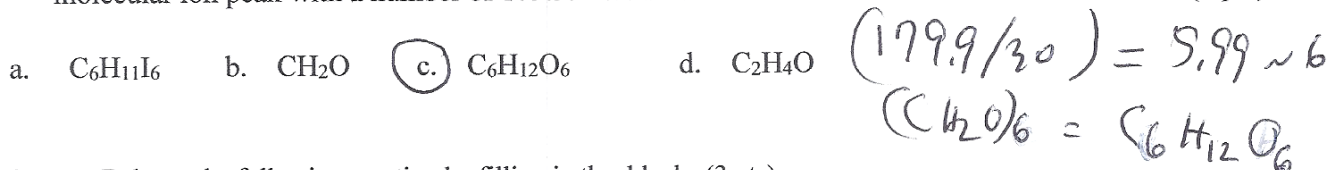


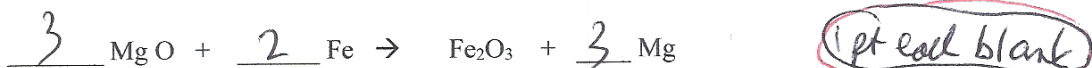
Name key Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (20 total pts)

1. A substance has an empirical formula of CH_2O (FM = 30.0). The mass spectrum shows a molecular ion peak with a number of 179.9. What is the molecular formula of the substance? (2 pts)

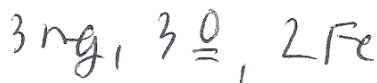


2. a. Balance the following reaction by filling in the blanks (3 pts)



- b. Give the number of each atom on both the reactant and product side of the reaction. (2 pts)

Reactant atom count



Product atom count



3. In the reaction shown below if you do the reaction with 0.273 moles of $\text{C}_2\text{H}_5\text{OH}$ and 0.273 moles of O_2 , which is the limiting reagent? (circle one) (2 pts)

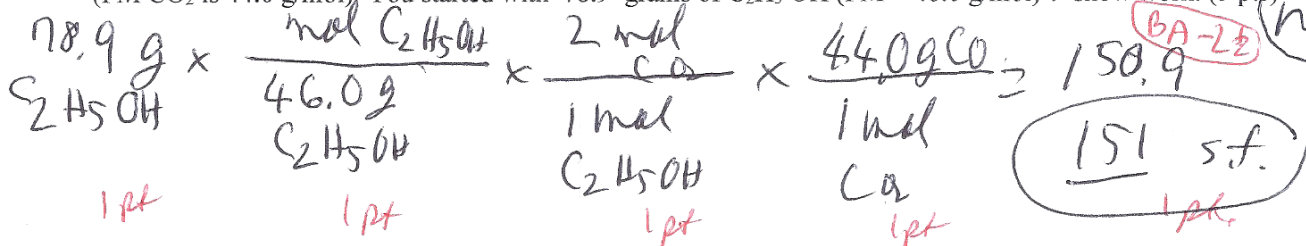


- (a) CO_2 (b) O_2 (c) H_2O (d) $\text{C}_2\text{H}_5\text{OH}$

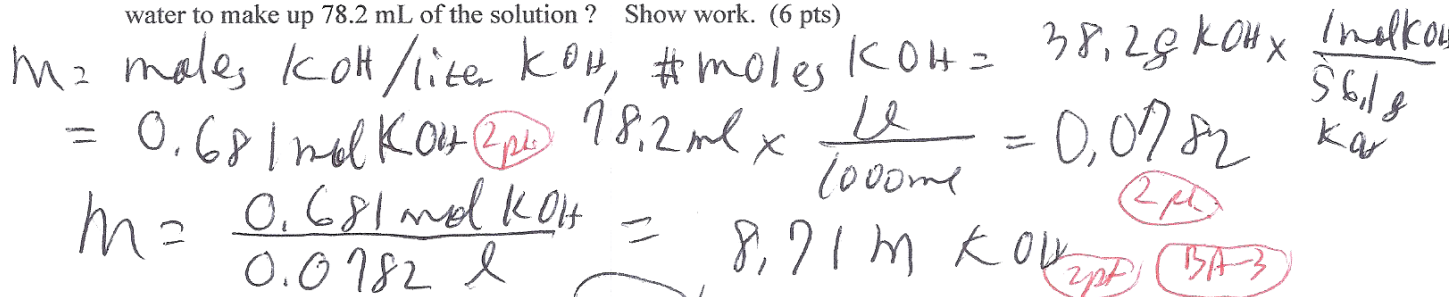
would need $(\text{O}_2 2.73)$
 O_2 - so limiting

