. Rebook the contract for three months at the current rate of exchange.

Accordingly

**Step 1: Cancel the contract at TT buying rate on 30.6.2009**

	Rs.
Spot US\$ 1	40.4800
Less: Margin 0.080%	0.0324
	40.4476

Hence TT buying rate Rs.40.45 (Rounded off)

US\$ 10,000 @ Rs.40.45 Rs.4,04,500/-

US\$ 10,000 @ Rs.41.87 Rs.4,18,700/-

Difference in favour of the bank Rs. 14,200/-.

**Step 2: New contract to be booked at the appropriate forward rate.**

Three months forward rate is as under:

US\$ 1 Rs.	40.4900 Spot Selling
Add: September Premium	Rs. 0.3750
	Rs. 40.8650
Add: Margin (0.25%)	Rs. 0.1022
	Rs. 40.9672

Forward rate to be quoted to the customer is US\$ 1 = Rs. 40.97

Thus cost to customer Rs. 14,200/-.

**Question 35:**

**i. 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	₹ 63.6800
Less: Exchange Margin @ 0.10%	₹ 0.0636
	₹ 63.6163

Rounded off to ₹ 63.6175

**ii. Amount payable on \$ 2,00,000**

Bank sells \$2,00,000 @ ₹ 64.4000	₹ 1,28,80,000
Bank buys \$2,00,000 @ ₹ 63.6163	₹ 1,27,23,260
Amount payable by customer	₹ 1,56,740

**iii. Swap Loss**

On 10th June the bank does a swap sale of \$ at market buying rate of ₹ 63.8300 and forward purchase for June at market selling rate of ₹ 63.9500.

Bank buys at	₹ 63.9500
Bank sells at	₹ 63.8000
Amount payable by customer	₹ 0.1500

Swap Loss for \$ 2,00,000 in ₹ = ₹ 30,000

**iv. Interest on Outlay of Funds**

On 10th April, the bank receives delivery under cover contract at ₹ 64.2800 and sell spot at ₹ 63.8000.

Bank buys at	₹ 64.2800
Bank sells at	₹ 63.8000
Amount payable by customer	₹ 0.4800

Outlay for \$ 2,00,000 in ₹ 96,000

Interest on ₹ 96,000 @ 12% for 10 days ₹ 320

**v. New Contract Rate**

The contract will be extended at current rate

\$/ ₹ Market forward selling Rate for August	₹ 64.2500
Add: Exchange Margin @ 0.10%	₹ 0.0643
	₹ 64.3143

Rounded off to ₹ 64.3150

**vi. Total Cost**

Cancellation Charges	₹ 1,56,740.00
Swap Loss	₹ 30,000.00
Interest	₹ 320.00
	₹ 1,87,060.00

**Question 37:**

**Exchange Position:**

Particulars	Purchases (GBP)	Sales (GBP)
Opening Balance Overbought	1,00,000	
Bill on London	1,60,000	
Forward Sales – TT		1,20,000
Cancellation of Forward Contract		60,000
TT Sales		1,50,000
Draft on London cancelled	60,000	-
	3,20,000	3,30,000
Closing Balance Oversold	10,000	-
	3,30,000	3,30,000

**Cash Position (Nostro A/c)**

	Credit	Debit
Opening balance credit	2,00,000	—
TT sales	—	1,50,000
	2,00,000	1,50,000
Closing balance (credit)	—	50,000
	2,00,000	2,00,000

The Bank has to buy spot TT GBP 15,000 to increase the balance in Nostro account to GBP 65,000.

This would bring the overbought position on GBP to 5,000.

Since the bank requires an oversold position of GBP 20,000, it has to sell forward GBP 25,000.

