	3	10,000	0.658	6,580
				(55,799)
Replace in 4 years	1	(10,000)	0.870	(8,700)
	2	(20,000)	0.756	(15,120)
	3	(30,000)	0.658	(19,740)
	4	(28,600)	0.572	(16,359)
	4	(40,000)	0.572	(22,880)
				(82,799)

Advice: The company should replace the old machine immediately because the PV of cost of replacing the old machine with new machine is least.

RESIDUAL

Question – 34

Jumble Consultancy Group has determined relative utilities of cash flows of two forthcoming projects of its client company as follows:

Cash Flow in ₹	-15,000	-10,000	-4,000	0	15,000	10,000	5,000	1,000
Utilities	-100	-60	-3	0	40	30	20	10

The distribution of cash flows of project A and Project B are as follows:

Project A

Cash Flow (₹)	-15,000	-10,000	15,000	10,000	5,000
Probability	0.10	0.20	0.40	0.20	0.10

Project B

Cash Flow (₹)	-10,000	-4,000	15,000	5,000	10,000
Probability	0.10	0.15	0.40	0.25	0.10

Which project should be selected and why ?

(SM TYK – 21)

Solution:

Evaluation of project utilizes of Project A and Project B

Project A			
Cash Flow (in ₹)	**Probability**	**Utility**	**Utility Value**
-15,000	0.10	-100	-10
-10,000	0.20	-60	-12

15,000	0.40	40	16
10,000	0.20	30	6
5,000	0.10	20	2
			2

	Project B		
Cash Flow (in ₹)	**Probability**	**Utility**	**Utility Value**
-10,000	0.10	-60	-6
-4,000	0.15	-3	-0.45
15,000	0.40	40	16
5,000	0.25	20	5
10,000	0.10	30	3
			17.55

Project B should be selected as its expected utility is more.

ADDITIONAL QUESTIONS

Question – 01

PQ Ltd. expects sales of ₹ 100 lakhs in the year 1. The same will increase by ₹ 20 lakhs per year over the next four years. At the end of 5 years the project would be wound up. The Deprecation will be charged at 20% p.a. on straight line method. The expenses excluding the depreciation will be 40% of the sales. There will be no salvage value of the plant. PQ Ltd. proposes to invest in the plant an amount where the Net Present Value will be Zero.

Corporate Tax rate is 30%.

You are required to calculate the investment which can be made in the plant.

(Exam November – 2024) (8 Marks)

Solution:

Working Notes:

(1) Expected Sales

Year	Expected Sales
1	₹ 100 lakhs
2	₹ 120 lakhs
3	₹ 140 lakhs

4	₹ 160 lakhs
5	₹ 180 lakhs

(2) Expected Expenses Excluding Depreciation

Year	Expenses
1	₹ 40 lakhs
2	₹ 48 lakhs
3	₹ 56 lakhs
4	₹ 64 lakhs
5	₹ 72 lakhs

(3) Cash Inflow from the Project

Let P be the cost of the plant then chargeable depreciation for each year shall be 0.20P. Accordingly, annual cash flow from the project shall be computed as follows:

Year	Expected Sales ₹ lakhs	Exp. ₹ lakhs	Dep. (3)	Profit Before Tax	Tax @ 30%	Profit After Tax
1	100	40	0.20P	60 – 0.20P	18 – 0.06P	42 – 0.14P
2	120	48	0.20P	72 – 0.20P	21.6 – 0.06P	50.4 – 0.14P
3	140	56	0.20P	84 – 0.20P	25.2 – 0.06P	58.8 – 0.14P
4	160	64	0.20P	96 – 0.20P	28.8 – 0.06P	67.2 – 0.14P
5	180	72	0.20P	108 – 0.20P	32.4 – 0.06P	75.6 – 0.14P

Year	Profit After Tax	Dep. Added Back	Cash Inflow
1	42 – 0.14P	0.20P	42 + 0.06P
2	50.40 – 0.14P	0.20P	50.40 + 0.06P
3	58.80 – 0.14P	0.20P	58.80 + 0.06P
4	67.20 – 0.14P	0.20P	67.20 + 0.06P
5	75.60 – 0.14P	0.20P	75.60 + 0.06P
Total			294 + 0.30P

Since NPV will be Zero the required comes as follows:

Sum of Cash Inflows – Plant Cost = 0

294 + 0.30P – P = 0

P = 420

Thus, the required investment to be made in plant shall be ₹ 420 lakhs.

