

# Addition Of Water And Alcohols To Aldehydes And Ketones

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from chapter(s) \_\_\_\_\_ in the recommended text

## **A. Introduction**

## B. Relative Reactivities Of Aldehydes And Ketones

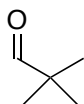
*more*



1



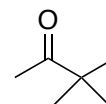
2



3



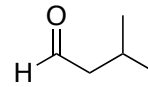
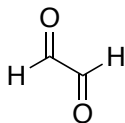
4



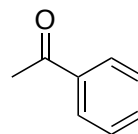
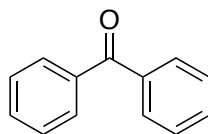
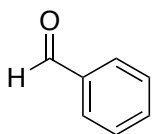
5

ie 120° to 109°.

*closer* thus *accentuating*



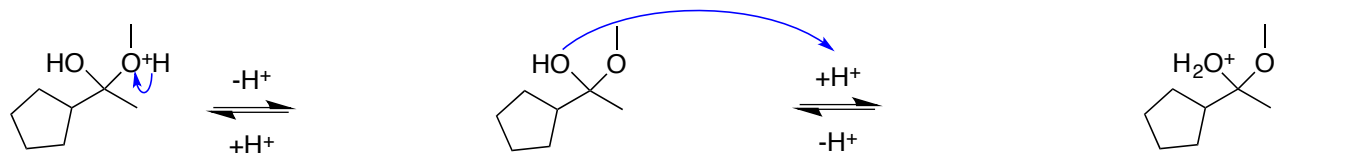
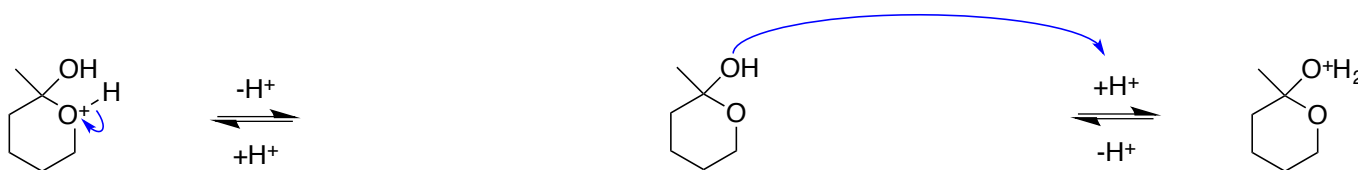
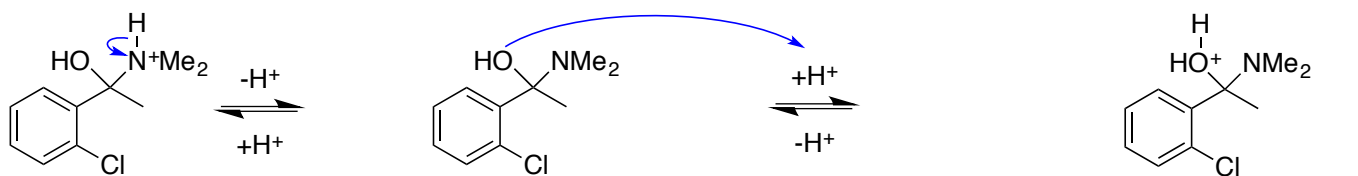
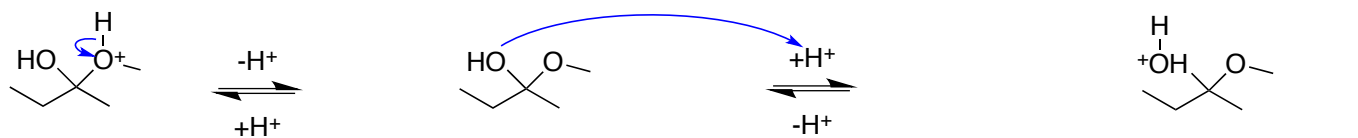
*most reactive*

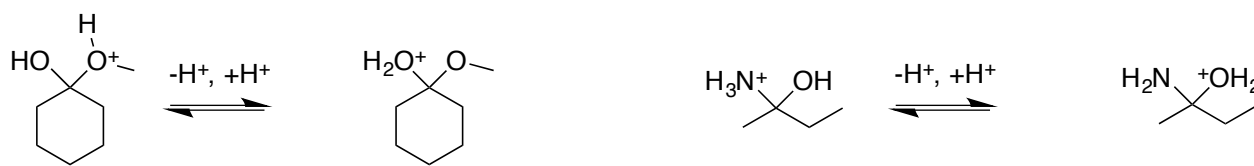
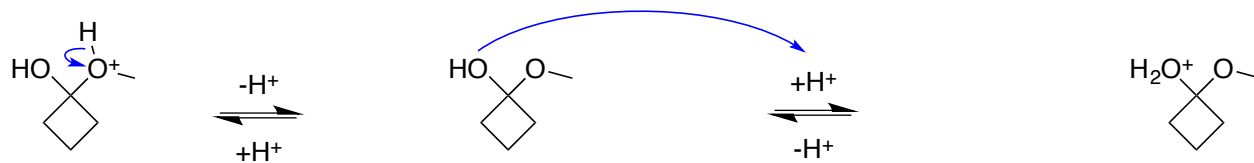