$\text{CO}_2 + \text{H}_2\text{O}$ - product never limiting reagent

4. For the reaction shown above if you have excess oxygen what is the theoretical yield of the CO_2 in grams (FM CO_2 is 44.0 g/mol). You started with 78.9 grams of $\text{C}_2\text{H}_5\text{OH}$ (FM = 46.0 g/mol)? show work. (5 pts)



5. What is the molarity of a solution made by dissolving 38.2 grams of KOH (FM = 56.1 g/mol) in enough water to make up 78.2 mL of the solution? Show work. (6 pts)



Extra Credit Question: (3 pts) Is NaCO_3 [(soluble) or (insoluble)] (circle one)? Explain briefly why.

soluble Carbonates are insoluble except group IA 1 1/2 pt

Name Key Print Name _____

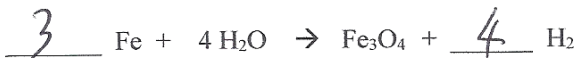
Please show work on all questions for partial credit even on questions which do not specify. (20 total pts)

1. A substance has an empirical formula of CH_2O (FM = 30.0). The mass spectrum shows a ^{green} molecular ion peak with a number of 29.8. What is the molecular formula of the substance? (2 pts)

- a. $\text{C}_6\text{H}_{11}\text{I}_6$ **b.** CH_2O c. $\text{C}_6\text{H}_{12}\text{O}_6$ d. $\text{C}_2\text{H}_4\text{O}$

$29.8/30 = 1.007$
empirical & molecular formulas are same

2. a. Balance the following reaction by filling in the blanks (3 pts)



- b. Give the number of each atom on both the reactant and product side of the reaction. (2 pts)

Reactant atom count

3 Fe, 8 H, 4 O

Product atom count

3 Fe, 8 H, 4 O

3. In the reaction shown below if you do the reaction with 3 moles of $\text{C}_2\text{H}_5\text{OH}$ and 10.0 moles of O_2 , which is the limiting reagent? (circle one) (2 pts)



- (a) CO_2 (b) O_2 (c) H_2O **(d)** $\text{C}_2\text{H}_5\text{OH}$

$3 \times 3 = 9 \text{ moles } \text{O}_2$

run out of $\text{C}_2\text{H}_5\text{OH}$ before O_2

4. For the reaction shown above if you have excess oxygen what is the theoretical yield of the CO_2 in grams (FM CO_2 is 44.0 g/mol) You started with 15.2 grams of $\text{C}_2\text{H}_5\text{OH}$ (FM = 46.0 g/mol)? show work. (5 pts)

$15.2 \text{ g } \text{C}_2\text{H}_5\text{OH} \times \frac{1 \text{ mol } \text{C}_2\text{H}_5\text{OH}}{46.0 \text{ g } \text{C}_2\text{H}_5\text{OH}} \times \frac{2 \text{ mol } \text{CO}_2}{1 \text{ mol } \text{C}_2\text{H}_5\text{OH}} \times \frac{44.0 \text{ g } \text{CO}_2}{1 \text{ mol } \text{CO}_2} = 29.1 \text{ g } \text{CO}_2$ (theoretical yield)

5. What is the molarity of a solution made by dissolving 130.2 grams of KOH (FM = 56.1 g/mol) in enough water to make up 27.3 mL of the solution? Show work. (6 pts)

$m = \text{moles/liter}$ $130.2 \text{ g } \text{KOH} \times \frac{1 \text{ mol } \text{KOH}}{56.1 \text{ g } \text{KOH}} = 2.32 \text{ mol } \text{KOH}$
 $27.3 \text{ mL} \times \frac{1 \text{ L}}{1000 \text{ mL}} = 0.0273 \text{ L}$
 $\frac{2.32 \text{ mol}}{0.0273 \text{ L}} = 84.98 \text{ M}$ (SF)
85.0 M

Extra Credit Question: (3 pts) Is SrSO_4 [(soluble) or (insoluble)] (circle one)? Explain briefly why.

