Chapter 7 Solutions to Problems

1. \( P/Y = 2, C/Y = 2, N = 14, PV = -912.54, PMT = 60, FV = 1,000 \). Solve for I/Y. I/Y = 14%.

2. a. \( P/Y = 2, C/Y = 2, N = 16, PV = -941.73, PMT = 35, FV = 1,000 \). Solve for I/Y. I/Y = 8%.
   b. \( K_i = 0.08(1-0.34) = 0.0528 \), or 5.28%

5. \( K_c = 0.08 + (0.15 - 0.08)1.2 = 0.164 \), or 16.4%

7. **Bonds:**

   \( P/Y = 2, C/Y = 2, N = 40, PV = -907.99, PMT = 40, FV = 1,000 \). Solve for I/Y. I/Y = 9%.

   \( K_i = 0.09(1-0.40) = 0.054 \), or 5.4%

*Preferred Stock:*

   \( K_p = $6/($60 - $4) = $6/$56 = 0.107 \), or 10.7%

*Retained Earnings:*

   \( D_1 = $3(1 + 0.05) = $3.15 \)

   \( K_c = ($3.15/$30) + 0.05 = 0.155 \), or 15.5%

*New Common Stock:*

   \( D_1 = $3(1 + 0.05) = $3.15 \)

   \( K_{nc} = ($3.15/$26) + 0.05 = 0.171 \), or 17.1%

9. a. \( K_a = 0.20(8) + 0.30(13) + 0.50(17) = 14\%

   b. *Market weights* refer to the proportions of debt, preferred stock, and common equity based on market values of a company’s securities. *Book weights* refer to the proportions based on balance sheet (book) values.

   c. The use of marginal cost of capital as a cutoff for investments requires a market-weighted cost to maximize stock price. Also, to be consistent, market costs should be weighted with market values. Book weights reflect historical values and are irrelevant in the calculation of \( K_a \).
11.

a:

<table>
<thead>
<tr>
<th>% Debt</th>
<th>Debt</th>
<th>Equity</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>-</td>
<td>14.0</td>
<td>14.0</td>
</tr>
<tr>
<td>0.10</td>
<td>6.0</td>
<td>14.0</td>
<td>13.2</td>
</tr>
<tr>
<td>0.30</td>
<td>6.1</td>
<td>14.2</td>
<td>11.77</td>
</tr>
<tr>
<td>0.50</td>
<td>7.5</td>
<td>14.9</td>
<td>11.2</td>
</tr>
<tr>
<td>0.60</td>
<td>8.5</td>
<td>16.0</td>
<td>11.5</td>
</tr>
<tr>
<td>.070</td>
<td>9.7</td>
<td>17.3</td>
<td>11.98</td>
</tr>
<tr>
<td>.080</td>
<td>11.5</td>
<td>18.5</td>
<td>12.9</td>
</tr>
</tbody>
</table>

Lowest average cost of capital is with 50% debt and 50% equity.

B: It raised the average cost of capital which lowers the stock’s value.