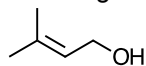
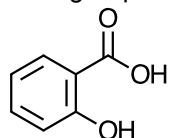


Objective 1: Identify organic functional groups, draw skeletal structures, and distinguish between the same compound, isomers, different compounds, and resonance structures.

1. a. Prenol has a fruity odor and is used in perfumes. This compound contains an alkene group and alcohol group. Circle each group.

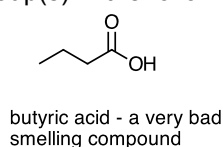
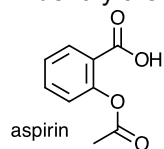


b. Salicylic acid is a pain reliever and contains an alcohol group, acid group, and aromatic group. Circle each group.



c. What is the difference between an alkene and aromatic group?

2. Identify the functional group(s) in the following molecules:



3. a.  $C_3H_8O$  has three isomers. Draw the Lewis structure of each isomer.

b. Xylene, which is a benzene ring with 2 methyl groups, has three isomers. Draw the Lewis structure of each isomer.

4. Determine structure from experimental data.

(from Spring 2009 Exam 1) You are trying to determine the identity of an organic ion. So far, your analysis shows that the compound contains:

(i) C and H and O with chemical formula  $C_2H_3O_2$ ,

(ii) Three HCH bond angles and three CCH bond angles of  $109.5^\circ$ . (Note: methane,  $CH_4$ , has four HCH bond angles.)

(iii) Two carbon-oxygen bonds of length 1.26 Angstroms. (Note: A carbon-oxygen single bond has a bond length of 1.34 Angstroms. A carbon-oxygen double bond has a bond length of 1.20 Angstroms.)

5. Compare the two compounds. Are these compounds the same compound, isomers, different compounds, or resonance structures?

