**Quiz 7A**

# Directions: Answer each of the following questions. Be sure to use complete sentences where appropriate. For full credit be sure to show all of your work. Where appropriate answers should be boxed for clarity, written to the correct number of significant figures, and, include the proper units.

1. Which of the following is a chemical reaction (4 points)?

|  |  |  |
| --- | --- | --- |
|  | Solid copper deposits on a piece of aluminum foil when the foil is placed in a blue copper(II) nitrate solution. The blue color of the solution fades. | Yes |
|  | Liquid ethyl alcohol turns into a solid when placed in a low-temperature freezer. | No |
|  | A white precipitate forms when solutions of barium nitrate and sodium sulfate are mixed. | Yes |
|  | A mixture of sugar and water bubbles when yeasts are added. After several days, the sugar is gone and ethyl alcohol is found in the water. | Yes |

1. Consider the following unbalanced chemical equation (5 points):

Al (s) + Cl2 (g) → AlCl3 (s)

* 1. Classify the reaction by the type of chemistry: combination, combustion, decomposition, single replacement, or double replacement reaction.

Combination reaction

* 1. A chemistry student tried to balance the equation by changing the subscript 2 on Cl to a 3. Why this is not correct. What is the correct balanced equation?

Changing the 2 to a 3 after chlorine changes the chemical formula of the diatomic chlorine gas making a molecule that does not exist. The correct balanced chemical equation is: 2 Al (s) + 3 Cl2 (g) → 2 AlCl3 (s)

1. Consider the following balanced total ionic equation (11 points):

2 K+ (aq) + S2- (aq) + Pb2+ (aq) + 2 NO3- (aq) → PbS (s) + 2 K+ (aq) + 2 NO3- (aq)

* 1. Identify the spectator ion(s). \_\_\_\_\_\_\_\_K+, NO3-
  2. Classify the reaction by the type of chemistry. \_\_\_\_\_\_\_\_double displacement
  3. Write the balanced conventional equation.

K2S (aq) + Pb(NO3)2 (aq) → PbS (s) + 2 KNO3 (aq)

* 1. Write the net ionic equation.

S2- (aq) + Pb2+ (aq) → PbS (s)

**Quiz 7B**

# Directions: Answer each of the following questions. Be sure to use complete sentences where appropriate. For full credit be sure to show all of your work. Where appropriate answers should be boxed for clarity, written to the correct number of significant figures, and, include the proper units.

1. Consider the following unbalanced chemical equation (5 points):

H2O (l) → H2 (g) + O2 (g)

1. Classify the reaction by the type of chemistry: combination, combustion, decomposition, single replacement, or double replacement reaction.

Decomposition reaction

1. A chemistry student tried to balance the equation by placing the subscript 2 after the oxygen atom in H2O. Explain why this is not correct. What is the correct balanced equation?

Placing a 2 after the oxygen in water changes the chemical formula to hydrogen peroxide. The correct balanced chemical equation is: 2 H2O (l) → 2 H2 (g) + O2 (g)

1. Consider the following balanced total ionic equation (11 points):

Ba2+ (aq) + 2 I- (aq) + 2 Na+ (aq) + SO42- (aq) → BaSO4 (s) + 2 I- (aq) + 2 Na+ (aq)

* 1. Identify the spectator ion(s). \_\_\_\_\_\_\_\_Na+, I-
  2. Classify the reaction by the type of chemistry. \_\_\_\_\_\_\_\_double displacement
  3. Write the balanced conventional equation.

BaI2 (aq) + Na2SO4 (aq) → BaSO4 (s) + 2 NaI (aq)

* 1. Write the net ionic equation.

Ba2+ (aq) + SO42- (aq) → BaSO4 (s)

1. Which of the following is a chemical reaction (4 points)?

|  |  |  |
| --- | --- | --- |
|  | Propane forms a flame and emits heat as it burns. | Yes |
|  | Acetone feels cold as it evaporates from the skin. | No |
|  | Bubbling is observed when potassium carbonate and hydrochloric acid solutions are mixed. | Yes |
|  | Heat is felt when a warm object is placed in your hand. | No |