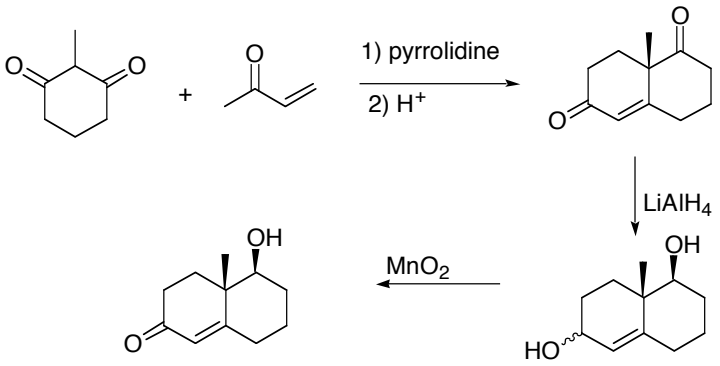
Chem 634
Problem Set 1
due Monday February 16, 2004
Prof. Fox

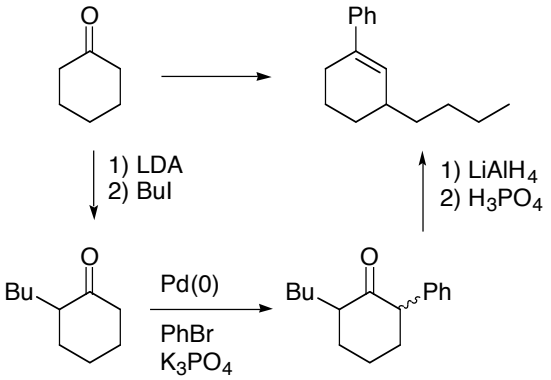
your name KEY

Literature references are required only for steps 1 and 2

1. Outline a synthesis from commercial materials. Provide a literature reference for each step, (20 pts)

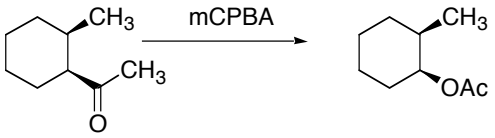


2. Outline a synthesis. Provide a literature reference for each step

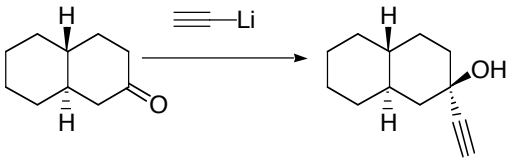


3. Predict the products

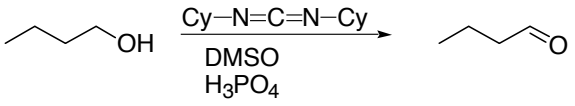
a. (10 pts)



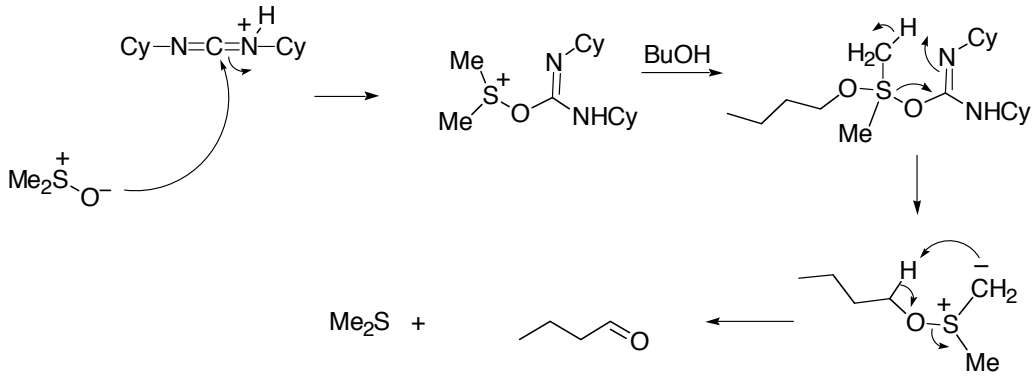
b. (10 pts)



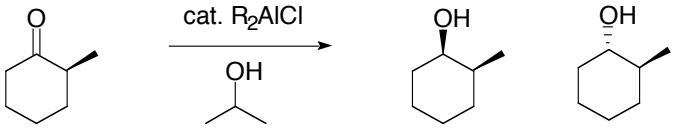
4. Provide a mechanism (10 pts)



Any reasonable mechanism accepted

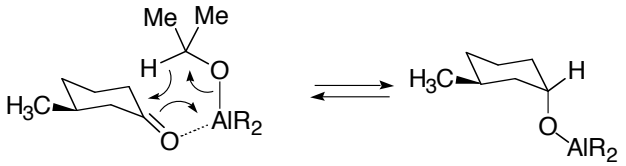


5. Rationalize the following observation. (20 pts)



20 min	86%	:	7%	(+ 7% unreacted ketone)
3 h	5%	:	95%	

Initially, the MPV reduction is under kinetic control— transfer of hydride from the bulky aluminum reagent occurs from the equatorial face.



However, MPV reduction is reversible (Oppenauer oxidation), and the equilibrium favors the formation of the thermodynamically favored *trans* 2-methylcyclohexanol