**Quiz 4**

# 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. Write the conventional and net ionic equations for the following unbalanced chemical equation. Circle the spectator ions, if any (5 points).

CE:

TIE: Zn (s) + 2 HC2H3O2 (aq) → H2 (g) + Zn2+ (aq) + 2 C2H3O2- (aq)

NIE:

1. Titanium metal reacts with fluorine gas to produce titanium(IV) fluoride (8 points).
	1. Write the balanced chemical equation.
	2. If 7.0 g of fluorine gas reacts with excess titanium how many grams of titanium(IV) fluoride can be produced?
2. Consider the following reaction (2 points):

2 CH3OH (g) + 3 O2 (g) → 2 CO2 (g) + 4 H2O (g)

Each of the following molecular diagrams represents an initial mixture of the reactants:

How many carbon dioxide molecules would be formed from the reaction mixture that produces the greatest amount of products?

1. How do we decide which component of a solution is the solvent (3 points)?
2. Define oxidation state (2 points).

**Quiz 4**

# 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. Write the conventional and net ionic equations for the following unbalanced chemical equation. Circle the spectator ions, if any (5 points).

CE: Zn (s) + 2 HC2H3O2 (aq) → H2 (g) + Zn(C2H3O2)2 (aq)

TIE: Zn (s) + 2 HC2H3O2 (aq) → H2 (g) + Zn2+ (aq) + 2 C2H3O2- (aq)

NIE: Zn (s) + 2 HC2H3O2 (aq) → H2 (g) + Zn2+ (aq) + 2 C2H3O2- (aq)

1. Titanium metal reacts with fluorine gas to produce titanium(IV) fluoride (8 points).
	1. Write the balanced chemical equation.

Ti (s) + 2 F2 (g) → TiF4 (s)

* 1. If 7.0 g of fluorine gas reacts with excess titanium how many grams of titanium(IV) fluoride can be produced?

$7.0 g F\_{2}×\frac{1 mol F\_{2}}{37.996 g F\_{2}}×\frac{1 mol TiF\_{4}}{2 mol F\_{2}}×\frac{123.859 g TiF\_{4}}{1 mol TiF\_{4}}=11.40926676 g TiF\_{4}≈11 g TiF\_{4}$

1. Consider the following reaction (2 points):

2 CH3OH (g) + 3 O2 (g) → 2 CO2 (g) + 4 H2O (g)

Each of the following molecular diagrams represents an initial mixture of the reactants:

How many carbon dioxide molecules would be formed from the reaction mixture that produces the greatest amount of products?

2 molecules

1. How do we decide which component of a solution is the solvent (3 points)?

The solvent is usually the liquid component of the solution. If both the solvent and solute are liquids or solids, the solvent is that component present in greatest amount (volume).

1. Define oxidation state (2 points).

The oxidation state is the imaginary charge an atom would have if shared electrons were divided equally between identical atoms bound to one another, or, for different atoms, if electrons were all assigned to the atom in each bond that has the greater attraction for electrons.