Organic Chemistry I **Fall 2007**

Exam 1 Review *as of 9-21-07*

Exam 1 will cover material from Chapters 1, 2 and 3 of the texbook, however not all parts of these chapters will be on the exam. Use the chapter outlines provided on the Organic Chemistry I syllabus website to help you focus on the specific material. Material from the first two lab experiments will also be on the exam. The following is a summary of the material that will be on your first hourly exam. It may be modified slightly next Tuesday.

Atomic Orbitals	Identify valence orbitals/electrons and understand their importance in chemical bonding Identify proper electronic configuration of atoms; know how to apply the Auf Bau principle, the Pauli exclusion principle and Hund's rule
Molecular Orbitals	Understand how molecular orbitals form Identify the atomic orbitals involved in the formation of bonds
Ionic Bonds	Identify types of atoms that tend to form ionic bonds Understand exchange of electrons during the formation of ionic bonds
Covalent Bonds	Identify the types of atoms that tend to form covalent bonds Understand the formation of sigma and pi bonds Identify pure and polar covalent bonds
Non-Covalent Interactions	Know and distinguish the types of non-covalent interactions Recognize molecules that have intra- and intermolecular non-covalent interactions
Polarity	Calculate the formal charges on atoms given structure Evaluate the relative polarity of molecules (formal charge, lone pairs, polar covalent bonds)
Hybridization	Recognize hybridization of C, N, O given a structure Identify types of hybridized atomic orbitals involved in bonding Identify the geometry and bond angles associated with different types of hybridization.
Drawing Organic Molecules	Draw proper Lewis structures of organic molecules Interpret conventions used for drawing organic molecules; convert from structure to molecular formula and from molecular formula to structure(s)
Isomers (Skeletal, functional group, positional only)	Draw and identify isomers of straight and branched chain alkanes
Degree of Unsaturation	Calculate the degree of unsaturation given molecular formula or structure Use degree of unsaturation to help draw structures from molecular formulas
Nomenclature	Name alkanes, alkenes, alkynes, alcohols, alkyl halides from given a structure; provide IUPAC name of alkanes, alkenes, alkynes, alkyl halides, alcohols Recognize and use common alkyl substituent names Identify substitution patterns of sp3 carbons (i.e. primary, secondary, tertiary, quarternary)
Functional Groups	Identify alkanes, alkenes, alkynes, aromatics, alcohols, alkyl, vinyl and aryl halides, amines, ethers and carbonyl-containing functional groups.
Alkenes & Alkynes	Identify alkene substitution and relative stability Identify and assign E-/Z- or cis/trans stereochemistry to alkenes Identify types of alkynes

Representative Old Exam Questions

F2003 Exam 1	1, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 15, 16, 19, 20
F2002 Exam 1	2, 3, 4, 5, 7, 8, 10, 13, 14, 16, 17, 19, 20, 22, 23, 24
F2001 Exam 1	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20
F2001 Exam 2	1, 3, 19, 22, 25