

Compounds: SOL Review #3

Chapters 7, 8, Organic Chemistry

Name: _____

Core Concept: Naming Compounds and Writing Formulas

Fringe Concepts:

Ionic and Covalent Bonds

Empirical Formulas

Oxidation Number

Lewis Dot, Molecular Shapes, Valence Electrons, Organic Chemistry, Polymers

Ionic and Covalent Bonds

1) Create a chart outlining the differences between ionic and covalent bonds:

IONIC

electrons are transferred

cation + anion

always cross charges

NEVER use prefixes

polyatomic ions

transition metals

COVALENT

electrons are shared

nonmetal + nonmetal

NEVER criss-cross

always use prefixes (unless mono on first element)

Naming Compounds Identify each compound as ionic (I) or covalent (C). Write the name of the compound.

- | | |
|------------------------------------------------------------|----------------------------------------------------------------------------------|
| 2) <u>C</u> SiO ₂ silicon dioxide | 6) <u>I</u> Fe ₂ (CO ₃) ₃ iron (III) carbonate |
| 3) <u>I</u> AlI ₃ aluminum iodide | 7) <u>C</u> F ₂ O ₇ difluorine heptoxide |
| 4) <u>I</u> NH ₄ OH ammonium hydroxide | 8) <u>C</u> N ₂ O ₄ dinitrogen tetroxide |
| 5) <u>I</u> Ca ₃ N ₂ calcium nitride | 9) <u>I</u> Cu ₂ O copper (I) oxide |

Writing Formulas Identify each compound as ionic (I) or covalent (C). Write the formula of the compound.

- | | |
|-------------------------------------------------------------------|----------------------------------------------------------------------------------|
| 10) <u>C</u> carbon tetrachloride CCl ₄ | 14) <u>I</u> aluminum nitride AlN |
| 11) <u>I</u> cobalt (II) phosphide Co ₃ P ₂ | 15) <u>I</u> strontium phosphate Sr ₃ (PO ₄) ₂ |
| 12) <u>I</u> ammonium sulfide (NH ₄) ₂ S | 16) <u>C</u> carbon monoxide CO |
| 13) <u>C</u> diphosphorus pentoxide P ₂ O ₅ | 17) <u>I</u> iron (III) hydroxide Fe(OH) ₃ |

18) What is the oxidation state of iron in Fe₃(PO₄)₂? +2 or 2+

19) What is the oxidation number of a nitride ion? -3 or 3-

Lewis Dot Structures & Molecular Shapes

20) How many valence electrons does phosphorus have? 5

21) How many valence electrons does helium have? 2

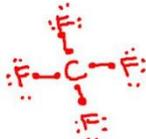
22) Why do all of the alkali metals react violently with water? They all have 1 valence electron.

Draw the Lewis Dot structure and identify the molecular shape of each compound.

23) H₂O bent



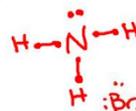
24) CF₄ tetrahedral



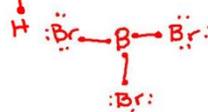
25) O₂ linear



26) NH₃ trigonal pyramid



27) BBr₃ trigonal planar



28) N₂ linear



