CHM151 Quiz 8a 25 Pts Fall 2011 Name: Key

1. The fact that BCl_3 is a planar molecule while NCl_3 is pyramidal can be explained several different ways. Which is

   (A) Nitrogen is more electronegative than boron.

   (B) The nitrogen atom in NCl_3 has a lone pair of electrons whereas the boron atom in BCl_3 does not.

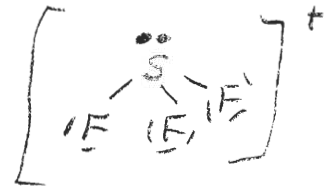
   (C) The nitrogen atom is smaller than the boron atom.

   (D) The boron atom in BCl_3 is sp^3 hybridized, while the nitrogen atom in NCl_3 is sp^2 hybridized.

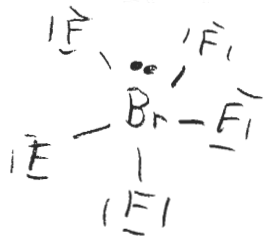
2. The geometry for SeF_3^+ is 26 v.e

   (A) trigonal pyramidal. (C) square planar.

   (B) tetrahedral. (D) rectangular planar.



3. Draw the Lewis structure for BrF_5 and state what its electron pair geometry and molecular (VSEPR) geometry are. 42 v.e.



e-pair geo: Octahedral

VSEPE: Sq. Pyramid

4. Which molecule is polar? (A) BF_3 (trig planar) (B) CO_2 (Linear) (C) CF_4 (Td) (D) H_2S (Bent)

5. Which substance has the highest boiling point? (A) CH_4 (Td London) (B) He (London) (C) HF (polar) (D) Cl_2 (London)

6. Which one of these solid substances has a crystal structure containing discrete molecules?

   (A) dry ice (C) quartz

   (B) graphite (D) silver bromide

7. The stronger the intermolecular forces in a substance

   (A) the higher the boiling point.

   (B) the lower the boiling point.

   (C) the higher the vapor pressure.

   (D) the smaller the deviation from ideal gas behavior.

8. Which group of substances is correctly arranged in order from the highest to the lowest melting point?

   (A) $HF>H_2>NaF$ (C) $NaF>H_2>HF$

   (B) $HF>NaF>H_2$ **(D)** $NaF>HF>H_2$ (ionic, H-bonding, London Forces)