

Chemistry 141C - Organic Chemistry  
2nd Midterm Exam  
Spring 2001  
Professor Jay Siegel

Name:

Signature:

Student ID number:

H																			He						
Li	Be																			B	C	N	O	F	Ne
Na	Mg																			Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr								
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe								
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn								

If you would like your exam left out for open pick-up please sign here. Note: Leaving your exam for open pick-up means that other people may have access to your exam.

I want my exam left for open pick-up \_\_\_\_\_

1) \_\_\_\_\_

2) \_\_\_\_\_

3) \_\_\_\_\_

4) \_\_\_\_\_

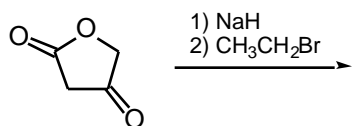
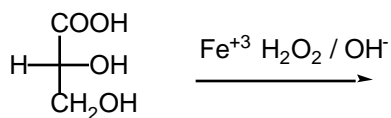
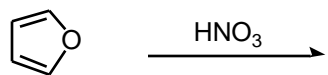
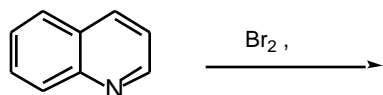
5) \_\_\_\_\_

6) \_\_\_\_\_

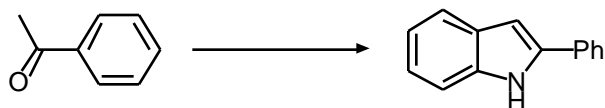
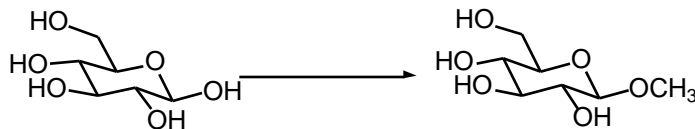
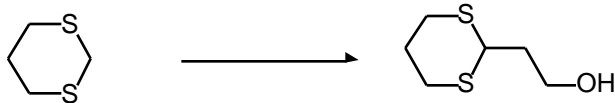
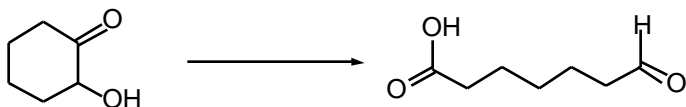
7) \_\_\_\_\_

Total \_\_\_\_\_

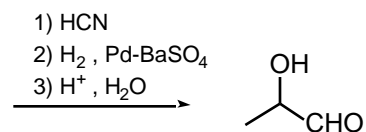
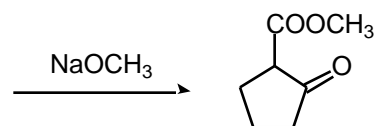
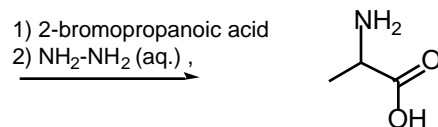
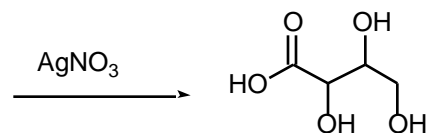
1) [ 12 pts ] Give the products for the following reactions (indicate major/minor):



2) [ 12 pts ] Give the reagents for the following reactions:

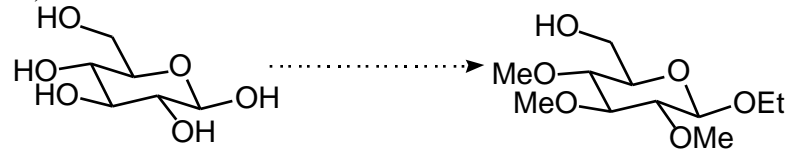


3) [ 12 pts ] Give the reactants for the following reactions:

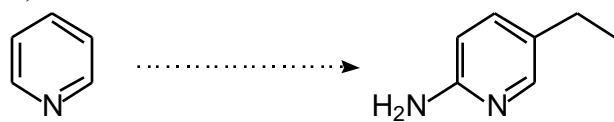


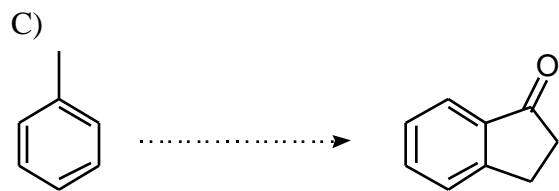
4) [ 24 pts ] Propose a multi-step synthesis to get from the structure on the left to the structure on the right. Use any inorganic or standard reagents you need and any other carbon compound up to 4 carbons as additional materials.