**Question 42:**

i. Profit based on current exchange rate

Revenue – Import Cost – FC - VC

$$= (6000 \times 165 \times 59.60) - (6000 \times 750 \times 5.98) - 6000(1,200 + 2,500)$$

$$= ₹98,94,000$$

Project based on exchange rate after 6 month

Revenue - Import Cost - FC - VC

$$= (6000 \times 165 \times 60.30) - (6000 \times 750 \times 6.25) - 6000(1,200 + 2,500)$$

$$= 93,72,000$$

∴ Loss due to transaction exposure = 98,94,000 – 93,72,000 = ₹5,22,000

**ii. Step 1 :**

Since the firm is now invoicing exports at ₹9,500, there is no transaction exposure relating to € receivable.

Of course, we still have HK\$ payable. Using the revised current rate and the rate after 6 months, loss due to transaction exposure = 6,000 × 750 × (6.25 – 6.02) = ₹10,35,000

\* Why 6,000? .....units to change hone wala hai

**Answer :** Change in units Economic exposure € and that's why Transaction exposure calculate karte time units change nahi karenge, 6,000 he rakhenge

**Step 2 :**

$S_0 = ₹/€ 59.60$

**(Old Current Rate)**

$S_T = ₹/€ = 60.3$



**(New Current Rate)**

€ Equivalent price based on old current rate =  $\frac{9,500}{59.60} = €159.40$

€ Equivalent price based on revised current rate =  $\frac{9,500}{59.85} = 158.73$

∴ Fall in price =  $\frac{159.4 - 158.73}{159.4} \times 100 = 0.42\%$

Given, elasticity,  $ed = 2.5\%$

So, increase in demand =  $2.5\% \times 0.42\% = 1.05\%$

∴ New Demand = 6000 units + 1.05% of 6,000 = 6063 units (approx)

**Self Note :** Dono current exchange rate kuy use kiye, 6 months baad wala bhi toh use kar sakte the?

**Answer :** No, because if we use rate after 6m i.e. ₹60.3/Euro, the change in demand will occur after 6m which will affect future project and not current 6m profit

**Step 3 :**

**Project based on old units, ₹ invoicing and revised current rate**

= (6000 × 9,500) - (6000 × 750 × 6.02) – 6000(1,200 + 2,500) = 77,10,000

**Project based on new units, ₹ invoicing and exchange rate after 6m**

$$= (6063 \times 9,500) - (6063 \times 750 \times 6.25) - 6063 \times 2500 - 6000 \times 1200$$

$$= ₹68,20,687.5$$

$$\therefore \text{Loss due to economic exposure} = 77,10,000 - 68,20,687.5 = ₹8,89,312.5$$

**Question 43:**

Here we have to compare the notional cash outflow for the forward rate of JP ¥ and the actual cash outflow involved in rupees against forward purchase of JP ¥ for dollars in Tokyo and spot purchase of dollars in Delhi for Rs.

**A. Cash flow of forward purchasing the JP ¥**

Rs. /JP ¥ 6 month forward rate

$$\text{Bid rate} = \text{Bid rate of US\$} / \text{Ask Rate of JP ¥} = \text{Rs. } 46 / \text{JP ¥ } 110.60 = \text{Rs. } 0.415913$$

$$\text{Ask rate} = \text{Ask rate of US\$} / \text{Bid Rate of JP ¥} = \text{Rs. } 46.03 / \text{JP ¥ } 110 = \text{Rs. } 0.418454$$

$$\text{Hence, Rs./JP ¥ 6 month forward rate} = 0.415913 / 0.418454$$

Accordingly, if the company had purchased JP ¥ forward against rupees it would have paid = Rs.418454.50

**B. Cash flow of forward purchasing US\$ in spot market and converting into JP ¥**

Amount of US dollars to be paid on due date by purchase of JP¥ 1 million in forward market

$$= \text{JP¥ } 1,000,000 / \text{JP¥ } 110 = \text{US\$ } 9090.91$$

$$\text{Cash outflows in rupees against purchase of dollars in on Dec. 31, 2009} = \text{US\$ } 9090.91 \times \text{Rs. } 46.26 = \text{Rs. } 420,545.50$$

**C. Loss or gain due to strategy adopted by Mr. X.**

$$(A) - (B) = \text{Rs. } 4,18,454.50 - 4,20,545.50 = \text{Rs. } 2091.00$$

Thus, the company paid more Rs. 2,091.00 in the strategy adopted by Mr. X.