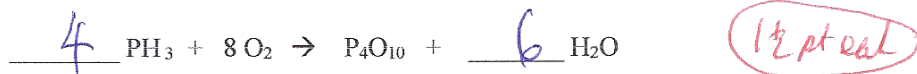
sulfates are normally soluble but Sr sulfate is insoluble bc exception

Name Key Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (20 total pts)

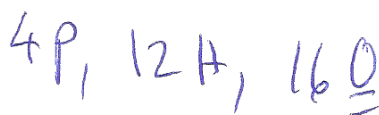
1. What is the molar mass of $\text{Co}(\text{NO}_3)_2$? (5 pts) $58.9 + 2[14.0 + 3(16.0)] = 182.9$
- a) 90 g/mol b) 121 g/mol c) 152 g/mol **d) 183 g/mol**

2. a. Balance the following reaction by filling in the blanks (3 pts)

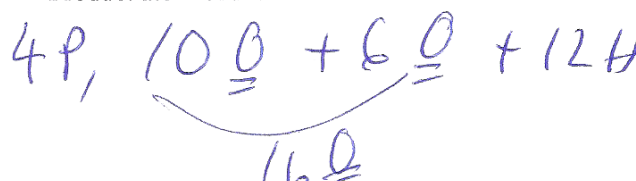


- b. Give the number of each atom on both the reactant and product side of the reaction. (3 pts)

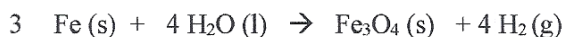
Reactant atom count



Product atom count



3. For the balanced reaction shown if you have excess water and 2.78 grams of the iron (Fe AM = 55.9 g/mol) what is the theoretical yield of the Fe_3O_4 in grams (FM Fe_3O_4 is 231.6 g/mol) Show work. (9 pts)

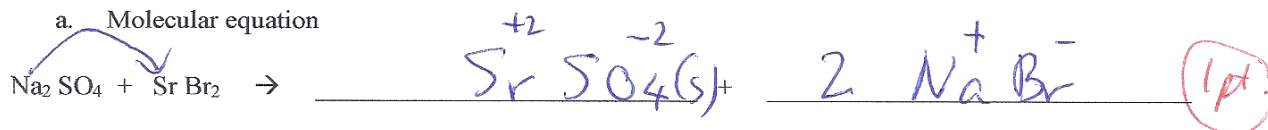


$2.78 \text{ g Fe} \times \frac{1 \text{ mol Fe}}{55.9 \text{ g Fe}} \times \frac{1 \text{ mol Fe}_3\text{O}_4}{3 \text{ mol Fe}} \times \frac{231.6 \text{ g Fe}_3\text{O}_4}{1 \text{ mol Fe}_3\text{O}_4} = 3.84 \text{ g Fe}_3\text{O}_4$

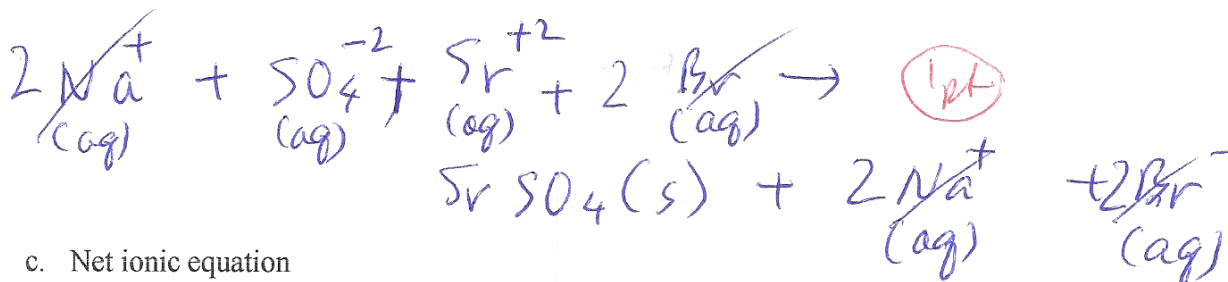
BA - 4 1/2
1 pt

Extra Credit Question: (3 pts) For the following write out the molecular equation, total ionic equation and net ionic equation

- a. Molecular equation



- b. Total ionic equation



- c. Net ionic equation

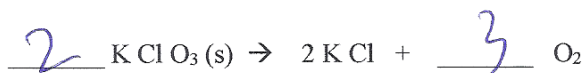


Name Key Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (20 total pts)

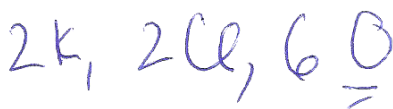
1. What is the molar mass of $\text{Co}(\text{NO}_3)_2$? (5 pts) $58.9 + 2[14.0 + 3(16.0)] = 182.9$
- a) 90 g/mol (b) 183 g/mol c) 152 g/mol d) 121 g/mol

