HW - Chapter 7 - Capital Budgeting- Q7

Calculation of Cash - outflow at year zero

Particulars	A (Rs.)	B (Rs.)
Cost of Machine	5,00,000	5,00,000
Cost of Utilities	1,00,000	2,00,000
Salvage value of Old Machine	(1,00,000)	(1,00,000)
Salvage of value Old Utilities	–	(20,000)
Total Expenditure (Net)	5,00,000	5,80,000

(i)   (a) Calculation of NPV

Year	DF @ 15%	Machine A		Machine B	
		Cash Inflows	PV	Cash Inflows	PV
0	1.000	(5,00,000)	(5,00,000)	(5,80,000)	(5,80,000)
1	0.870	1,00,000	87,000	2,00,000	1,74,000
2	0.756	1,50,000	1,13,400	2,10,000	1,58,760
3	0.658	1,80,000	1,18,440	1,80,000	1,18,440
4	0.572	2,00,000	1,14,400	1,70,000	97,240
5	0.497	1,70,000	84,490	40,000	19,880
Salvage	0.497	50,000	24,850	60,000	29,820
NPV			42,580		18,140

Since the Net present Value of both the machines is positive both are acceptable.

(b)   Discounted Pay-back Period   (Amount in Rs.)

Year	Machine A		Machine B	
	Discounted CI	Cumulative Discounted CI	Discounted CI	Cumulative Discounted CI
1	87,000	87,000	1,74,000	1,74,000
2	1,13,400	2,00,400	1,58,760	3,32,760
3	1,18,440	3,18,840	1,18,440	4,51,200
4	1,14,400	4,33,240	97,240	5,48,440
5	1,09,340*	5,42,580	49,700*	5,98,140

* Includes salvage value.

Discounted Payback Period

Machine A = 4 years + (5,00,000- 4,33,240) ÷ 1,09,340 = 4.61 years

Machine B = 4 years + (5,80,000 - 5,48,440) ÷ 49,700 = 4.63 years

(c)   Desirability Factor or Profitability Index:

Profitability Index (PI) = Present value of net cash inflow ÷ PV of outflows

Machine A = Rs. 5,42,580 ÷ Rs. 5,00,000 = 1.08

Machine B = Rs. 5,98,140 ÷ 5,80,000 = 1.03

(ii)   Since the absolute surplus in the case of A is more than B and also the desirability factor, it is better to choose A. The discounted payback period in both the cases is almost same, also the net present value is positive in both the cases, but the desirability factor (profitability index) is higher in the case of Machine A, it is therefore better to choose Machine A.