Reductive Amination

Prelab Questions

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Provide a mechanism for the formation of an imine in the reaction below. (3)

2. Give the structure of the imine synthesized in lab between p-vanillin and p-toluidine. (2)

3. When p-vanillin is mixed with p-toluidine, the mixture becomes liquid. Explain what is happening? (1)

4. The instructions in step 3 begin “Add 2 mL of acetic acid to the amine (prepared in step 2) to destroy the excess borohydride and to neutralize the phenoxide ion.” Draw the structure of the amine produced in step 2 and circle the phenoxide functional group referred to. (1)

5. The structure of capsaicin, the pungent ingredient in red pepper, is shown below. Like the product of this lab procedure, it is an amide. Suggest a multi-step synthetic scheme analogous to the sequence used in this experiment to prepare capsaicin. Begin with p - vanillin and use the acid chloride of 8-methyl-6-nonenoic acid in the last step of the reaction sequence. (3)

