

Third Exam

Name (PRINT) ANSWER KEY

Last, First

Chemistry 3332

Signature _____

April 20, 2007

ID# _____

Please circle class time.

Dr. Bean's 10:00 AM

Dr. Bean's 1:00 PM

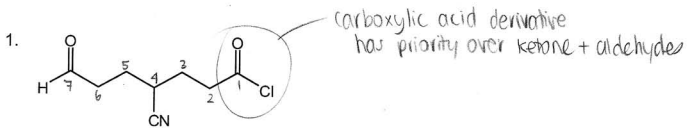
Page #	Score	
1. 15 pts.		
2. 9 pts.		
3. 18 pts.		
4. 18 pts.		
5. 14 pts.		
6. 13 pts.		
7. 13 pts.		

TOTAL _____

Note: Present your student ID when you return the exam booklet

A. Nomenclature: (15 points)

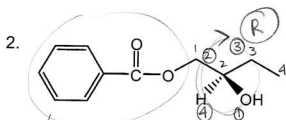
Give an acceptable IUPAC name for each of the following compounds. Be sure to indicate the stereochemistry where appropriate.



heptanoyl chloride

4-cyano
7-oxo

4-cyano-7-oxoheptanoyl chloride



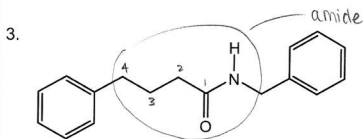
benzoic acid
benzoate

(2R)-2-hydroxybutyl benzoate

butyl
(2R)
2-hydroxy



benzoate
(2R)-2-hydroxybutyl



butanamide

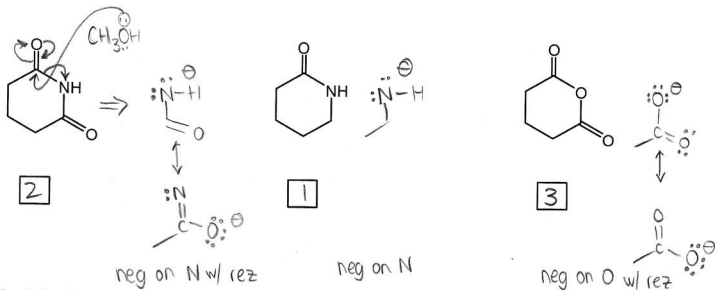
N-benzyl
4-phenyl

N-benzyl-4-phenylbutanamide

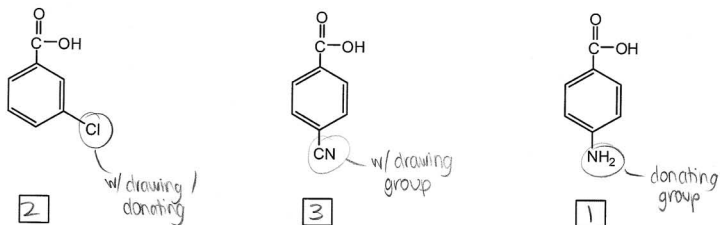
* always comes 1st

B. Facts: (9 points total)

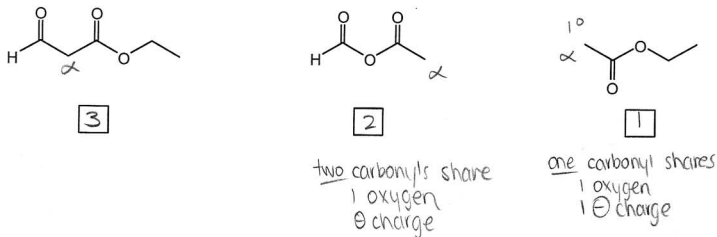
1. Rank the following compounds in order of increasing reactivity with CH_3OH . (1 = slowest rate, 3 = fastest rate)



2. Rank the following compounds in order of increasing acidity. (1=least acidic, 3=most acidic)



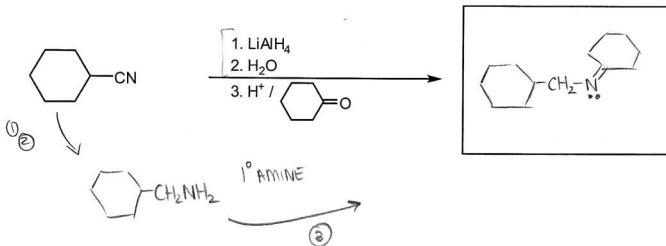
3. Rank the following compounds in order of increasing acidity. (1=least acidic, 3=most acidic)



