Chemistry 141 Name KEY

Cary Willard

Quiz 2a (20 points) September 10, 2009

All work must be show to receive credit. Answers should be in scientific notation and to the correct number of significant figures.

1. (9 points) Write a chemical equation for the reaction of aqueous solutions of magnesium chloride and lithium carbonate. (I will sell you the formulas for the reactants for 3 points)

MgCl2*(aq)* + Li2CO3*(aq)* 🡪 MgCO3*(s)* + 2 LiCl*(aq)*

Write the total ionic equation for the reaction.

Mg+2*(aq)* + 2 Cl-1*(aq)* + 2 Li+1*(aq)* + CO3-2*(aq)* 🡪 MgCO3*(s)* + 2 Li+1*(aq)* + 2 Cl-1*(aq)*

Write the net ionic equation for the reaction.

Mg+2*(aq)* + CO3-2*(aq)* 🡪 MgCO3*(s)*

1. (3 points) Determine the oxidation state of each element in Sc2(SO4)3.

Sc +3 S +6 O -2

1. (8 points) Fructose, a sugar found in fruit, contains only carbon, hydrogen, and oxygen. It is used in ice cream to prevent a sandy texture. Complete combustion of 32.4 mg of fructose in oxygen produced 47.6 mg of CO2 and 19.4 mg of H2O. What is the empirical formula of fructose?

The molar mass of fructose is 180 g/mol. What is the molecular formula for fructose?

CH2O 🡪 30 g/mol --- need 6 units to get a molar mass of 180 g/mol

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Quiz 2b (20 points) September 10, 2009

All work must be show to receive credit. Answers should be in scientific notation and to the correct number of significant figures.

1. (9 points) Write a chemical equation for the reaction of aqueous solutions of barium chloride and sodium carbonate. (I will sell you the formulas for the reactants for 3 points)

BaCl2*(aq)* + Na2CO3*(aq)* 🡪 BaCO3*(s)* + 2 NaCl*(aq)*

Write the total ionic equation for the reaction.

Ba+2*(aq)* + 2 Cl-1*(aq)* + 2 Na+1*(aq)* + CO3-2*(aq)* 🡪 BaCO3*(s)* + 2 Na+1*(aq)* + 2 Cl-1*(aq)*

Write the net ionic equation for the reaction.

Ba+2*(aq)* + CO3-2*(aq)* 🡪 BaCO3*(s)*

1. (3 points) Determine the oxidation state of each element in Sr3(PO4)2.

Sr +2 P +5 O -2

1. (8 points) Pheromones are chemical signals secreted by a member of one species to evoke a response in another member of the same species. One honeybee pheromone is an organic compound known as an alarm pheromone, which smells like bananas. It induces an aggressive attack by other honeybees, causing swarms of angry bees to attack the same aggressor. Complete combustion of 35.0 mg of alarm pheromone produced 82.8 mg of CO2 and 33.9 mg of H2O. What is the empirical formula of this pheromone?

The molar mass of this pheromone is 130.2 g/mol. What is the molecular formula?

C7H14O2 🡪 130 g/mol --- need 1 units to get a molar mass of 130 g/mol