Alternative solution if a discount rate of 10% is applied, though students may solve the question using a rate other than 10%.

Working Notes:

(1) Expected Sales

Year	Expected Sales
1	₹ 100 lakhs
2	₹ 120 lakhs
3	₹ 140 lakhs
4	₹ 160 lakhs
5	₹ 180 lakhs

(2) Expected Expenses Excluding Depreciation

Year	Expenses
1	₹ 40 lakhs
2	₹ 48 lakhs
3	₹ 56 lakhs
4	₹ 64 lakhs
5	₹ 72 lakhs

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Let P be the cost of the plant then chargeable depreciation for each year shall be 0.20P. Accordingly, annual cash flow from the project shall be computed as follows:

Year	Expected Sales ₹ lakhs	Exp. ₹ lakhs	Dep. (3)	Profit Before Tax	Tax @ 30%	Profit After Tax
1	100	40	0.20P	60 – 0.20P	18 – 0.06P	42 – 0.14P
2	120	48	0.20P	72 – 0.20P	21.6 – 0.06P	50.4 – 0.14P
3	140	56	0.20P	84 – 0.20P	25.2 – 0.06P	58.8 – 0.14P
4	160	64	0.20P	96 – 0.20P	28.8 – 0.06P	67.2 – 0.14P
5	180	72	0.20P	108 – 0.20P	32.4 – 0.06P	75.6 – 0.14P

Year	Profit After Tax	Dep. Added Back	Cash Inflow	PVF @ 10%	PV of Cash Inflow
1	42 – 0.14P	0.20P	42 + 0.06P	0.909	38.178 + 0.05454P
2	50.40 – 0.14P	0.20P	50.40 + 0.06P	0.826	41.6304 + 0.04956P
3	58.80 – 0.14P	0.20P	58.80 + 0.06P	0.751	44.1588 + 0.04506P
4	67.20 – 0.14P	0.20P	67.20 + 0.06P	0.683	45.8976 + 0.04098P
5	75.60 – 0.14P	0.20P	75.60 + 0.06P	0.621	46.9476 + 0.03726P
Total					216.8124 + 0.2274P

Since NPV will be Zero the required comes as follows:

Sum of Cash Inflows – Plant Cost = 0

216.8124 + 0.2274P – P = 0

P = 280.63

Thus, the required investment to be made in plant shall be ₹ 280.63 lakhs.

Question – 02

BC Ltd. is contemplating on buying a new machine at ₹ 70,00,000 with an additional working capital requirement of ₹ 10,00,000. The machine is expected to have an economic useful life of 5 years, with no salvage value. The company follows the straight line method of depreciation and same is accepted for tax purposes. The machine is expected to generate an incremental increase in the before tax cash operating income of ₹ 25,00,000 (in real terms) per year for a period of 5 years. The relevant tax rate is 35%. Inflation is expected to be 6% per year and the firms cost of capital in real term is 10% per year. Assuming that the working capital requirement will remain unchanged throughout the period, in spite of inflation.

Advise the company whether the machine should be purchased or not.

Show your NPV calculation in real term.

PV Factor at 10% & 6% are as under –

PV Factor	1	2	3	4	5
At 10%	0.909	0.826	0.751	0.683	0.621
At 6%	0.943	0.890	0.840	0.792	0.747

(Exam May – 2025) (6 Marks)

Solution:

Working Notes:

(1) Cash Outflow (Initial Outlay) = ₹ 70,00,000 + ₹ 10,00,000 = ₹ 80,00,000

(2) Cash Flow After Tax and Present Value

Particulars	(₹)
Incremental cash operating income	25,00,000
Less: Taxes (0.35)	8,75,000
CFAT	16,25,000
Cum. PV Factor for 5 years at 10%	3.790
Present Value	61,58,750

(3) PV of tax shield due to Depreciation

Tax saving due to Depreciation per year	14,00,000
Tax rate	35%
Tax saving per year for five years	4,90,000

PV of tax shield due to Depreciation

Years	Tax Saving (Nominal)	Inflation Factor at 6%	Real Tax saving	PVF @ 10%	PV (₹)
1	4,90,000	0.943	4,62,070	0.909	4,20,021.63
2	4,90,000	0.890	4,36,100	0.826	3,60,218.60
3	4,90,000	0.840	4,11,600	0.751	3,09,111.60
4	4,90,000	0.792	3,88,080	0.683	2,65,058.64
5	4,90,000	0.747	3,66,030	0.621	2,27,304.63
Present value of tax shield due to depreciation					15,81,715.10

