

Addition Of Water And Alcohols To Aldehydes And Ketones

from chapter(s) _____ in the recommended text

A. Introduction

B. Relative Reactivities Of Aldehydes And Ketones

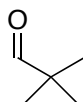
more



1



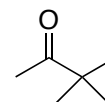
2



3



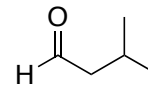
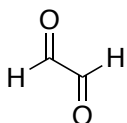
4



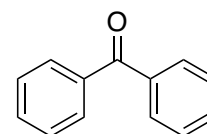
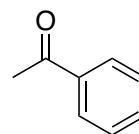
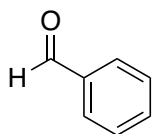
5

ie 120° to 109° .

closer thus accentuating



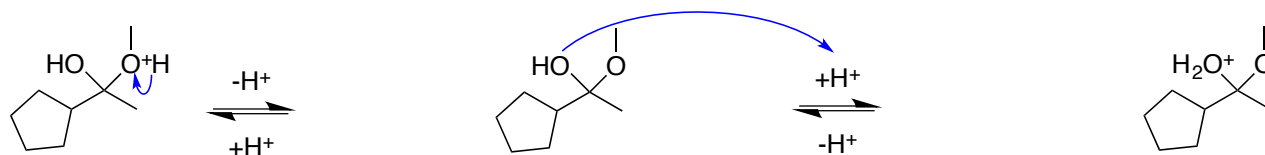
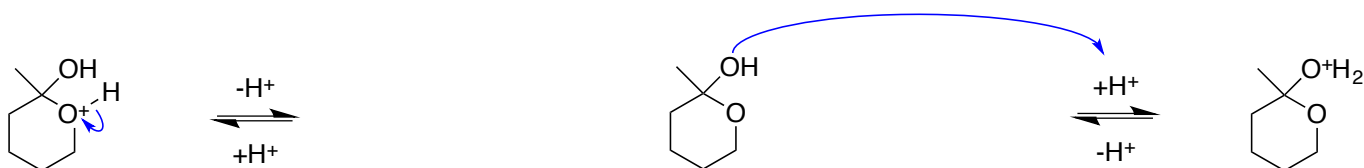
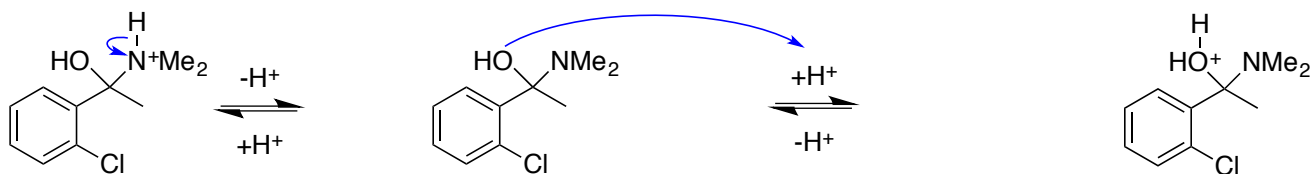
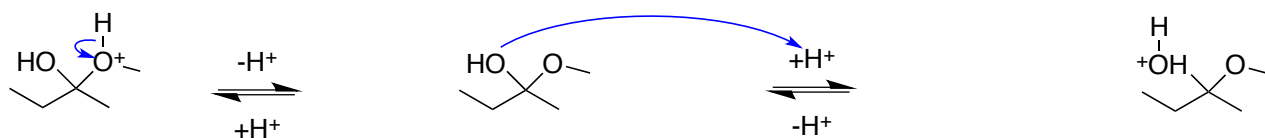
most reactive

