## QUESTION 1

A company has proposal to invest in a machine which cost Rs. $\mathbf{2 , 0 0 , 0 0 0}$. It is expected to generate following CFAT for five years.

| YEAR | 1 | 2 | 3 | 4 | 5 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| CFAT | 50000 | 75000 | 100000 | 50000 | 70000 |


Decision Install the machinery NPV IS POSITIVE PI > 1

QUESTION 2

| A company is considering two mutually exclusive proposals. Cash flows related to the projects are. |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| YEAR | 0 | 1 | 2 | 3 | 4 | 5 |
| PROJECT A | -500000 | 400000 | 60000 | 50000 | 70000 | 80000 |
| PROJECT B | -500000 | 20000 | 500000 | 60000 | 70000 | 50000 |

Calculate NPV of the two projects if discount rate is $12 \%$ which project should be selected.

| YEAR | PROJECT A | PROJECT B | Cost of Capital 12\% |
| :---: | :---: | :---: | :---: |
| 0 | -500000 | -500000 |  |
| 1 | 400000 | 20000 |  |
| 2 | 60000 | 500000 |  |
| 3 | 50000 | 60000 |  |
| 4 | 70000 | 70000 |  |
| 5 | 80000 | 50000 |  |
| PRESENT VALUE OF CASH |  |  |  |
| FLOWS | \$530,443.92 | \$532,018.50 |  |
| NPV | \$30,443.92 | \$32,018.50 | Present value of all cash inflows (-) Present value of all cash outflows NPV (Rate, Value 1, Value 2,..........) + cash outflow |
| PROFITABILITY INDEX | \$1.0609 | \$1.0640 | Present value of all cash inflows ( $\div$ ) Present value of all cash outflows |
| Decision | Select B |  |  |
|  | IF(C39>D39,"SELEC | CT A","SELECT B") |  |

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## QUESTION 1

PK Ltd. decides to install a new machine costing Rs. 1,00,000. the machine is expected to save costs and its life is estimated to be 6 years. The CFAT from the machine over 6 years are estimated as follows. Calculate IRR of the machine. Should the machine be installed ? Cost of capital is $14 \%$

| YEAR | 1 | 2 | 3 | 4 | 5 | 6 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| CFAT | 15000 | 20000 | 25000 | 35000 | 40000 | 45000 |


| YEAR | CFAT |
| ---: | ---: |
| 0 | -100000 |
| 1 | $\mathbf{1 5 0 0 0}$ |
| 2 | $\mathbf{2 0 0 0 0}$ |
| 3 | $\mathbf{2 5 0 0 0}$ |
| 4 | $\mathbf{3 5 0 0 0}$ |
| 5 | $\mathbf{4 0 0 0 0}$ |
|  | $\mathbf{4 5 0 0 0}$ |

## ANNUAL CASH FLOWS

QUESTION 2
A company is considering two mutually exclusive proposals. Cash flows related to the projects are.

| YEAR | 0 | 1 | 2 | 3 | 4 | 5 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| PROJECT A | -500000 | 400000 | 60000 | 50000 | 70000 | 80000 |
| PROJECT B | -500000 | 20000 | 500000 | 60000 | 70000 | 5000 |

Calculate IRR of the two projects if discount rate is $12 \%$ which project should be selected

| YEAR | PROJECT A | PROJECT B |
| ---: | ---: | ---: |
| 0 | -500000 | $\mathbf{- 5 0 0 0 0 0}$ |
| 1 | $\mathbf{4 0 0 0 0 0}$ | $\mathbf{2 0 0 0 0}$ |
| 2 | $\mathbf{6 0 0 0 0}$ | $\mathbf{5 0 0 0 0 0}$ |
| 3 | $\mathbf{5 0 0 0 0}$ | $\mathbf{6 0 0 0 0}$ |



## NON-PERIODIC CASH FLOWS

QUESTION 3
A company has project A under consideration. The inflows and outflows related to the projects are at irregular intervals of time as follows:

| Date | Cash flows |
| ---: | ---: |
| $01 / 04 / 2017$ | -100000 |
| $31 / 12 / 2017$ | 80000 |
| $30 / 09 / 2018$ | 35000 |
| $31 / 08 / 2019$ | 30000 |
| $24 / 10 / 2020$ | 25000 |

Calculate XNPV if discount rate is $12 \%$. Also calculate XIRR.

| XNPV | 42508.74507 |
| :--- | ---: |
| XIRR | $44.38 \%$ |

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## QUESTION 1

A company is considering two projects. The cost of both the projects is Rs. $\mathbf{1 , 2 0 , 0 0 0}$. The Profit after tax of the projects are as below:

| YEAR | 1 | 2 | 3 | 4 | 5 | 6 | SALVAGE VALUE <br> 12000 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| PAT PROJECT A | 10000 | 30000 | 50000 | 60000 | 20000 | 10000 |  |  |
| PAT PROJECT B | 30000 | 40000 | 40000 | 70000 | 10000 | 20000 |  | 6000 |

pat roject

| YEAR | PROJECT A | PROJECT B |  |
| :---: | :---: | :---: | :---: |
| 1 | 10000 | 30000 | ARR=(AVERAGE PROFIT |
| 2 | 30000 | 40000 |  |
| 3 | 50000 | 40000 | AVERAGE INVESTME |
| 4 | 60000 | 70000 |  |
| 5 | 20000 | 10000 | INITIAL INVESTMENT |
| 6 | 10000 | 20000 | SALVAGE VALUE |

