Please show your work for all questions. Logically correct work must be shown to receive credit for your answers.

1. Computron (30 points this section)
Computron Industries is a manufacturer of electronic components. The board of directors has replaced the retiring president of the firm with a new president, Elizabeth Brannigan, who has asked you to make an analysis of the firm’s financial position. The most recent Computron financial statements are as follows:

Computron Industries: Balance Sheet as of December 31, 2000

<table>
<thead>
<tr>
<th></th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>$ 52,000</td>
</tr>
<tr>
<td>AR</td>
<td>402,000</td>
</tr>
<tr>
<td>Inventories</td>
<td>836,000</td>
</tr>
<tr>
<td>Total CA</td>
<td>$1,290,000</td>
</tr>
<tr>
<td>Net FA</td>
<td>5,360,800</td>
</tr>
<tr>
<td>Total Assets</td>
<td>$1,650,800</td>
</tr>
<tr>
<td>Accounts payable</td>
<td>$ 175,200</td>
</tr>
<tr>
<td>Notes Payable</td>
<td>225,000</td>
</tr>
<tr>
<td>Accruals</td>
<td>140,000</td>
</tr>
<tr>
<td>Total CL</td>
<td>$ 540,200</td>
</tr>
<tr>
<td>Long-term debt</td>
<td>424,612</td>
</tr>
<tr>
<td>Common stock</td>
<td>460,000</td>
</tr>
<tr>
<td>Retained earnings</td>
<td>225,988</td>
</tr>
<tr>
<td>Total Equity</td>
<td>$ 685,988</td>
</tr>
<tr>
<td>Total L &amp; OE</td>
<td>$1,630,800</td>
</tr>
</tbody>
</table>

Computron Industries: Income Statement for Year Ended December 31, 2000

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>$ 3,850,000</td>
</tr>
<tr>
<td>COGS</td>
<td>(3,250,000)</td>
</tr>
<tr>
<td>Other expenses</td>
<td>(430,300)</td>
</tr>
<tr>
<td>Deprec.</td>
<td>(30,000)</td>
</tr>
<tr>
<td>Tot. op. costs</td>
<td>(33,780,300)</td>
</tr>
<tr>
<td>EBIT</td>
<td>$ 149,000</td>
</tr>
<tr>
<td>Interest exp.</td>
<td>(76,000)</td>
</tr>
<tr>
<td>EBT</td>
<td>$ 73,000</td>
</tr>
<tr>
<td>Taxes (40%)</td>
<td>(29,280)</td>
</tr>
<tr>
<td>Net income</td>
<td>$ 43,720</td>
</tr>
</tbody>
</table>
1. (20 points) Calculate ratios for Computron Industries for use in comparison to the following industry averages. In the third column indicate if Computron Industries’ performance is weak, OK, or strong for that particular ratio. Show your work on the right side of the table.

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Industry</th>
<th>Computron Industries</th>
<th>Indicate weak, OK, or strong and briefly state why.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Ratio (\frac{CA}{CL})</td>
<td>2.7x</td>
<td>(\frac{1290}{510.2} = 2.39x)</td>
<td>Somewhat weak. Less liquid than the industry average.</td>
</tr>
<tr>
<td>Quick Ratio (\frac{CA-Inv}{CL})</td>
<td>1.0x</td>
<td>(\frac{1290 - 836}{510.2} = 0.84x)</td>
<td>Somewhat weak again. Computron is less liquid than the industry by both measures.</td>
</tr>
<tr>
<td>Debt ratio (TLTA) (%)</td>
<td>50%</td>
<td>(\frac{510.2 \times 4.612}{1650.8} = 58.45%)</td>
<td>Weak. Computron has considerably more debt than the industry average.</td>
</tr>
<tr>
<td>Times-interest-earned (\frac{EBIT}{Int})</td>
<td>2.5x</td>
<td>(\frac{491.9}{196} = 2.51x)</td>
<td>Weak. Low TIE also indicates high use of debt and higher than average risk.</td>
</tr>
<tr>
<td>Inventory turnover (\frac{COGS}{INV})</td>
<td>6x</td>
<td>(\frac{3250}{830} = 3.93x)</td>
<td>Weak. Well below the industry average. Implies possible excess inventory.</td>
</tr>
<tr>
<td>Days sales outstanding (\frac{AR}{Sales per day})</td>
<td>32 days</td>
<td>(\frac{402}{3850/360} = 10.65x)</td>
<td>Weak. Computron is carrying high receivables.</td>
</tr>
<tr>
<td>Fixed assets turnover (\frac{Sales}{Net Fixed Asset})</td>
<td>10.7x</td>
<td>(\frac{3850}{3648} = 10.67x)</td>
<td>OK. About the same as the industry average.</td>
</tr>
<tr>
<td>Total assets turnover (\frac{Sales}{TA})</td>
<td>2.6x</td>
<td>(\frac{3850}{1650.8} = 2.33x)</td>
<td>Weak. Assets are not used as effectively as average.</td>
</tr>
<tr>
<td>Profit margin (\frac{NI}{Sales})</td>
<td>3.5%</td>
<td>(\frac{44120}{3850} = 11.46%)</td>
<td>Very weak. Profit margin is less than (\frac{1}{3}) of the industry average.</td>
</tr>
<tr>
<td>Return on total assets (\frac{NI}{Assets})</td>
<td>9.1%</td>
<td>(\frac{44120}{1650.8} = 2.65%)</td>
<td>ROA is also weak, less than (\frac{1}{3}) the industry average.</td>
</tr>
<tr>
<td>Return on equity (\frac{NI}{Equity})</td>
<td>18.2%</td>
<td>(\frac{44120}{685988} = 6.45%)</td>
<td>ROE weak — about only (\frac{1}{3}) of the industry average.</td>
</tr>
</tbody>
</table>

