

**Solution:**

**Calculation of Forward Rates**

**Forward Rate**

$$1 = 74 \times \frac{1.08}{1.09} = 73.321$$

$$2 = 73.321 \times \frac{1.08}{1.09} = 72.65$$

$$3 = 72.65 \times \frac{1.08}{1.09} = 71.98$$

	0	1	2	3
CF (\$)	- 25	5	7	8
Exchange rate (NC/₹)	74	73.321	72.65	71.98
CF (₹)	- 1,850	366.6	508.55	575.84
CF India	-	60	80	90
Cost of leather in India	- 400	- 450	-500	-600
CF	- 2250	- 23.40	88.55	65.84
X PVF (9%)	1.000	0.917	0.842	0.772
	-2250	-21.46	74.56	50.83

NPV = - 2146.07 Reject

**Question – 07**

A multinational company is planning to set up a subsidiary company in India (where hitherto it was exporting) in view of growing demand for its product and competition from other MNCs. The initial project cost (consisting of Plant and Machinery including installation) is estimated to be US\$ 500 million. The net working capital requirements are estimated at US\$ 50 million. The company follows straight line method of depreciation. Presently, the company is exporting two million units every year at a unit price of US\$ 80, its variable cost per unit being US\$ 40.

The Chief Financial Officer has estimated the following operating cost and other data in respect of proposed project:

- (i) Variable operating cost will be US \$ 20 per unit of production;

- (ii) Additional cash fixed cost will be US \$ 30 million p.a. and project's share of allocated fixed cost will be US \$ 3 million p.a. based on principle of ability to share;
- (iii) Production capacity of the proposed project in India will be 5 million units;
- (iv) Expected useful life of the proposed plant is five years with no salvage value;
- (v) Existing working capital investment for production & sale of two million units through exports was US \$ 15 million;
- (vi) Export of the product in the coming year will decrease to 1.5 million units in case the company does not open subsidiary company in India, in view of the presence of competing MNCs that are in the process of setting up their subsidiaries in India;
- (vii) Applicable Corporate Income Tax rate is 35%, and
- (viii) Required rate of return for such project is 12%.

Assuming that there will be no variation in the exchange rate of two currencies and all profits will be repatriated, as there will be no withholding tax, estimate Net Present Value (NPV) of the proposed project in India.

Present Value Interest Factors (PVIF) @ 12% for five years are as below:

Year	1	2	3	4	5
PVIF	0.8929	0.7972	0.7118	0.6355	0.5674

**(SM TYK – 04 & Exam May – 2014)**

**Solution:**

**W.N. 1: CFAT (Millions)**

Sales [5 million × \$ 80]	\$ 400	
(-) VC [5 million × \$ 20]	\$ 100	
(-) additional FC	\$ 30	
CFBT	\$ 270	.....(i)

(-) Dep $\left(\frac{\$ 500}{5}\right)$	\$ 100	
PBT	\$ 170	
Tax @ 33%	\$ 59.5	.....(ii)
CFAT (i – ii)	\$ 210.5	

**CFAT (Export)**

Sales	\$ 120	
[1.5 × \$ 80]		
(-) VC (1.5 × \$ 40)	\$ 60	
CFBT	\$ 60	
Tax @ 35%	\$ 21	
CFAT	\$ 39	

Incremental CFAT (\$ 210.50 – \$ 39) = \$ 171.50

**Calculation of NPV**

**(Millions)**

	Year	PVF	Amount	P.V.
<b>(A) Incremental cash outflow</b>				
Cost of plant	0	1.000	\$ 500	\$ 500
Working capital (\$ 50 - \$15)	0	1.000	\$ 35	\$ 35
<b>Total</b>				<b>\$ 535</b>
<b>(B) Incremental cash inflow</b>				
Incremental CFAT (WN 1)	1-5	3.6048	\$ 171.50	\$ 618.22
WC recovered (Incremental)	5	0.5674	\$ 35	\$ 19.859
<b>Total</b>				<b>\$ 638.079</b>
NPV (B-A)				\$ 103.079

Since NPV is positive hence project should be accepted.