**Question 44:**

**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	= Rs. 75.50
Dollar – SKW	= SKW 1190.00
Rupee – SKW cross rate	= Rs. 75.50 / 1190.00
	= Rs. 0.0634

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

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

Amount payable to Importer as per above rate (1190 Million x Rs. 0.0638) Rs. 759.2200 Lakh  
 Thus, Exchange Rate Loss = (Rs. 759.2200 Lakh - Rs. 754.4600 Lakh) Rs. 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)	Rs. 759.2200 Lakh
Less: Profit form NDF Market USD 4219 x 75.50	Rs. 3.1853 Lakh
	Rs. 756.0347 Lakh

Thus, Exchange Rate Loss = (Rs. 756.0347 Lakh - Rs. 754.4600 Lakh) Rs. 1.5747 Lakh

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

**Question 45:**

i. Under the given circumstances, the USD is expected to quote at a premium in India as the interest rate is higher in India.

**ii. Calculation of the forward rate:**

$$\frac{1 + R_h}{1 + R_f} = \frac{F_1}{E_0}$$

Where: Rh is home currency interest rate, Rf is foreign currency interest rate, F1 is end of the period forward rate, and Eo is the spot rate.

Therefore  $\frac{1 + (0.10/2)}{1 + (0.04/2)} = \frac{F_1}{55.50}$

$$\frac{1 + 0.05}{1 + 0.02} = \frac{F_1}{55.50}$$

or  $\frac{1.05}{1.02} \times 55.50 = F_1$

or  $\frac{58.275}{1.02} = F_1$

or  $F_1 = ₹57.13$

iii. Rate of premium:

$$\frac{57.13 - 55.50}{55.50} \times \frac{12}{6} \times 100 = 5.87\%$$

**Question 50:**

**WRONG ANSWER BY ICAI**

The correct forward price is given by:

$$F(0,T) = S_0 \frac{(1+r_{US\$})^T}{(1+r_{Euro})^T} = 1.665(1.015)/(1.02) = 1.6568$$

Because the forward price is higher than the model price, we will sell the forward contract. If transaction costs could be covered, we would buy the € in the spot market at \$1.665 and sell it in the forward market at \$1.664. We would earn interest at the foreign interest rate of 2 percent. By selling it forward, we could then convert back to dollars at the rate of \$1.664. In other words, \$1.665 would be used to buy 1 unit of the €, which would grow to 1.02 units (the 2 percent € rate). Then 1.02 € would be converted back to 1.02(\$1.664) = \$1.69728. This would be a return of \$1.69728/\$1.665 – 1 = 0.019387 or 1.94 percent, which is better than the US rate.

**CORRECT ANSWER BY SANJAY SARAF SIR**

As per IRP  $F/1.665 = (1.015/1.02)^{0.5}$

$F = 1.6609$  USD/EURO

Arbitrage can be done through the following route

Let us assume amount of borrowing to be \$1,00,000

**Step 1 :** Borrow 1,00,000\$ at 1.5% for 6 months

Amount of outflow after 6 months =  $1,00,000(1.015)^{0.5} = 1,00,747.21\$$

**Step 2:** Convert 1,00,000 \$ spot@ 1.6665 getting  $1,00,000/1.665 = \text{EURO } 60,060.06$

**Step 3:** Invest euro @ 2% for 6 months

Amount receivable after 6 months =  $60,060.06(1.02)^{0.5} = 60,657.68$  euros

**Step 4:** Sell EURO 6m forward @1.664

So inflow after 6 months =  $60,657.68 \times 1.664 = \$1,00,934.39$

Arbitrage profit =  $\$1,00,934.39 - \$1,00,747.21 = \$ 187.18$

**Question 54:**

**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	GBP 201.3335 Million
Gain = 201.3335 – 200	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 62:**