AVERAGE PROFIT AFTER TAX (APAT)

AVERAGE INVESTMENT
(AI)

ARR

## AVERAGE(C11:C16) AVERAGE(D11:D16)

|  | 66000 | 63000 |  |  |
| :---: | :---: | :---: | :---: | :---: |
| $($ F15-F16)/2+F16 | $(\mathrm{G} 15-\mathrm{G} 16) / 2+$ G16 |  |  |  |
|  | $45.45 \%$ | $55.56 \%$ |  |  | APAT/AI

## CONCEPT OF PAYBACK PERIOD

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## QUESTION 1

| YEAR | 1 | 2 | 3 | 4 | 5 | 6 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| CFAT | 10000 | 15000 | 24000 | 40000 | 30000 | 6000 |

Calculate Payback period. If desired payback period is 4 should the project be accepted

| YEAR | CFAT | Cumulative Cash Flows | Cost of the project | 60000 |
| :---: | :---: | :---: | :---: | :---: |
| 1 | 10000 | 10000 | Desired PB | 4 |
| 2 | 15000 | 25000 |  |  |
| 3 | 24000 | 49000 |  |  |
| 4 | 40000 | 89000 |  |  |
| 5 | 30000 | 119000 |  |  |
| 6 | 6000 | 125000 |  |  |

$\mathrm{PB}=$ No.of Complete years +(remaining cost to be recovered/cash inflows of next

PAYBACK PERIOD

DECISION
3+(F9-D12)/C13
SELECT

## CONCEPT OF DISCOUNTED PAYBACK PERIOD

QUESTION 2
The cost of the projects is Rs. $1,00,000$. It is expected to generate cash flows as follows:

| YEAR | 1 | 2 | 3 | 4 | 5 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| CFAT | 60000 | 50000 | 40000 | 30000 | 20000 |  |
| Calculate Discounted Payback period assuming a discount rate of 10\% |  |  |  |  |  |  |
|  | YEAR | CFAT | PV of Individual CFAT | Cumulative Cash Flows | Discount Rate | 10\% |
|  | 1 | 60000 | \$54,545.45 | \$54,545.45 | Initial outlay | 100000 |
|  | 2 | 50000 | \$41,322.31 | \$95,867.77 |  |  |
|  | 3 | 40000 | \$30,052.59 | \$125,920.36 |  |  |



## QUESTION 1

A project requires an initial outlay of Rs. 20000 and has a life of 5 years. It generates year ending profits before deprecitaion and taxes of Rs. $\mathbf{1 2 0 0 0}$, Rs. $\mathbf{1 0 0 0 0}$, Rs. $\mathbf{8 0 0 0}$, Rs. $\mathbf{6 0 0 0}$ and Rs. $\mathbf{5 0 0 0}$. It is depreciated on SLM. Tax rate is $\mathbf{3 5 \%}$. Compute (i) Payback period (ii) ARR and (iii) Acceptability of the project if the project if project should satisfy both the criteria of standard payback period of 3 years and standard accounting rate of return on $\mathbf{2 0 \%}$.

Solution Initial investment 20000

| Particulars | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| :--- | :--- | :--- | :--- | :--- | :--- |
| PBDT | 12000 | 10000 | 8000 | 6000 | 5000 |
| Less Depreciation | 4000 | 4000 | 4000 | 4000 | 4000 |
| PBT | =B8-B9 | =C8-C9 | =D8-D9 | =E8-E9 | =F8-F9 |
| Less: Tax @35\% | =B10*35\% | =C10*35\% | =D10*35\% | =E10*35\% | =F10*35\% |
| Profit after tax (PAT) | =B10-B11 | =C10-C11 | =D10-D11 | =E10-E11 | =F10-F11 |
| Add: Depreciation | 4000 | 4000 | 4000 | 4000 | 4000 |
| Cash Flows after Tax (CFAT) | =B12+B13 | =C12+C13 | =D12+D13 | =E12+E13 | =F12+F13 |
| Cumulative CFAT | =B14 | =B15+C14 | =C15+D14 | =D15+E14 | =E15+F14 |


| Payback period | $=2+(C 5-C 15) / D 14$ | years | 2.44 years |
| :--- | :--- | :--- | :--- |
| ARR | APAT/AI*100 | =C20/C21 | 27.3 percent |
| APAT | $=$ AVERAGE(B12:F12) |  |  |
| AI | $=C 5 / 2$ |  |  |

