HW04 - Introduction to Compounds

1 4 points

Complete the sentence regarding the energy levels of an electron in the hydrogen atom. As the principal quantum number increases,

- the energy levels remain degenerate
- the spacing between successive energy levels remains constant
- the spacing between successive energy levels increases
- the spacing between successive energy levels decreases

2 4 points

Which of these atoms have unpaired electrons?

- oxygen
- neon
- nitrogen
- magnesium

3 4 points

How many total electrons are in the oxide anion?

- 4
- 6
- 12
- 10
- 8

4 4 points

The metal Ca and the nonmetal Br form an ionic bond. What is the formula for this ionic compound?

- $CaBr_2$
- Ca_2Br_3
- CaBr
- Ca_2Br
- Ca_3Br_2

5 4 points

Strontium (Sr) and chlorine (Cl) come together to make a bond. What type of compound is formed and what is its formula?

- Covalent, Sr_2Cl_2
- Ionic, SrCl
- Ionic, $SrCl_2$
- Covalent, $SrCl_2$

6 4 points

An example of iron oxidizing to form rust involves oxide forming an ionic compound with iron(III). What is the formula of this ionic compound?

- Fe_3O_2
- Fe_2O_3
- FeO_3
- Fe_3O_4
- FeO

7 4 points

Cobalt(II) forms an ionic compound with hydroxide. What is the formula for this compound?

- $Co(OH)_2$
- $CoOH_2$
- OH_2Co
- $Co(OH)_3$
- CoOH

8 4 points

What is the formula for magnesium phosphate?

- $Mg_3(PO_3)_2$
- $Mg(PO_4)_2$
- $Mg_3(PO_4)_2$
- Mg_3PO_4
- $MgPO_4$

9 4 points

What is the formula for sodium phosphite?

- Na_2PO_3
- $NaPO_3$
- Na_3PO_4
- $NaPO_2)_3$
- Na_3PO_3

10 3 points

What is the name of Na_2S?

- sodium sulfate
- sodious sulfous
- sodium sulfide
- disodium sulfide
- disodium sulfurous
- sodium sulfite

11 4 points

Compared to a nonmetal in the same period, a metal is more likely to _____ its valence shell and form a _____.

- fill, cation
- empty, anion
- empty, cation
- fill, anion

12 4 points

Select the ionic compound with the strongest theoretical ionic bond strength.

- NaI
- KF
- NaF
- KCl

13 4 points

Select the ionic compound with the highest theoretical lattice energy.

- $MgCl_2$
- CaI_2
- MgI_2
- $CaBr_2$

14 4 points

A stronger ionic bond is typically associated with the ions having...
select all that apply.

- larger ionic radii
- greater charge density
- larger charges
- smaller ionic radii

15 4 points

The range of atomic radii for small to large atoms is approximately...

- .5 to 300 Å
- 1 to 1000 Å
- 50 to 300 Å
- .5 to 3 Å
- 40 to 5000 Å

16 4 points

Which of the following best ranks the neutral elements P, Ge, and O from smallest to largest atomic radius?

- O < Ge < P
- Ge < P < O
- Ge < O < P
- P < O < Ge
- O < P < Ge

17 4 points

The smallest atomic radius in a particular period will be the...

- alkaline earth metal
- halogen
- noble gas
- alkali metal

18 4 points

Which of the following species is most likely to lose an electron to form a cation?

- Carbon
- Oxygen
- Sodium
- Fluorine

19 4 points

Which of the following is expected to have the highest electronegativity?

- Magnesium
- Sodium
- Chlorine
- Carbon

20 4 points

Hydrofluoric acid, HF, makes a polar covalent bond. Which of the following best describes the bond?

- There is an unequal sharing of electrons, resulting in a partial negative and partial positive
- There is an equal sharing of electrons, resulting in completely neutral charges on each atom
- There is an equal sharing of electrons, resulting in a partial negative and partial positive
- There is an unequal sharing of electrons, resulting in completely neutral charges on each atom

21 4 points

A bond between two nonmetals involves the sharing of electrons. However, one of the atoms has a higher electron affinity, meaning it attracts the electrons in the bond more than the other atom. What type of bond is this?

- Pure Covalent
- Polar covalent
- Ionic
- Metallic

22 4 points

Select all the covalent compounds below:

- Br_2
- CH_4
- CO_2
- CaO
- H_2O
- NH_3
- LiBr
- HCl

23 4 points

Select all the compounds below that have ionic bonds.

- NaCl
- HBr
- $MgCl_2$
- LiBr
- CH_3OH
- H_2O
- $FeCl_3$

24 4 points

Which type of bond is found in each of the following compounds?
HBr
I_2
LiBr

- HBr: ionic
  I_2: covalent
  LiBr: covalent
- HBr: ionic
  I_2: covalent
  LiBr: ionic
- HBr: covalent
  I_2: covalent
  LiBr: ionic
- HBr: covalent
  I_2: ionic
  LiBr: covalent

25 4 points

What are the bonds in the following molecules?
HCl
Br_2
KCl

- HCl: covalent
  Br_2: covalent
  KCl: ionic
- HCl: ionic
  Br_2: ionic
  KCl: covalent
- HCl: ionic
  Br_2: covalent
  KCl: covalent
- HCl: ionic
  Br_2: covalent
  KCl: ionic