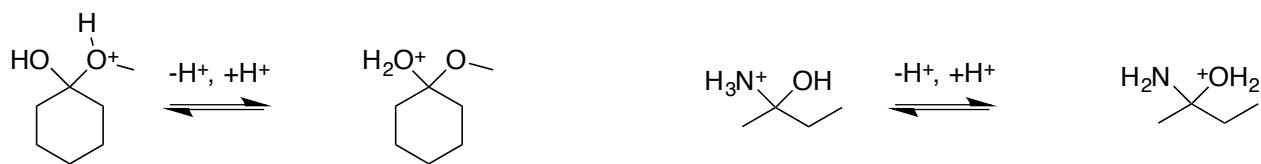
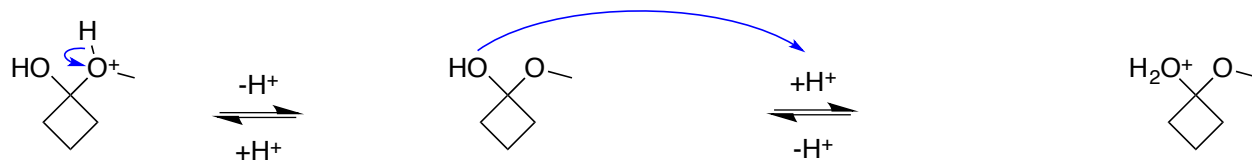