(4) PV of release of Working Capital

	(₹)
Release of Working Capital at the end of 5th year	10,00,000
Inflation factor at 6% at the end of 5th year	0.747
Cash inflow in real terms	7,47,000
PVF @ 10% at the end of 5th year	0.621
Present value of inflow	4,63,887

Calculation of NPV

Particulars	Present Value (₹)
Initial Outlay	(80,00,000)
Present Value of CFAT	61,58,750
Present Value tax shield on depreciation	15,81,715.10
Present Value release of working	4,63,887
	2,04,352.10

Recommendation: The Company should purchase the machine as the NPV of real cash flow is positive.

Question – 03

SS Company is considering the replacement of its existing machine with a new machine. The Purchase price of the New machine is ₹ 26 Lakhs and its expected Life is 8 years. The company follows straight-line method of depreciation on the original investment (scrap value is not considered for the purpose of depreciation). The other expenses to be incurred for the New Machine are as under:

(a) Installation Charges ₹ 9,000

(b) Fees paid to the consultant for his advice to buy New Machine ₹ 6,000.

(c) Additional Working Capital required ₹ 17,000. (will be released after 8 years)

The written down value of the existing machine is ₹ 76,000, and its Cash Salvage Value is ₹ 12,500. The dismantling of this machine would cost ₹ 4,500. The Annual Earnings (before tax but after depreciation) from the New Machine would amount to ₹ 3,15,000. Income tax rate is 35%. The Company's required Rate of Return is 13%.

You are required to advise on the viability of the proposal.

PVIF (13%, 8) = 0.376 PVIFA (13%, 8) = 4.80

(MTP August – 2025)

Solution:

Working Notes:

1. Computation of Annual Depreciation-

Particulars	₹
Purchase Price	26,00,000
Add: 1. Installation Charges	9,000
2. Fees Paid to Consultant for Advice	6,000
Total Cost of New Machine	26,15,000
Useful Life	8 Years
Annual Depreciation (Total Cost/No. of Years)	3,26,875

2. Computation of Annual Cash Savings-

Particulars	₹
Annual Earnings	3,15,000
Less: Tax @ 35%	1,10,250
Earnings after Tax	2,04,750
Add: Depreciation on New Machine	3,26,875
Annual Cash Saving	5,31,625

3. Tax effect on sale of Old Machine-

Particulars	₹
Proceeds of Sale	12,500
Less: Cost of Removal	4,500
Net Proceeds	8,000
Less: WDV	76,000
Net Loss due to Sale	68,000
Tax savings due to Loss on Sale @ 35%	23,800
Total Cash Inflow due to Sale (₹ 8,000 + ₹ 23,800)	31,800

4. Computation of Net Present Value-

Particulars	Period	Cash Flow (₹)	PVF @ 13%	PV (₹)
(a) Annual Cash inflow after Tax	1-8	5,31,625	4.8	25,51,800
(b) Net Salvage Value of Existing Machine	0	31,800	1.0	31,800
(c) Working Capital Realized	8	17,000	0.376	6,392
Present Value of Cash Inflows				25,89,992

Less: 1. Initial Investment	0	26,15,000	1.0	26,15,000
2. Initial Working Capital	0	17,000	1.0	17,000
NPV of the Proposal				(42,008)

Decision: Since NPV of the project is negative it is not viable.

Question – 04

The Management of a multinational company TL Ltd. is engaged in construction of Infrastructure Project. A proposal to construct a Toll Road in Nepal is under consideration of the Management.

The following information is available:

- The initial investment will be in purchase of equipment costing USD 250 lakhs. The economic life of the equipment is 10 years. The depreciation on the equipment will be charged on straight line method.
- EBIDTA to be collected from the Toll Road is projected to be USD 33 lakhs per annum for a period of 20 years.
- To encourage investment Nepalese government is offering a 15-year term loan of USD 150 lakhs at an interest rate of 6 per cent per annum. The interest is to be paid annually. The loan will be repaid at the end of 15 year in one tranche.
- The required rate of return for the project under all equity financing is 12 per cent per annum.
- Post tax cost of debt is 5.6 per cent per annum.
- Corporate Tax Rate is 30 per cent.
- All cash Flows will be in USD.

