Final Exam

Chemistry 3332

May 3, 2006

Name (PRINT)_____
Last, First

Signature _____

ID# _____

Please circle class time.

Dr. Bean's 10:00 AM

Dr. Bean's 1:00 PM

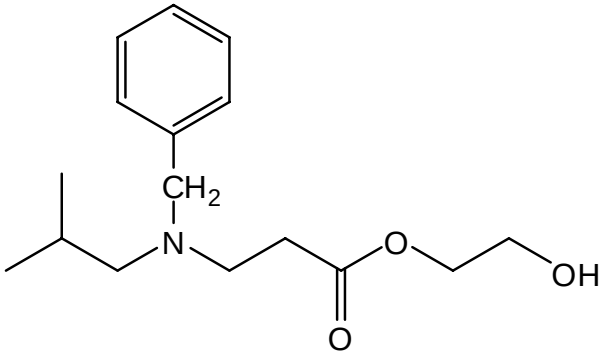
Page #	Score	
1. 15 pts.		
2. 24 pts.		
3. 16 pts.		
4. 15 pts.		
5. 15 pts.		
6. 15 pts.		

TOTAL_____

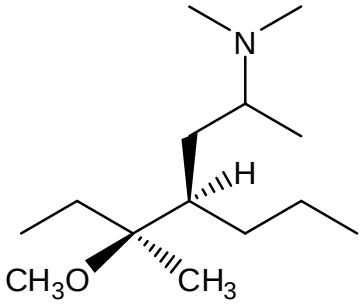
ACS Exam: # correct _____ = _____

A. Nomenclature: (15 points)
Give an acceptable IUPAC name for each of the following compounds. Be sure to indicate the **stereochemistry** where appropriate.

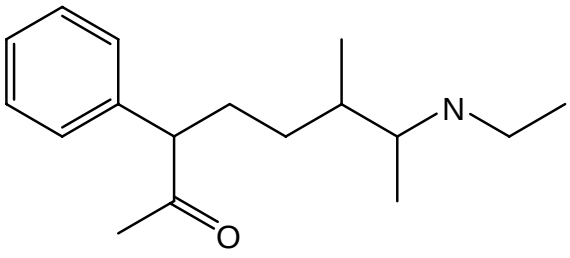
1.



2.

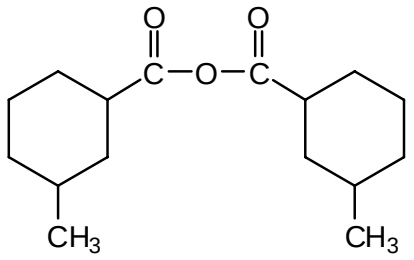


3.

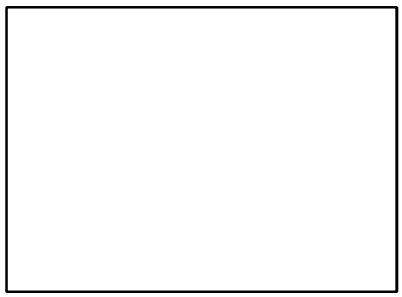


B. Reactions: Total = 40 points, 8 points each
Please provide the starting material, reagents or major product in the answer box. Be sure your drawing indicates **stereochemistry** if applicable. Partial credit is awarded only when intermediate products in a multi-step reaction are shown below the reaction.

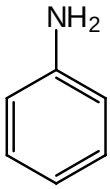
1.

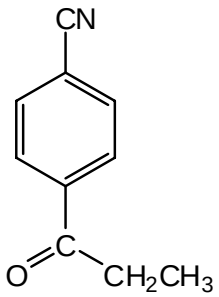


1. H_3O^+
2. $(COCl)_2$
3. NH_3
4. Br_2 / NaOH / H_2O

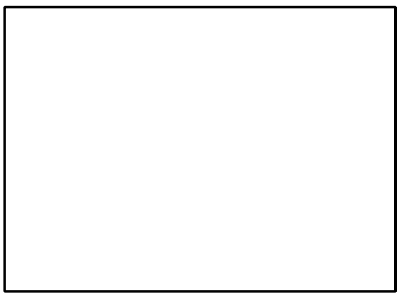


2.

