

REVIEW QUESTIONS

Chapter 10

1. Write Lewis structure for each ionic compound shown below:

a) SrO

b) CaI₂

2. Write the formula for the ionic compound formed from the combination of the elements indicated by the following Lewis symbols. (Note: formulas should be written in terms of X and Y and not actual elements, since their identity is not conclusively known).

a) $\cdot\mathbf{X}\cdot$ $\cdot\ddot{\mathbf{Y}}\cdot$

b) $\cdot\mathbf{X}\cdot$ $\cdot\ddot{\mathbf{Y}}\cdot$

c) $\cdot\dot{\mathbf{X}}\cdot$ $\cdot\ddot{\mathbf{Y}}\cdot$

3. Draw Lewis structures and use VSEPR to predict the shape and bond angles and polarity for each of the following molecules or ions:



Shape: _____

Bond angle: _____

Polarity (Y/N): _____



Shape: _____

Bond angle: _____

Polarity (Y/N): _____



Shape: _____

Bond angle: _____

Polarity (Y/N): _____

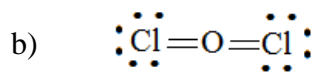
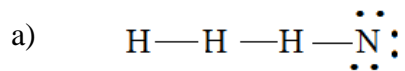


Shape: _____

Bond angle: _____

Polarity (Y/N): _____

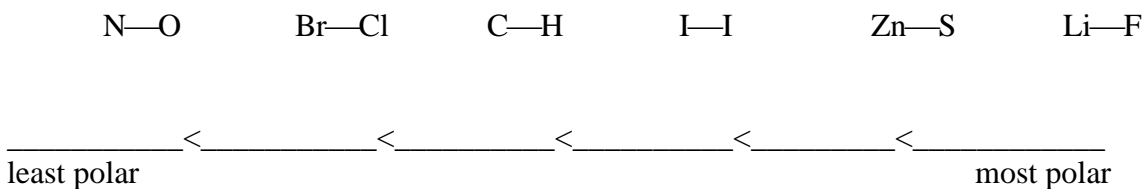
4. Determine what is wrong with each Lewis structure shown below, and write the correct structure.



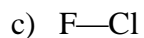
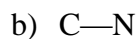
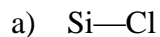
5. Classify each of the following bonds as ionic, polar covalent or non-polar covalent:



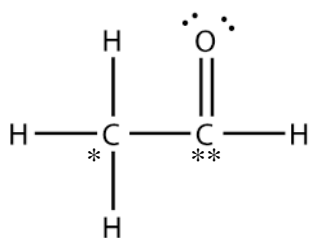
6. Arrange the following bonds in order of increasing polarity:



7. For each bond below, determine the direction of the dipole and indicate by labeling the atoms with $\delta+$ and $\delta-$ charges.



8. Shown below is the Lewis structure for acetaldehyde molecule. Predict the shape and the bond angle of the molecule at each point indicated:



carbon (*) shape: _____

bond angle: _____

carbon (**) shape: _____

bond angle: _____

9. Complete each of the following statements with a suitable word or phrase:

- Polarity of a bond is caused by _____
- Linear molecules with polar bonds are usually _____
- Molecules with 3 bonding pairs and 1 non-bonding pair of electrons around the central atom have a _____ shape.
- Bonds that have unequal sharing of electrons are classified as _____.
- Molecules with 2 bonding pairs and 2 non-bonding pair of electrons around the central atom have a _____ shape.

ANSWERS:

1. No answers provided
2. a) X_3Y
b) XY
c) XY_3
3. a) pyramidal; 109.5° ; polar
b) bent; 109.5 ; polar
c) trigonal planar; 120° ; polar
d) linear; 180° ; non-polar
4. No answers provided
5. a) polar covalent
b) ionic
c) non-polar covalent
6. No answers provided
7. No answers provided
8. carbon (*): tetrahedral; 109.5°
carbon (**): trigonal planar; 120°
9. No answers provided