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

	<b>Amount</b>
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.,	
$₹ 1,12,5000 \times [1.0475]^2$	₹ 12,34,413

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

	<b>Amount</b>
Cost of letter of credit at 1 % on US\$ 15,000 at US\$ 1 = ₹ 75	₹ 11,250
Add: Interest for 180 days (₹ 11,250 × 19% × 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 × 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 65:**

**i. Money market hedge**

For money market hedge Indian Firm shall borrow in US\$ and then translate them to Indian Rupee and shall make deposit in Indian Rupee.

For receipt of US\$ 50,000 in 3 months (@ 1.5% interest) amount required to be borrowed now (US\$ 50,000 ÷ 1.015) = US\$ 49,261.08

With spot rate of 72.65 the Rupee deposit will be = ₹ 35,78,817.46

Deposit amount will increase over 3 months (@2.25% interest) will be = ₹ 36,59,340.85

Forward market hedge

Sell 3 months' forward contract accordingly, amount receivable after 3 months will be (US\$ 50,000 x 72.95)

= ₹ 36,47,500

In this case, more will be received under the money market hedge hence it is better option.

**ii. Exchange Exposure to H Ltd.**

Expected Realisation as per Forward Rate (US\$ 50,000 X 72.95)	₹ 36,47,500
Actual Realisation as per actual Spot Rate (US\$ 50,000 X 73.00)	₹ 36,50,000
Gain	₹ 2,500

**Question 66:**

**£ Exposure**

Since Columbus has a £ receipt (£ 138,000) and payment of (£ 480,000) maturing at the same time i.e. 3 months, it can match them against each other leaving a net liability of £ 342,000 to be hedged.

**i. Forward market hedge**

Buy 3 months' forward contract accordingly, amount payable after 3 months will be £ 342,000 / 0.9520 = US\$ 359,244

**ii. Money market hedge**

To pay £ after 3 months' Columbus shall requires to borrow in US\$ and translate to £ and then deposit in £.

For payment of £ 342,000 in 3 months (@2.5% interest) amount required to be deposited now ( $£ 342,000 \div 1.025$ ) = £ 333,658

With spot rate of 0.9830 the US\$ loan needed will be = US\$ 339,429

Loan repayable after 3 months (@3.25% interest) will be = US\$ 350,460

In this case the money market hedge is a cheaper option.

**€ Receipt**

Amount to be hedged = € 590,000

**i. Forward market hedge**

Sell 4 months' forward contract accordingly, amount receivable after 4 months will be ( $€ 590,000 \times 1.9510$ ) = US\$ 1,151,090

**ii. Money market hedge**

For money market hedge Columbus shall borrow in

€ and then translate to US\$ and deposit in US\$

For receipt of € 590,000 in 4 months (@ 5.33% interest) amount required to be borrowed now ( $€ 590,000 \div 1.0533$ ) = € 560,144

With spot rate of 1.8890 the US\$ deposit will be = US\$ 1,058,113

Deposit amount will increase over 4 months

(@3.83% interest) will be = US\$ 1,098,639

In this case, more will be received in US\$ under the forward hedge.

**Question 67:**

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\$	$[US\$ 8 \text{ Million } (1 - 0.01)]$	US\$ 7.92 Million
Amount required in ₹	$[₹ 66.98 \times US\$ 7.92 \text{ Million}]$	₹ 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 Outflow		₹ 54.5341 Crore

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

Question 70:

BY SANJAY SARAF SIR

**Alternative 1: Bill Discounting**

Value of Export in INR	47,50,000
Less: Interest i.e. Discount @ 9% p.a. for 60 days	71,250
Net amount to be received	46,78,750
Add: Cost of fund saved @ 15% p.a. for 60 days	1,16,969
	47,95,719

**Alternative 2: Forward Cover**

Inflow after 60 days  $1,00,000 \times 48.1 = 48,10,000$

Alternative 1 is better. Firm should not accept banks offer.

