

Names of all students (please print) _____

CHEM 243 Organic Chemistry I

Points _____ (10 max)

Worksheet #1: September 9, 2024. Complete the following worksheet by collaborating with a group of 3-4 students. You can use a text book or your lecture video notes. You must work together, with the names of all students included on **ONE** sheet and turned in for a group grade.

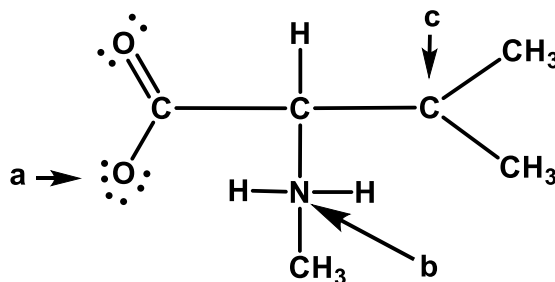
Here is what you need to do today:

- You can join any table you want in room 477 or 481 (3-4 students per table).
- Each student should have their own worksheet. You will all work together answering these questions.
- Its important that everyone in your group is discussing the same problem! Do not divide up the work!
- At any time, you can request help from me or the Peer Leaders.
- One student can volunteer or be assigned to be the “recorder”. When you all agree to an answer, the recorder will write that answer onto the “group” worksheet.
- Everyone in the group will add their name to the group worksheet. When you are done, turn the group worksheet in to Dr. Brush.
- Remember, Worksheet “Zero” is due today.

My worksheets are designed with the assumption that you have (1) watched the videos, (2) taken notes, and (3) have your notebook open on your table.

(1) Formal Charge. In the structure drawn to the right, what is the Formal Charge for atoms:

(a) _____ (b) _____ (c) _____



Note: all lone pairs have been drawn.

(2) Covalent Bonds, Hybridization, and Molecular Geometry. For the structure drawn below:

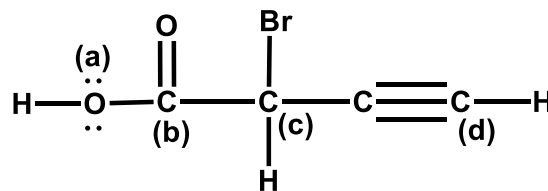
What is the Hybridization and Geometry for atoms labeled (a) – (d):

(a) _____ and _____

(b) _____ and _____

(c) _____ and _____

(d) _____ and _____



Note: all lone pairs have been drawn.

What is the total number of sigma (σ) covalent bonds in this structure _____

What is the total number of pi (π) covalent bonds in this structure _____

(3) For the structure drawn at the right:

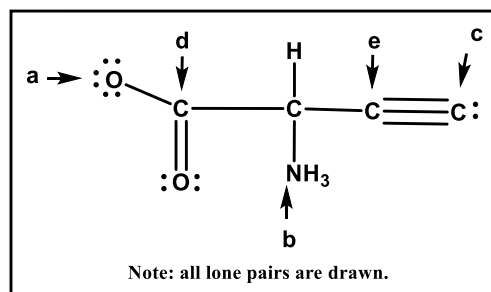
(a) What is the Formal Charge for: (a) _____ (b) _____ (c) _____

(b) What is the hybridization for: (b) _____ (d) _____ (e) _____

(c) What is the molecular geometry for:

(b) _____ (d) _____ (e) _____

(d) What is the total number of pi (π) covalent bonds in the structure drawn above _____

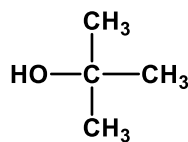


(4) Constitutional Isomers for C_4H_9Cl . In the boxes below, draw reasonable structures for four Constitutional isomers with the molecular formula C_4H_9Cl . You can draw either bond-line or zig-zag structures. **One example is given for you.**

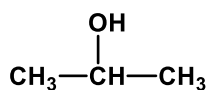
$\begin{array}{c} :\ddot{\text{Cl}}: \\ \\ \text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_3 \\ \text{bond-line} \end{array}$ $\begin{array}{c} :\ddot{\text{Cl}}: \\ \\ \text{zig-zag} \end{array}$	

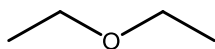
(5) Comparing Organic Structures. Are the following pairs of organic compounds:

Constitutional Isomers or Identical or Different

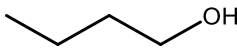


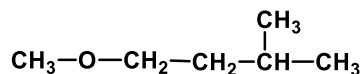
and





and





and

