WEEK 2 WORKSHEET

Notes

- Ionic bonds result from the transfer of electrons from one element to another.
- Covalent bonds result from the sharing of electrons between two nuclei.
- 2nd row elements can fill without satisfying octet.
- Formal charge = # of valence e\(^-\) in neutral atom - # of e\(^-\) it actually has.
- Bond length and strength are inversely related; they are dependent on hybridization.
- Bonds with sp hybridized carbon will have greatest bond strength and shortest bond length. Bonds with sp\(^3\) hybridized carbon will have the smallest bond strength and longest bond length.
- Strong Bronsted-Lowry acid = weak conjugate base, strong Bronsted-Lowry base = weak conjugate acid.

1. How many covalent bonds are predicted for each atom?
   a. O
   b. Al
   c. Br

2. Label each bond in the following compounds as ionic or covalent.
   a. NaI
b. \( \text{HCl} \)

c. \( \text{NaOCH} \)

3. Draw one valid Lewis structure for each compound. Assume the atoms are arranged as drawn.

\[
\begin{align*}
\text{CH}_2\text{N}_2 & \quad \text{H} \quad \text{C} \quad \text{N} \quad \text{N} \\
& \quad \text{H}
\end{align*}
\]

\[
\begin{align*}
\text{HCO}_2^- & \quad \text{O} \\
& \quad \text{H} \quad \text{C} \quad \text{O}
\end{align*}
\]

\[
\begin{align*}
\text{CH}_3\text{CNO} & \quad \text{H} \quad \text{C} \quad \text{C} \quad \text{N} \quad \text{O} \\
& \quad \text{H}
\end{align*}
\]
4. With reference to compound A drawn below, label each compound as an isomer, a resonance structure, or neither.

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A

a.

b.

c.

d.
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5. Rank the following bonds in order of increasing bond length.

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H

1

2

3

a.
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6. Rank the following Bronsted-Lowry acids in order of increasing acidity. Which compound forms the strongest conjugate base?

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A: Br

B: F

C: NH

D: OH
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