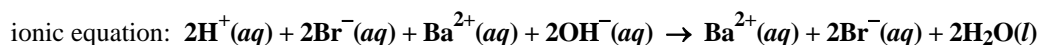
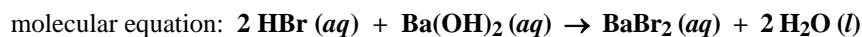
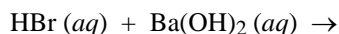


Name _____

1. Write the balanced molecular, ionic, and net ionic equations for the following *acid-base* reaction. [6 pts]



2. The common constituent in **basic** solutions is:
[3 pts]

a) H_2 b) H_3O^+ c) OH^- d) NH_3 e) Cl^-

3. **True or False**

a) An acid is a hydrogen ion (H^+) donor. [2 pts]

TRUE

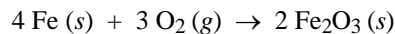
b) A weak acid does not ionize when dissolved in water. [2 pts]

FALSE, a weak acid does ionize to a small extent in water.

c) CH_3COOH is a strong acid. [2 pts]

FALSE, carboxylic acids are weak acids.

4. Assign the oxidation number (charge) to Fe and O in Fe_2O_3 . Also, identify the **reactant** that is oxidized and the reactant that is reduced in the following reaction. [4 pts]



Oxidation number of O in Fe_2O_3 -2

Oxidation number of Fe in Fe_2O_3 +3

Reactant oxidized Fe

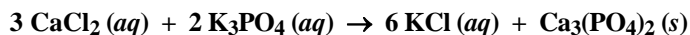
Reactant reduced O₂

5. Complete and balance the following *precipitation* reaction:



When the equation is balanced with the smallest set of whole number coefficients, the balancing coefficient for CaCl_2 is? **Circle the correct answer.** [3 pts]

- a) 1 b) 2 c) **3** d) 4 e) 6



6. 150.0 g of glucose ($\text{C}_6\text{H}_{12}\text{O}_6$) are dissolved in 250.0 mL of water. What is the **molarity** of this solution? [4 pts]

$$M = \frac{\text{mol solute}}{\text{L of soln}}$$

$$\text{mol solute} = 150.0 \text{ g glucose} \times \frac{1 \text{ mol glucose}}{180.2 \text{ g glucose}} = 0.8324 \text{ mol glucose}$$

$$M = \frac{0.8324 \text{ mol}}{0.2500 \text{ L}} = \mathbf{3.330 \text{ M}}$$

7. How many **milliliters** of a 0.992 *M* stock solution of KCl would be needed to prepare 0.250 L of 0.175 *M* KCl? **Circle the correct answer.** [3 pts]

- a) 0.0441 mL b) 1.42 mL c) **44.1 mL** d) 694 mL e) 1420 mL

$$M_c V_c = M_d V_d$$

$$(0.992 \text{ M})V_c = (0.175 \text{ M})(0.250 \text{ L})$$

$$V_c = 0.0441 \text{ L} = \mathbf{44.1 \text{ mL}}$$

$$\text{Molarity} = \frac{\text{moles solute}}{\text{L of solution}}$$

$$M_1 V_1 = M_2 V_2$$

SOLUBLE COMPOUNDS	EXCEPTIONS
Compounds containing alkali metal ions (Li^+ , Na^+ , K^+ , Rb^+ , Cs^+) and the ammonium ion (NH_4^+)	
Nitrates (NO_3^-), bicarbonates (HCO_3^-), and chlorates (ClO_3^-)	
Halides (Cl^- , Br^- , I^-)	Halides of Ag^+ , Hg_2^{2+} , and Pb^{2+}
Sulfates (SO_4^{2-})	Sulfates of Ag^+ , Ca^{2+} , Sr^{2+} , Ba^{2+} , and Pb^{2+}
INSOLUBLE COMPOUNDS	EXCEPTIONS
Carbonates (CO_3^{2-}), phosphates (PO_4^{3-}), chromates (CrO_4^-), and sulfides (S^{2-})	Compounds containing alkali metal ions and the ammonium ion
Hydroxides (OH^-)	Compounds containing alkali metal ions and the Ba^{2+} ion