WB chem 7 10-17-17

① Formula

aluminum nitrate

lead (IV) permanganate

zinc chromate

Vanadium (II) phosphate

Silver hydroxide

② Arrange the following atoms in order of increasing reactivity using arrows and words:

Rb, Li, Na, K

③ which atom is more reactive?

Ca or Na

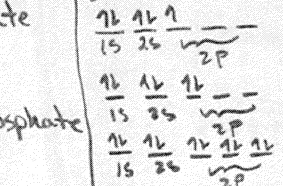
④ The radius of the atom is determined by:

Zeff vs. core

Protons vs. Zeff

Zeff vs valence

⑤ Select OD that violates Hunds Rule: write the OD on your board!



⑥ write the net ionic ppt rxn between:

$AgNO_3$ and NaCl

$Pb(NO_3)_2$ and KI

$Ba(NO_3)_2$ and Na_2SO_4

⑦ write the ionization equations:

$AgNO_3$, $Pb(NO_3)_2$, $Ba(NO_3)_2$

$MgCl_2$

⑧ when Rb reacts with oxygen, the charge on Rb is: ____

⑨ A soln is flame tested producing a deep red flame. The element is ____.

⑩ choose the element with the lowest IE.

Cl, P, S, Si

⑪ An atom of Cl has 17 e^-. How many energy levels does it need for its e^-?

⑫ name

$Ca(OH)_2$

$Fe(NO_2)_3$

$(NH_4)_2Cr_2O_7$

$Cr(CN)_3$

Li_2CO_3

⑬ write the EC:

He, Ne, Ar

⑭ Mg reacts with oxygen. Write the correct chemical formula for the compound that forms.

⑮ name

Na_2CO_3

NaOH

$MgBr_2$

KCl

$FeCl_2$

⑯ which element has the highest attractive forces?

Al, P, S, Si, Cl, Ar

⑰ which element has the lowest attractive forces?

Cr, Mn, Sc, Ti, Fe, Zn

⑱ The smallest atom is: Bi, Sb, As, P, N

⑲ Select the atom with 2 single e^- in the highest occupied energy level:

Mg, O, N, F

⑳ write the outer valence EC for F, Cl, Br.

㉑ which of the following elements have 2 unpaired e^- in their EC?

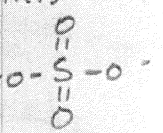
㉒ Select the smallest element:

Br, Se, As, Ge

㉓ Calc # core e^- in C

㉔ Calc # core e^- in Ar.

㉕ Name this polyanion:



㉖ write the ionization equation:

$Al(OH)_3$

$SnCrO_4$

$HgBr_2$

$Cr_2(SO_4)_3$

$KMnO_4$

$Fe(OH)_3$

㉗ which compound is most ionic?

PCl_3, OF_2, BBr_3, LiF, SF_6

㉘ Given:

NaCl, $MgBr_2$, LiOH, $CuCO_3$

The dominant chemical bond is ____.

6 write the net ionic ppt rxn for the rxn between:

$AgNO_3$ and $NaCl$	$Ag^+ + Cl^- \rightarrow AgCl$
$Pb(NO_3)_2$ and KI	$Pb^{+2} + 2I^- \rightarrow PbI_2$
$Ba(NO_3)_2$ and Na_2SO_4	$Ba^{+2} + SO_4^{-2} \rightarrow BaSO_4$

7 Write the ionization equation:

$AgNO_3$	$AgNO_3 \rightarrow Ag^+ + NO_3^-$
$Pb(NO_3)_2$	$Pb(NO_3)_2 \rightarrow Pb^{+2} + 2NO_3^-$
$Ba(NO_3)_2$	$Ba(NO_3)_2 \rightarrow Ba^{+2} + 2NO_3^-$
$MgCl_2$	$MgCl_2 \rightarrow Mg^{+2} + 2Cl^-$

7

The first subatomic particle discovered was electron.

8

When Rb metal reacts with oxygen, the charge on Rb is +1 or -1

9

A solution containing an unknown metal is flame tested. The color of the flame is Red. The metal is Ca, Sr, Li, Na, Ba

10

Choose the element with the lowest I.E. Cl, P, S, Si

11

An atom of Cl has 17e⁻. How many energy levels needed? 3

9-12-12 Worksheet Nomenclature

Directions: Name the compound. Then write the ionization equation.

1. $AuBr_3$ gold(III) bromide

2. $MgHPO_4$ magnes. hydphosphate

3. Ag_2SO_4 Silver sulfate

4. $Ca(OH)_2$ calcium hydroxide

5. $Fe(NO_2)_3$ iron(III) nitrite

6. $(NH_4)_2Cr_2O_7$ ammonium dichromate

7. $Cr(CN)_3$ chromium(III) cyanide

8. Li_2CO_3 lithium carbonate

9. $BaSO_4$ barium sulfate

10. $Mn(OH)_2$ manganese(II) hydroxide

(a) Write the E C of He, Ne, Ar.

He $1s^2$

Ne $1s^2 2s^2 2p^6$

Ar $1s^2 2s^2 2p^6 3s^2 3p^6$

(c) Principle quantum number (n) refers to shape of the orbital.

(d) Principle quantum number (m_l) refers to orientation of the orbital

(e) neutral An atom with at. number equal to 37 has 37 electrons.

+1 charge 36 e^-

(f) When Mg reacts with nitrogen, Mg ionizes to form a charge of +2.

