

Lewis Dot Diagrams

Valence Shell Electron Pair Repulsion (VSEPR) Model

Your Name: SOLUTIONS
 Date: 2022-01-11
 Class:

- Draw Lewis Dot Diagrams for the following molecules including all resonance forms, where appropriate.
- Predict the VSEPR shapes for all molecules.
- Note the orbital hybridization for the central atom(s) in each molecule (sp , sp^2 , sp^3 , sp^3d , sp^3d^2).
- Predict the approximate bond angles for the bonds around the central atom.
- Predict whether each molecule has a dipole and the approximate direction that the dipole moment points.

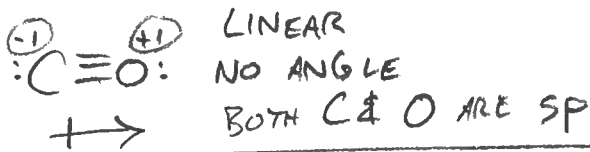
(DIPOLAR MARKED WITH ARROWS \rightarrow
 POINTING FROM δ^+ TO δ^-)

1. $BeCl_2$

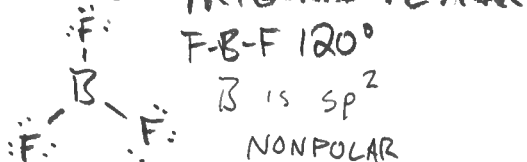


LINEAR Be is sp HYBRIDIZED
 $Cl-Be-Cl$ 180° NON-POLAR

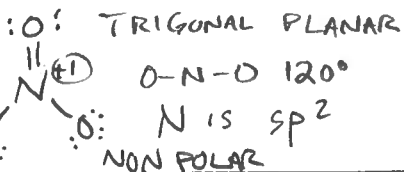
2. CO



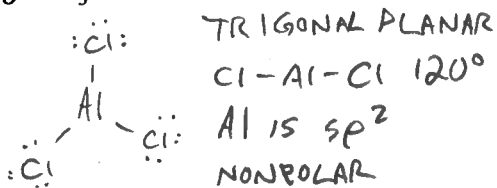
3. BF_3



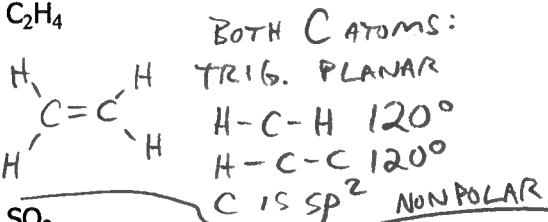
4. NO_3^-



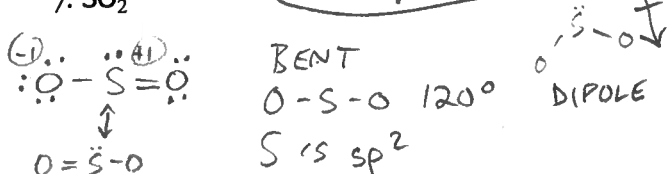
5. $AlCl_3$



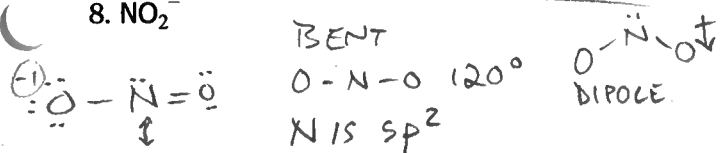
6. C_2H_4



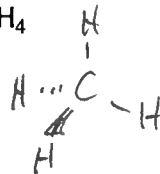
7. SO_2



8. NO_2^-

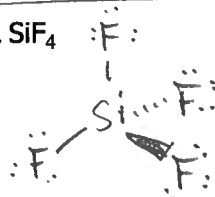


9. CH_4



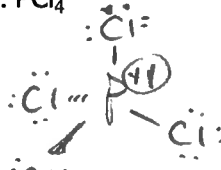
TETRAHEDRAL
 $H-C-H$ 109.5°
 C is sp^3
 NONPOLAR