**Question – 08**

A US company wants to setup a manufacturing plant in India which requires an initial outlay of ₹ 8 Million. It is expected to have a useful life of 5 years with

a salvage of ₹ 2 Million. The company follows straight line method of depreciation. To support additional level of activity, investment would require one time additional working capital of ₹ 1 Million.

Since the cost of production lower in India, the variable cost of production would be ₹ 30 per unit. Additional fixed cost per annum is estimated at ₹ 0.5 Million. The company is projecting its annual sales to 80000 units at the price of ₹ 100 per unit. Applicable tax rate to the company is 34% and its cost of capital is 8%.

Inflation rates in US and India are expected to be 8% and 9% respectively. The current exchange rate is ₹ 72 per US Dollar.

Assuming that all profit will be repatriated every year and there will be no withholding taxes, estimate the net present value of the proposed project in India and evaluate its feasibility.

PVF @ 8% for the five years are as under:

Rate	1 Year	2 Year	3 Year	4 Year	5 Year
8%	0.926	0.857	0.794	0.735	0.681

**(Exam December – 2021)**

**Solution:**

**Forward Rate**

$$1 \text{ year} = ₹ 72 \times \frac{1.09}{1.08} = 72.67$$

$$2 \text{ year} = 72.67 \times \frac{1.09}{1.08} = 73.34$$

$$3 \text{ year} = 73.34 \times \frac{1.09}{1.08} = 74.02$$

$$4 \text{ year} = 74.02 \times \frac{1.09}{1.08} = 74.71$$

$$5 \text{ year} = 74.71 \times \frac{1.09}{1.08} = 75.40$$

**W.N. 2: CFAT (₹)**

Sales (80,000 units × 100)	= 80,00,000
VC (80,000 × 30)	= 24,00,000
FC	= 5,00,000
CFBT (i)	= 51,00,000
(-) Dep $\left(\frac{80,00,000 - 20,00,000}{5}\right)$	= 12,00,000
PBT	= 39,00,000
Tax @ 34% (ii)	= 13,26,000
CFAT (i – ii)	= 37,74,000

**NPV**

	0	1	2	3	4	5
Cost of plant	- 80,00,000	-	-	-	-	-
Working capital	- 10,00,000	-	-	-	-	+ 10,00,000
Salvage	-	-	-	-	-	+ 20,00,000
CFAT	-	+ 37,74,000	37,74,000	37,74,000	37,74,000	37,74,000
CF (₹)	- 90,00,000	37,74,000	37,74,000	37,74,000	37,74,000	67,74,000
Exchange rate	72	72.67	73.34	74.02	74.71	75.40
CF (\$)	- 1,25,000	51,933.40	51,458.96	50,986.22	50,515.32	89,840.85
(×) PVF	1.000	0.926	0.857	0.794	0.735	0.681

NPV = \$ 1,05,984.09 Accept.

**Question – 09**

A USA based company is planning to set up a software development unit in India. Software developed at the Indian unit will be bought back by the US parent at a transfer price of US \$10 millions. The unit will remain in existence in India for one year; the software is expected to get developed within this time frame.

The US based company will be subject to corporate tax of 30 per cent and a withholding tax of 10 per cent in India and will not be eligible for tax credit in the US. The software developed will be sold in the US market for US \$ 12.0 millions. Other estimates are as follows:

Rent for fully furnished unit with necessary hardware in India ₹ 15,00,000

Man power cost (80 software professional will be working for 10 hours each day) ₹ 400 per man hour

Administrative and other costs ₹ 12,00,000

Advise the US Company on the financial viability of the project. The rupee-dollar rate is ₹48/\$.

Note: Assume 365 days a year.