You are required to advise the management of TL Ltd. on the viability of the proposal by using Adjusted Net Present Value method. Ignore inflation.

Given

PVIFA (12%, 10) = 5.650, PVIFA (12%, 20) = 7.469, PVIFA (8%,15) = 8.559, PVIF (8%, 15) = 0.315.

Note: Make calculations in USD Lakhs and round off them upto 3 decimal points.

(RTP November – 2024)

Solution:

(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)
Tax Saving on Interest	1 to 15	2.70	8.559	23.109

Adjusted Present Value of the Project

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.

CHAPTER – 13

INTERNATIONAL FINANCIAL MANAGEMENT

PART I: INTERNATIONAL CAPITAL BUDGETING

Question – 01

ABC Ltd. is considering a project in US, which will involve an initial investment of US $ 1,10,00,000. The project will have 5 years of life. Current spot exchange rate is ₹ 48 per US $. The risk free rate in US is 8% and the same in India is 12%. Cash inflow from the project is as follows:

Year	Cash in flow
1	US $ 20,00,000
2	US $ 25,00,000
3	US $ 30,00,000
4	US $ 40,00,000
5	US $ 50,00,000

Calculate the NPV of the project using foreign currency approach. Required rate of return on this project is 14%.

(SM TYK – 01)

Solution:

RADR of USA $= \left[\left(\frac{1.14}{1.12} \times 1.08\right) - 1\right] \times 100$

$= 9.9\%$

Calculation of NPV

Year	Cash Flow (Million) US$	PV Factor @ 9.9%	P.V.
1	2.00	0.910	1.820
2	2.50	0.828	2.070
3	3.00	0.753	2.259
4	4.00	0.686	2.744
5	5.00	0.624	3.120

		Less: Investment NPV	12.013 11.000 1.013

Therefore, Rupee NPV of the project is = ₹ (48 × 1.013) Million

= ₹ 48.624 Million

Question – 02

X Ltd., an Indian company, is considering a proposal to make an investment of USD 1,65,00,000 in Latin America. The project will have a life of 5 years. The current spot exchange rate is INR/USD 72. All investments and revenues will occur in USD. The USD and INR risk free rates are 8% and 12% respectively.

The following cash flow is expected from the project.

Year	Cash Inflows (USD)
1	30,00,000
2	37,50,000
3	45,00,000
4	60,00,000
5	75,00,000

Assume required rate of return on the project as 14%.

You are required to calculate:

(i) The viability of the project using foreign currency approach.

(ii) What will be the impact if there is a withholding tax of 10% applicable on the project.

(Exam January – 2021) (8 Marks)

Solution:

(i) NPV

RADR of USA $= \left[\left(\frac{1.14}{1.12} \times 1.08\right) - 1\right] \times 100$

= 9.93%

NPV = ($ 30,00,000 × 0.910) + ($ 37,50,000 × 0.827) + ($ 45,00,000 × 0.753) + ($ 60,00,000 × 0.685) + ($ 75,00,000 × 0.623) – 1,65,00,000

= $ 15,02,250

NPV in (₹) = $ 15,02,250 × 72

= ₹ 10,81,62,000

Since NPV is positive hence project should be accepted.

(ii) Withholding Tax

PVCI (15,02,250 + 1,65,00,000)	= 18,00,02,250
(-) withholding tax	= 10%
PVCI	= $ 1,62,02,025
(-) PVCO	= $ 1,65,00,000
NPV	= - $ 2,97,975

NPV in (₹) = - $ 2,97,975 × 72

= - ₹ 2,14,54,200

NPV is negative project should be rejected.

Question – 03

DK Ltd. is considering as investment proposal in Sri Lanka involving an initial investment of LKR 25 billion. The current spot exchange rate is INR/LKR 0.37. The risk free rate in India is 6% and the same is Sri Lanka is 5.02%. The project will generate a cash flow of LKR 5 billion in the first year. The cash flow will increase by LKR 1 billion each year for the next 4 years. The project will bind up on completion of 5 years with no salvage value.

The required rate of return for the project is 8%

(i) You are required to find out the investment worth of the project by

(a) Home Currency Approach

(b) Foreign Currency Approach

(ii) Compare the outcome under both the approaches.