**BY ICAI**

	Rs.
Value of the export in INR	47,50,000
Interest @ 1.5% for 60 days	71,250
Net Amount to be received	46,78,750
Cost of the fund @ 15% p.a. for 2 months	1,42,362
Net Saving ( cost of fund – interest )	71,112
Difference to be paid after 60 days at forward rate (48.10 – 47.50) x 1,00,000	60,000

Hence the exporter should agree to the offer of his banker.

**Question 72:**

The differential inflation is 4%. Hence the rate will keep changing adversely by 4% every year. Assuming that the change is reflected at the end of each year, the rates will be:

End of Year	₹	₹ /USD
1	₹ 46.00 x 1.04	47.84
2	₹ 47.84 x 1.04	49.75
3	₹ 49.75 x 1.04	51.74
4	₹ 51.74 x 1.04	53.81

**Alternative Answer**

End of Year	₹	₹ /USD
1	₹ 46.00 × $\frac{(1+0.08)}{(1+0.04)}$	47.77
2	₹ 47.77 × $\frac{(1+0.08)}{(1+0.04)}$	49.61
3	₹ 49.61 × $\frac{(1+0.08)}{(1+0.04)}$	51.52
4	₹ 51.52 × $\frac{(1+0.08)}{(1+0.04)}$	53.50

**Question 77:**

**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	490.00

Working Capital	60.00
Release of existing Working Capital	(25.00)
	525.00

ii.

**1. Incremental Cash Inflow after Tax (CFAT) generated by investment in India for 5 years**

	\$ Million
Sales Revenue (5 Million x \$90)	450.00
Less: Costs	
Variable Cost (5 Million x \$30)	150.00
Fixed Cost	30.00
Depreciation (\$490Million/5)	98.00
EBIT	172.00
Taxes @ 35%	60.20
EAT	111.80
Add: Depreciation	98.00
CFAT (1-5 years)	209.80

2. Cash flow at the end of the 5 years (Release of Working Capital) \$35.00 Million

**3. Cash generation by exports (Opportunity Cost)**

	\$ Million
Sales Revenue (1.5 Million x \$90)	135.00
Less: Variable Cost (1.5 Million x \$50)	75.00
Contribution before tax	60.00
Tax @ 35%	21.00
CFAT (1-5 years)	39.00

**4. Additional CFAT:**

	\$ Million
Through setting up subsidiary in India	209.80
Through Exports in India	39.00
CFAT (1-5 years)	170.80

**iii. Determination of NPV**

Year	CFAT (\$ Million)	PVF@12%	PV (\$ Million)
1-5	170.80	3.6048	615.6998
5	35	0.5674	19.8590
			635.5588
Less: Initial Outflow			525.0000
NPV			110.5588

**Advice: Since NPV is positive the proposal should be accepted.**

**Question 79:**

**i. Viability of the Project**

$$(1 + 0.12) (1 + \text{Risk Premium}) = (1 + 0.14)$$

$$\text{Or, } 1 + \text{Risk Premium} = 1.14/1.12 = 1.0179$$

$$\text{Therefore, Risk adjusted dollar rate is } = 1.0179 \times 1.08 = 1.099 - 1 = 0.099$$

**Calculation of NPV**

Year	Cash flow (Million) US\$	PV Factor at 9.9%	P.V.
1	3.00	0.910	2.730
2	3.75	0.828	3.105
3	4.50	0.753	3.389
4	6.00	0.686	4.116
5	7.50	0.624	<u>4.680</u>
			18.02
		Less: Investment	<u>16.50</u>
		NPV	<u>1.52</u>

Therefore, Rupee NPV of the project is = ₹ 72 x US\$ 1.52 Million  
= ₹ 109.44 Million

Project is viable as the NPV is positive.