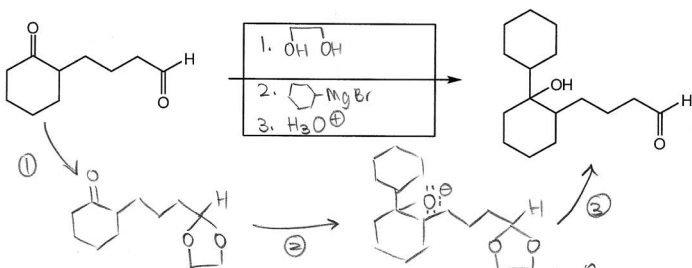
C. Reactions: Total = 36 points, 6 points each

Please provide the starting material, reagents or major product in the answer box. Be sure your drawing indicates **stereochemistry** if applicable. Partial credit is awarded only when intermediate products in a multi-step reaction are shown below the reaction.

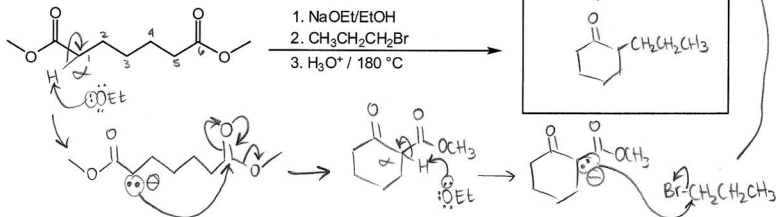
1.

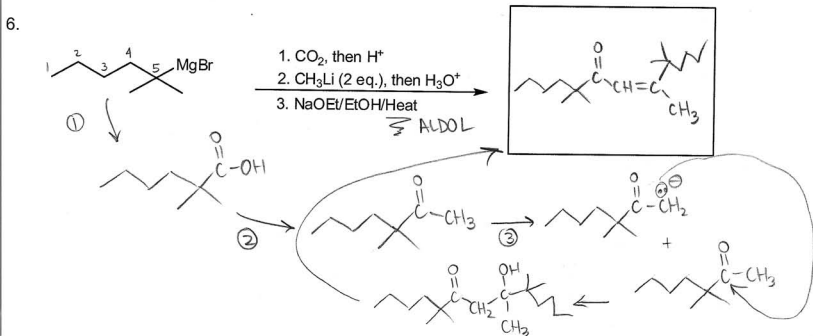
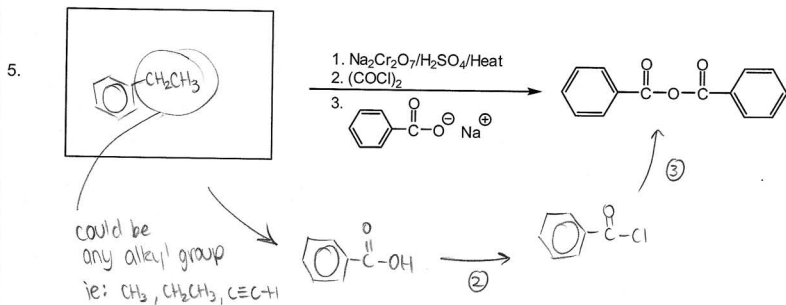
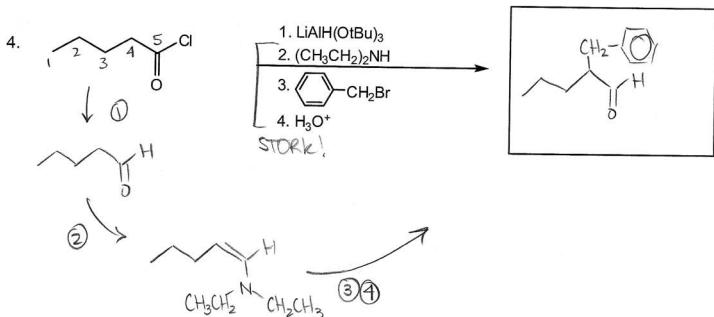


2.