least reactive

C. Proton Transfer Steps

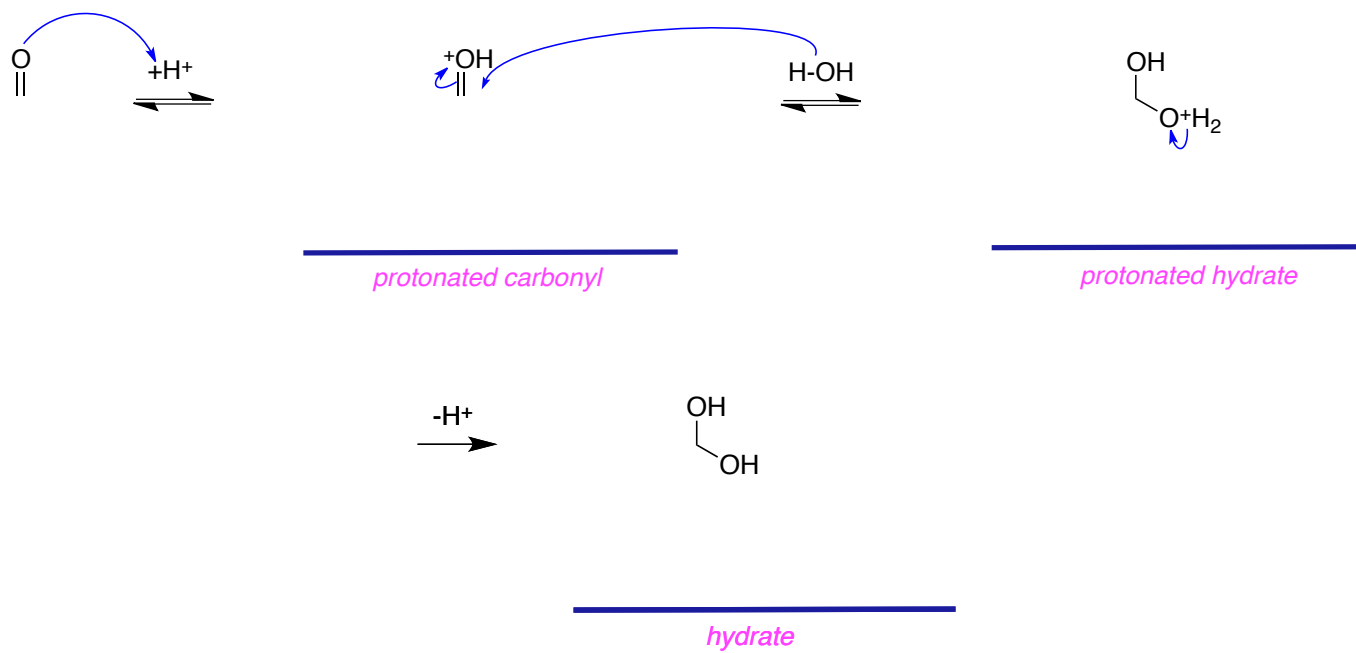
common



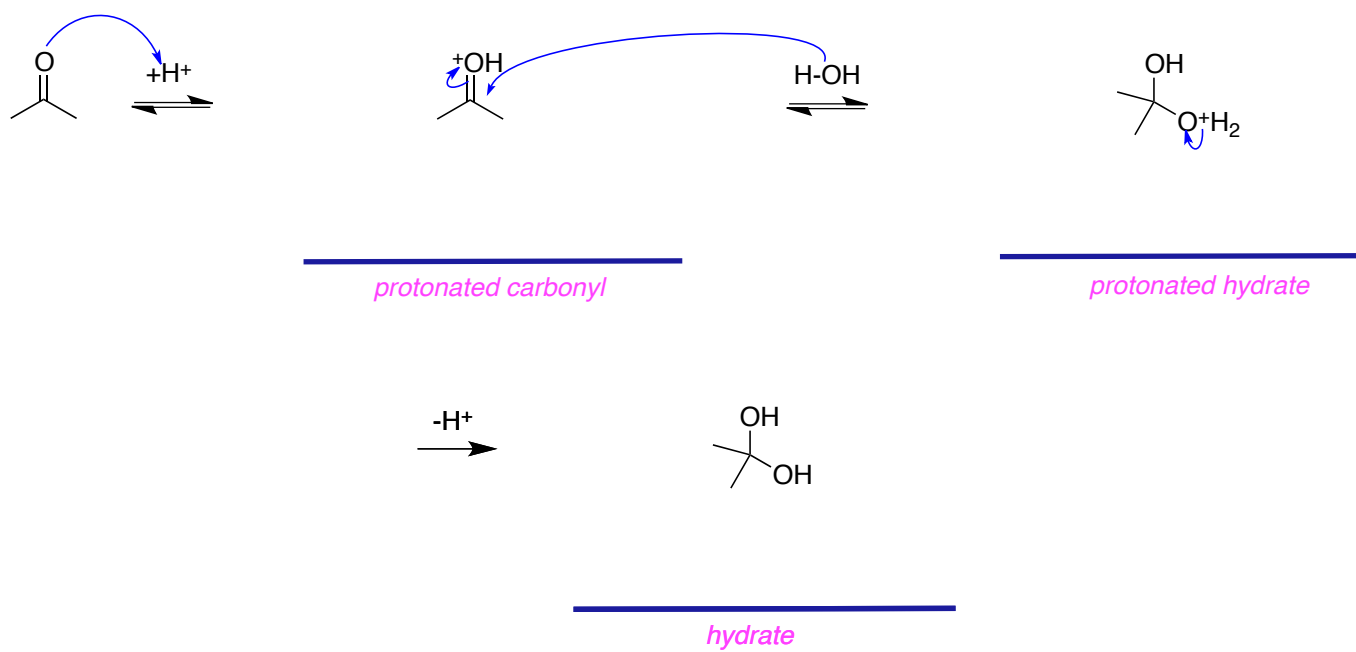


D. Addition Of Water

equilibrium
strongly

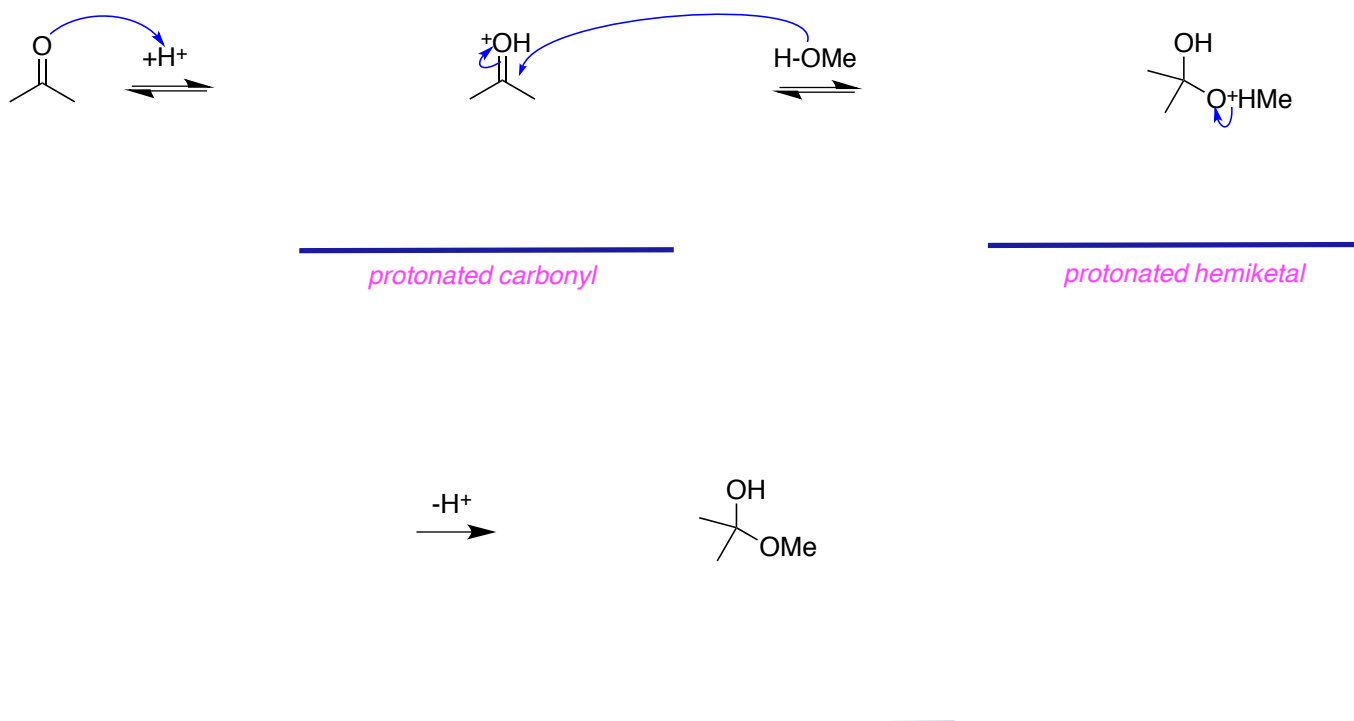


Draw the key intermediates for hydration of acetone using curly arrows to show electron flow.



