P 3-7 Northern Sun, Inc.

**At the beginning of year 1, Northern Sun Inc., a food processing concern, is considering a new line of frozen entrees. The accompanying table shows projected cash outflows and inflows. Assume that all inflows and outflows are end-of-period payments.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|   |   |   |   |   |   |   |   |
|   |   | Cash Outflows ($000s) |   |   |   |   |   |
|   |  | Initial Investment |  |  |  |   |
|   |   | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |   |
|   |  |  |  |  |  |  |   |
| R&D |  | ($200) |  |  |  |  |   |
| Packaging and design |  | ($55) |  |  |  |  |   |
| Product testing |  | ($100) |  |  |  | ($50) |   |
| Marketing |  |  | ($15) | ($10) | ($10) | ($10) |   |
| Distribution |  |  | ($30) | ($50) | ($50) | ($50) |   |
| Cash inflow |  |  | $100  | $250  | $300  | $300  |   |
|   |  |  |  |  |  |  |   |
| Net cash flows |  | ($355) | $55  | $190  | $240  | $190  |   |
|   |  |  |  |  |  |  |   |
|   |  |  |  |  |  |  |   |
|   |   |   |   |   |   |   |   |

*Required:*

*The company’s cost of capital is 10 percent. Compute the following:*

1. *Net present value.*
2. *Payback*

P 3-26

An investment project involves the purchase of equipment at a cost of $100 million. For tax purposes the equipment has a life of five years and will be depreciated on a straight-line basis. Inflation is expected to be 5 percent and the real interest rate is 5 percent. The tax rate is 40 percent.

*What is the present value of the depreciation tax shield for the machine?*