

Review for Chem 30B Midterm Exam 1 (McMurry Chapters 12-15)

Topics: Introduction to all organic compound families, alkanes, alkenes, alkynes, aromatic compounds (substituted benzenes), alcohols, phenols, ethers, thiols, and amines (and cyclic variants of these compounds, if applicable)

Names and Structures [Resource: Naming Handout]

1. Recognize all functional groups and name their families. [Resource: Functional Group and Families Handout]
2. Give IUPAC names and/or IUPAC-accepted common names for compounds covered in Chpts 12-15 (including commonly-used substituent names).
3. Draw organic compound structures using both condensed and line structural formulas, given the IUPAC names or IUPAC-accepted common names.
4. Molecular structure variations:
 - Constitutional isomers: Draw constitutional isomers given molecular formula. Be able to distinguish among constitutional isomers, identical molecules, and molecules that are neither isomers nor identical.
 - Cis and trans isomers: Draw cis and trans isomers given molecular formula or name of compound.
 - Classify carbon atoms, alcohols, and amines as primary, secondary, tertiary, or quaternary, if applicable.

Properties

5. Know general properties of the compounds in the families covered in Chpts 12-15.
6. Given a list of molecules, be able to predict and explain trend in boiling point, using intermolecular forces. [Resource: Intermolecular Forces Handout]
7. Given a list of molecules, be able to predict and explain trend in solubility, using intermolecular forces. [Resource: Intermolecular Forces Handout]

Reactions [Resource: Organic Reactions Handout]

8. Given structural formulas of reactants and catalyst/conditions, predict all possible products, and distinguish between major and minor products, if applicable (Markovnikov's rule, Zaitsev's rule).
9. Given structural formulas of products, give structural formulas of reactants and catalysts/conditions that lead to products.
10. Given the name of reaction and reactant, be able to write the equation for the reaction, including any catalysts/conditions necessary and all products possible.
11. Classify the types of reactions.

For great review material and sample problems, check out Prof. Fossum's site at

<http://www.laney.edu/wp/cheli-fossum/>

Sample review problems and answers:

<http://www.laney.edu/wp/cheli-fossum/files/2012/02/30B-Review-Q-Ex-1475.pdf>

<http://www.laney.edu/wp/cheli-fossum/files/2012/02/30B-Review-Ex-1-Answers474.pdf>

Sample exam 1 and answers:

<http://www.laney.edu/wp/cheli-fossum/files/2012/01/30B-Exam-1-S12476.pdf>

<http://www.laney.edu/wp/cheli-fossum/files/2012/01/Chem-30B-Ex1-S12-Answers637.pdf>