

General Chemistry I

PLI #13 06/23/21

1. Write Lewis structures that obey the octet rule:

a. Cl_2

b. CH_2Cl_2

c. H_2CO

d. NH_3

2. Draw resonance structures and select the most stable one for $(\text{SCN})^-$.

3. The central atom has been underlined. Do not break the octet rule. Indicate formal charges when nonzero for each Lewis structure. Draw the predicted molecular geometry on basis of VSEPR theory.

Molecular formula	Lewis structure (including formal charges)	Electron geometry name	Molecular structure	Approximate bond angles
<u>P</u> F ₃				
As <u>C</u> O ⁻				
<u>Xe</u> O ₄				
<u>S</u> O ₃				

4. Consider the elements N, Mg, O, F, Al
 - a. Write the noble gas electron configurations for each elements.
 - b. Arrange the elements in order of increasing atomic radius.
 - c. Arrange the elements in order of increasing ionization energy.
5. Write the noble gas electron configuration and determine whether it is diamagnetic or paramagnetic.
 - a. Al
 - b. S^{2-}
 - c. Fe^{3+}
6. Draw the following Lewis dot structures
 - a. CH_3Cl
 - b. HCN

c. Oxygen

d. Ammonia

e. $\text{C}_2\text{H}_4\text{O}$

7. Fill out the following table!

Molecule	Lewis Structure	Electron Pair Geometry	Molecular Geometry	Bond Angles	Polar or Nonpolar?
Ammonium ion					
Hydronium ion					
CH ₂ O					
SO ₂					
PCl ₅					
C ₂ H ₂					
HCO ₃ ⁻					

Draw Molecular Geometry:

Ammonium:

Hydronium:

CH_2O :

SO_2 :

PCl_5 :

C_2H_2 :

HCO_3^- :