Problem 7-27

Internet Stock 12% rate of return
Blue Chip Stock 9% rate of return

Part A)

Finding the highest possible return for a moderate investor while staying within the constraints of $50000 with a maximum of $35000 being invested in the riskier internet fund and a risk rating of 240 was obtained using the formula:

\[
\text{Objective function: } \max = I \cdot 0.12 + B \cdot 0.09;
\]

\[
\text{Constraints: } I + B \leq 50000;
\]

\[
I \leq 35000;
\]

\[
\frac{6}{1000}I + \frac{4}{1000}B \leq 240;
\]

Global optimal solution found.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
<th>Reduced Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>20000.00</td>
<td>0.000000</td>
</tr>
<tr>
<td>B</td>
<td>30000.00</td>
<td>0.000000</td>
</tr>
</tbody>
</table>

The results tell us to comprise the portfolio with 20000 worth of the internet stock and 30000 of the blue chip stock. Creating the portfolio with this mixture will lead us to have an annual return of $5100.

Part B)

Finding the highest possible return for an aggressive investor while staying within the constraints of $50000 with a maximum of $35000 being invested in the riskier internet fund and a risk rating of 320 was obtained using the formula:

\[
\text{Objective function: } \max = I \cdot 0.12 + B \cdot 0.09;
\]

\[
\text{Constraints: } I + B \leq 50000;
\]

\[
I \leq 35000;
\]

\[
\frac{6}{1000}I + \frac{4}{1000}B \leq 320;
\]

Global optimal solution found.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
<th>Reduced Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>35000.00</td>
<td>0.000000</td>
</tr>
<tr>
<td>B</td>
<td>15000.00</td>
<td>0.000000</td>
</tr>
</tbody>
</table>
The results tell us to comprise the portfolio with $35000 worth of the internet stock and $15000 of the blue chip stock. Creating the portfolio with this mixture will lead us to have an annual return of $5550.

**Part C**

Finding the highest possible return for a conservative investor while staying within the constraints of $50000 with a maximum of $35000 being invested in the riskier internet fund and a risk rating of 160 was obtained using the formula:

\[
\begin{align*}
\text{Max} &= I \cdot 0.12 + B \cdot 0.09; \\
I + B &\leq 50000; \\
I &\leq 35000; \\
(6/1000)I + (4/1000)B &\leq 160; \\
\end{align*}
\]

Global optimal solution found.

<table>
<thead>
<tr>
<th>Objective value:</th>
<th>3600.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
<td>Value</td>
</tr>
<tr>
<td>I</td>
<td>0.000000</td>
</tr>
<tr>
<td>B</td>
<td>40000.00</td>
</tr>
</tbody>
</table>

The results tell us to comprise the portfolio with $0 worth of the internet stock and $40000 of the blue chip stock. Creating the portfolio with this mixture will lead us to have an annual return of $3600. This portfolio is the only one of the three that has no money invested in the riskier internet stock. Also this is the only portfolio that we are unable to invest all $50000 available to be invested due to the fact that anymore money invested will lead to a higher risk factor than allowed in a conservative portfolio.