

Pre-Comp Review Part 3

1. Complete the chart below:

Chemical Formula	Lewis Structure	Name of Molecular Geometry	Name of Compound	Polar Bonds?
CCl₄				
NF₃				
CO₂				
BF₃				
SeO₂				
H₂S				

2. Circle the bonds below that are polar:

a) C—F

b) N—O

c) Br—Br

d) Si—S

e) C—H

f) B—F

3. Identify all of the IMFs present in the substances below:

a) NF_3 _____

b) NH_3 _____

c) Br_2 _____

4. Which has a higher boiling point: Br_2 or I_2 ? Why?

5. Which has a higher boiling point: HF or HCl? Why?

6. Calculate the molar mass of $\text{Ni}_3(\text{PO}_4)_2$. Show your work.

7. What is the name of the compound in #6? _____

8. Calculate the molar mass of ammonium hydroxide. Show your work.

9. If a chemist has 88.15 g of Cr_2O_3 , then how many moles of that substance does she have? Show your work.

10. A geologist needs 1.92 moles of silicon tetroxide for a study he is conducting. How many grams of silicon tetroxide should he obtain? Show your work.

11a) Calculate the molar mass of $\text{Ti}(\text{C}_2\text{H}_3\text{O}_2)_2$. Show your work.

b) What is the percent composition of carbon in the compound from part a? Show your work.

c) What is the name of the compound from part a? _____

12. What is the empirical formula for a compound containing 38.8% carbon, 16.2% hydrogen and 45.1% nitrogen? Show your work.

13. What is the molecular formula for the compound in #12 if it is determined to have a molar mass of 124.10 g/mol? Show your work.

14. Galactose has a molecular weight of approximately 180.16 g/mol and an empirical formula of CH_2O . What is the molecular formula of galactose? Show your work.

15. An ionic compound is composed of 34.95 g of iron and 15.05 g of oxygen. Find the empirical formula of this compound. Show your work.

16. An astronaut exploring Jupiter's moon Europa finds an unknown compound on the surface of the moon. She collects a sample of it and takes it back to Earth for analysis. Name five physical properties she could observe/measure to help determine the identity of this compound.

17. Find the percent composition of carbon in acetylsalicylic acid ($\text{C}_9\text{H}_8\text{O}_4$), the active ingredient in aspirin. Show your work.

18. In the space below, draw particle diagrams of the substances indicated. Your drawing must contain more than one molecule.

A) Pure, gaseous CO_2	B) A mixture of gaseous CO_2 and O_2	C) Solid NaCl