\[ \frac{540.2 + 424.612}{1650.8} = \frac{964.812}{1650.8} = 58.45\% \]
2. (7 points) Construct the **extended** Du Pont equation for Computron, and analyze the component breakdown of the company’s ROE in comparison to the industry average.

\[
ROE = PM \times TAT \times Equity \text{ Multiplier}
\]

**Computron**

\[
= 1.15 \times 2.33 \times \frac{1}{1.58} = 6.38 \text{ (rounded)}
\]

**Industry**

\[
= 3.58 \times 2.6 \times 2 = 18.2
\]

Computron has a much lower PM and a TAT that is a little less than the industry combined with a bit higher equity multiplier.

3. (3 points) Would you say that cost control or asset management is primarily responsible for the deviation of Computron’s ROE from the industry average? Explain.

Since profit margin is the big problem, I would say that it is cost control.
III. (30 points, 15 pts. each for 1 and 2)
1. Jill's Wigs Inc. had the following balance sheet last year:

<table>
<thead>
<tr>
<th></th>
<th>Last</th>
<th>Multi.</th>
<th>1st Pass</th>
<th></th>
<th>Last</th>
<th>Multi.</th>
<th>1st Pass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>800</td>
<td>2</td>
<td>1600</td>
<td>Accounts payable</td>
<td>350</td>
<td>2</td>
<td>700</td>
</tr>
<tr>
<td>Accounts receivable</td>
<td>450</td>
<td>2</td>
<td>900</td>
<td>Accrued wages</td>
<td>150</td>
<td>2</td>
<td>300</td>
</tr>
<tr>
<td>Inventory</td>
<td>1900</td>
<td>2</td>
<td>3800</td>
<td>Notes payable</td>
<td>2000</td>
<td></td>
<td>2000</td>
</tr>
<tr>
<td>Net fixed assets</td>
<td>34,000</td>
<td>1.5</td>
<td>44200</td>
<td>Mortgage</td>
<td>26,500</td>
<td></td>
<td>26500</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Common stock</td>
<td>3200</td>
<td></td>
<td>3200</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Retained earnings</td>
<td>4,000</td>
<td>+1000</td>
<td>5000</td>
</tr>
<tr>
<td>Total assets</td>
<td>$36,200</td>
<td></td>
<td>48600</td>
<td>Total liabilities</td>
<td></td>
<td></td>
<td>37700</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>and equity</td>
<td>$36,200</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Jill has just invented a non-slip wig for men which she expects will cause sales to double, increasing after-tax net income to $1,000. She was at 65% of capacity last year. 65% x 2 = 1.3
(a) Will Jill need any outside capital if she pays no dividends?