10. SiF_4



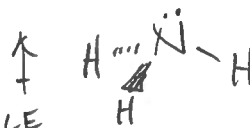
TETRAHEDRAL
 $F-Si-F$ 109.5°
 Si is sp^3
 NONPOLAR

11. PCl_4^+



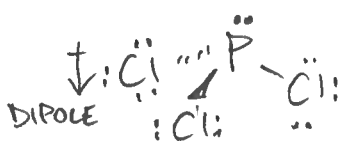
TETRAHEDRAL
 $Cl-P-Cl$ 109.5°
 P is sp^3
 NONPOLAR

12. NH_3



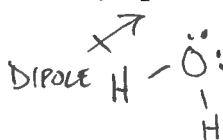
TRIGONAL PYRAMIDAL
 $H-N-H$ 109.5°
 N is sp^3

13. PCl_3



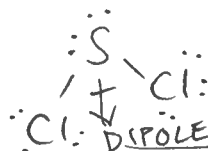
TRIG. PYR.
 $Cl-P-Cl$ 109.5°
 P is sp^3

14. H_2O



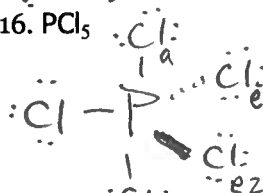
BENT
 $H-O-H$ 109.5°
 O is sp^3

15. SCl_2