**(SM TYK – 02, RTP Nov – 2021 & Exam May – 2017)**

**Solution:**

**Cost of Software in India**

Rent	₹ 15,00,000
Manpower (80 × 10 × 400 × 365)	₹ 11,68,00,000
Administration	₹ 12,00,000
Cost	<u>₹ 11,95,00,000</u>

**Tax Amount**

Sales (\$ 1,00,00,000 × 48)	₹ 48,00,00,000
(-) Cost	₹ 11,95,00,000
Profit	<u>₹ 36,05,00,000</u>
Tax @ 30%	₹ 10,81,50,000

Total Cost of Software

$$= ₹ 11,95,00,000 + 10,81,50,000$$

$$= ₹ 22,76,50,000$$

$$\text{In \$} = \frac{₹ 22,76,50,000}{48}$$

= \$ 4.743 Millions

Software will be sold at \$ 12 Millions & Cost is 4.743 Millions hence Project Should be Accepted.

**Question – 10**

VK Ltd. is an Indian company which is planning to set up a manufacturing plant through its subsidiary in the small country Farland, (where hitherto it was exporting) in view of growing demand for its product and competition from other MNCs. The currency of Farland is the Farroh (Fr.).

An initial investment of Fr. 80 million in plant and machinery would be required. In addition to that the initial investment in working capital of Fr. 6 million would be also required which shall be financed through a loan from a local bank of Farland, at interest rate of 10% p.a. The working capital shall also be subject to inflation. At the end of 5 years, the subsidiary would be taken over by the Govt. of Farland for a price of Fr. 2 million. The part of the proceeds would be used to pay off the bank loan.

It is expected that subsidiary shall produce Net Cash Flows from Operations of Fr. 30 million per year at current price level over the five-year period, before allowing for Farland inflation of 8% per year. Depreciation on Plant and Machinery shall be charged at 20% per year on straight line basis. As a result of setting up the subsidiary, VK Ltd. expects to lose after-tax export income from Farland of INR 8,00,000 per year in current price terms, before allowing for India inflation of 3%. Profits in Farland are taxed at a rate of 20% after allowing deduction for interest and depreciation. All after-tax cash profits are remitted to the India at the end of each year. Indian tax @ 30% is charged on profit earned, but due to tax treaty between Farland and the India the tax paid in Farland is allowed to be set off against any India Tax liability. Taxation is paid in the year in which the liability arises. VK Ltd. requires foreign investments to be discounted at 12%. The current exchange rate is Fr.2.5/INR and the Farroh is expected to depreciate against INR by 5% per year.

Advise should VK Ltd. undertake the investment in Farland or not.

Note:-

1. Present Figures in thousands multiple.
2. Round off all calculations.
3. PVF @12%

## INTERNATIONAL FINANCIAL MANAGEMENT

Year	1	2	3	4	5
PVF	0.893	0.797	0.712	0.636	0.567

(MTP October – 2023)

### Solution:

#### (i) Forward Rate

Fr/₹	= 2.5				
1 year	= 2.5 × 1.05	= 2.625			
2 year	= 2.625 × 1.05	= 2.7563			
3 year	= 2.7563 × 1.05	= 2.8941			
4 year	= 2.8941 × 1.05	= 3.0388			
5 year	= 3.0388 × 1.05	= 3.1907			

#### CFAT (Fr '000')

	1	2	3	4	5
EBITDA (30,000)	32,400	34,992	37,791	40,815	44,080
(–) Depreciation	16,000	16,000	16,000	16,000	16,000
(–) Interest (6,000 × 10%)	600	600	600	600	600
PBT	15,800	18,392	21,191	24,215	27,480
Tax @ 20%	3,160	3,678	4,238	4,843	5,496
PAT	12,640	14,714	16,953	19,372	21,984
(+) Depreciation	16,000	16,000	16,000	16,000	16,000
CFAT (Fr)	28,640	30,714	32,953	35,372	37,984

#### WC Requirement

	0	1	2	3	4	5
WC	6,000	6,480	6,998	7,558	8,163	---
Additional WC (Fr)	---	480	518	560	605	---

