

Chemistry 351

Quiz #11

December 4, 2019

Name: _____

Student Number: _____

Section Number: _____

TA: _____

INSTRUCTIONS:

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

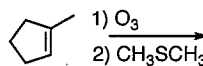
Write your name, student number, and section number **on both the quiz and answer sheet. Be certain to bubble in your PID digits on the answer sheet. The absence of any of these identification items will result in the deduction of 2 points from your score.**

Question 1 is worth 4 points, Question 2 is worth 4 points, and Question 3 is worth 2 points

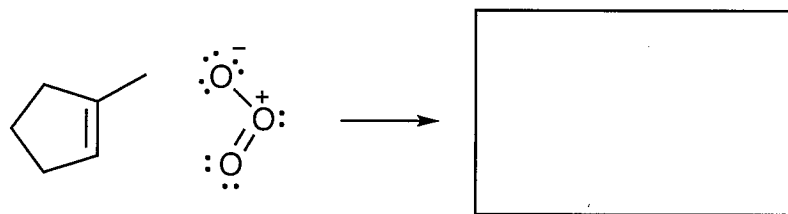
Write your answers to Questions 1-3 in the space provided on this quiz.

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.

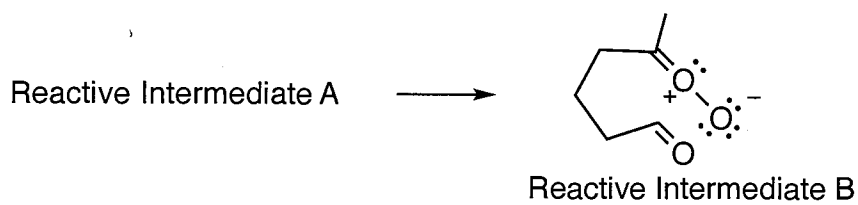
1. (4 pts) For the reaction of 1-methylcyclopentene with ozone, the structures of Reactive Intermediate B and Reactive Intermediate C are provided below. In the space and labeled boxes below, provide:



- Arrows showing the flow of electrons during reaction of 1-methylcyclopentene with ozone.
- The structure of Reactive Intermediate A.
- Arrows showing the flow of electrons during reductive workup of Reactive Intermediate C with dimethyl sulfide.
- The structures of the Product and Byproduct obtained from the reaction of 1-methylcyclopentene with ozone followed by reductive workup using dimethyl sulfide.



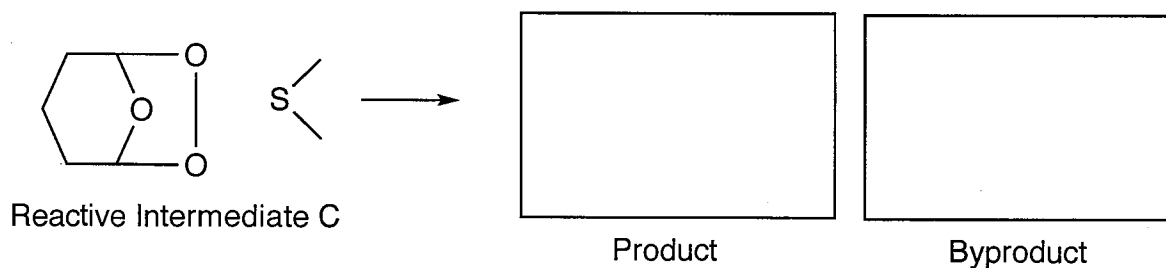
Reactive Intermediate A



Reactive Intermediate B



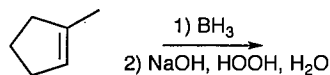
Reactive Intermediate C



Product

Byproduct

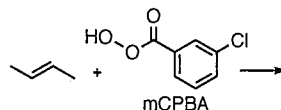
2. (4 pts) For the hydroboration of 1-methylcyclopentene:



a. In the space provided below, show the flow of electrons during reaction of 1-methylcyclopentene with borane (BH_3) and the structure of the intermediate MONOalkyl borane.

b. In the space provided below, provide a detailed mechanism (structure of intermediates and arrows showing the flow of electrons) for the oxidative workup of the intermediate MONOalkyl borane using hydrogen peroxide in basic water and the structure of the organic product resulting from the oxidative workup.

3. (2 pts) For the reaction of *trans*-2-butene with mCPBA:



a. In the space provided below, provide a detailed mechanism (structures and arrows showing the flow of electrons) for this reaction.

b. The structures of the Product and Byproduct with stereochemistry shown where appropriate.
NOTE: You can draw a concerted mechanism with no reactive intermediate OR as a stepwise mechanism proceeding through a single reactive intermediate.