2. a. Balance the following reaction by filling in the blanks (3 pts)



- b. Give the number of each atom on both the reactant and product side of the reaction. (3 pts)

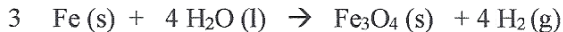
Reactant atom count



Product atom count



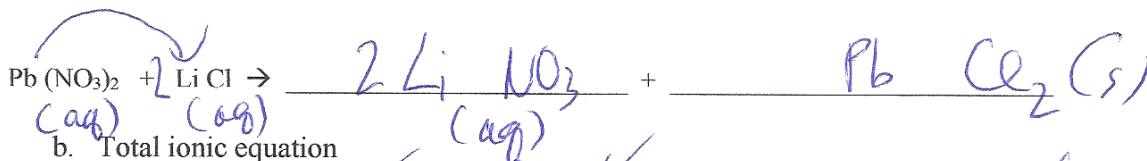
3. For the balanced reaction shown if you have excess water and 834.2 grams of the iron (Fe AM = 55.9 g/mol) what is the theoretical yield of the Fe_3O_4 in grams (FM Fe_3O_4 is 231.6 g/mol) Show work. (9 pts)



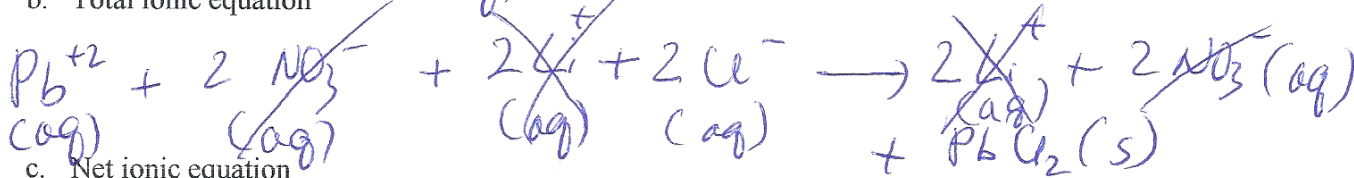
$834.2 \text{ g Fe} \times \frac{1 \text{ mol Fe}}{55.9 \text{ g Fe}} \times \frac{1 \text{ mol Fe}_3\text{O}_4}{3 \text{ mol Fe}} \times \frac{231.6 \text{ g Fe}_3\text{O}_4}{1 \text{ mol Fe}_3\text{O}_4} = 1152 \text{ g Fe}_3\text{O}_4$

Extra Credit Question (3 pts) For the following write out the molecular equation, ionic equation & net ionic equation

- a. Molecular equation



- b. Total ionic equation



- c. Net ionic equation



Name Key Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (20 total pts)

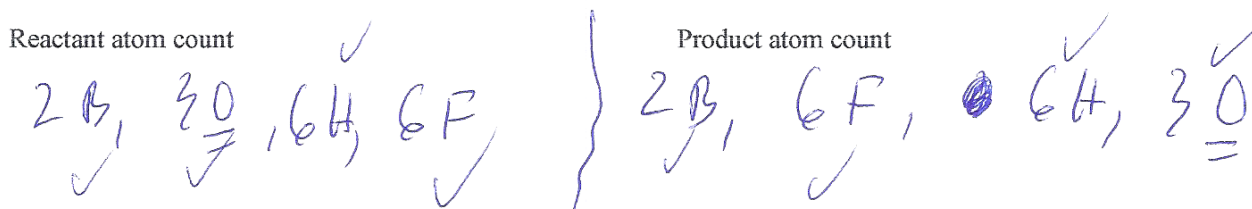
1. Which of the following statements is true about nonelectrolytes? (5 pts)

- a) Nonelectrolytes dissolve in water to produce ions. **(c)** Nonelectrolytes do not dissociate in water.
 b) Nonelectrolytes conduct electricity d) Most nonelectrolytes are ionic compounds

2. a. Balance the following reaction by filling in the blanks (3 pts)



b. Give the number of each atom on both the reactant and product side of the reaction. (3 pts)