(b) If so, how much?

\[ \text{48600 - 37700} \]
\[ \boxed{\$10,900} \]

2. A firm has the following balance sheet:

<table>
<thead>
<tr>
<th></th>
<th>Last</th>
<th>Multi.</th>
<th>1st Pass</th>
<th></th>
<th>Last</th>
<th>Multi.</th>
<th>1st Pass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>10</td>
<td>1.2</td>
<td>12</td>
<td>Accounts payable</td>
<td>10</td>
<td>x/1.2</td>
<td>12</td>
</tr>
<tr>
<td>Accounts receivable</td>
<td>10</td>
<td>1.2</td>
<td>12</td>
<td>Notes payable</td>
<td>20</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>Inventories</td>
<td>10</td>
<td>1.2</td>
<td>12</td>
<td>Long-term debt</td>
<td>40</td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>Fixed assets</td>
<td>90</td>
<td>1.0</td>
<td>90</td>
<td>Common stock</td>
<td>40</td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>Retained earnings</td>
<td></td>
<td></td>
<td></td>
<td>Retained earnings</td>
<td>10</td>
<td>-118</td>
<td>28</td>
</tr>
<tr>
<td>Total assets</td>
<td>$120</td>
<td></td>
<td>126</td>
<td>Total liab. &amp; equity</td>
<td>$120</td>
<td></td>
<td>140</td>
</tr>
</tbody>
</table>

Fixed assets are being used at 80 percent of capacity; sales for the year just ended were $200; sales will increase $10 per year for the next 4 years; the profit margin is 5 percent; and the dividend payout ratio is 60 percent. Assume that fixed assets cannot be sold. Show calculations (other than the balance sheet) below:

\[ \frac{240}{200} = 1.2 \]
\[ 80 \times 1.2 = 96 \Rightarrow \text{no new capacity needed} \]

Sales = 210 + 240 + 230 + 1240 = 3000

NI = 900 \times 0.05 = 45

RE = 45 \times 0.40 = 18

a. What are the total external financing requirements for the entire 4 years, i.e., the total AFN for the 4-year period?

\[ \frac{126}{-140} \]
\[ \rightarrow 414 \text{ surplus} \]
III. (40 points) Two Pass AFN.

**Financing feedback and ROE**

You have been given the attached information on the Crum Company. Crum expects sales to grow by 50% in 2001, and operating costs should increase at the same rate. Fixed assets were being operated at 80% of capacity in 2000, but all other assets were used to full capacity. Underutilized fixed assets cannot be sold. Current assets and spontaneous liabilities should increase at the same rate as sales during 2001. The company plans to finance any external funds needed as 35% notes payable and 65% common stock. After taking financing feedbacks into account, and after the second pass, what is Crum's projected ROE using the projected balance sheet method (use data from the 2nd pass column for the calculation of ROE)?

The blank worksheet for the projected balance sheet method follows.

### Information on the Crum Company:

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>Factor</th>
<th>2001</th>
<th>Feedbk</th>
<th>2nd pass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>$1,000.00</td>
<td>1.5</td>
<td>1500</td>
<td></td>
<td>1500</td>
</tr>
<tr>
<td>Operating costs</td>
<td>800.00</td>
<td>1.5</td>
<td>1200</td>
<td></td>
<td>1200</td>
</tr>
<tr>
<td>EBIT</td>
<td>$200.00</td>
<td></td>
<td>300</td>
<td>+7.47</td>
<td>300</td>
</tr>
<tr>
<td>Interest</td>
<td>16.00</td>
<td></td>
<td>16</td>
<td></td>
<td>23.47</td>
</tr>
<tr>
<td>EBT</td>
<td>$184.00</td>
<td></td>
<td>284</td>
<td></td>
<td>276.53</td>
</tr>
<tr>
<td>Taxes (40%)</td>
<td>73.60</td>
<td></td>
<td>113.6</td>
<td></td>
<td>110.41</td>
</tr>
<tr>
<td>Net Income</td>
<td>$110.40</td>
<td></td>
<td>170.40</td>
<td></td>
<td>165.92</td>
</tr>
<tr>
<td>Dividends (60%)</td>
<td>66.24</td>
<td></td>
<td>102.34</td>
<td></td>
<td>99.55</td>
</tr>
<tr>
<td>Add'n to R.E.</td>
<td>$44.16</td>
<td>1.5</td>
<td>1050</td>
<td></td>
<td>1050</td>
</tr>
<tr>
<td>Current Assets</td>
<td>$700.00</td>
<td>1.2</td>
<td>3600</td>
<td></td>
<td>3600</td>
</tr>
<tr>
<td>Net fixed Assets</td>
<td>300.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total assets</td>
<td>$1,000.00</td>
<td></td>
<td>1410</td>
<td></td>
<td>1410</td>
</tr>
<tr>
<td>A/P and Accruals</td>
<td>$150.00</td>
<td>1.5</td>
<td>225</td>
<td>+93.39</td>
<td>225</td>
</tr>
<tr>
<td>N/P 8.00%</td>
<td>200.00</td>
<td></td>
<td>200</td>
<td>+173.45</td>
<td>293.39</td>
</tr>
<tr>
<td>Common stock</td>
<td>150.00</td>
<td></td>
<td>150</td>
<td>+173.45</td>
<td>323.45</td>
</tr>
<tr>
<td>Retained earnings</td>
<td>500.00</td>
<td>+68.16</td>
<td>568.16</td>
<td>+66.37</td>
<td>566.37</td>
</tr>
<tr>
<td>Total Liab &amp; Equity</td>
<td>$1,000.00</td>
<td></td>
<td>1143.16</td>
<td></td>
<td>1408.21</td>
</tr>
</tbody>
</table>