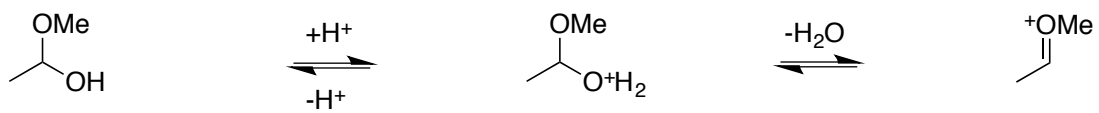
exactly 2 %.
 120° to 109°
 disfavored
 does

E. Additions Of Alcohols



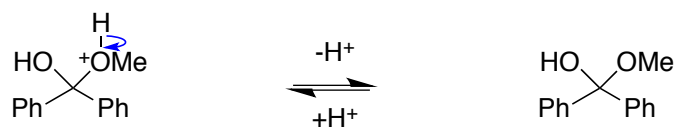
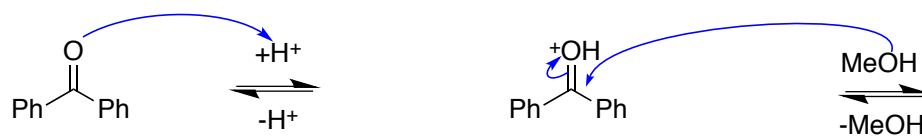
hemiketal
 called a *hemiacetal*.

hemiacetal
acetal.