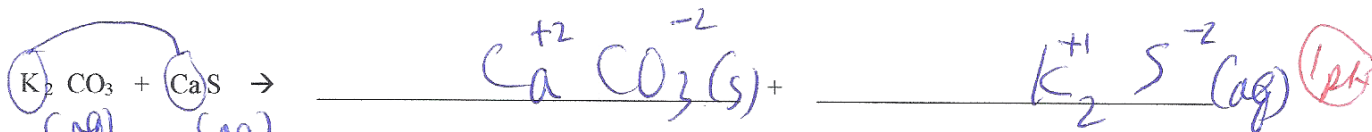
3. If you have a compound with 71.2 % Selenium (Se) and 28.8% oxygen (O) what is the empirical formula? (atomic mass of Se is 79.0, atomic mass of O is 16.0) (9 pts) (assume 100g total)

$71.2 g Se \times \frac{1 mol Se}{79.0 g Se} = 0.90 \div 0.90 \rightarrow 1$
 $28.8 g O \times \frac{1 mol O}{16.0 g O} = 1.8 \div 0.90 \rightarrow 2$
 SeO_2

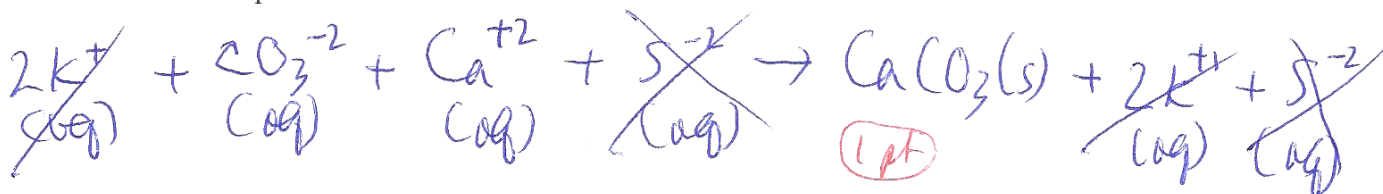
15A - 4 1/2

Extra Credit Question (3 pts) For the following write out the molecular equation, ionic equation & net ionic equation

a. Molecular equation



b. Total ionic equation



c. Net ionic equation



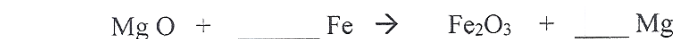
Name _____ Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (20 total pts)

1. A substance has an empirical formula of CH_2O (FM = 30.0) . The mass spectrum shows a molecular ion peak with a number of 179.9. What is the molecular formula of the substance ? (2 pts)

a. $\text{C}_6\text{H}_{11}\text{I}_6$ b. CH_2O c. $\text{C}_6\text{H}_{12}\text{O}_6$ d. $\text{C}_2\text{H}_4\text{O}$

2. a. Balance the following reaction by filling in the blanks (3 pts)

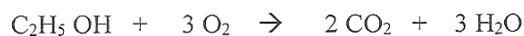


- b. Give the number of each atom on both the reactant and product side of the reaction. (2 pts)

Reactant atom count

Product atom count

3. In the reaction shown below if you do the reaction with 0.273 moles of $\text{C}_2\text{H}_5\text{OH}$ and 0.273 moles of O_2 , which is the limiting reagent ? (circle one) (2 pts)



(a) CO_2 (b) O_2 (c) H_2O (d) $\text{C}_2\text{H}_5\text{OH}$

4. For the reaction shown above if you have excess oxygen what is the theoretical yield of the CO_2 in grams (FM CO_2 is 44.0 g/mol) You started with 78.9 grams of $\text{C}_2\text{H}_5\text{OH}$ (FM = 46.0 g/mol) ? show work. (5 pts)

5. What is the molarity of a solution made by dissolving 38.2 grams of KOH (FM = 56.1 g/mol) in enough water to make up 78.2 mL of the solution ? Show work. (6 pts)

Extra Credit Question: (3 pts) Is NaCO_3 [(soluble) or (insoluble)](circle one) ? Explain briefly why.

