

Problem Set #14

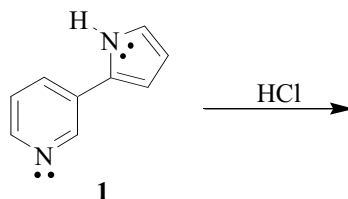
Chemistry 3231

December 5, 2001

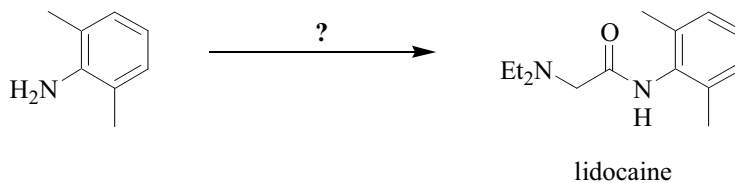
1. The two sp^3 -hybridized, pyramidal amines shown below are nonsuperimposable mirror images, but an “optically active” ethylmethylamine does not exist. Explain.



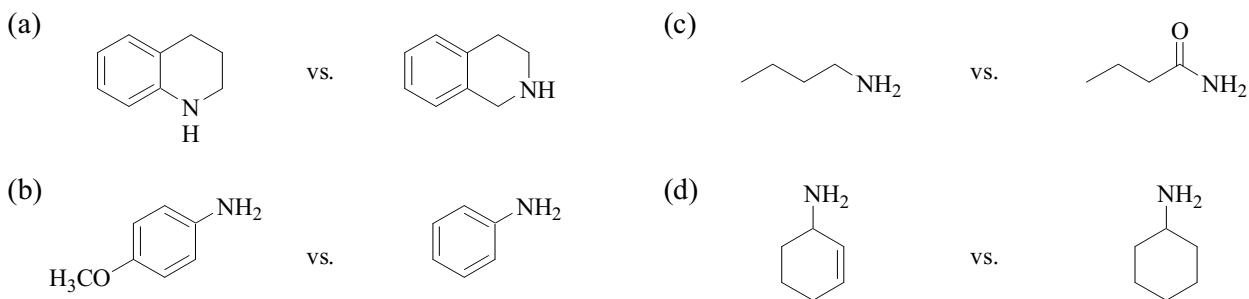
2. Draw the product that is formed when compound **1** is treated with one equivalent of HCl. Justify your answer.



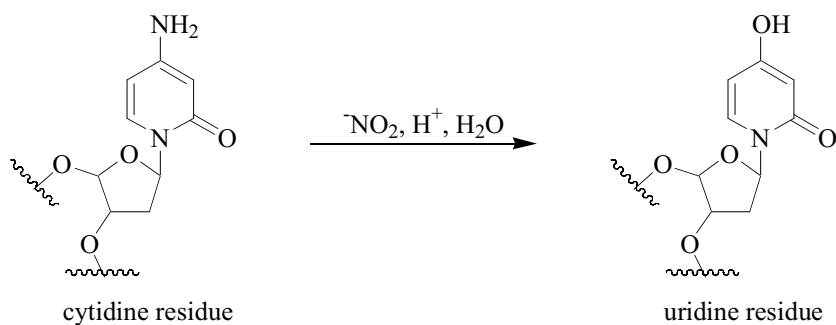
3. Lidocaine (Xylocaine) is used as a local anesthetic. Provide an efficient synthetic route to lidocaine from the 2,6-dimethylaniline and any other organic or inorganic reagents.



4. Which compound of each of the following pairs is expected to be more basic?



5. Inorganic nitrites (NO_2^-) are commonly used food preservatives. Their ability to diazotize (change R-NH_2 to R-N_2) free amino functions – like those in the nucleic acid residues of DNA – has been suggested as a cause for mutagenesis. Diazotization may occur under the acidic conditions of the stomach. Show how the cytidine residue below can be changed into a uridine residue in the presence of NO_2^- , acid, and water (i.e., “stomach conditions”).



Week #14 – Reading and Problems

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Reading

Chapter 20: Introduction, 20.2-20.4, 20.5a,b,d, 20.6a,c
Chapter 25: Introduction, 25.1a-c, 25.3a,c

Problems

Chapter 20: 3, 6, 8*, 10*, 13, 34, 40, 41A-C, 43A-C
Chapter 25: 3, 5*, 6*, 17, 24*, 29

* Good problems to do

Announcements

- Syllabus update: We are not (obviously) going to cover all the topics on the syllabus. We should get through amines, and a little bit of amino acids (hopefully!) – parts of Chapters 20 and 25.
- My schedule for the next couple of weeks:
Office hours at 1-3 pm on the following days – Wed., 12/5; Mon., 12/10 (Alt. 806)
Review session at 10-11 am on Wed., 12/12 (Alt. 202)
Individual appointments at 1-5 pm on Wed., 12/12 (Alt. 705)
- If you wish to schedule an appointment with me, please do it soon. My schedule is getting booked rather quickly. I apologize in advance for those students with whom I will not be able to meet, as there is not enough time to accommodate everyone.
- CONGRATULATIONS on getting to the last problem set of the semester!!! ☺

