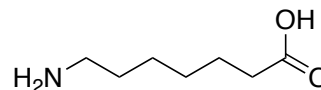
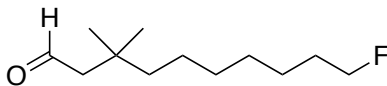
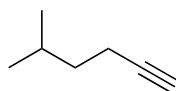
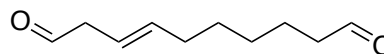
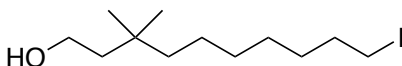
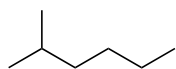
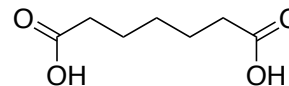
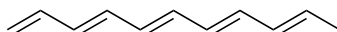
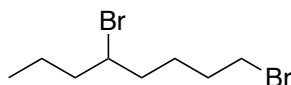


Organic Chemistry

Exercise 4

1. Draw six valid chemical structures with each one being an example of a molecule that contains one of the following functional groups: primary alcohol, secondary alcohol, tertiary amine, phenyl, carboxylic acid ester, ketone, ether, urethane!
2. Transfer: Name the first twelve members of the homologous series of alkanes! What trend do you expect with regard to their melting and boiling points if their molecular weight is increasing?
3. Draw the molecular structures that correspond to the trivial names of the following bromoalkanes: isopropylbromide, isobutylbromide, neopentylbromide, cyclohexylbromide!
4. Draw the following molecular structures: 3,4,5,7-tetramethyl nonane, 3-isopropyl-5,5-dimethyloctane, 2-bromo-6,6-dimethyloctane, 1,4-diethylbenzene, 3-methyl-4-hydroxypentanoic acid, 5-vinyl-1,8-nonadiene, 4,4-dimethyl-3-ethyl heptanal, hexyl propanoate, N-acetyl-3-hexanamine, (Z,Z)-Octadeca-9,12-dienoic acid.
5. Give the IUPAC names of the following compounds.



Reading Suggestions:

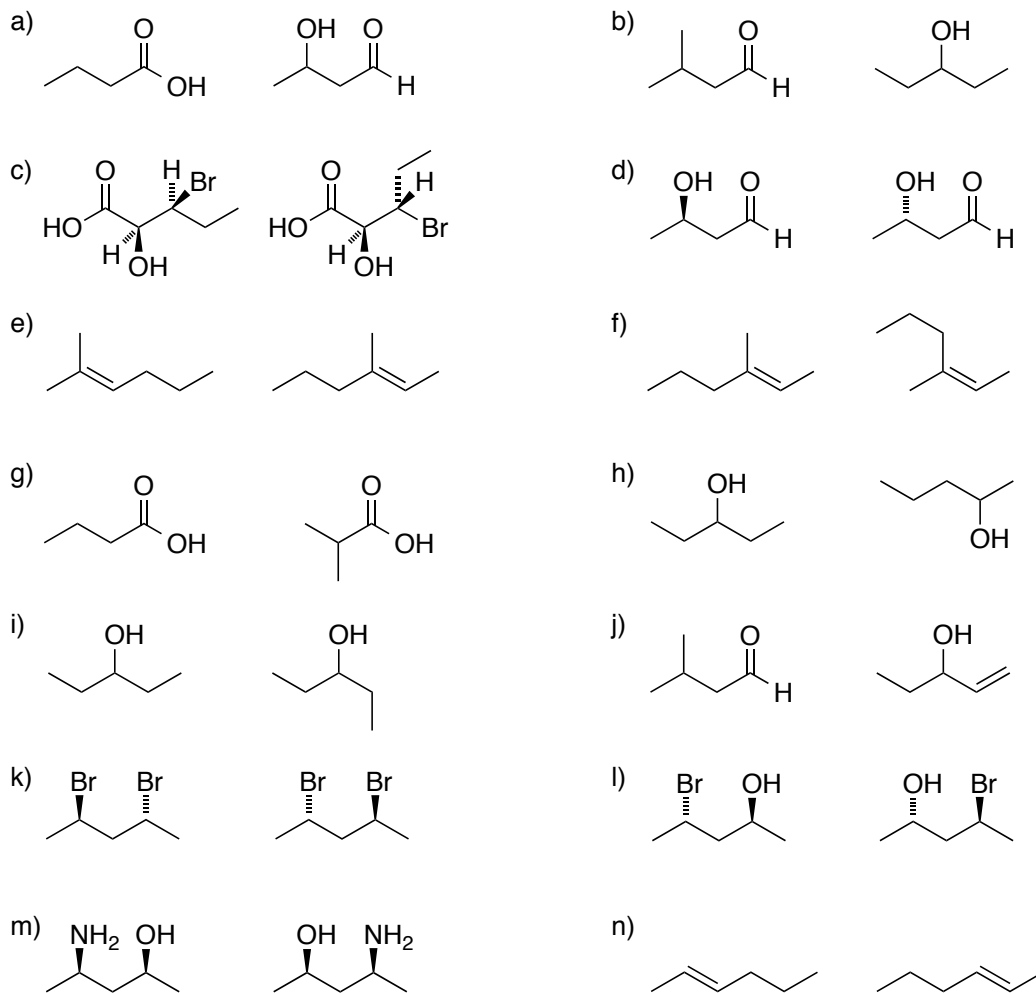
Clayden, Greeves, Warren, Wothers, *Oxford University Press*, **2001**, pp. 19–45.