Name _____ Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (20 total pts)

1. A substance has an empirical formula of CH_2O (FM = 30.0) . The mass spectrum shows a ^(green) molecular ion peak with a number of 29.8 What is the molecular formula of the substance ? (2 pts)

a. $\text{C}_6\text{H}_{11}\text{I}_6$ b. CH_2O c. $\text{C}_6\text{H}_{12}\text{O}_6$ d. $\text{C}_2\text{H}_4\text{O}$

2. a. Balance the following reaction by filling in the blanks (3 pts)

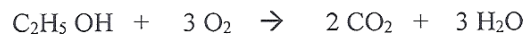


- b. Give the number of each atom on both the reactant and product side of the reaction. (2 pts)

Reactant atom count

Product atom count

3. In the reaction shown below if you do the reaction with 3 moles of $\text{C}_2\text{H}_5\text{OH}$ and 10.0 moles of O_2 , which is the limiting reagent ? (circle one) (2 pts)



(a) CO_2 (b) O_2 (c) H_2O (d) $\text{C}_2\text{H}_5\text{OH}$

4. For the reaction shown above if you have excess oxygen what is the theoretical yield of the CO_2 in grams (FM CO_2 is 44.0 g/mol) You started with 15.2 grams of $\text{C}_2\text{H}_5\text{OH}$ (FM = 46.0 g/mol) ? show work. (5 pts)

5. What is the molarity of a solution made by dissolving 130.2 grams of KOH (FM = 56.1 g/mol) in enough water to make up 27.3 mL of the solution ? Show work. (6 pts)

Extra Credit Question: (3 pts) Is SrSO_4 [(soluble) or (insoluble)] (circle one) ? Explain briefly why.

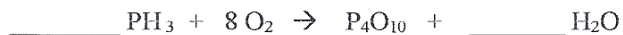
Name _____ Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (20 total pts)

1. What is the molar mass of $\text{Co}(\text{NO}_3)_2$? (5 pts)

- a) 90 g/mol b) 121 g/mol c) 152 g/mol d) 183 g/mol

2. a. Balance the following reaction by filling in the blanks (3 pts)

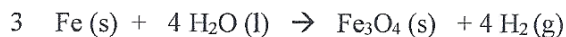


b. Give the number of each atom on both the reactant and product side of the reaction. (3 pts)

Reactant atom count

Product atom count

3. For the balanced reaction shown if you have excess water and 2.78 grams of the iron (Fe AM = 55.9 g/mol) what is the theoretical yield of the Fe_3O_4 in grams (FM Fe_3O_4 is 231.6 g/mol) Show work. (9 pts)



Extra Credit Question: (3 pts) For the following write out the molecular equation, total ionic equation and net ionic equation

a. Molecular equation



b. Total ionic equation

c. Net ionic equation

Name _____ Print Name _____

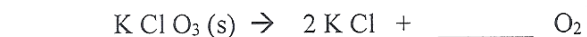
Please show work on all questions for partial credit even on questions which do not specify. (20 total pts)

1. What is the molar mass of $\text{Co}(\text{NO}_3)_2$? (5 pts)

(green)

a) 90 g/mol b) 183 g/mol c) 152 g/mol d) 121 g/mol

2. a. Balance the following reaction by filling in the blanks (3 pts)

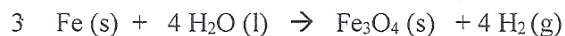


b. Give the number of each atom on both the reactant and product side of the reaction. (3 pts)

Reactant atom count

Product atom count

3. For the balanced reaction shown if you have excess water and 834.2 grams of the iron (Fe AM = 55.9 g/mol) what is the theoretical yield of the Fe_3O_4 in grams (FM Fe_3O_4 is 231.6 g/mol) Show work. (9 pts)



Extra Credit Question (3 pts) For the following write out the molecular equation, ionic equation & net ionic equation

a. Molecular equation



b. Total ionic equation

c. Net ionic equation

Name _____ Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (20 total pts)

1. Which of the following statements is true about nonelectrolytes? (5 pts)
 - a) Nonelectrolytes dissolve in water to produce ions.
 - b) Nonelectrolytes conduct electricity
 - c) Nonelectrolytes do not dissociate in water.
 - d) Most nonelectrolytes are ionic compounds
2. a. Balance the following reaction by filling in the blanks (3 pts)



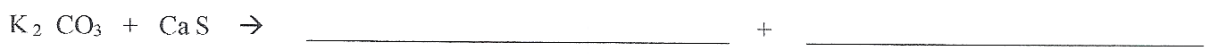
- b. Give the number of each atom on both the reactant and product side of the reaction. (3 pts)

Reactant atom count	Product atom count
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3. If you have a compound with 71.2 % Selenium (Se) and 28.8% oxygen (O) what is the empirical formula? (atomic mass of Se is 79.0, atomic mass of O is 16.0) (9 pts)

Extra Credit Question (3 pts) For the following write out the molecular equation, ionic equation & net ionic equation

- a. Molecular equation



- b. Total ionic equation

- c. Net ionic equation