

Chem 105 Ch2 Quiz 3 Spring 09

Name: _____

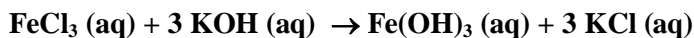
Score _____/40

2/22/2008

Multiple Choice

Identify the letter of the choice that best completes the statement or answers the question.

- _____ 1. Identify the ions in $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$.
- N^{3-} , H^+ , Cr^{3+} and O^{2-}
 - N^{3-} , H^+ , Cr^{3+} and O^{2-}
 - NH_4^+ and $\text{Cr}_2\text{O}_7^{2-}$**
 - NH_3 and $\text{H}_2\text{Cr}_2\text{O}_7$
 - NH_4^+ , Cr^{3+} and O^{2-}
- _____ 2. Sodium sulfate has the chemical formula Na_2SO_4 . Based on this information, the formula for chromium(III) sulfate is _____.
- $\text{Cr}_3(\text{SO}_4)_2$
 - $\text{Cr}_2(\text{SO}_4)_3$**
 - $\text{Cr}(\text{SO}_4)_2$
 - Cr_2SO_4
 - CrSO_4
- _____ 3. What is the correct formula for vanadium(V) sulfide?
- V_2S_5**
 - V_5S
 - VS_5
 - V_{10}S_5
 - V_5S_2
- _____ 4. How many grams are in 0.50 mol iron(II) sulfide?
- 0.057 g
 - 8.2 g
 - 18 g
 - 44.0 g**
 - 1.8×10^2 g
- _____ 5. What is the mass percent of each element in dichloromethane, CH_2Cl_2 ?
- 10.06% C, 60.24% H, 29.70% Cl
 - 20.00% C, 20.00% H, 60.00% Cl
 - 24.10% C, 3.11% H, 72.79% Cl
 - 33.87% C, 0.22% H, 65.91% Cl
 - 14.14% C, 2.37% H, 83.48% Cl**
- _____ 6. If 1.00 g of an unknown molecular compound contains 4.55×10^{21} molecules, what is its molar mass?
- 44.0 g/mol
 - 66.4 g/mol
 - 72.1 g/mol
 - 98.1 g/mol
 - 132 g/mol**
7. Solutions of iron (III) chloride and potassium hydroxide give iron (III) hydroxide and potassium chloride when combined. Write the molecular equation.



8. What is the name of this compound N_2O_4 ?

Dinitrogen tetraoxide

9. What is the formula for disulfur decafluoride?

S_2F_{10}

10. There are 0.00255 mol of $\text{Ni}(\text{NO}_3)_2 \cdot 6 \text{H}_2\text{O}$. (formula mass 290.71 g/mol)

a. What is the mass of $\text{Ni}(\text{NO}_3)_2 \cdot 6 \text{H}_2\text{O}$?

$$0.00255 \text{ mol Ni}(\text{NO}_3)_2 \cdot 6 \text{H}_2\text{O} \times (290.71 \text{ g/mol}) = 0.741305 \text{ g}$$

b. How many moles of O_2 do you have?

$$0.00255 \text{ mol Ni}(\text{NO}_3)_2 \cdot 6 \text{H}_2\text{O} \left| \frac{12 \text{ mol O}}{1 \text{ mol Ni}(\text{NO}_3)_2} \right. = 0.0306 \text{ mol O} \left| \frac{1 \text{ mol O}_2}{2 \text{ mol O}} \right. = 0.0153 \text{ mol O}_2$$

c. What is the mass % of oxygen?

$$\frac{192.00}{290.71} \times 100\% = 66.045\%$$

Table 3.1 Formulas and Names of Some Common Polyatomic Ions

Formula	Name	Formula	Name
CATION: Positive Ion			
NH_4^+	ammonium ion		
ANIONS: Negative Ions			
Based on a Group 4A element		Based on a Group 7A element	
CN^-	cyanide ion	ClO^-	hypochlorite ion
CH_3CO_2^-	acetate ion	ClO_2^-	chlorite ion
CO_3^{2-}	carbonate ion	ClO_3^-	chlorate ion
HCO_3^-	hydrogen carbonate ion (or bicarbonate ion)	ClO_4^-	perchlorate ion
Based on a Group 5A element		Based on a transition metal	
NO_2^-	nitrite ion	CrO_4^{2-}	chromate ion
NO_3^-	nitrate ion	$\text{Cr}_2\text{O}_7^{2-}$	dichromate ion
PO_4^{3-}	phosphate ion	MnO_4^-	permanganate ion
HPO_4^{2-}	hydrogen phosphate ion		
H_2PO_4^-	dihydrogen phosphate ion		
Based on a Group 6A element			
OH^-	hydroxide ion		
SO_3^{2-}	sulfite ion		
SO_4^{2-}	sulfate ion		
HSO_4^-	hydrogen sulfate ion (or bisulfate ion)		