Chimie Organique, Paul Arnaud, *Dunod Editeur*, **2009**, pp. 11-13;171-197.

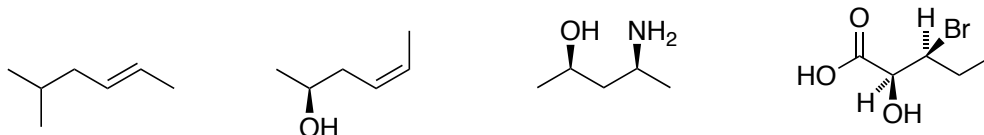
Organic Chemistry

Exercise 5

1. What is the exact structural relation (identical; different compounds; isomers; and what kind of isomers) of the following pairs of compounds:

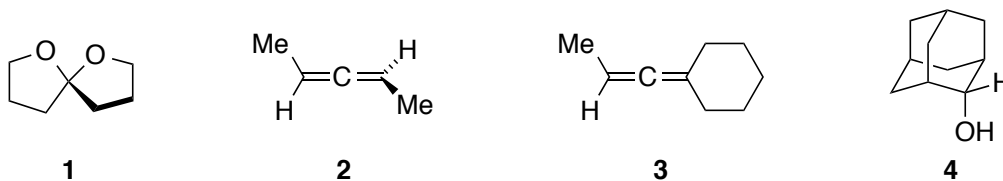


2. Give the exact IUPAC names for the following compounds, including the assignment of their stereochemistry:



3. Draw the exact structures (including their stereochemistry) of the following compounds: *(E)*-4-hydroxy-2-octene, *(Z)*-3-methyl-3-octene, *(S)*-2-hydroxypropanal, 2*R*,3*S*-3-hydroxybutan-2-amine

4. Transfer: Which of the following compounds are chiral? On what basis do you decide? Please give your arguments.



Hint for **3**: Consider how the orientation of the p-orbitals in two cumulated double bonds influences the orientation of the substituents Me and H.

Reading Suggestions:

Clayden, Greeves, Warren, Wothers, *Oxford University Press*, **2001**, pp. 381–404; 445–451.

Chimie Organique, Paul Arnaud, *Dunod Editeur*, **2009**, pp. 13–16; 47–72.