

Problem Set - Atomic Structure #1 - Questions

Atomic Structure Problems

Clearly and as completely as possible describe the structure of the following atoms and ions.

<b>Major Steps in Solving Atomic Structure Problems</b>		
<ol style="list-style-type: none"> <li>1. Identify the location of the Element on the Periodic Table.</li> <li>2. From the Periodic Table, identify &amp; write down the <b>Atomic Number (AN)</b> of the Element.</li> <li>3. From the symbols to the upper left hand side of the Element Symbol, identify &amp; write down the <b>Mass Number (MN)</b> of the Isotope.</li> <li>4. The <b>Atomic Number</b> <math>\equiv</math> The <b>Number of Protons (p<sup>+</sup>)</b> in the Nucleus.</li> <li>5. The <b>Mass Number</b> minus the <b>Atomic Number</b> <math>\equiv</math> The <b>Number of Neutrons (n)</b> in the Nucleus.</li> <li>6. Identify if it is a <b>Neutral Atom, Cation, or Anion</b> and then identify the <b>Number of Charges (#)</b>.</li> <li>7. For Neutral Atoms, the <b>Atomic Number</b> <math>\equiv</math> The <b>Number of Electrons (e<sup>-</sup>)</b> in the Nucleus.</li> <li>8. For <b>Positively Charged Ions, Cations</b>, the Number of Electrons <math>\equiv</math> The Atomic Number minus the number of <b>Positive Charges on the Ion</b> (i.e., this corresponds to the number of electrons removed on going from the neutral atom to the cation).</li> <li>9. For <b>Negatively Charged Ions, Anions</b>, the Number of Electrons <math>\equiv</math> The Atomic Number plus the number of <b>Negative Charges on the Ion</b> (i.e., this corresponds to the number of electrons added on going from the neutral atom to the anion).</li> </ol>		
$p^+ = AN$		
$n = MN - AN$		
$e^- = AN$ (for neutral atoms)	$e^- = AN - \#$ (for Cations)	$e^- = AN + \#$ (for Anions)

1. <sup>13</sup>C
2. <sup>12</sup>C
3. <sup>14</sup>C
4. <sup>1</sup>H
5. <sup>2</sup>H (can also be shown as <sup>2</sup>D)
6. <sup>3</sup>T (can also be shown as <sup>3</sup>H)
7. <sup>11</sup>B
8. <sup>10</sup>B
9. <sup>56</sup>Fe

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