### AFN Financing:

<table>
<thead>
<tr>
<th>Weights:</th>
<th>Dollars:</th>
<th>Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/P</td>
<td>0.3500</td>
<td>93.394</td>
</tr>
<tr>
<td>Common Stock</td>
<td>0.6500</td>
<td>173.45</td>
</tr>
</tbody>
</table>

\[
\text{ROE} = \frac{18.659\%}{1.000} = 18.659\%
\]

\[
\frac{323.45 + 566.37}{323.45 + 566.37} = 18.659\%
\]
V. (25 points) Van Auken Lumber’s 2000 income statement is shown here:

<table>
<thead>
<tr>
<th>Van Auken Lumber:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income Statement for December 31, 2000</td>
</tr>
<tr>
<td>(thousands of dollars)</td>
</tr>
<tr>
<td>Sales</td>
</tr>
<tr>
<td>Cost of goods sold</td>
</tr>
<tr>
<td>Gross profit</td>
</tr>
<tr>
<td>Fixed operating costs</td>
</tr>
<tr>
<td>Earnings before interest and taxes</td>
</tr>
<tr>
<td>Interest</td>
</tr>
<tr>
<td>Earnings before taxes</td>
</tr>
<tr>
<td>Taxes (40%)</td>
</tr>
<tr>
<td>Net Income</td>
</tr>
<tr>
<td>Dividends (50%)</td>
</tr>
</tbody>
</table>

a. (12 points) Compute the degree of operating leverage (DOL), degree of financial leverage (DFL), and degree of total leverage (DTL) for Van Auken Lumber.

\[
DOL = \frac{10800}{4320} = 2.5
\]

\[
DFL = \frac{4320}{1440} = 3
\]

\[
DTL = 2.5 \times 3 = 7.5
\]

b. (5 points) Explain the meaning of the values you computed in part “a” for DOL, DFL, and DTL.

DOL of 2.5 \( \Rightarrow \) a 1% change in sales changes EBIT 2.5%

DFL of 3 \( \Rightarrow \) a 1% change in EBIT changes EPS 3%

DTL of 7.5 \( \Rightarrow \) a 1% change in sales changes EPS 7.5%

c. (8 points) Briefly discuss two ways Van Auken can reduce its degree of total leverage

Reducing fixed cost will reduce DOL & DTL
Reducing interest will reduce DFL & DTL
VI. (10 points) The Weaver Watch Company manufactures a line of ladies’ watches, which is sold through discount houses. Each watch is sold for $20; the fixed costs are $100,000 for 30,000 watches or less; variable costs are $15 per watch.

a. What is the firm’s operating gain or loss at sales of 18,000 watches?

\[
\text{Sales} \quad 18,000 \times 20 = 360,000 \\
\text{VC} \quad 18,000 \times 15 = -270,000 \\
\text{FC} \quad -100,000 \\
\text{EBIT} \quad (10,000)
\]

b. What is the operating breakeven point?

\[
Q = \frac{\text{FC}}{p-v} = \frac{100,000}{20-5} = 20,000 \text{ units}
\]

c. What happens to the operating breakeven point if the selling price rises to $25?

\[
Q = \frac{\text{FC}}{p'-v} = \frac{100,000}{25-5} = 10,000 \text{ units}
\]

Breakeven point falls by half.