Given :

t	1	2	3	4	5
PVIF (8%, t)	0.92593	0.85734	0.79383	0.75503	0.68058
PVIF (7%, t)	0.93457	0.87344	0.81630	0.76290	0.71299

(Exam December – 2021) (8 Marks)

Solution:

Working Notes :

Calculation of Forward Exchange Rates

End of Year	₹	₹/KR
1	$0.37 \times \frac{1.06}{1.052}$	0.373
2	$0.373 \times \frac{1.06}{1.052}$	0.376
3	$0.376 \times \frac{1.06}{1.052}$	0.380
4	$0.379 \times \frac{1.06}{1.052}$	0.384
5	$0.382 \times \frac{1.06}{1.052}$	0.388

(i) Home Currency Approach

Year	Cash Flow Billon LKR	₹/LKR	Cash Flow Billon ₹	PVF @ 8%	PV Billion ₹
1	5	0.373	1.865	0.92593	1.7269
2	6	0.376	2.256	0.85734	1.9342
3	7	0.380	2.660	0.79383	2.1116
4	8	0.384	3.072	0.73503	2.2580
5	9	0.388	3.492	0.68058	2.3766
					10.4073
Less: Investment	25	0.37			9.2500
				NPV	1.1573

*Alternatively if students have used the PVIF (8%, 4) as given in the question paper then answer NPV would be 1.2188 instead of 1.1573

(ii) Foreign Currency Approach

(1 + 0.06) (1 + Risk Premium) =1.08

1 + Risk Premium = 1.08/1.06 = 1.01887

Therefore, Risk adjusted LKR Rate = 1.01887× 1.0502 – 1 = 0.07

Calculation of NPV

Year	Cash Flow (Billon LKR)	PVF @ 7%	PV (Billion LKR)
1	5	0.93457	4.6729
2	6	0.87344	5.2406
3	7	0.81630	5.7141
4	8	0.76290	6.1032
5	9	0.71299	6.4169
			28.1477
Less: Investment			25.0000
		NPV	3.1477

Thus, Rupee NPV of the project = 0.37 × 3.1477 = 1.1646 billion

Decision: NPV is positive in the approach so, project will worth investment.

Question – 04

XY Limited is engaged in large retail business in India. It is contemplating for expansion into a country of Africa by acquiring a group of stores having the same line of operation as that of India.

The exchange rate for the currency of the proposed African country is extremely volatile. Rate of inflation is presently 40% a year. Inflation in India is currently 10% a year. Management of XY Limited expects these rates likely to continue for the foreseeable future.

Estimated projected cash flows, in real terms, in India as well as African country for the first three years of the project are as follows:

	Year – 0	Year – 1	Year – 2	Year – 3
Cash flows in Indian ₹ (000)	–50,000	–1,500	–2,000	–2,500

Cash flows in African Rands (000)	–2,00,000	+50,000	+70,000	+90,000

XY Ltd. assumes the year 3 nominal cash flows will continue to be earned each year indefinitely. It evaluates all investments using nominal cash flows and a nominal discounting rate. The present exchange rate is African Rand 6 to ₹ 1.

You are required to calculate the net present value of the proposed investment considering the following:

(i) African Rand cash flows are converted into rupees and discounted at a risk adjusted rate.

(ii) All cash flows for these projects will be discounted at a rate of 20% to reflect it's high risk.

(iii) Ignore taxation.

	Year – 1	Year - 2	Year - 3
PVIF @ 20%	.833	.694	.579

(SM TYK – 03 & Exam May – 2013) (6 Marks)

Solution:

Step 1: Calculation of Exchange Rate

$$FR = SR \times \frac{1+i}{1+i}$$

$$\text{Year 1 FR} = 6 \times \frac{1.40}{1.10} = 7.6364$$

$$\text{Year 2} = 7.6364 \times \frac{1.40}{1.10} = 9.7191$$

$$\text{Year 3} = 9.719 \times \frac{1.40}{1.10} = 12.3696$$

	0	1	2	3
Real CF (AR)	- 2,00,000	+ 50,000	+ 70,000	+ 90,000
Nominal CF (40%)	- 2,00,000	+ 70,000	+ 1,37,200	+ 2,46,960
Exchange rate	6	7.6364	9.7191	12.3696
(AR/€)				

Nominal CF (₹) (1)	- 33,333	+ 9167	+14,117	+ 19,965
Real CF (India)	- 50,000	- 1,500	- 2,000	- 2,500
NCF (2)	- 50,000	- 1,650	- 2,420	- 3,328
Total CF (1) + (2)	- 83,333	+ 7517	+ 11,697	+ 16,637
(×) PVF @ 20%	1.000	0.833	0.694	0.579
PV	- 83,333	+ 6,262	+ 8,118	+ 9,633

