Homework #3

You must show your entire work **on a separate sheet(s) of paper** to get full credit.

1. Complete the following table for neutral atoms

<table>
<thead>
<tr>
<th>Name of Elements</th>
<th>Symbol</th>
<th>Atomic Number</th>
<th>Mass Number</th>
<th>Number of Protons</th>
<th>Number of Neutrons</th>
<th>Number of Electrons</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td></td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calcium</td>
<td></td>
<td>42</td>
<td></td>
<td>38</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td>16</td>
<td></td>
</tr>
<tr>
<td></td>
<td>56</td>
<td>138</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. What is Dalton’s Atomic Theory?

3. What are the elements that contain each of the following numbers of protons? Give their names and chemical symbols.

   a. 1   b. 76   c. 29   d. 21   e. 95

4. Draw the Lewis dot structures for the following elements.


5. What happens when an electron collapses back to its ground state from an excited state?

6. Draw a diagram similar to the step ladder method done in lecture for the electronic configuration of the following elements.

   a. Sodium   b. Magnesium
   c. Aluminum  d. Silicon
   e. Phosphorus  f. Argon

7. How many valence electrons does each element have in Question 6?

8. Classify each of the following as a solid, liquid, or gas at room temperature.


9. Classify each of the following elements as a metal, a nonmetal, or a semimetal.

   a. Helium   b. Sodium   c. Iodine   d. Calcium   e. Boron