

CHEM 335: A BRIEF REVIEW OF THE SEMESTER

Chapter 13

NMR know how to use it to go from spectrum to structure and vice versa

Chapter 17

Alcohols & Phenols A few new reactions here (Oxidation/Reduction, Grignards, Eliminations, Halogenation, Protection).

Chapter 18

Ethers & Epoxides Preparation, Cleavage, Regiochemistry & Stereochemistry of epoxide opening. Claisen Rearrangement of ally ethers of phenol.

Chapter 19

Aldehydes & Ketones Lots of new chemistry here but we revisit Chapter 17 a bit. Reduction/Oxidation, Nuc. Addition to C=O, Imine/Enamine, Acetal, Wittig, Conjugate Addition.

Chapter 21

Carboxylic Acid Derivatives Interconversions! Hydrolysis, Alcoholysis, Aminolysis, Reductions, Organometallics.

Chapter 20

Carboxylic Acids Substituent effects on acidity, pKa and acidity, Carboxylation of Grignards.

Chapter 22

α -Substitution Chemistry next to the Carbonyl and Reactions of Enolates plus a revisit to Chapter 19. Halogenation, Alkylation, Decarboxylation.

Chapter 23

Carbonyl Condensation Aldol, Claisen, Michael, Robinson, Stork-Enamine.

Chapter 24

Amines pKa's again, Various Preparations, Alkylation, Rearrangements, Elimination. Aryl amines.

Chapter 25

Carbohydrates Fischer Projections, D, L designation, Aldose stereoisomers (specific names such as Ribose are not important for this course), pyranose and furanose structures and the anomeric carbon. A few reactions on sugars.

Chapter 26

Amino Acids Acid & and a Base, Protecting Groups, DCC coupling, Peptide Synthesis and Strategies.

General

Mechanism (Any Major Themes?)

Reagents (Provide)

Products (Predict)

Trends (Reactivity, Electrophilicity, Nucleophilicity, Acidity, Basicity)

Interconversions (Alcohols, Aldehydes/Ketones, Carboxylic Acid Derivatives, Amines)

Synthesis (Look for the clues and work backwards)

Suggestion for Preparing for the FINAL EXAM:

- Organize your reagents and reactions!

For example, consider the following types of reaction and the reagents necessary for each of these transformations:

- ☞ Oxidations (of alcohols and aldehydes)
- ☞ Reductions (of ketones/aldehydes, carboxylic acid derivatives, etc.; full vs. partial)
- ☞ Reactions at the Carbonyl (aldehydes/ketones, carboxylic acid derivatives)
- ☞ Reactions of the alpha carbon
- ☞ Reactions of the beta carbon (conjugate addition: amines, thiols, Gilman, Michael, Stork)
- ☞ Reactions with Grignards
- ☞ Reactions with Gilman
- ☞ Hydrolysis reactions
- ☞ Reactions with Alcohols (to alkyl halides, ketones/aldehydes, carboxylic acids, acid halides, anhydrides)
- ☞ Reactions with Amines (to similar cmpds as above and in conjugate addition reactions).
- ☞ Reactions of Carboxylic Acids
- ☞ Epoxide formation and Reactions
- ☞ Eliminations
- ☞ Rearrangements