CT-02

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Question-01

$$EFF\% = \left(1 + \frac{I_{NOM}}{M}\right)^M - 1$$

$$= \left(1 + \frac{0.24}{4}\right)^4 - 1$$

$$= 0.2625$$

$$= 26.25\%$$

Here,

$I_{NOM} = 24\%$

$= 0.24$

$M = \text{quarterly}$

$= 4.$

So, we will now consider

$i = 0.2625$ for doing

next steps.

P.T.O

Project P;

Year	0	1	2	3	4	5
Cash flow	-56137	19956	30000	15688	19588	26457
Discount cash flow	-56137	15806.73	18821.68	7796.03	7710.18	8248.66
Cumulative cash flow	-56137	-40330.27	-21508.59	-13712.56	-6002.38	2246.28

$$P_1 = \frac{F_1}{(1+i)^{N_1}} = \frac{19956}{(1+0.2625)^1} = 15806.73$$

$$P_2 = \frac{F_2}{(1+i)^{N_2}} = \frac{30000}{(1+0.2625)^2} = 18821.68$$

$$P_3 = \frac{F_3}{(1+i)^{N_3}} = \frac{15688}{(1+0.2625)^3} = 7796.03$$

$$P_4 = \frac{F_4}{(1+i)^{N_4}} = \frac{19588}{(1+0.2625)^4} = 7710.18$$

$$P_5 = \frac{F_5}{(1+i)^{N_4}} = \frac{26457}{(1+0.2625)^5} = 8248.66$$

P.T.O

$$\text{Pay back Period} = 4 + \frac{6002.38}{8248.66}$$

$$= 4.73 > 4.5 \text{ years.}$$

Project Q;

Year	0	1	2	3	4	5
cash flow	-77771	15897	46689	26458	27781	48751
Discount cash flow	-77771	12591.68	29292.19	13148.10	10935.09	15199.41
cumulative cash flow	-77771	-65179.32	-35887.13	-22739.03	-11803.94	3395.47

P.T.O

$$P_1 = \frac{F_1}{(1+i)^{N_1}} = \frac{15897}{(1+0.2625)^1} = 12591.68$$

$$P_2 = \frac{F_2}{(1+i)^{N_2}} = \frac{46689}{(1+0.2625)^2} = 29292.19$$

$$P_3 = \frac{F_3}{(1+i)^{N_3}} = \frac{26458}{(1+0.2625)^3} = 13148.10$$

$$P_4 = \frac{F_4}{(1+i)^{N_4}} = \frac{27781}{(1+0.2625)^4} = 10935.09$$

$$P_5 = \frac{F_5}{(1+i)^{N_5}} = \frac{48751}{(1+0.2625)^5} = 15199.41$$

$$\text{Pay back Period} = 4 + \frac{11803.94}{15199.41}$$

$$= 4.78 > 4.5 \text{ years}$$

P.T.O

Though both projects are independent, we cannot chose any of them, because their pay back periods are greater than 4.5 years. So, two projects will be rejected in this case.

Question (2)

NPV of Project P;

$$P_0 + P_1 + P_2 + P_3 + P_4$$

$$= -56137 + \frac{F_1}{(1+i)^{N_1}} + \frac{F_2}{(1+i)^{N_2}} + \frac{F_3}{(1+i)^{N_3}} + \frac{F_4}{(1+i)^{N_4}} + \frac{F_5}{(1+i)^{N_5}}$$

$$= -56137 + \frac{19956}{(1+0.2625)^1} + \frac{30000}{(1+0.2625)^2} + \frac{15688}{(1+0.2625)^3} + \frac{19588}{(1+0.2625)^4} + \frac{26457}{(1+0.2625)^5}$$

$$= 2246.29 > 0.$$

P.T.O

NPV of Project 9;

$P_0 + P_1 + P_2 + P_3 + P_4$

$$= -77771 + \frac{F_1}{(1+i)^{N_1}} + \frac{F_2}{(1+i)^{N_2}} + \frac{F_3}{(1+i)^{N_3}} + \frac{F_4}{(1+i)^{N_4}} + \frac{F_5}{(1+i)^{N_5}}$$

$$= -77771 + \frac{15897}{(1+0.2625)^1} + \frac{46689}{(1+0.2625)^2} + \frac{26458}{(1+0.2625)^3} + \frac{27781}{(1+0.2625)^4} + \frac{48751}{(1+0.2625)^5}$$

$$= 3395.46 > 0.$$

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Both Projects have NPV greater than 0, but the projects are mutually exclusive. So, only one Project can be selected. So, we will select the NPV with higher positive value. As, NPV P < NPV Q, Project Q will be selected. So, when we consider NPV method the answer will absolutely be changed.