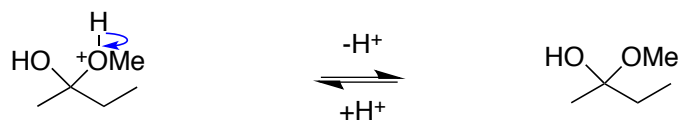
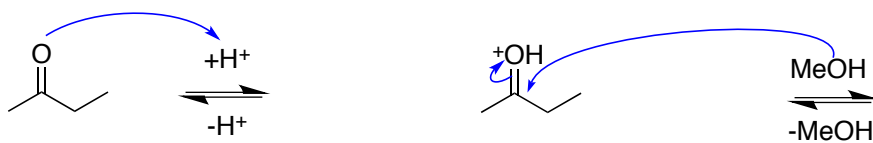


protonated acetal

do react



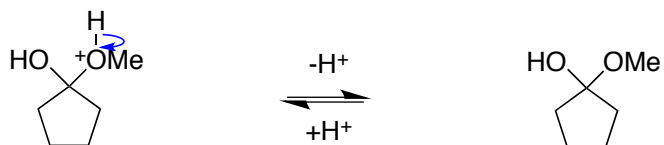
hemiketal

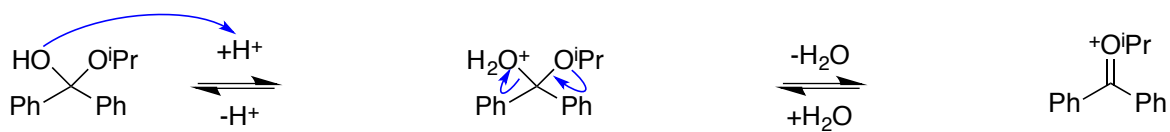


hemiketal



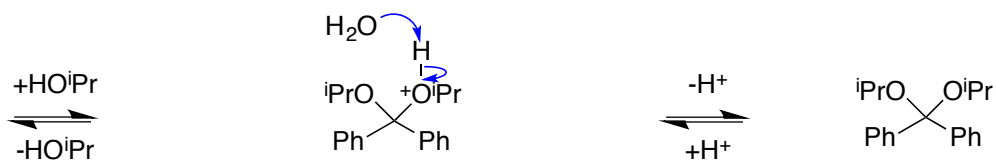
starting material?





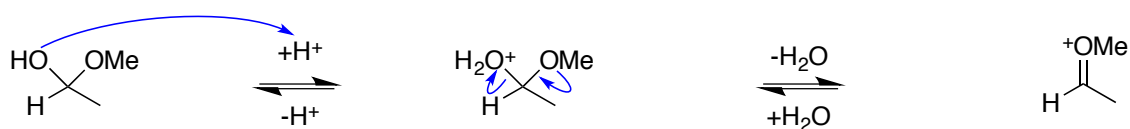
protonated on OH

oxonium ion



protonated ketal

an alcohol



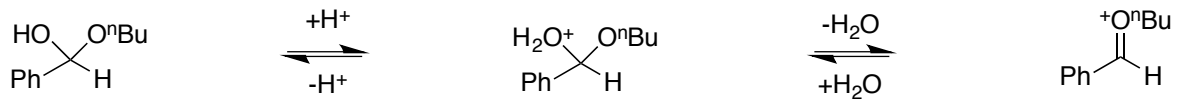
protonated on OH

oxonium ion



protonated acetal

acetal



protonated on OH

oxonium ion



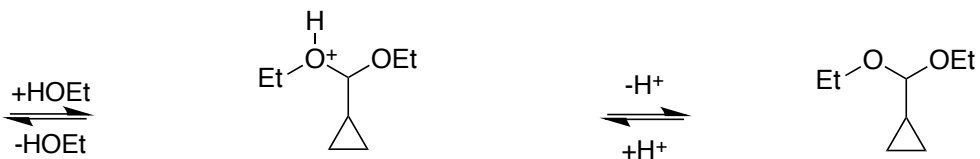
protonated acetal

acetal



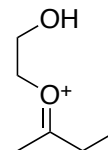
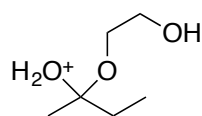
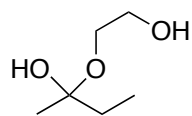
protonated on OH