A)

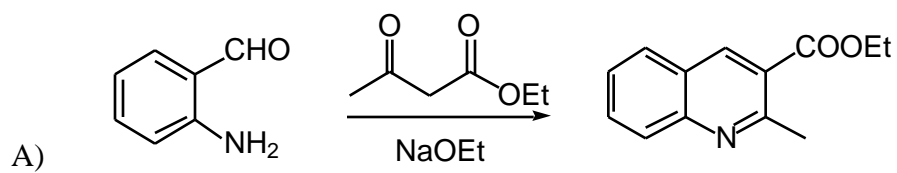


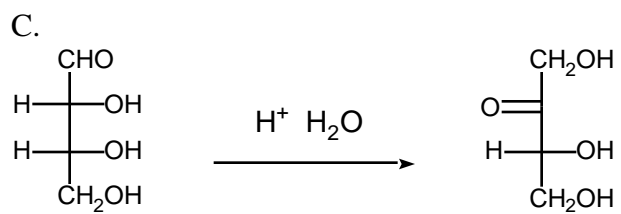
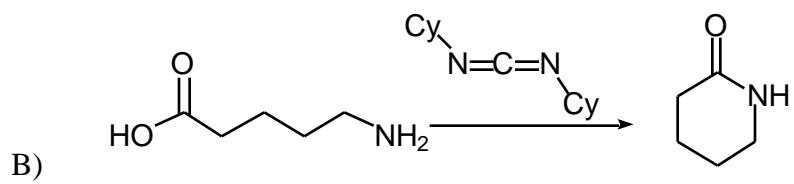
B)





5) [20 pts ] Propose detailed mechanisms to account for the following reactions (use curved-arrow notation to indicate electron flow).





6) [12 pts] Draw

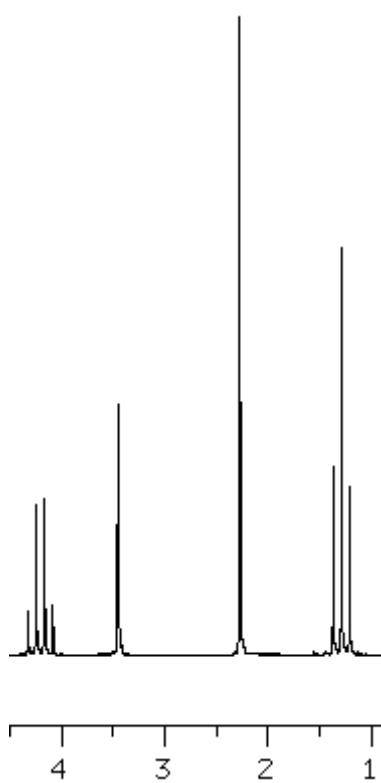
a. a non-reducing disaccharide.

b. 2 nitrogen containing heterocycles, one with a basic and one with a non-basic nitrogen.

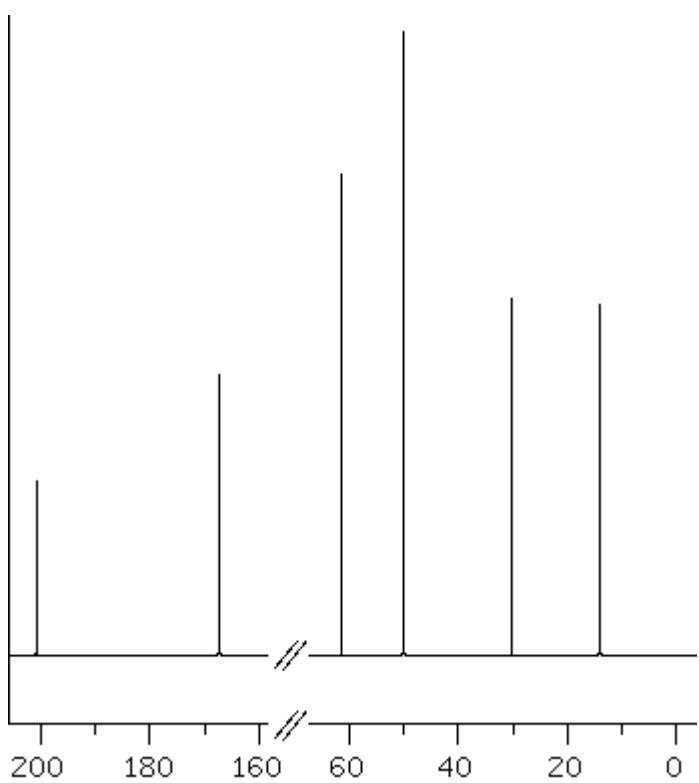
c. 4 carboxylic acid derivatives (not carboxylic acids), in order of most to least reactive toward nucleophiles.