Mg_2O MgO_2 MgO

Naming Ionic Compounds Worksheet One

Give the name of the following ionic compounds:

15

1) Na_2CO_3 Sodium carbonate
2) NaOH sodium hydroxide
3) $MgBr_2$ magnesium bromide
4) KCl pot ehloride
5) $FeCl_2$ iron (II) chloride
6) $FeCl_3$ iron (III) chloride
7) $Zn(OH)_2$ zinc hydroxide
8) $BeSO_4$ beryllium Sulfate
9) CrF_2 ~~cal~~ chromium (II) fluoride
10) Al_2S_3 Alu sulfide

11) PbO lead (II) oxide
12) Li_3PO_4 lithium phosphate
13) TiI_4 titanium (IV) iodide
14) Co_3N_2 cobalt (I) nitride
15) Mg_3P_2 mag phosphide
16) $Ga(NO_2)_3$ gallium(III)nitrite
17) Ag_2SO_3 Silver Sulfite
18) NH_4OH ammonium hydroxide
19) $Al(CN)_3$ alu cyanide
20) $Be(CH_3COO)_2$ beryl. acetate
$C_2H_3O_2$

Which of the following elements has higher attractive forces on the valence e⁻?

Al, P, S, Si, Cl, Ar

Which of the following elements has lower attractive forces on its valence e⁻?

Cr, Mn, Sc, Ti, Fe, Zn

Which of the following elements has higher attractive forces on its outer e⁻?

F, I, Cl, Br

Which of the following elements is smallest?

Bi, Sb, As, P, N

13 Which element, Mg or Al, requires more ionization energy to remove an e^- from the n=2 energy level?

$\overset{12}{Mg}$ ($\overset{13}{Al}$) $1s^2 | 2s^2 2p^6 | 3s^2 3p^1$

$1s^2 | 2s^2 2p^6 | 3s^2$

$Z_{eff\,Al} = 13 - 2 = +\underline{11}$

$Z_{eff\,Mg} = 12 - 2 = +\underline{10}$

Why: Al has higher nuc. charge

14 Calculate the Zeff of the n=2 electrons of Mg and Al

Mg = +10   Al = +11

15

A powdered metal is reacted with a colorless soln. Bubbles rise from the exothermic rxn. A flaming splint is inserted into tube and gas ignites.
The gas is <u>hydrogen</u>.

16 **19**

Select the atom with 2 single electrons in the highest occupied energy level.

Mg: ↑↓ (3s)

(O): ↑↓ (2s) ↑↓ ↑ ↑ (2p)

N: ↑↓ (2s) ↑ ↑ ↑ (2p)

F: ↑↓ (2s) ↑↓ ↑↓ ↑ (2p)

20

Write EC for F, Cl, Br and underline outer valence

$\underline{2s^2 2p^5}$ F

$\underline{3s^2 3p^5}$ Cl

$\underline{4s^2 4p^5}$ Br

21

Which of the following elements have 2 unpaired e⁻?

Cl, S, O, Ar

[redacted] 22

[redacted] Select the smallest elemet from

[redacted] (Br), Se, As, Ge

[redacted]

[redacted] Given C with atomic number 6, Calculate the core electrons.

[redacted] ^{6}C $(1s^2)$ $2s^2 2p^2$ 23

core: $1s^2$ — valence: $2s^2 2p^2$

core (2)

[redacted]

[redacted] Given Ar, calculate the core e^-

[redacted] ^{18}Ar $(1s^2 2s^2 2p^6)$ $3s^2 3p^6$

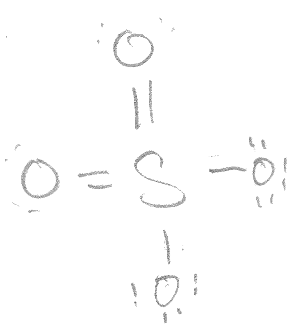
core: $1s^2 2s^2 2p^6$ — val: $3s^2 3p^6$

[redacted] core (10) 24

[redacted]

[redacted] Name this polyanion:

[redacted] [redacted] 25



Sulfate

Ionize

$Al(OH)_3 \rightarrow Al^{+3} + 3OH^-$

$SnCrO_4 \rightarrow Sn^{+2} + CrO_4^{-2}$

$HgBr_2 \rightarrow Hg^{+2} + 2Br^-$

$Cr_2(SO_4)_3 \rightarrow 2Cr^{+3} + 3SO_4^{-2}$

$KMnO_4 \rightarrow K^+ + MnO_4^-$

$Fe(OH)_3 \rightarrow Fe^{+3} + 3OH^-$

Which compound is most ionic?

PCl_3 OF_2 BBr_3 LiF SF_6

The type of bond in the following compounds is a _____ bond.

NaCl, $MgBr_2$, LiOH, $CuCO_3$

covalent Ionic

(5) when calcium and bromine react, they form an ionic compound.

(a) write the symbol for each ion that forms: Ca^{+2} Br^-

(b) what is the chem. formula? $CaCl_2$

(c) E.C.V for Ca^{+2} and Br^- (outer valence)

Ca^{+2} → $3s^23p^6$

Br^- → $4s^24p^6$

(d) name: calcium bromide

(2) Formula

aluminum nitrate $Al(NO_3)_3$

lead (IV) permanganate $Pb(MnO_4)_4$

Zinc chromate $ZnCrO_4$

Vanadium (II) phosphate $V_3(PO_4)_2$

Silver hydroxide $AgOH$

Copper (II) acetate $Cu(C_2H_3O_2)_2$

2

Arrange the following atoms in order of increasing reactivity.

Rb, Li, Na, K Rb > K > Na > Li

~~Li > Na > K > Rb~~

3

Which atom was more reactive?

Ca or Na

4

The radius of an atom is determined by which combination?

Zeff vs core

#protons vs Zeff

Zeff vs valence

#protons vs core

5

Select the OD that violates Hund's rule: