

Chemistry 351

Quiz #9

November 7, 2018

Name: _____

Student Number: _____

Section Number: _____

TA: _____

INSTRUCTIONS:

This quiz consists of 3 questions on 3 pages. Please make certain that your quiz is complete.

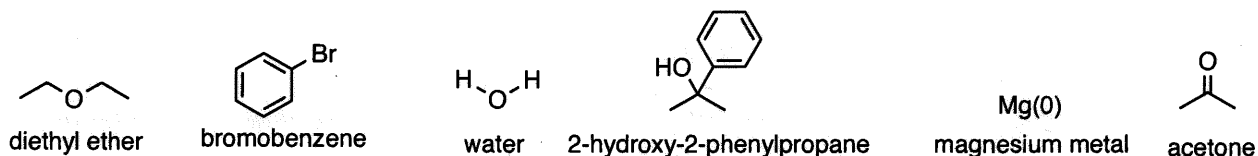
Write your name, student number, and section number **on both the quiz and answer sheet. Be certain to bubble in your PID digits on the answer sheet. The absence of any of these identification items will result in the deduction of 2 points from your score.**

Questions 1 is worth 4 points. Question 2 and Question 3 are each worth 3 points.

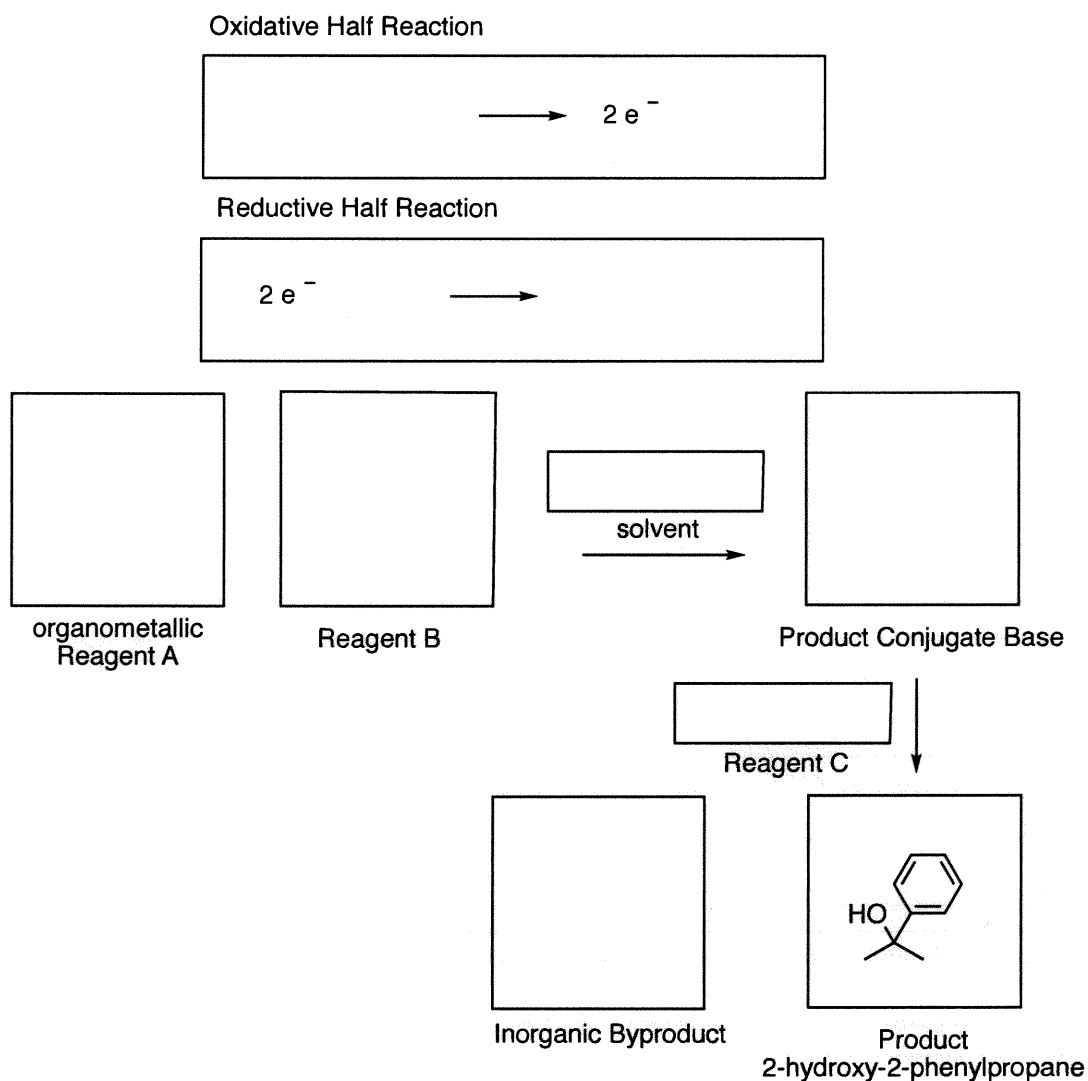
Write your answers to Questions 1-3 in the space provided on this quiz.