(“000”)

	0	1	2	3	4	5
Cost (Fr)	(80,000)	---	---	---	---	---
CFAT	---	28,640	30,714	32,953	35,372	37,984
Additional WC	---	(480)	(518)	(560)	(605)	---

Salvage	---	---	---	---	---	2,000
Recovered WC	---	---	---	---	---	2,163
CF (Fr)	-80,000	28,160	30,196	32,393	34,767	42,147
Exchange Rate (Fr/₹)	2.5	2.625	2.7563	2.8941	3.0388	3.1907
CF (₹)	-32,000	10,728	10,955	11,193	11,441	13,209
(-) Tax	---	(602)	(667)	(732)	(797)	(861)
Loss of Export	---	(824)	(849)	(874)	(900)	(927)
CFAT	-32,000	9,302	9,439	9,587	9,744	11,421
PVF	1.000	0.893	0.797	0.712	0.636	0.567

NPV = 3,328

**Working Tax in India**

	1	2	3	4	5
PBT (Fr)	15,800	18,392	21,191	24,215	27,480
Exchange Rate Fr/₹	2.625	2.7563	2.8941	3.0388	3.1907
PBT (₹)	6,019	6,673	7,322	7,969	8,613
Tax @ 10%	602	667	732	797	861

**ICAI SOLUTION:**

**Working Notes:**

**(1) Calculation of the project cash flows for VK Ltd.'s subsidiary in Farland**

**Fr.'000**

Year	0	1	2	3	4	5
Cash flow from operating		32,400	34,992	37,791	40,815	44,080
Depreciation		16,000	16,000	16,000	16,000	16,000
Interest		600	600	600	600	600
Profit after tax		15,800	18,392	21,191	24,215	27,480
Farland tax		3,160	3,678	4,238	4,843	5,496
Profit after tax		12,640	14,714	16,953	19,372	21,984
Add back depreciation		16,000	16,000	16,000	16,000	16,000
Initial investment	-80,000	28,640	30,714	32,953	35,372	37,984
Change in W.C.		-480	-518	-560	-605	-653
Loan capital						-6000
Sales on Subsidiary						2000
	-80000	28160	30196	32393	34767	33331

**(2) Expected Exchange Rates**

Year	Rate
0	2.50
1	$2.50 \times 1.05 = 2.63$
2	$2.50 \times (1.05)^2 = 2.76$
3	$2.50 \times (1.05)^3 = 2.89$
4	$2.50 \times (1.05)^4 = 3.04$
5	$2.50 \times (1.05)^5 = 3.19$

**(3) Calculation of Tax paid in India**

Year	1	2	3	4	5
PBT (fr)	15,800	18,392	21,191	24,215	27,480
Tax @ 10 %	1,580	1,839	2,119	2,422	2,748
Exchange Rate	2.63	2.76	2.89	3.04	3.19
Tax in India (INR' 000)	601	666	733	797	861

**Calculation Net Present Value (NPV) for VK Ltd.'s subsidiary at parent company level**

Year	0	1	2	3	4	5
Project cash flow (Fr.'000)	-80,000	28,160	30,196	32,393	34,767	33,331
Exchange Rate (Fr./INR)	2.50	2.63	2.76	2.89	3.04	3.19
Cash Invested from India (INR '000)	-32,000	--	--	--	--	--
Cash Received in India (INR '000)	--	10,707	10,941	11,209	11,437	10,449
Tax in India (INR '000)		601	666	733	797	861
	-32,000	10,106	10,275	10,476	10,640	9,588
Lost export after tax (INR '000)		824	849	874	900	927
Parent Cash Flow	-32,000	9,282	9,426	9,602	9,740	8,661
PVF	1	0.893	0.797	0.712	0.636	0.567
	-32,000	8,289	7,513	6,837	6,195	4,911
NPV						1,745

**Decision:** Since NPV of the project is positive it should be accepted.