**Quiz 2**

# 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. How many atoms are there in 5.24 g P (4 points)?
2. Combustion of a 1.000 g sample of an organic compound known to contain carbon, hydrogen, and oxygen produces 2.360 g of carbon dioxide and 0.640 g of water (12 points).
	1. What is the empirical formula?
	2. The molar mass of the gas cyclopronanone is about 56 g/mol. Write the balanced combustion reaction.
	3. What is the functional group for cyclopronanone? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. KF is a strong electrolyte and HF is a weak electrolyte. How does their dissociation in water differ (4 points)?

**Quiz 3**

# 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. How many atoms are there in 5.24 g P (4 points)?

$$5.24 g P ×\frac{1 mol P}{30.974 g P}×\frac{6.022×10^{23} atoms P}{1 mol P}=1.018766708×10^{23} atoms P≈1.02×10^{23} atoms P$$

1. Combustion of a 1.000 g sample of an organic compound known to contain carbon, hydrogen, and oxygen produces 2.360 g of carbon dioxide and 0.640 g of water (12 points).
	1. What is the empirical formula?

$$2.360 g CO\_{2}×\frac{1 mol CO\_{2}}{44.009 g CO\_{2}}×\frac{1 mol C}{1 mol CO\_{2}}=0.053624176 mol C$$

$$0.053624176 mol C×\frac{12.011 g C}{1 mol C}=0.644026354 g C$$

$$0.640 g H\_{2}O×\frac{1 mol H\_{2}O}{18.015 g H\_{2}O}×\frac{2 mol H}{1 mol H\_{2}O}=0.071047957 mol H$$

$$0.071047957 mol H×\frac{1.008 g H}{1 mol H}=0.071616341 g H $$

$$m\_{O}=m\_{sample}-m\_{C}-m\_{H}$$

$$m\_{O}=1.000 g-0.644026354 g-0.071616341 g=0.284357305 g O×\frac{1 mol O}{15.999 g O}=0.017773442 mol O $$

$$C\_{\frac{0.053624176 }{0.017773442}}H\_{\frac{0.071047957}{0.017773442}}O\_{\frac{0.017773442}{0.017773442}}=C\_{3.017095732}H\_{3.997422503}O\_{1}=C\_{3}H\_{4}O$$

* 1. The molar mass of the gas cyclopronanone is about 56 g/mol. Write the balanced combustion reaction.

$$ratio=\frac{molar mass}{empirical mass}=\frac{56\frac{g}{mol}}{\left(3\left(12.011\frac{g}{mol}\right)+4\left(1.008\frac{g}{mol}\right)+1\left(15.999\frac{g}{mol}\right)\right)}≈1$$

2 C3H4O (g) + 7 O2 (g) → 6 CO2 (g) + 4 H2O (l)

* 1. What is the functional group for cyclopronanone? \_\_\_\_\_ ketone\_\_\_\_\_\_
1. KF is a strong electrolyte and HF is a weak electrolyte. How does their dissociation in water differ (4 points)?

In a solution of KF, only the ions of K+ and F- are present in the solvent. In an HF solution, there are a few ions of H+ and F- present but mostly dissolved HF molecules.