When you complete the quiz, insert your answer sheet into your quiz and then hand both in on the bench in front of the lecture hall in the spot indicated by your section number.

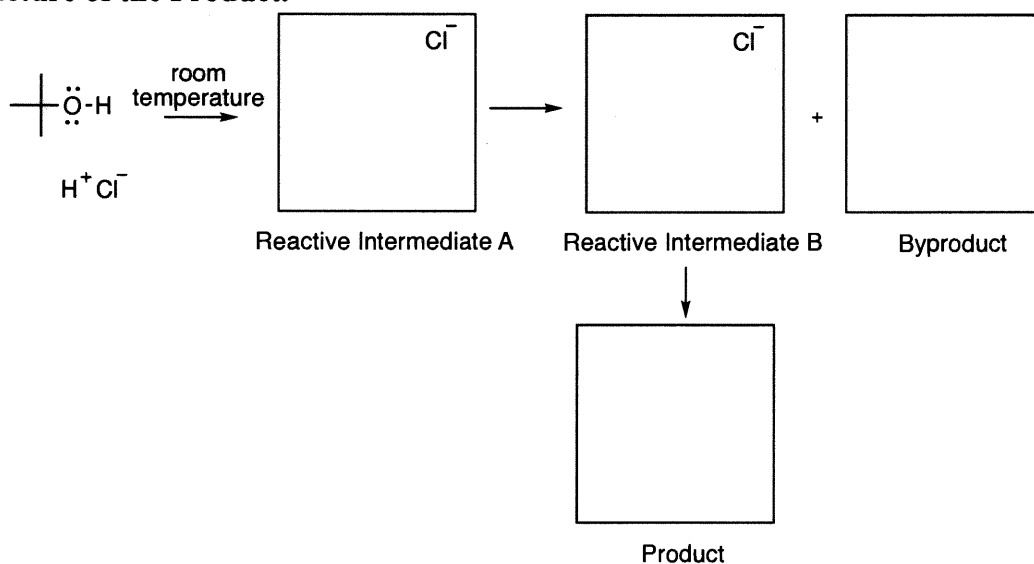
1. You are to synthesize 2-hydroxy-2-phenylpropane using the following reagents:



- (1 pt) In the labeled boxes below write out the **Oxidative Half Reaction** and the **Reductive Half Reaction** that lead to formation of the organometallic Reagent A that you will need for synthesis of 2-hydroxy-2-phenylpropane.
- (1 pt) In the labeled boxes, provide the structure of **organometallic Reagent A**, **Reagent B** and the **solvent** required to generate the Conjugate Base of the desired Product 2-hydroxy-2-phenylpropane.
- (1 pt) **Draw the arrows** that show the flow of electrons during reaction of organometallic Reagent A and Reagent B.
- (1 pt) In the labeled boxes, provide the structure of the **Product Conjugate Base**, the structure of **Reagent C** that needs to be added to the Product Conjugate Base to obtain Product 2-hydroxy-2-phenylpropane, and the **Inorganic Byproduct** formed.



2. For the reaction of *tert*-butyl alcohol with HCl at room temperature:
- (1 pt) In the labeled boxes, provide the **structure of Reactive Intermediate A** and the **structure of Reactive Intermediate B**.
 - (1 pt) Provide the **arrows** for the flow of electrons during **conversion of *tert*-butyl alcohol and HCl to Reactive Intermediate A**. Provide the arrows for the flow of electrons during **conversion of Reactive Intermediate A into Reactive Intermediate B** and conversion of **Reactive Intermediate B into the Product**.
 - (1 pt) In the labeled boxes, provide the **structure of the reaction's Byproduct** and the **structure of the Product**.



3. For the reaction of 1 equivalent of *n*-propanol with 1 equivalent of phosphorus tribromide:
- (1 pt) In the labeled box, provide the **structure of the Reactive Intermediate**.
 - (1 pt) In the labeled boxes, provide the **structure of the organic Product** and the **structure of the Inorganic Byproduct** formed in the reaction.
 - (1pt) Provide the **arrows** for the flow of electrons during **reaction of *n*-propanol with PBr₃** leading to the Reactive Intermediate. Provide **arrows** for the flow of electrons during the **collapse of the Reactive Intermediate** leading to formation of the Product and Byproduct.

