**Problem 6 \ 2 )**

Consider the net cash flows (NCF) and salvage values (SV) shown below . Assume the alternatives can be indefinitely renewed with same cash flows and salvage values. Specify the planning horizon and complete set of cash flows for each alternative using each of the following :

|  |  |  |
| --- | --- | --- |
|  | **Alternative 1** | **Alternative 2** |
| **EOY** | **NCF** | **SV** | **NCF** | **SV** |
| 0 | -$100 | $100 | -$70 | $70 |
| 1 | $20 | $40 | $30 | $50 |
| 2 | $20 | $20 | $40 | $30 |
| 3 | $40 |  | $50 |  |
| 4 | $60 |  |  |  |

1. Least common multiple of lives

**L.C.M= 12 years**

|  |  |  |
| --- | --- | --- |
| EOY | Alt 1 | Alt 2 |
| 0 | -$100 | -$70 |
| 1 | $20 | $30 |
| 2 | $20 | $40 |
| 3 | $40 | -$20 |
| 4 | -$40 | $30 |
| 5 | $20 | $40 |
| 6 | $20 | -$20 |

|  |  |  |
| --- | --- | --- |
| EOY | Alt 1 | Alt 2 |
| 7 | $40 | $30 |
| 8 | -$40 | $40 |
| 9 | $20 | -$20 |
| 10 | $20 | $30 |
| 11 | $40 | $40 |
| 12 | $60 | $50 |

|  |  |  |
| --- | --- | --- |
| EOY | Alt 1 | Alt 2 |
| 0 | -$100 | -$70 |
| 1 | $20 | $30 |
| 2 | $20 | $40 |
| 3 | $40 | $50 |

1. Shortest life among Alternatives

**Shortest life = 3 years**

1. Longest life among Alternatives

|  |  |  |
| --- | --- | --- |
| EOY | Alt 1 | Alt 2 |
| 0 | -$100 | -$70 |
| 1 | $20 | $30 |
| 2 | $20 | $40 |
| 3 | $40 | -$20 |
| 4 | $60 | $80 |

**Longest life = 4 years**

EX)

 Consider an investment project , the cash flow pattern of which repeats itself every 5 years forever as shown below . At an interest rate of 10% , compute the capitalized cost for this project .

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| EOY | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | ∞ |
| NCF(SR) | 0 | -1000 | -1000 | -400 | -400 | -200 | -1000 | -1000 | -400 | -400 | -20 | ... |

Pw = 1000 (P/A 10,2) + 400 (P/A 10,2) (P/F 10,2) + 200 (P/F 10,5)

 = 1000 ( 1.73554 ) + 400 ( 1.73554 ) ( 0.82645 ) + 200 ( 0.62092 )

 = 2433.46

Aw = 2433.46 ( A/P 10,5 ) = 2433.46 ( 0.26380 ) = 641.95

Cw = 641.95/0.1 = 6419.5