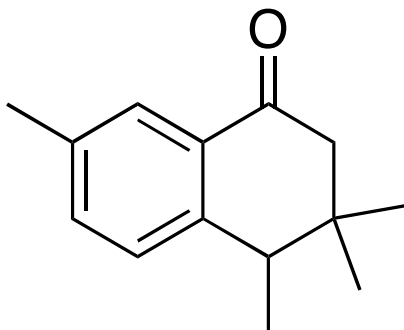


Organic Chemistry

CHM 223

Take-Home Problem Set

1. The following molecule has 14 carbon atoms. Draw an arrow to each of the 14 carbons and indicate how many hydrogens are attached.



2. Draw the correct Lewis structure for the following molecules, and indicate bond polarity by drawing polarization symbols δ^+ and δ^- where appropriate. Are these molecules polar or nonpolar?

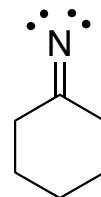
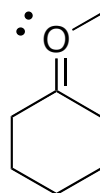
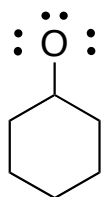
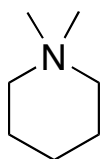
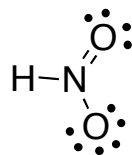
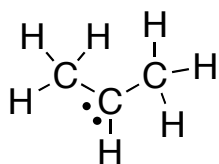
phosphoric acid - H_3PO_4

ethanol - $\text{CH}_3\text{CH}_2\text{OH}$

acetic acid - $\text{CH}_3\text{CO}_2\text{H}$

acetone - $(\text{CH}_3)_2\text{CO}$

3. Consider the molecules below and indicate formal charges (if they exist) on the appropriate atom(s)



4. Some structures, below, may have atoms with lone pairs of electrons that are not drawn. Identify these structures, and draw the lone pairs on the correct atoms.

