

HW - HW - Chapter 8 - Risk Analysis- Q6

(i) The risk free rate of interest and risk factor for each of the projects are given. The risk adjusted discount rate (RADR) for different projects can be found on the basis of CAPM as follows:

Required Rate of Return = $IRf + (ke - IRf) \text{ Risk Factor}$

For P-I : RADR = $0.10 + (0.15 - 0.10) 1.80 = 19\%$

For P-II : RADR = $0.10 + (0.15 - 0.10) 1.00 = 15\%$

For P-III : RADR = $0.10 + (0.15 - 0.10) 0.60 = 13\%$

(ii) The three projects can now be evaluated at 19%, 15% and 13% discount rate as follows:

Project P-I

| | |
|---------------------------------------|---------------|
| Annual Inflows | Rs. 6,00,000 |
| PVAF (19 %, 4) | 2.639 |
| PV of Inflows (Rs. 6,00,000 x 2.639) | Rs. 15,83,400 |
| Less: Cost of Investment | Rs. 15,00,000 |
| Net Present Value | Rs. 83,400 |

Project P-II

| Year | Cash Inflow (Rs.) | PVF (15%,n) | PV (Rs.) |
|---------------------|-------------------|-------------|-----------|
| 1 | 6,00,000 | 0.870 | 5,22,000 |
| 2 | 4,00,000 | 0.756 | 3,02,400 |
| 3 | 5,00,000 | 0.658 | 3,29,000 |
| 4 | 2,00,000 | 0.572 | 1,14,400 |
| Total Present Value | | | 12,67,800 |
| Less: Investment | | | 11,00,000 |
| Net Present Value | | | 1,67,800 |

Project P-III

| Year | Cash Inflow (Rs.) | PVF (13%,n) | PV (Rs.) |
|---------------------|-------------------|-------------|-----------|
| 1 | 4,00,000 | 0.885 | 3,54,000 |
| 2 | 6,00,000 | 0.783 | 4,69,800 |
| 3 | 8,00,000 | 0.693 | 5,54,400 |
| 4 | 12,00,000 | 0.613 | 7,35,600 |
| Total Present Value | | | 21,13,800 |
| Less: Investment | | | 19,00,000 |
| Net Present Value | | | 2,13,800 |

Project P-III has the highest NPV. So, it should be accepted by the firm.