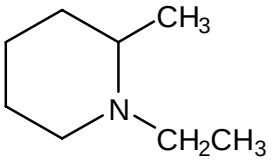




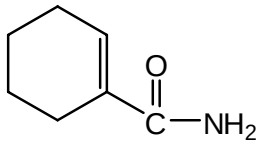
3.



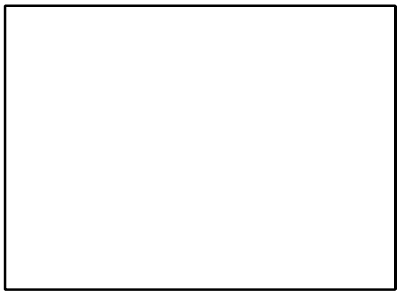
1. $LiAlH_4$
2. H_2O
3. $CH_3-\overset{O}{\overset{\|}{C}}-H$ / $NaBH_3CN$



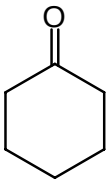
4.

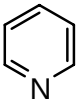
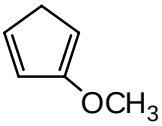
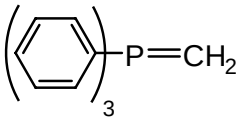


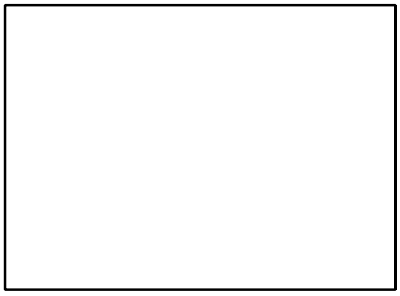
1. $SOCl_2$ or $POCl_3$ or P_2O_5
2. $CH_3-C(=O)-CH_2-C(=O)-OEt$ / NaOEt
3. H_3O^+ / 180 °C



5.

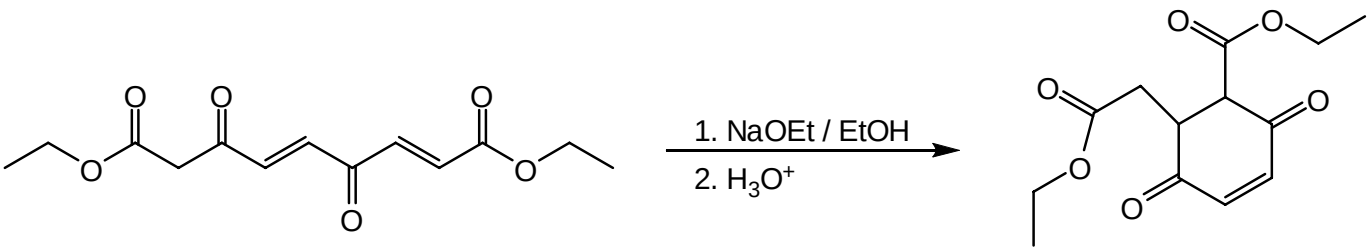


1. Br_2 / CH_3CO_2H
2. 
3. 
4. 



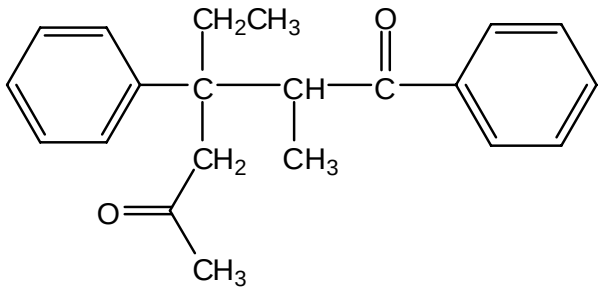
C. Mechanisms: (15 points)

Provide a clear mechanism to explain the formation of the product. Use curved arrows to indicate “electron flow”. Remember to show only one step at a time. **Show all intermediates and all formal charges. When more than one resonance contributor may be drawn, be sure to draw the most stable contributor.**



D. Synthesis: 15 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.



E. Spectroscopy: 15 Points

A compound with the formula $C_9H_{10}O$ exhibits the IR, ^{1}H NMR and proton decoupled ^{13}C NMR spectra shown below. Please identify this compound and draw the structure in the box provided below.