= ₹ 8,50,00,000

Invest ₹ 8,50,00,000 in sensex

After 1 year Investment value $= \frac{₹\ 8,50,00,000}{3,256} \times 3,765$

$= ₹\ 9,82,87,776$

Buy $ at SR $= \frac{₹\ 9,82,87,776}{43.90}$

$= \$\ 22,38,901$

Nominal rate of return to US investor

$= \frac{\$\ 22,38,901 - \$\ 20,00,000}{\$\ 20,00,000} \times 100$

= ₹ 11.94% P.a.

(ii) Calculation of real appreciation or deprecation in ₹

Real rate of $ (Without Inflation)

Bid Rate $= \frac{₹\ 43.85}{s} = \frac{1.09}{1.05}$

S $= \frac{43.85 \times 1.05}{1.09} = 42.24$

$= \frac{S - F}{F} \times 100$

$= \frac{42.50 - 42.24}{42.24} \times 100 = 0.61\%$

Ask Rate $= \frac{₹\ 43.90}{S} = \frac{1.09}{1.05}$

S $= \frac{₹\ 43.90 \times 1.05}{1.09} = 42.29$

$= \frac{42.60 - 42.29}{42.29} \times 100 = 0.73\%$ Premium in ₹

(iii) Calculation of Estimate SR as per PPP

$$\text{Bid Rate} = \frac{E(S)}{42.50} = \frac{1.09}{1.05} - ₹\ 44.12$$

$$\text{Ask Rate} = \frac{E(S)}{42.60} = \frac{1.09}{1.05} - ₹\ 44.22$$

(iv) Real rate of return on sensex for Indian Investor

$$\text{Sensex Return} = \frac{3{,}765 - 3{,}256}{3{,}256} \times 100$$

$$= 15.63\%$$

$$\text{Real Return} = \left[\frac{1.1563}{1.09} - 1\right] \times 100$$

$$= 6.08\%$$

Question – 31

Shoe Company sells to a wholesaler in Germany. The purchase price of a shipment is 50,000 deutsche marks with term of 90 days. Upon payment, Shoe Company will convert the DM to dollars. The present spot rate for DM per dollar is 1.71, whereas the 90-day forward rate is 1.70.
You are required to calculate and explain:

(i) If Shoe Company were to hedge its foreign-exchange risk, what would it do? What transactions are necessary?

(ii) Is the deutsche mark at a forward premium or at a forward discount?

(iii) What is the implied differential in interest rates between the two countries? (Use interest-rate parity assumption).

Solution:

(i) It Shoe company want to hedge the risk then it should enter into forward contract & Sell its DK receivable at forward rate i.e. DM/$ 1.70

$$\text{Amount Receivable in \$} = \frac{\text{DM } 50{,}000}{1.70}$$

$$= \$\ 29{,}411.76$$

(ii) DM is at premium because DM is appreciating in forward market

$$\text{Premium in DM} = \frac{S-F}{F} \times 100$$

$$= \frac{1.71-1.70}{1.70} \times 100 \times \frac{365}{90}$$

$$= 2.386\% \text{ P.a.}$$

(iii) Since IRP hold good, hence premium in DM in equal to interest rate difference. Therefore Interest Rate Difference in 2.386% p.a. & rate of interest in DM is less than rate of interest in $ by 2.386% p.a.

Question – 32

XYZ has taken a six-month loan from its foreign collaborator for USD 2 millions. 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 ?

(Exam Jan – 2021)

Solution:

(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

(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.

(6) FOREIGN CURRENCY EXPOSURES

(1) LEADING & LAGGINGS

Question – 33

An Indian importer has to settle an import bill for $ 1,30,000. The exporter has given the Indian exporter two options:

(i) Pay immediately without any interest charges.

(ii) Pay after three months with interest at 5 percent per annum.

The importer's bank charges 15 percent per annum on overdrafts. The exchange rates in the market are as follows:

Spot rate (₹ /$) : 48.35 /48.36

3-Months forward rate (₹/$) : 48.81 /48.83

The importer seeks your advice. Give your advice.

(SM TYK – 21 & Exam November – 2011)

Solution:

Calculation of Cash Outflows (₹)

(i) Pay Immediately

Rupees required to buy $ 1,30,000 at SR

($ 1,30,000 × 48.36) = ₹ 62,86,800

Borrow ₹ 62,86,800 @ 15% p.a. for 3 Month

Cash Outflows = 62,86,800 (1.0375)

= ₹ 65,22,555

(ii) Pay after 3 months

$ Payable with interest = $ 1,30,000 (1.0375)

= $ 1,31,625

Buy $ 1,31,625 at 3 months FR

Cash outflow = $1,31,625 × 48.83 = ₹ 64,27,249

Pay after 3 months is better due to the lower cash outflows.

Question – 34

Z Ltd. importing goods worth USD 2 million, requires 90 days to make the payment. The overseas supplier has offered a 60 days interest free credit period and for additional credit for 30 days an interest of 8% per annum.