**ii. If there is a withholding tax of 10%**

Total PV of Cash Inflows	US\$ 18.02 Million
Less: Withholding Tax @ 10%	US\$ 1.802 Million
PV of Cash Inflow after Withholding Tax	US\$ 16.218 Million
Less: Initial Investment	US\$ 16.50 Million
NPV	(US\$ 0.282 Million)

Therefore, Rupee NPV of the project is = ₹ 72 x (US\$ 0.282 Million)  
= - ₹ 20.304 Million

Thus, if there is a withholding tax of 10% then the project will not be viable.

**Question 80:**

**i. Net Present Value (All Equity Financed) – Base NPV**

Particulars	Period	USD Lakhs	PVF @ 12%	PV (USD Lakhs)
Initial Investment	0	(250.00)	1.000	(250.000)
EBIDTA	1 to 20	33.00	7.469	246.477

Tax	1 to 20	(9.90)	7.469	(73.943)
Depreciation	1 to 10	(25.00)		
Tax Saving on Dep	1 to 10	7.50	5.650	42.375
NPV				(35.091)

ii. Present Value of Impact of Financing by Debt

Particulars	Period	USD Lakhs	PVF @ 8%	PV (USD Lakhs)
Loan	0	150.00	1.000	150.000
Interest	1 to 15	(9.00)	8.559	(77.031)
Tax Saving on Interest	1 to 15	2.70	8.559	23.109
Repayment of Principal	15	(150.00)	0.315	(47.250)
NPV				48.828

Adjusted Present Value of the Project  
 = Base NPV + PV of Impact of Financing  
 = - US\$ 35.091 + US \$ 48.828 lakh  
 = US\$ 13.737 lakh

**Advise:** Since APV is positive, TL Ltd. should accept the project.

**Alternatively,** if instead of PV of overall impact of Financing the PV of impact of tax shield on Interest is considered then APV shall be computed as follows:

= Base NPV + PV of Tax Shield on Interest  
 = - US\$ 35.091 + US \$ 23.109 lakh  
 = - US\$ 11.982 lakh

**Advise:** Since APV is negative, TL Ltd. should not accept the project.

**Question 86:**

Net Issue Size = \$ 8.82 million

Gross Issue = 8.82 / 0.98 = \$9.00 million

Issue Price per GDR in ₹ (360 x 2 x 90%)	₹ 648
Issue Price per GDR in \$ (₹ 648 / ₹ 72)	\$ 9.00
Dividend Per GDR (D1) = ₹ 20 x 2 =	₹ 40
Net Proceeds Per GDR = ₹ 648 x 0.98 =	₹ 635.04

1.

**a. Number of GDR to be issued**

\$9.00 million / \$9 = 1.00 million

**b. Cost of GDR**

$$K_e = \frac{40.00}{635.04} + 0.12 = 18.30\%$$

2. If the company receives an offer from US Bank willing to provide an equivalent amount of loan with interest rate of 12%, it should accept the offer.
3. If the offer is accepted there will be net saving of 6.30%.

## HOME WORK QUESTIONS

### Question 20:

If Bank agrees to take early delivery:

#### Working Notes:

#### 1. Swap Difference

(a) Bank Sells at Spot Rate on 30th November 2020	₹ 75.22
(b) Bank Buys at Forward Rate of 31st December 2020 (75.27 + 0.15)	₹ 75.42
Swap loss per US\$ (a – b)	– ₹ 0.20
Swap loss for US\$ 1,00,000 (1,00,000 x -0.20)	₹ 20,000

