

Biology I Advanced
Obj Chapter 2
The Chemical Basis of Life

1. Describe the three major subatomic particles in terms of charge, mass, and location in the atom.
2. Define these terms in a manner that differentiates them from other terms in the list:

<i>Atom</i>	<i>Element</i>	<i>Molecule</i>	<i>Isotope</i>	<i>Ion</i>	<i>Compound</i>
<i>Radioactive isotope</i>		<i>Mixture</i>	<i>Solution</i>	<i>solute</i>	<i>solvent</i>
3. Use the periodic table to indicate the number of protons, neutrons and electrons in the following:

Lead atom	Mg ²⁺	N ³⁻	Thallium-201	Strontium-89
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4. Choose 2 elements from the three top rows of the periodic table. Draw ring diagrams to show how their electrons are arranged.
5. Describe three ways scientists use radioisotopes in connection with organisms.
6. Differentiate between ionic and covalent bonding. Describe a method for identifying whether a bond is ionic or covalent.
7. Write a formula for each of the following ionic compounds:
 - a. calcium bonded to chlorine
 - b. Magnesium bonded to fluorine
 - c. Potassium bonded to oxygen
 - d. Potassium bonded to iodine
8. Draw a diagram of a water molecule. Indicate type of atoms and placement. Describe the overall polarity of the molecule.
9. Define these terms as they relate to water molecules:

polarity	hydrogen bond	adhesive	cohesive	capillarity
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10. Describe five characteristics of water and give an example of how each characteristic is important to organisms.
11. Define and differentiate between acids and bases *without* reference to pH. Describe two acids and two bases found in organisms.
12. Describe the pH scale in terms of range of numbers, size of increments and associated ions.
13. What is the function of a buffer? How are buffers important to organisms?
14. Describe chemical reactions using the following terms:

chemical bond	reactant	product
oxidation reaction	reduction reaction	