**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. Give the oxidation number of carbon in the following (4 points):
	1. CF2Cl2 \_\_\_+4
	2. Na2C2O4  \_\_\_+3
	3. HCO3- \_\_\_+4
	4. C2H6 \_\_\_-3
2. Calculate each of the following quantities (9 points)
	1. Mass (g) of solute in 185.8 mL of 0.267 M calcium acetate

$$185.8 mL×\frac{1 L}{1000 mL}×\frac{0.267 mol Ca(C\_{2}H\_{3}O\_{2})\_{2}}{1 L}×\frac{158.166 g Ca(C\_{2}H\_{3}O\_{2})\_{2}}{1 mol Ca(C\_{2}H\_{3}O\_{2})\_{2} }=7.85 g Ca(C\_{2}H\_{3}O\_{2})\_{2}$$

* 1. Molarity of 500. mL of solution containing 21.1 g of potassium iodide.

$$21.1 g KI×\frac{1 mol KI}{166.003 g KI}×\frac{1}{500. mL}×\frac{1000 mL}{1 L}=0.254 M$$

* 1. Formula units of sodium cyanide in a 145.6 L solution of 0.850 M sodium cyanide.

$145.6 L×\frac{0.850 mol NaCN}{1 L}×\frac{6.022×10^{23} formula unit}{1 mol NaCN}=7.45×10^{25} formula units NaCN$

1. Balance the net ionic equation for the reaction of the dioxovanadium(V) ion, VO2+, with zinc in an acid solution to from VO2+ (5 points).

VO2+ (aq) + Zn (s) → VO2+ (aq) + Zn2+ (aq)

Red: **(**VO­2+ (aq) + 2 H+ (aq) + e- → VO2+ (aq) + H2O (l)**) × 2**

+ Ox: Zn (s) → Zn2+ (aq) + 2 e-

Total Ionic Equation: 2 VO­2+ (aq) + 4 H+ (aq) + 2 e- + Zn (s) → 2 VO2+ (aq) + 2 H2O (l) + Zn2+ (aq) + 2 e-

2 VO­2+ (aq) + 4 H+ (aq) + Zn (s) → 2 VO2+ (aq) + 2 H2O (l) + Zn2+ (aq)

1. What is the type of reaction investigated in this week’s experiment (2 points)?

single replacement reactions