oxonium ion



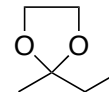
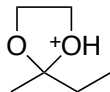
protonated acetal

acetal



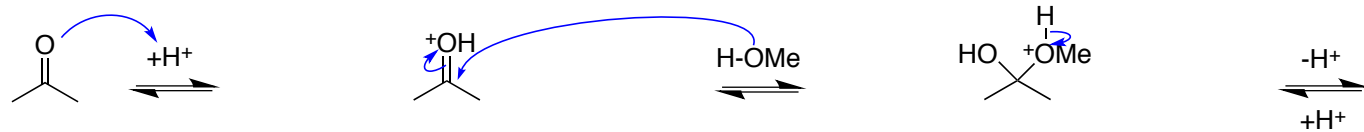
protonated on OH

oxonium ion



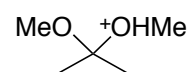
protonated ketal

ketal

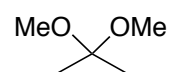


protonated carbonyl

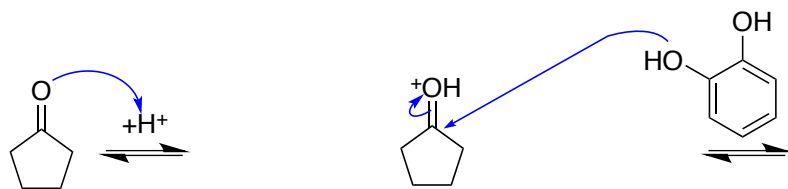
protonated hemiacetal



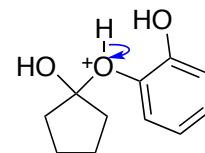
protonated ketal



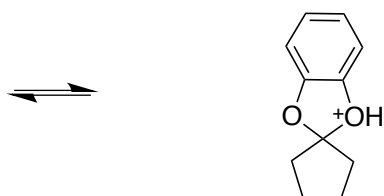
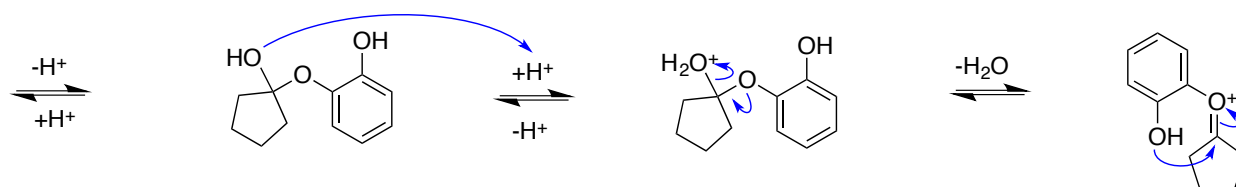
ketal



