Chemistry 247b Problem Set 3

1. Write out the structures and give IUPAC names for all possible alkene isomers of C₆H₁₂.

2. Assign stereochemistry (E) or (Z) for each of the following compounds. In cases having double bonds in the groups that are to be prioritized, please write out the structure carefully, showing two additional “phantom” atoms for each double bond present. For example:

   \[
   \text{CH₃CH₂} \quad \text{CH} = \text{CH}_2 \quad \text{CH₃CH₂} \quad \text{CH} = \text{CH}_2
   \]
   
   becomes

   \[
   \text{CH₃CH₂} \quad \text{CH} = \text{CH}_2 \quad \text{CH₃CH₂} \quad \text{CH} = \text{CH}_2
   \]

   a. \[
   \text{CH₃CH₂} \quad \text{CH} = \text{CH}_2 \quad \text{CH₃CH₂CH₃} \quad \text{CH} = \text{CH}_2 \]
   
   b. \[
   \text{CH₃CH₂} \quad \text{CH} = \text{CH}_2 \quad \text{CH₃CH₂CH₃} \quad \text{CH} = \text{CH}_2
   \]

   c. \[
   \text{CH₃CH₂} \quad \text{CH} = \text{CH}_2 \quad \text{CH₃CH₂CH₃} \quad \text{CH} = \text{CH}_2
   \]

   d. \[
   \text{CH₃CH₂} \quad \text{CH} = \text{CH}_2 \quad \text{CH₃CH₂CH₃} \quad \text{CH} = \text{CH}_2
   \]

   e. \[
   \text{CH₃CH₂} \quad \text{CH} = \text{CH}_2 \quad \text{CH₃CH₂CH₃} \quad \text{CH} = \text{CH}_2
   \]

   f. \[
   \text{CH₃CH₂} \quad \text{CH} = \text{CH}_2 \quad \text{CH₃CH₂CH₃} \quad \text{CH} = \text{CH}_2
   \]

3. Draw skeletal structures (as in 2e and 2f) for each of the following compounds.

   a. (Z)-2-methyl-4-decene
   b. (E)-3-bromo-2-chloro-2-pentene
   c. trans-4-methyl-2-cyclohexenol
   d. (E)-5-methoxy-3,7-dimethyl-2-octen-1-ol