Present Value = - 59,320

(+) PV of TV $= \left(\frac{16,637}{20\%}\right) \times 0.579$ = 48,164

NPV = -11,156 Reject

Question – 05

XYZ Ltd., a company based in India, manufactures very high quality modem furniture and sells to a small number of retail outlets in India and Nepal. It is facing tough competition. Recent studies on marketability of products have clearly indicated that the customers are now more interested in variety and choice rather than exclusivity and exceptional quality. Since the cost of quality wood in India is very high, the company is reviewing the proposal for import of woods in bulk from Nepalese supplier.

The estimate of net Indian (₹) and Nepalese Currency (NC) cash flows in Nominal terms for this proposal is shown below:

Year	Net Cash Flow (in millions)			
	0	1	2	3
NC	-25.000	2.600	3.800	4.100
Indian (₹)	0	2.869	4.200	4.600

The following information is relevant:

(i) XYZ Ltd. evaluates all investments by using a discount rate of 9% p.a. All Nepalese customers are invoiced in NC. NC cash flows are converted to Indian (₹) at the forward rate and discounted at the Indian rate.

(ii) Inflation rates in Nepal and India are expected to be 9% and 8% p.a. respectively. The current exchange rate is ₹ 1= NC 1.6

Assuming that you are the finance manager of XYZ Ltd., calculate the net present value (NPV) and modified internal rate of return (MIRR) of the proposal.

You may use following values with respect to discount factor for ₹ 1 @9%.

	Present Value	Future Value
Year 1	0.917	1.188
Year 2	0.842	1.090
Year 3	0.772	1

(SM TYK – 05 & Exam November – 2015) (6 Marks)

Solution:

(i) Calculation of NPV

Step 1: Forward Rates

1 $= NC\ 1.60 \times \frac{1.09}{1.08}$ $= 1.6148$

2 $= NC\ 1.6148 \times \frac{1.09}{1.08}$ $= 1.6298$

3 $= NC\ 1.6298 \times \frac{1.09}{1.08}$ $= 1.6449$

Step 2: NPV

	0	1	2	3
CF (NC)	- 25.000	+ 2.600	+ 3.800	+ 4.100
Exchange rate (NC/₹)	1.60	1.6148	1.6298	1.6449
CF (₹)	- 15.625	+ 1.6101	+ 2.3316	+ 2.4926
CF India	0	+ 2.869	+ 4.200	+ 4.600
Total CF	- 15.625	4.4791	6.5316	7.0926
X PVF (9%)	1	0.917	0.842	0.772
PV	- 15.625	+ 4.1073	+ 5.4996	+ 5.4755

NPV = - 0.5426

(ii) Modified IRR

Terminal value

(1) $4.4791\ (1.09)^2$ = 5.3216

(2) 6.5316×1.09 = 7.1194

(3) $= 7.0926$

$= 19.53$

$15.625\ (1 + r)^3 = 19.53$

$$r = \left[\left(\frac{19.53}{15.625}\right)^{1/3} - 1\right] \times 100$$

$= 7.72\%$

Question – 06

DD Ltd. a company based in India manufactures good quality of leather bags and sells to retail outlets in India and USA. The cost of quality leather in India is very high, the company is reviewing the proposal of importing of leather in bulk from USA supplier. The estimate of net US $ and Indian ₹ Currency Cash Flows in nominal terms for this proposal is given below:

	Net Cash Flow (in Lakh)			
Year	0	1	2	3
In US $	(25)	5	7	8
In ₹	0	60	80	90
If not imported cost of leather to be purchased in India (in ₹)	400	450	500	600

Other information:

(i) DD Ltd. evaluates all investments by using discount rate of 9% p.a.

(ii) All US customers are invoiced in US $. US $ Cash flows converted into ` at the forward rate and discounted at Indian Rate.

(iii) Inflation in USA and India are expected to be 9% and 8% respectively.

(iv) The current exchange rate 1 US $ = ₹ 74

You are required to Calculate Net Present Value and recommend the decision. Present value factor @ 9% are as under:

1 Year	2 Year	3 Year
0.917	0.842	0.772

(Exam December – 2021) (8 Marks)

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;