#### 2. Interest on Outlay Funds

(a) On 30th November Bank sells at	₹ 75.22
(b) It buys from customer at ₹ 75.40 Outlay of Funds per US\$ (b – a)	₹ 0.18
Interest on Outlay fund for US\$ 1,00,000 for 31 days (US\$100000 x 00.18 x 31/365 x 18%)	₹ 275.18

#### 3. Charges for early delivery

Swap loss	₹ 20,000.00
Interest on Outlay fund for US\$ 1,00,000 for 31 days	₹ 275.18
Total charges of early delivery	₹ 20,275.18

#### Net Inflow to Mr. Guru

Amount received on sale (₹ 75.40 x 1,00,000)	₹ 75,40,000
Less: Charges for early delivery payable to bank	₹ 20,275.18
Net Inflow to Mr. Guru	₹ 75,19,724.82

#### 4. If Mr. Guru deploys these funds in US\$, then inflow will be -

Receipt of US\$ on 30th November 2020	US\$ 1,00,000
Add: Interest for 31 Days $\left(1,00,000 \times 3\% \times \frac{31^*}{365}\right)$	US\$ 254.79
US\$ available on 31st December 2020 for sale	US\$ 1,00,254.79

Sale of US\$ 1,00,000 to bank as per agreed rate (₹ 75.40)	₹ 75,40,000.00
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Sale of US\$ 254.79 @ ₹ 75.32 i.e. Forward Rate	₹ 19,190.78
Amount of Inflows	₹ 75,59,190.78

**Advice:** Since Cash Inflow will be higher in deployment of funds option the same should be chosen.

## INTERNATIONAL WORKING CAPITAL MANAGEMENT

### Question 82:

	India	Malaysia	US
India	-	Rs. 1,44,38,100	(US\$ 1,06,007)
Malaysia	(Rs. 1,44,38,100)	-	MYR 1,443,800 (US\$ 80,000)
US	US\$ 1,06,007	(MYR 14,43,800) US\$ 80,000	

Table showing conversion of above position into pound sterling

	India £	Malaysia £	US £	Total £
India	-	2,12,013	(74,917)	1,37,096
Malaysia	(2,12,013)	-	1,41,341 (56,537)	(1,27,209)
US	74,917	(1,41,341) 56,537	-	(9,887)
	(1,37,096)	1,27,209	9,887	-

**Decision:** Central treasury department will instruct the Malaysia subsidiary to pay the Indian subsidiary £1,27,209 and the US subsidiary to pay the Indian subsidiary £9,887.

### Question 83:

Cash Balances: ('000)

Acting independently

	Capital	Interest	₹ in 30 days
India	-5,00,000	-2,666.67	-5,02,667
U.S.	12,500	15.63	5,76,757
U.K.	6,000	18.50	4,01,233
			<b>4,75,323</b>

Cash Balances:-

Immediate Cash pooling

	₹
India	- 5,00,000

U.S.	$\frac{12,500}{0.0215}$	5,81,395
U.K.	$\frac{6,000}{0.0149}$	4,02,685
		4,84,080

Immediate cash pooling is preferable as it maximizes interest earnings

**Note:** If the company decides to invest pooled amount of ₹4,84,080/- @ 6.2% p.a. for 30 days an interest of ₹2,501/- will accrue.

**Question 85:**

\$2,000,000 per month = \$24,000,000 per year.

Time saved = 10-2 = 8 days funds are freed for other uses.

Investing \$24,000,000 at 12% for 8 days: Yield =  $24,000,000 (0.12) (8/360) = \$64,000$

% yield =  $64,000/24,000,000 = 0.00267$  or 0.267%

Since the firm saves less than 0.3% and the proposed charges is 0.5%, the services would not produce commensurate savings. However, the new transfer time would shorten the exposure of the funds to various risks by an average of 8 days. The firm must decide whether or not this reduction in risk is worth the difference between the proposed fee and the savings due to the shorter transfer time,  $0.5\% - 0.267\% = 0.233\%$ .