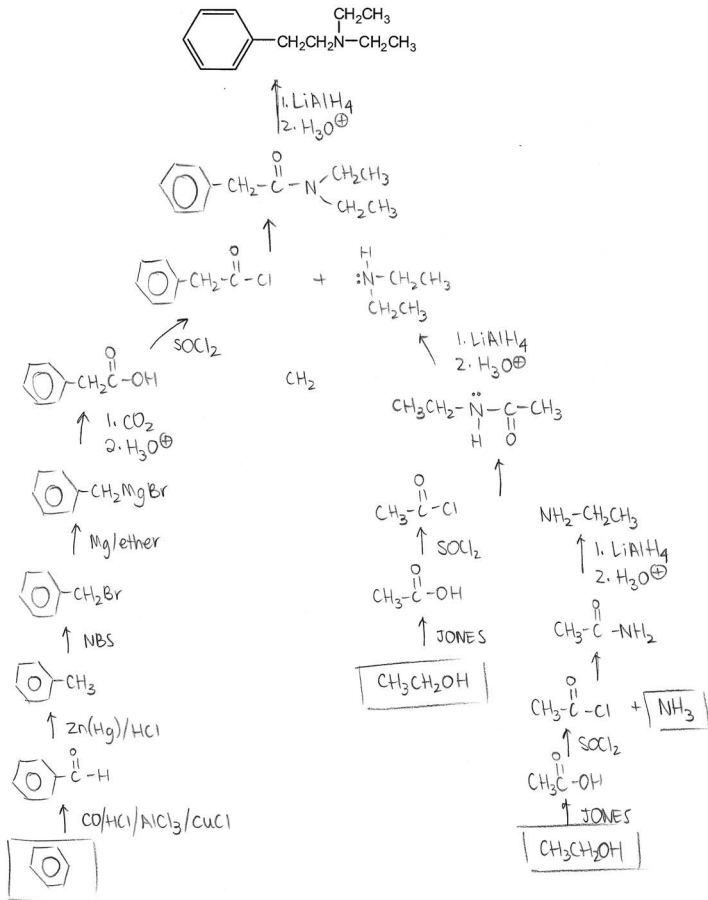
3.





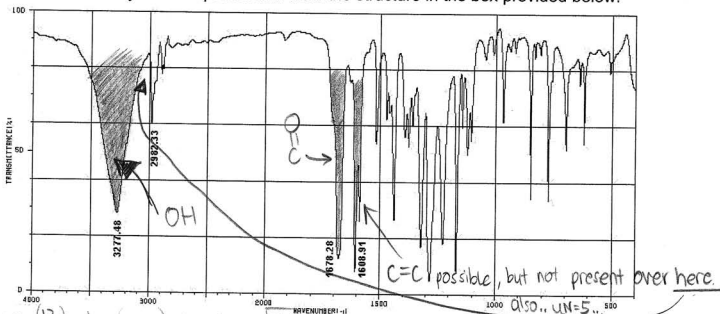
E. Synthesis: 13 Points

Synthesize the molecule below using any of the following reagents: benzene, any alkanes, alkenes, or alcohols of three carbons or less, any inorganic reagents, any oxidizing or reducing agents, and any peroxyacids.



F. Spectroscopy: 13 Points

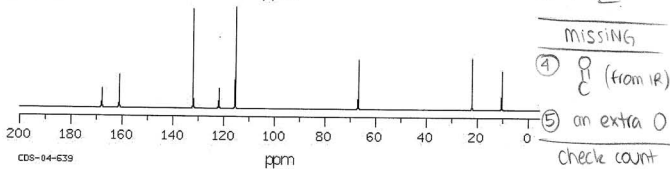
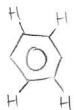
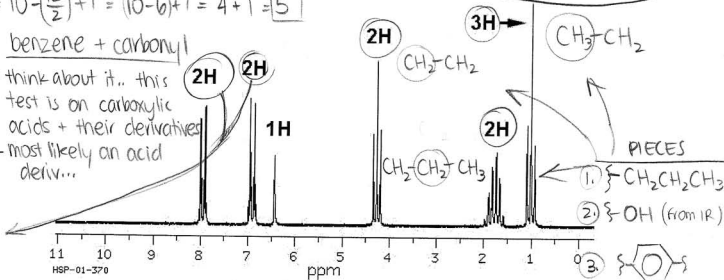
A compound with the formula $C_{10}H_{12}O_3$ exhibits the IR, 1H NMR and proton decoupled ^{13}C NMR spectra shown below. Please identify this compound and draw the structure in the box provided below.



$$UN\# = 10 - \left(\frac{12}{2}\right) + 1 = (10 - 6) + 1 = 4 + 1 = 5$$

benzene + carbonyl

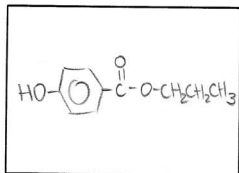
• think about it.. this test is on carboxylic acids + their derivatives
- most likely an acid deriv...



- PIECES
- CH₂CH₂CH₃
 - OH (from IR)
 - benzene ring

- MISSING
- benzene ring
 - an extra O

check count
 $C_{10}H_{12}O_3$ ✓



unlikely...
CH₂ is downfield for a reason.. check #'s on that data sheet