**Quiz 8**

# 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. Synthesis of the first compound of argon was reported in 2000. HArF was made by reacting Ar with HF. Draw a Lewis structure for HArF, and determine the orbital geometry, molecular geometry, approximate bond angle(s), and hybridization (5 points).



Trigonal bipymidal, linear, 180°, sp3d

1. Do all resonance forms of N2O have the same hybridization at the central N atom? Explain your answer (3 points).



Yes, they all have an sp hybridization.

1. The following molecules contain polar covalent bonds. Which of them are polar molecules and which are nonpolar molecules (5 points)?
   1. CCl4 \_\_\_\_\_nonpolar\_\_\_\_\_\_\_\_\_
   2. CHCl3 \_\_\_\_\_polar\_\_\_\_\_\_\_\_\_\_
   3. CO2 \_\_\_\_\_nonpolar\_\_\_\_\_\_\_\_\_
   4. H2S \_\_\_\_\_polar\_\_\_\_\_\_\_\_\_\_
   5. SO2 \_\_\_\_\_polar\_\_\_\_\_\_\_\_\_\_
2. Consider the electron configuration of a carbon atom. After sp3 hybridization, which of the following statements are true about the carbon atom (4 points)?

\_\_true\_\_\_a total of four unpaired electrons

\_\_true\_\_\_four equal energy hybrid orbitals

\_\_false\_\_\_two unpaired electrons

\_\_false\_\_\_hybrid orbitals of four distinctly different energies

1. What is the difference between the equivalence point of a titration and the end point (3 points)?

The end point is when the indicator permanently changes color. The equivalence point occurs when all of the hydrogen ions have been neutralized.