CHE 232 Section 001 Organic Chemistry
Practice for Exam 3 Fall 2003

Name__________________________  Student ID No._____________________

You are allowed to have scratch paper and a simple model set. You do not need a calculator.

Read each question carefully so that you answer properly.

Take this practice exam seriously. It is long: but still set a timer for 1 hour. Stop when time is up.

After you check your answers with the key, MAKE SURE YOU UNDERSTAND THE ANSWERS. Then, try the exam again after a day or two, to see if what you learned stuck with you.
1. Provide a full mechanism for the following transformation (use arrows, lone pairs). Aughhh!!! Keep your head.

O
OH O O

O O

O O NH

EtOH

\[ \text{Benzylic alcohol} + \text{Acetate ester} \rightarrow \text{Product} \]

2. Provide the missing products or reagents (boxes) in the following synthesis. (cat) means catalytic amount.

\[ \text{Amide} \rightarrow \text{Product} \]

\[ \text{Amide} \rightarrow \text{Product} \]
3. Give the product for each reaction. NOTE: XS means excess. 1st problem is 3 different reactions from one molecule.

---

**Problem 1:**

1. \( \text{Na} \)
2. \( \text{H}_3\text{O}^+ / \text{H}_2\text{O} \)

**Problem 2:**

1. \( \text{Li} \)
2. \( \text{H}_3\text{O}^+ / \text{H}_2\text{O} \)

**Problem 3:**

1. \( \text{LiAlH}_4 \)
2. \( \text{H}_3\text{O}^+ / \text{H}_2\text{O} \)

---

**Problem 4:**

1. \( \text{Et}_2\text{CuLi} \)

**Problem 5:**

1. \( \text{EtMgBr} \)

---

**Problem 6:**

1. \( \text{Mg} \)
2. \( \text{XS CO}_2 \)
3. \( \text{H}_3\text{O}^+ / \text{H}_2\text{O} \)

**Problem 7:**

1. \( \text{LDA} \)
2. \( \text{EtBr} \)
3. \( \text{H}_3\text{O}^+ / \text{H}_2\text{O} \)

**Problem 8:**

1. \( \text{Li} \)
2. \( 1/2 \text{CO}_2 \)

**Problem 9:**

1. \( \text{LiAlH}_4 \)

**Problem 10:**

1. \( \text{NaCN} \)
2. \( \text{EtBr} \)
3. \( \text{H}_3\text{O}^+ / \text{H}_2\text{O} \)

---
4. Fill in the boxes. There is only one compound in the first one. That doesn’t mean one molecule.

5. Draw the products for the following two reactions.

For the second reaction, draw a formal mechanism.