

Chapter 12 – Chemical Bonding

1. A _____ is a chemical bond characterized by the sharing of one or more pairs of valence electrons.
2. Predict which of the following has an ionic bond (refer to the Periodic Table for help).

a. CaO	h. BrCl
b. CO ₂	i. KBr
c. FeO	j. SrI ₂
d. N ₂ O ₅	k. HBr
e. SO ₃	l. IBr
f. MgO	m. KF
g. ZnO	n. CuI

3. The noble gas _____ is isoelectronic with an aluminum ion.

4. Predict which of the following are isoelectronic with the noble gas argon.

N³⁻ Cl⁻ Mg²⁺ K⁺ Ca²⁺ H⁺ S²⁻ O²⁻ Br⁻ P³⁻

5. Draw the Lewis Dot structure for the following:

- a. N
- b. F
- c. S
- d. Ca

6. Complete the following sentences to make them true.

- a. Bonding electrons are _____ over the entire NO molecule.
- b. The bond length is _____ than the sum of the two atomic radii.
- c. Breaking an N-O bond _____ energy.

7. What is the total number of valence electrons in one molecule of N₂O₃? _____

8. For the following molecules

- i. Determine the total number of valence electrons.
- j. Draw the Lewis Dot Structure (the central atom is underlined).
- k. Determine the molecular shape.
- l. Determine the bond angle.
- m. Determine the polarity of the molecule.

1) N₂

2) H₂S

shape: _____ angle: _____
polarity: _____

shape: _____ angle: _____
polarity: _____

3) SeO₂

4) PI₃

shape: _____ angle: _____
polarity: _____

shape: _____ angle: _____
polarity: _____

5) NO₂⁻

6) PO₄³⁻

shape: _____ angle: _____
polarity: _____

shape: _____ angle: _____
polarity: _____