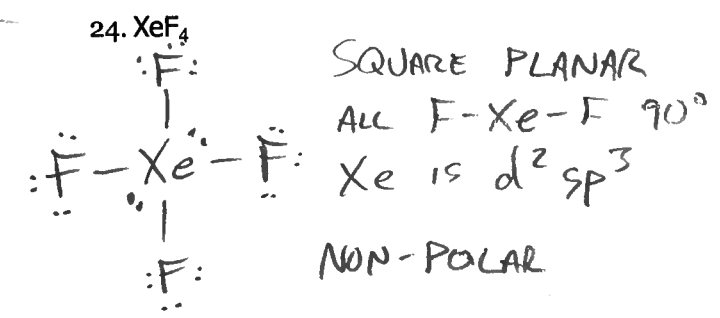
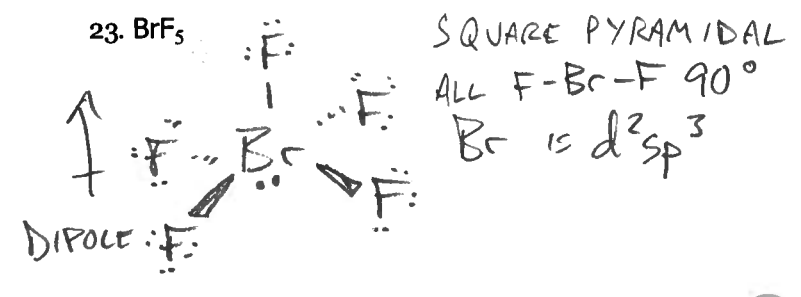
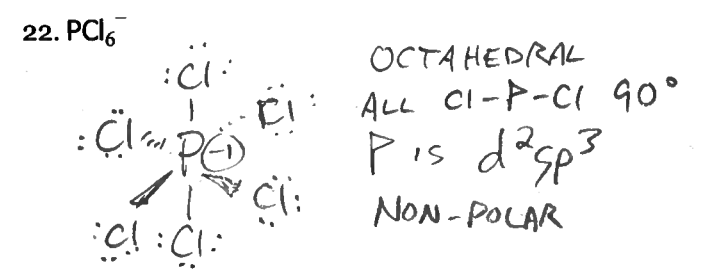
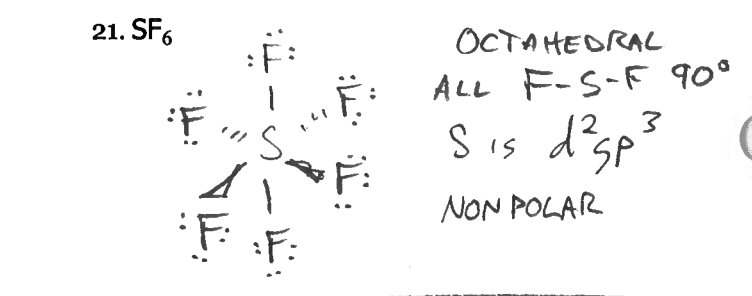
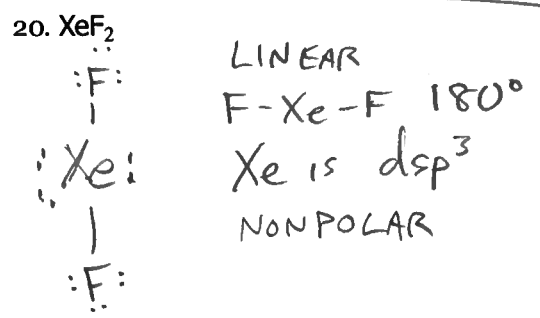
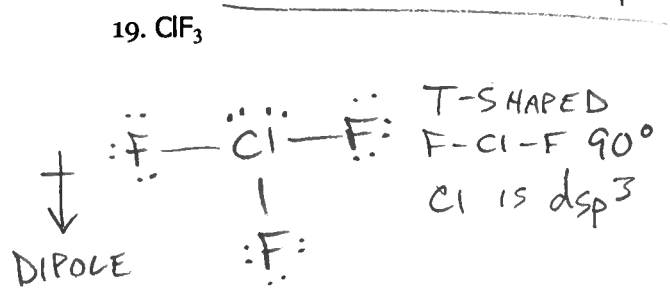
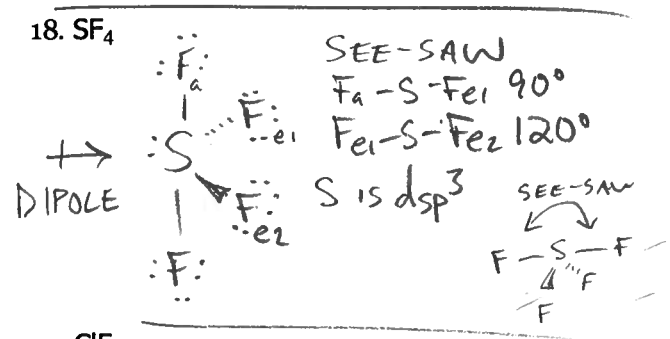
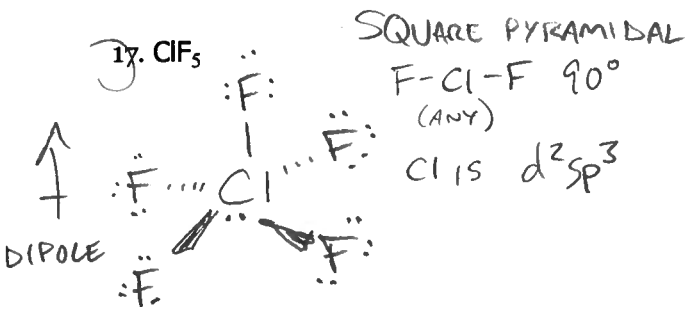


BENT
 $Cl-S-Cl$ 109.5°
 S is sp^3

16. PCl_5



TRIGONAL BIPYRAMIDAL
 Cl_a-P-Cl_{e1} 90°
 $Cl_{e1}-P-Cl_{e2}$ 120°
 P is dsp^3



IN FUTURE EDIT, ClF_5 IS REMOVED AND XeOF_4 IS ADDED

