

**Assessment****Chapter 3****BLM 3-5****Chapter 3 Test****Goal**

**Demonstrate and assess your understanding of the concepts presented in Chapter 3.**

**Short Answer Questions**

- Classify each of the following substances as ionic or covalent based on the given properties.
  - A blue solid dissolves in water. The solution conducts electricity.
  - A colourless liquid does not dissolve in water.
  - A white crystalline solid dissolves in water. The solution does not conduct electricity.
- Classify the bonds between the following elements as ionic or covalent based on electronegativity differences.
  - potassium and oxygen
  - carbon and iodine
  - silver and iodine
  - aluminum and fluorine
- Use Lewis structures to show how electrons transfer to form ionic bonds between the following elements:
  - Ca and S
  - Na and F
  - Al and Cl
  - K and O
- Use Lewis structures to show how electrons are shared to form covalent bonds in compounds with the following atoms:
  - a hydrogen atom and an iodine atom
  - one carbon atom and four chlorine atoms
  - one nitrogen atom and three fluorine atoms
  - two hydrogen atoms attached to a carbon atom that also has one oxygen atom attached to it
- Determine the polarity of the bonds between each pair of atoms (i.e., non-polar covalent, polar covalent, ionic) based on their electronegativity differences.
  - iodine and fluorine
  - bromine and chlorine
  - lithium and fluorine
  - carbon and nitrogen
  - boron and oxygen

**Assessment****Chapter 3****BLM 3-5****Chapter 3 Test** (continued)

6. Explain why  $\text{H}_2\text{O}$  is a liquid at room temperature, while a molecule of similar size, like methane ( $\text{CH}_4$ ), is gaseous.
7. Write the names and formulas of the substances that result from the following elemental combinations.

	<b>F</b>	<b>O</b>	<b>N</b>	<b>C</b>
Na				
Mg				
Al				
S				

8. Write the formulas for the following compounds.
- sodium sulfate
  - aluminum phosphate
  - copper(II) chloride
  - tin(IV) hydroxide
  - iron(III) carbonate
9. Give the correct name for the following formulas.
- $\text{KMnO}_4$
  - $\text{Ca}(\text{CH}_3\text{COO})_2$
  - $\text{PbO}_2$
  - $\text{SnSO}_3$
  - $\text{Mg}(\text{HCO}_3)_2$
10. Iron can form two different sulfates. Each sulfate can be named in two different ways. Write the formula and both names for each compound.