protonated carbonyl



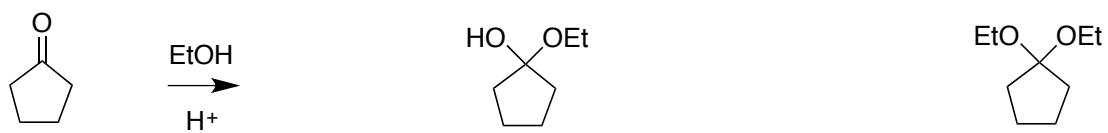
protonated hemiketal



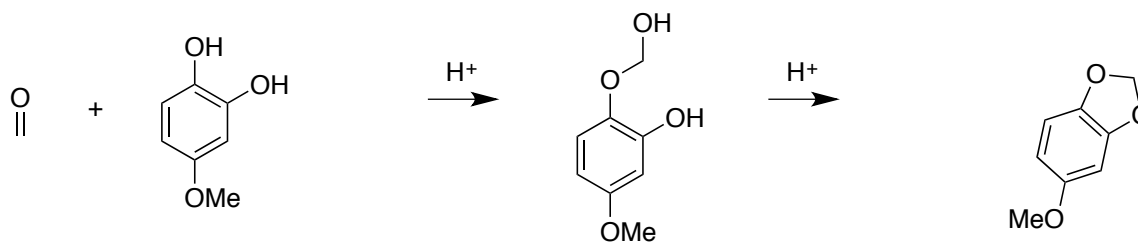
protonated ketal



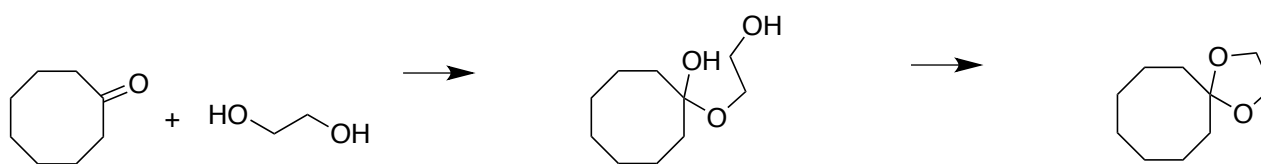
ketal



hemiketal

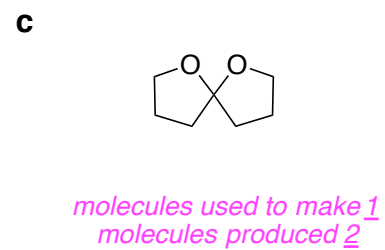
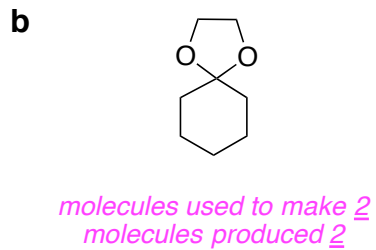
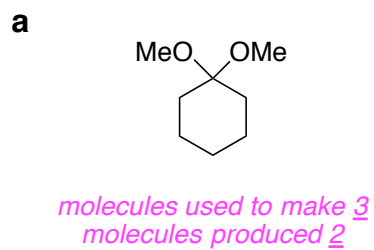
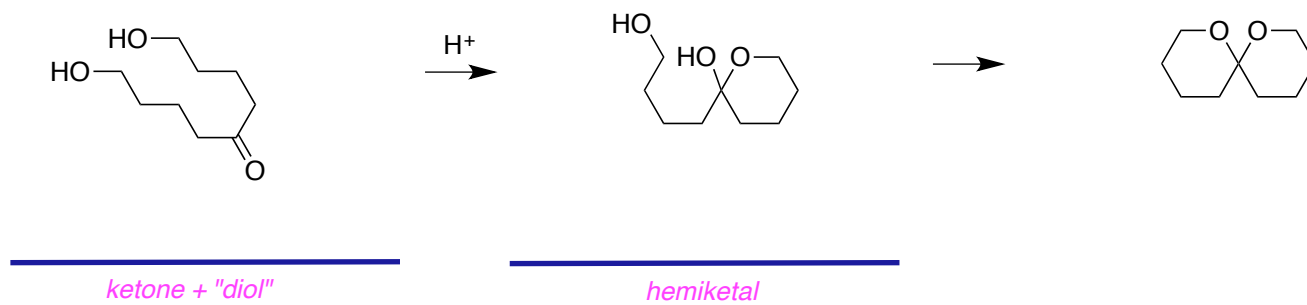
ketal

aldehyde + "diol"

acetal

ketone + "diol"

hemiketal



to acid is **c**.