Name: Id#

ISE 307, Term 153

ENGINEERING ECONOMIC ANALYSIS

Quiz# 5

Date: Sunday, August 28, 2016

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# **Q1.** Peabody Corporation has the following base-case estimates for its new small engine assembly project:

• Price per unit= $450 increasing at a rate of 10%

• Variable costs = $200 per unit increasing at a rate of 8%

• Fixed costs = $1 million increasing by 100,000 each year

• Demand = 12,000 units per year decreasing at a 5% rate

• Capital investment = $7 million at year 0

• Product life = 5 years

• Salvage value = $2,000,000

• Depreciation method: Seven-year MACRS

• Tax rate= 35%

• MARR = l5%

1. Calculation the depreciation for each year over the product life, the book value at the end of year 5 and the Tax Gains or Losses.
2. Develop the project’s cash flows over its project life.
3. Determine the net present worth (NPW) of the project at the company’s MARR of 15%.

Is this project acceptable?

MACRS Depreciation Schedule with Half Year Convention for 7-Year MACRS property

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** |
| **14.29** | **24.49** | **17.49** | **12.49** | **8.93** | **8.92** | **8.93** | **4.46** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Income Statement** |  |  |  |  |  |  |
|  | **0** | **1** | **2** | **3** | **4** | **5** |
| **Revenues** |  |  |  |  |  |  |
| **Unit Price** |  |  |  |  |  |  |
| **Demand(Units)** |  |  |  |  |  |  |
| **Sales Revenue** |  |  |  |  |  |  |
| **Expenses** |  |  |  |  |  |  |
| **Unit Variable Cost** |  |  |  |  |  |  |
| **Variable Cost** |  |  |  |  |  |  |
| **Fixed Cost** |  |  |  |  |  |  |
| **Depreciation** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Taxable Income** |  |  |  |  |  |  |
| **Income Taxes (35%)** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Net Income** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Cash Flow Statement** |  |  |  |  |  |  |
| **Operating Activities** |  |  |  |  |  |  |
| **Net Income** |  |  |  |  |  |  |
| **Depreciation** |  |  |  |  |  |  |
| **Investment Activities** |  |  |  |  |  |  |
| **Investment** |  |  |  |  |  |  |
| **Salvage** |  |  |  |  |  |  |
| **Gains Tax** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Net Cash Flow** |  |  |  |  |  |  |
| **PW(15%)** |  |  |  |  |  |  |