7) [10 pts] Propose a chemical structure consistent with the spectral data on the following pages.

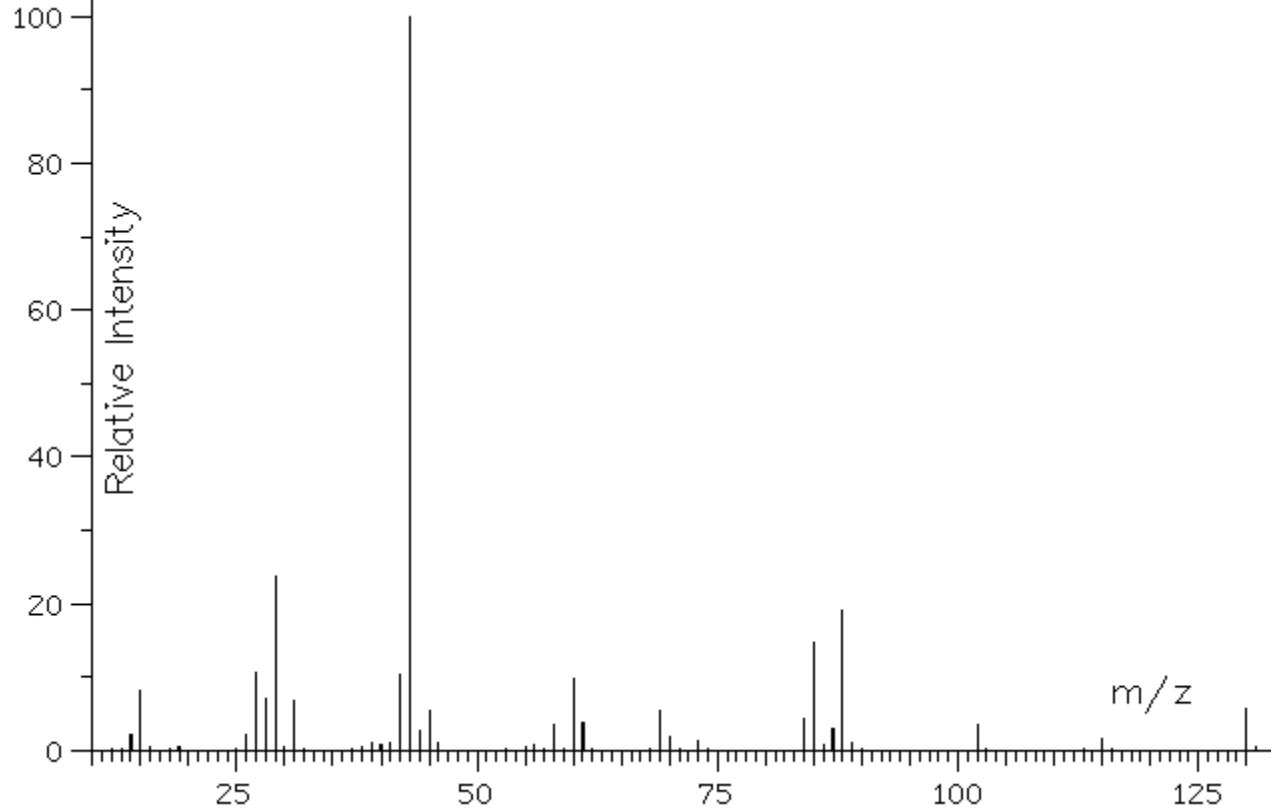
$^1\text{H}$  NMR



$^{13}\text{C}$  NMR



Mass Spectrum:



IR ( $\text{cm}^{-1}$ ) 2990, 1750, 1720.