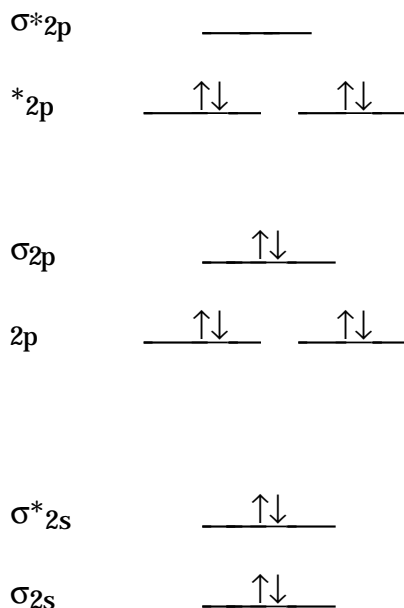


1. a) sp^3d^2 , square planar, nonpolar
 c) sp^3 , pyramidal, polar
 e) sp^2 , bent, polar

- b) sp^3 , tetrahedral, polar
 d) sp , linear, nonpolar
 f) sp^3d , T-shaped, polar

2. 180° , 180° , 120° , 109.5°

3.



$$\text{bond order} = 1/2(8 - 4) = 2$$

4. a) BN 2, diamagnetic
 b) NO^- 2, paramagnetic
 c) CN^- 3, diamagnetic
 d) N_2^+ 2 1/2, paramagnetic

5. a) SiO_2 (quartz) a network covalent solid
 b) NH_3 can H-bond
 c) $C_{40}Cl_{10}$ larger molecule, stronger London dispersion force
 d) $NaOH$ ionic solid
 e) H_2NCH_2OH has 2 groups that can H-bond

6. a) network covalent solid
 c) amorphous solid
 b) ionic solid
 d) molecular solid

7. a) diamond; network covalent solid, covalent bonds
 b) $MgBr_2$; ionic solid, ionic bonds
 c) CH_3OH ; molecular solid, H-bonds, dispersion forces, dipole forces
 d) Br_2 ; molecular solid, dispersion forces
 e) SeF_2 ; molecular solid, dispersion forces, dipole forces