CHEM 1311
Practice Set
Molecular Structure

1. (5.24) Determine the geometric arrangement of electron dense regions for atoms having the following electron dense regions:
   a. 3 b. 5 c. 2 d. 6

2. (5.26) Determine the number of electron dense regions for the central atom of each compound having the following geometries:
   a. Tetrahedral
   b. Linear
   c. Octahedral
   d. Trigonal bipyramidal

3. (5.28) Predict the shape of each of the following:
   a. H_2Se b. $TiCl_4$ c. SF_2 d. GaH_3

4. (5.29) Predict the shape of each of the following:
   a. XeO_4 b. SO_2Cl_2 c. OsO_4 d. SeO_2

5. (5.30) Hypothesize the shape of each following molecules or ions:
   a. SbF_5 b. IF_4^+ c. SeO_3^{-2} d. CrO_4^{2-}

6. (5.31) Find the shape of each of the following ions:
   a. NO_3^- b. NO_2^+ c. NO_2^-

7. (5.32) Obtain the geometry for each of the following:
   a. PO_4^{3-} b. MnO_4^- c. SO_4^{2-} d. SO_3^{2-} e. ClO_4^- f. SCN^-

8. (5.46) Predict the hybridization of the central atom in the following compounds:
   a. H_2CO b. BH_3 c. CH_3SH d. H_2CNH

9. (5.47) Find the hybridization of the central atom in the following compounds:
   a. BH_4^- b. HCO_2^- c. CH_3^+ d. CH_3^-

10. Determine the Electron Pair Geometry and hybridization of the central atom in the following compounds: a. SF_2 b. NF_3 c. ClO_2^- d. SBr_4