Organic Graffiti !

Thanks to Dr. R. for the title.

Organic Chemistry II
CHE 311 001, Exam #1

100 scribbled points
February 15, 2013

Rules of the road:
1. There are 10 questions on six pages with two extra credit questions.
2. No Notes.
3. No electronic devices of any kind. This includes, but is not limited to the following: PDAs, cell phones, pagers, calculators, mp3 players and multifunctional watches.
4. Read the agreement and sign below before you begin.
5. This exam is for the sole use of the student whose name appears below. This exam may not be reproduced in any form without written consent of the instructor.
6. Good Skill!

K.C. Russell

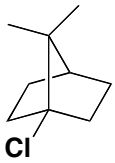
I hereby recognize that I am subject to and agree to abide by the *Northern Kentucky University Honor Code*, which provides standards that encourage ethical academic behavior and imposes penalties for violations of such standards.

Printed Name : _____

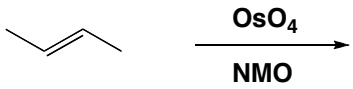
Student ID# _____
Last eight of ISO or last four of SSN

Signature : _____

1. Explain why the following alkyl halide does not undergo a substitution reaction, regardless of the conditions under which the reaction is run. (5 pts.)



2. Alkenes undergo an oxidation when treated with a catalytic amount of osmium tetroxide (OsO_4) and a stoichiometric amount of an oxidant such as *N*-methyl morpholine-*N*-Oxide (NMO). What is the structure of the compound produced by reaction of 2-butene with OsO_4/NMO if it has an IR absorption at 3400 cm^{-1} and M^+ = 90.07 in the mass spectrum?? (9 points)



3. Compound **W**, $C_6H_{13}Cl$, undergoes base-promoted E2 elimination to give a single C_6H_{12} alkene, **Y**. Compound **X**, $C_6H_{13}Br$, undergoes a similar reaction to form **Y** and an isomeric alkene **Z**. **W** is chiral; **X** is not. Catalytic hydrogenation of **Y** and **Z** produces 2-methylpentane. Propose structures for **W** and **X** and the elimination products **Y** and **Z**. (10 points)