Chem 332
Spring 2012
Exam #4
May 21, 2012

Name		
ranic		

This is an open-book, open notes exam. No electronic devices are allowed.

1. (5 points each) Fill in the missing starting material, reagent or product. Stereochemistry is important!

a. ?
$$C_6H_{13}Br$$
 $NaCN$ $DMSO$ CN

c.
$$\begin{array}{c} CH_3MgBr \\ \hline Cu cat \end{array} \begin{array}{c} ? \\ C_7H_{12}O \end{array}$$

d.
$$\frac{1. \text{ TsNH-NH}_2}{2. \text{ NaBH}_3 \text{CN}} ?$$

2. (20 points) Circle the correct product, and explain why.

3. (20 points) Outline a synthetic route to \mathbf{A} . You may use any starting materials that contribute three or fewer carbons to the final product, and/or any monosubstituted benzene derivative that contirbutes seven or fewer carbons to the final product. Stereochemistry is not important.

4. (20 points) Deduce the structure of **D**, and outline an arrow-pushing mechanism for its formation.

$$H_3CO$$
 B
 CH_3O
 OCH_3
 H_2N
 OCH_3
 OCH_3
 OCH_3
 OCH_3
 OCH_4
 OCH_4
 OCH_4
 OCH_5
 OCH_5
 OCH_6
 OCH_6

13C NMR 196.8, s 153.0, s (2) 142.5, s 132.4, s 105.7, d (2) 14 NMR 7.17, s, 2H 3.88, s, 3H 2.54, s, 3H 2.54, s, 3H

105.7, d (2) 60.9, q 56.2, q (2) 26.4, q

IR: 1680 cm⁻¹

5. (10 points each) Draw arrow-pushing mechanisms for each of the following:

b.
$$CH_3O$$
 CH_3O CH_3O CH_3O CH_3O