NAME \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ GRADED: BONDING / COMPOUNDS

DIRECTIONS: Answer each of the following questions by selecting or providing (when required) the best answer. I have noticed that putting answers off to the side, has not worked brilliantly … so let’s try highlighting in yellow for the multiple choice. To highlight in MS Word, select the text to be highlighted. Go to the HOME tab and select the highlight icon, which should look something like:

This worksheet covers work from page 76 to 104 of the notes. Have this sent back to me, by Thursday, 9 April, 2020.

1) Which formula is best described by the terms; **inorganic molecule** and **compound**?

 1) Na2O 2) CH4 3) O3 4) H2O

2) Which formula is best described by the terms; **organic, molecule,** and **compound**?

 1) Na2O 2) CH4 3) O3 4) H2O

3) Which formula represents a molecular **inorganic** **compound** made with **polar covalent bonding**?

 1) Fe2O3 2) CH3OH 3) F2 4) SO2

4) Which formula is best described by the terms: **inorganic, ionic bonds,** and **compound**?

 1) Fe2O3 2) CH3OH 3) F2 4) SO2

5) Which element, when bonded to lithium (Li) would produce an ionic compound?

 (1) K (atomic number 19) (3) Kr (atomic number 36)

 (2) Fe (atomic number 26) (4) F (atomic number 9)

6) As a bond between a fluorine atom (atomic # 9) and a sulfur atom (atomic # 16) is formed, electrons are

 (1) shared to form an ionic bond (3) lost and gained to form an ionic bond

 (2) shared to form a covalent bond (4) lost and gained to form a covalent bond



7) Which type of chemical bond is formed between two atoms of oxygen, in O2?

 (1) metallic (2) polar covalent (3) ionic (4) nonpolar covalent

 Cl H

 | |

 C = C

 | |

 H Cl

8) Given the structural formula:

 How many covalent bonds are represented in the molecule?

 (1) 6 (2) 2 (3) 5 (4) 4

 9) Which one of these formulae contains (a) **polar covalent bond(s)**?

 (1) Br2 (3) NH3

 (2) KCl(4) CaBr2

10) Which type of bond is formed when electrons are transferred completely from one atom to another?

 (1) covalent (3) hydrogen

 (2) ionic (4) metallic

11) Which type of bond is found in the compound sulfur dioxide? (SO2)?

 (1) covalent (3) hydrogen

 (2) ionic (4) metallic

12) When an atom of chlorine and an atom of hydrogen become a molecule of hydrogen chloride (HCl), a

 chemical bond is:

 1) formed and energy is released

 2) broken and energy is absorbed

 3) broken and energy is released

 4) formed and energy is absorbed

13) The bonds between iron and chlorine, in FeCl3 are

 (1) ionic and are formed by the sharing of valence electrons

 (2) ionic and are formed by the transfer of valence electrons

 (3) covalent and are formed by the sharing of valence electrons

 (4) covalent and are formed by the transfer of valence electrons

14) A solid substance was tested in the laboratory. The test results are listed below.

 The solid: **• dissolves in water • is an electrolyte • melts at a temperature > 200°C**

 Based on these results the solid substance could be:

 (1) Cu (2) C12H22O11 (3) C (4) MgSO4

DIRECTIONS: For questions 15 -18, use your notes, your Periodic Table which lists metals and nonmetals, and your grasp of terms to identify the following substances. **Read the short descriptions, and HIGHLIGHT ALL APPROPRIATE DESCRIPTORS.**

15) Given: Potassium chloride (KCl) is very soluble in water, breaking up into ions rather readily. It is a

 relative of regular table salt. It tastes like table salt, and is used as a “salt substitute” for those of

 the population on a low sodium diet. Since it lacks sodium (possessed by table salt), it can be used

 to flavor food(s), yet help to maintain lower blood pressure.

Highlight all that apply. Hint, there are 5

🖵 a molecular element made of many, but the same type of atom(s)

🖵 a molecular (covalent) compound

🖵 an ionic compound

🖵 has covalent bonds, primarily

🖵 has ionic bonds, primarily

🖵 organic substance (compound or element)

🖵 inorganic substance (compound or element)

🖵 electrolyte in H2O so it can conduct electricity

🖵 non-electrolyte so it won’t conduct a current

🖵 could be decomposed into simpler substances

🖵 cannot be decomposed into simpler substances

16) Given: C12H22O11 is called sucrose (table sugar). It is a disaccharide (di-sack-ar-ide). This means that it is

 two simpler sugars bonded to each other. As we all know, sucrose is nicely soluble in water, but

 it does not form ions in water. Taste buds on our tongues detect its presence, because the shape of

 the molecule “fits” into certain receptors on cells and triggers the nerve impulse we recognize as

 “sweet”. Sugar can be combusted (burned or oxidized) in the presence of oxygen gas.

Highlight all that apply. Hint, there are 5

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🖵 a molecular (covalent) compound

🖵 an ionic compound

🖵 has covalent bonds, primarily

🖵 has ionic bonds, primarily

🖵 organic substance (compound or element)

🖵 inorganic substance (compound or element)

🖵 electrolyte in H2O so it can conduct electricity

🖵 non-electrolyte so it won’t conduct a current

🖵 could be decomposed into simpler substances

🖵 cannot be decomposed into simpler substances

17) Given: NaF is the formula for one of the fluoride-containing substances found in toothpaste. It helps to

 deliver the fluoride ion into tooth enamel, in order to convert and to strengthen the naturally

 occurring enamel, hydroxyapatite into fluoroapatite, which is 100 times more resistant to the

 attack of acids! It dissolves easily into water, which is a real advantage because the fluoride ion

 can be deposited by water and saliva to all enameled surfaces, with careful brushing.

Highlight all that apply. Hint, there are 5

🖵 a molecular element made of many, but the same type of atom(s)

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18) Given: Benzene has the formula of C6H6. It is used as a starting point for a large number of other

 materials. Benzene is carcinogenic (car-sin-oh-jen-ic) and can mutate human DNA. It is

 poorly soluble in water and thus, it does not dissolve or break into ions. It is very flammable,

 which means it is easily combusted (oxidized).

Highlight all that apply. Hint, there are 5

🖵 a molecular element made of many, but the same type of atom(s)

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🖵 an ionic compound

🖵 has covalent bonds, primarily

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🖵 organic substance (compound or element)

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🖵 could be decomposed into simpler substances

🖵 cannot be decomposed into simpler substances



19) What is the probable skeletal formula for the molecule:

 Highlight the NUMBER of your choice… The

 diagrams won’t be highlighted.



 1)



 2)



 3)



 4)



20) Using the same molecule as in #19, which of the following is the most correct

 ***condensed*** formula?

 1) CH3CH2NH2

 2) C2H7N

 3) CHN

 4) C3H9N

21) True or False: Based upon your notes, the molecule cholesterol (page 96 of your notes), has a pyridine

 ring (page 102) in its structure.