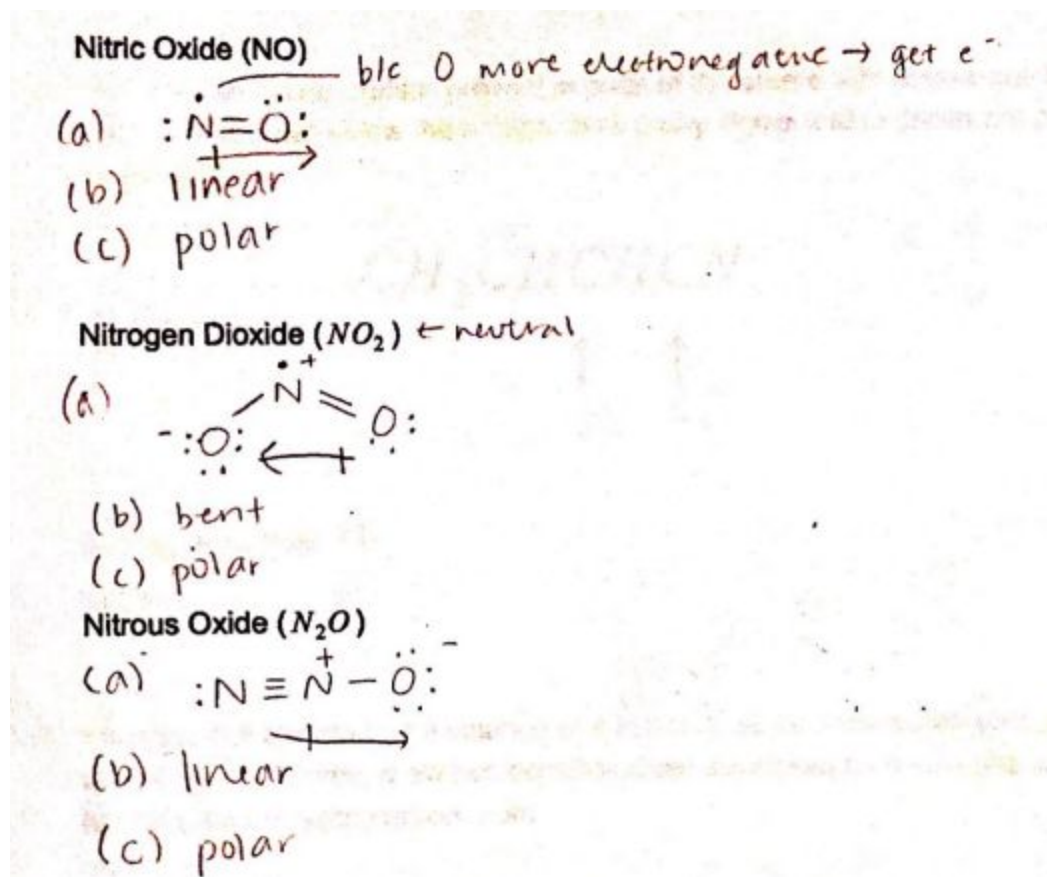


### Ch 3: Chemical Bonds

- For the following three nitrogen oxide compounds:
  - Draw the most stable lewis structure.
  - Determine the shape.
  - Determine whether the compound is polar or nonpolar.



- Which of the following ranks the following bonds from most polar to least polar?

a) Mg-O > B-O > C-O > O-O

c) Cl-O > O-O > Mg-O > C-O

b) Cl-O > Mg-O > C-O > O-O

d) Mg-O > C-O > B-O > O-O

- Which of the following molecules has the largest dipole moment?

CO

NO

HI

HBr

HF

4. Fill in the blank for each below:
- When electrons are shared unequally, chemists characterize these types of bonds as polar covalent bonds.
  - Chemical bonds formed by the attraction of oppositely charged ions are called ionic bonds.
  - If atom X forms a diatomic molecule with itself, the bond is nonpolar covalent.
5. For each pair of compounds below, circle the compound that contains bonds with greater ionic character.

LiCl or LiBr

$H_2S$  or HCl

AgF or AgI

6. Which compound has bonds with greater ionic character,  $CO_2$  or  $CS_2$ ?

$CO_2$

7. Arrange the cations  $Rb^+$ ,  $Be^{2+}$ ,  $Sr^{2+}$  in order of increasing polarizing power and explain your arrangement.

$Rb^+ < Sr^{2+} < Be^{2+}$  because these cations are smaller and more highly charged

8. Which of the following species has a stronger bond? Why?

$O_2$  or  $CN^-$

$CN^-$