

In solving problems, you must show all work. Little or no credit will be given for a correct answer with no work shown.

1. Write the electronic configuration for the following atoms or ions. The atomic number of the element is given by the subscript preceding the symbol (9%).

a. $_{15}\text{P}$

b. $_{5}\text{B}$

c. $_{20}\text{Ca}^{+2}$

2. An ion with a +1 charge has the electronic configuration $1s^2, 2s^2, 2p^6, 3s^2, 3p^6$. What is the ion? (3%)

3. a) The formula of acetone is $\text{C}_3\text{H}_6\text{O}$. How many grams are there in 2.6 mol acetone? (8%)

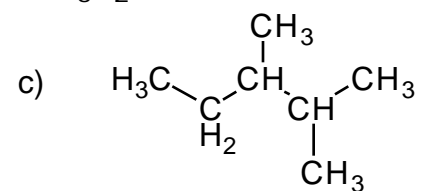
b) The density of acetone is 0.79 g/ml. What is the volume of the above 2.6 mol of acetone in ml? (8%)

4. Draw the extended structures of 4 isomers having the formula $\text{C}_3\text{H}_6\text{Cl}_2$. Name each of the isomers you have drawn. (12%)

5. Name the following substances. (9%)

a) CaF_2

b) C_3O_2



6. Calculate how many grams of CO_2 are generated when 150 g of octanol ($\text{C}_8\text{H}_{18}\text{O}$) are burned in oxygen. Combustion of octanol in oxygen produces CO_2 and water. (20%)

7. A common compound contains 12% carbon, 48% oxygen, and 40% Ca. What is its empirical formula? (15%) (Show your work)

8. Draw the three dimensional structure of staggered ethane (C_2H_6) (5%)

9. a. Auburn is 105 miles from Atlanta. What is this distance in meters? In cm? Use scientific notation in your answer. (1 mile = 1.609 km). (5%)

b. The density of ethyl alcohol is 0.79 g/ml. What is the weight of 5 gal ethyl alcohol in g? (1 gal = 3.78 liter) (6%)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____

Total minus _____ Grade _____

Name _____