Section 3 — Formation of Ionic and Molecular Compounds

1. Compounds are formed when elements combine in different chemical reactions. This identifies which elements combine and how many of them are present in the compound.

A. Chemical Name
B. Atomic Mass Unit
C. Atomic Number
D. Chemical Formula

2. In the formula for baking soda [$NaHCO_{3(s)}$] the following indicates how many atoms are present in each molecule …

A. 1 sodium, 1 hydrogen, 3 carbon dioxide
B. 1 atom of each element
C. 1 sodium, 1 hydrogen, 1 carbon, 3 oxygen
D. 1 sodium, 1 hydrogen, 1 calcium and 3 oxygen

3. In the formula for baking soda $NaHCO_{3(s)}$ the (s) indicates that this molecule is …

A. safe
B. stable
C. strong
D. solid

4. Pure substances formed as a result of the attraction between charged particles of opposite charges are …

A. Stable elements
B. Ionic compounds
C. Molecular compounds
D. Charged elements

5. When ionic compounds are formed, the ions combine to form a …

A. crystal
B. block
C. irregular pattern
D. cloud

6. When sodium (a very reactive metal) is placed in chlorine (a green gas), the sodium explodes with a bright yellow flame. As it burns, this white, coarse-grained powder is produced.

A. silicon
B. carbon
C. alum
D. salt

7. A group of ions *' that act as one '* are called …

A. Subatomic ions
B. Polyatomic ions
C. Molecular ions
D. Aqueous ions

8. When naming ionic compounds there are two rules to remember: The first is that the name of the metal is always placed first, the second is the name of the non-metal ion(s) changes to ….

A. 'ous'
B. 'ade'
C. 'ide'
D. 'ate'

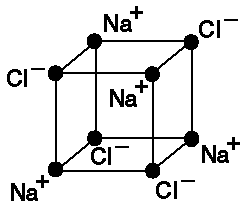
9. The ion charges of a particular element will help you determine the chemical formula for the compound that is formed. Calcium [Ca^{2+}] combines with chlorine [Cl^{1-}] to produce Calcium Chloride. The correct formula for Calcium Chloride is …

A. **Ca_2Cl**
B. **$CaCl_2$**
C. **2CaCl**
D. **Ca2Cl**

10. The alkali metals include Lithium and Sodium, each having an ion charge of 1+, are often reactive with the elements that have an ion charge of 1-. The group of elements that alkali metals react with are called the …

A. **Halogens**
B. **Earth Metals**
C. **Non-Metals**
D. **Metalloids**

11. This type of lattice structure represents the compound, **sodium chloride**.



The characteristic that identifies this compound as an ionic compound is its **distinct crystal** …

A. **size** **B.** **shape** **C.** **ion** **D.** **element**

12. **N_2O_3** is a molecular compound. The chemical name - following the rules for naming molecular compounds – for N_2O_3 is …

A. **trinitrogen oxide**
B. **dinitrogen oxide**
C. **trinitrogen dioxide**
D. **dinitrogen trioxide**

13. Sugar **$C_{12}H_{22}O_{11}$** is a molecular compound. This compound contains …

A. **3 carbon atoms, 4 hydrogen atoms and 2 oxygen atoms**
B. **3 calcium atoms, 4 helium atoms and 2 organic atoms**
C. **12 carbon atoms, 22 hydrogen atoms and 11 oxygen atoms**
D. **12 calcium atoms, 22 helium atoms and 11 oxidizing atoms**

14. Use the information in the following table to answer this question.

Compound	Formula	Melting Point °C	Boiling Point °C
baking soda	$NaHCO_3$	455°	1550 °
carbon dioxide	CO_2	sublimates	-79 °
rubbing alcohol	CO_3H_8O	-90 °	82 °
salt	NaCl	801 °	1413 °

The molecular compounds from the table above are …

A. **baking soda and salt**
B. **rubbing alcohol and salt**
C. **carbon dioxide and baking soda**
D. **carbon dioxide and rubbing alcohol**

15. A Tetra Pak is a drink container that is used by manufacturers to provide juice in a handy convenient format. Tetra means …

A. **recyclable**
B. **four**
C. **wax paper**
D. **convenient**