The bankers of Z Ltd offer a 30 days loan at 10% per annum and their quote for foreign exchange is as follows:

	₹
Spot 1 USD	56.50
60 days forward for 1 USD	57.10
90 days forward for 1 USD	57.50

You are required to evaluate the following options:

(i) Pay the supplier in 60 days, or

(ii) Avail the supplier's offer of 90 days credit.

(SM TYK – 12)

Solution:

Calculation of Cash Outflows (₹)

(i) Pay the supplier in 60 days

Rupees required to buy $ 20,00,000 at 60 days FR

($ 20,00,000 × 57.10) = ₹ 11,42,00,000

Borrow ₹ 11,42,00,000 @ 10% P.a. for 30 day cash outflows

(₹11,42,00,000 × 1.00833) = 11,51,51,667

(ii) Pay the supplier in 90 days

$ Payable with interest = $ 20,00,000 × 1.00667

= $ 20,13,333

Buy $ 20,13,333 at 90 days FR

Cash outflow = $ 20,13,333 × 57.50

= ₹ 11,57,66,667

Pay the supplier in 60 days is better due to the lower cash outflows.

Question – 35

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

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

(b) 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 upto four decimals and cash flows in Crore.

(RTP November – 2021)

Solution:

Option 1: Pay Immediately

Particulars	Amount
$ Payable After Discount ($ 8 Million × 0.99)	7.92 Million
Rupees required to buy (7.92 Million × 66.98)	₹ 530.486 Million
(-) Cash Available	₹ 53.0482 Cr.
Fund Required	₹ 0.25 Cr.
Borrow ₹ 52.7982 Cr. @ 9% p.a. for 90 days	₹ 52.7982 Cr.
Cash Outflow ₹ $52.7982 \times \left[1+\left(0.09 \times \frac{90}{360}\right)\right]$	53.9862 Cr.

Option 2: Pay in 60 days

Particulars	Amount
$ Payable	$ 8 Million
₹ Required to buy $ 8 Million at 60 days FR	
$ 8 Millions × 67.16	₹ 53.7280

(-) Available Amount 0.25 × $\left[1 + 0.04 \times \frac{60}{360}\right]$	₹ 0.2517 Cr.
Fund required	₹ 53.4763
Borrow ₹ 53.4763 Cr. @ 9% p.a. for 30 days Cash Outflow ₹ 53.4763 Cr. × $\left[1 + \left(0.09 \times \frac{30}{360}\right)\right]$	₹ 53.8774 Cr.

Option 3: Pay in 90 Days

Particulars	Amount
$ Payable with interest $ 8 × $\left[1 + \left(0.08 \times \frac{30}{360}\right)\right]$	8.0533 Million
Rupees required to buy $ 8.0533 at 90 days FR $ 8.0533 × 68.03	₹ 54.7866 Cr.
(-) Available Cash 0.25 Cr × $\left[1 + 0.04 \times \frac{30}{360}\right]$	0.2525 Cr
Cash Outflow	54.5341

Pay the supplier on 60th days is the best option due to lower cash outflows.

(2) INVOICING

Question – 36

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 upto three decimal places).

(Exam July – 2021)

Solution:

(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 × $ 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 × € 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 × £ 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 × $ 74404.762 = ₹ 51,74,851
€	₹ 50,00,000/ ₹ 63.20 = € 79,113.924	₹ 63.20 (1 + 0.06/2) = ₹ 65.10	₹ 65.10 × € 79,113.924 = ₹ 51,50,316
£	₹ 50,00,000/ ₹ 88.75 = £ 56,338.028	₹ 88.75 (1 + 0.05/2) = ₹ 90.97	₹ 90.97 × £ 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 £.

(3) MONEY MARKET COVER

Question – 37

An exporter is a UK based company. Invoice amount is $3,50,000. Credit period is three months. Exchange rates in London are :

Spot Rate ($/£) 1.5865 – 1.5905

3-month Forward Rate ($/£) 1.6100 – 1.6140

Rates of interest in Money Market:

	Deposit	Loan
$	7%	9%
£	5%	8%

Compute and show how a money market hedge can be put in place. Compare and contrast the outcome with a forward contract.

(SM TYK – 29)

Solution:

Option 1: Forward Cover

Sell $ 3,50,000 at 3 months FR

$$\text{Cash Inflows} = \frac{\$\ 3,50,000}{1.6140} = £\ 2,16,852.54$$

Option 2: Money Market Cover

- Amount to be borrowed from US money market @ 9% p.a. for 3 months

$$\frac{\$\ 3,50,000}{1 + (0.09 \times 3/12)} = \$\ 3,42,298.29$$

- Sell $ 3,42,298.29 at SR $= \frac{\$\ 3,42,298.29}{1.5905} = £\ 2,15,214.27$

- Invest £ 2,15,214.27 in UK Money Market @ 5% for 3 months

  Cash Inflows = £ 2,15,214.27 × [1 + (0.05 × 3/12)]

  = £ 2,17,904.44.