*least reactive*

## C. Proton Transfer Steps

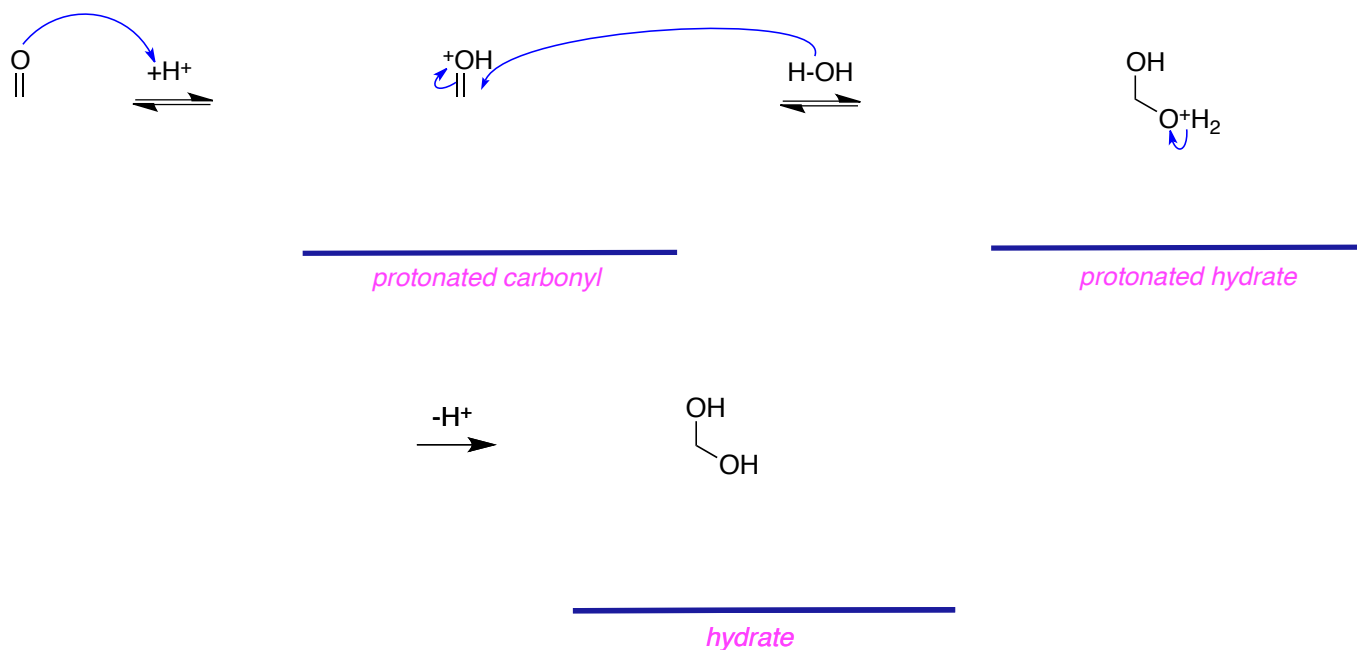
*common*



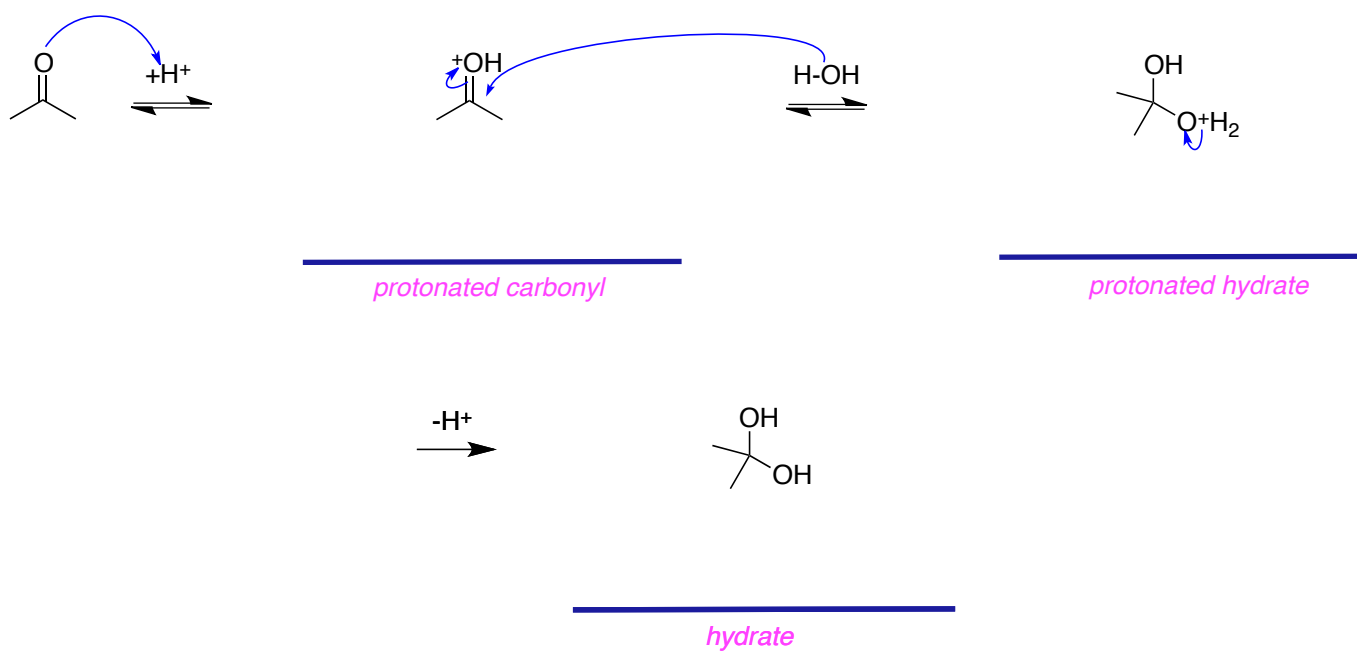


## D. Addition Of Water

*equilibrium*  
*strongly*

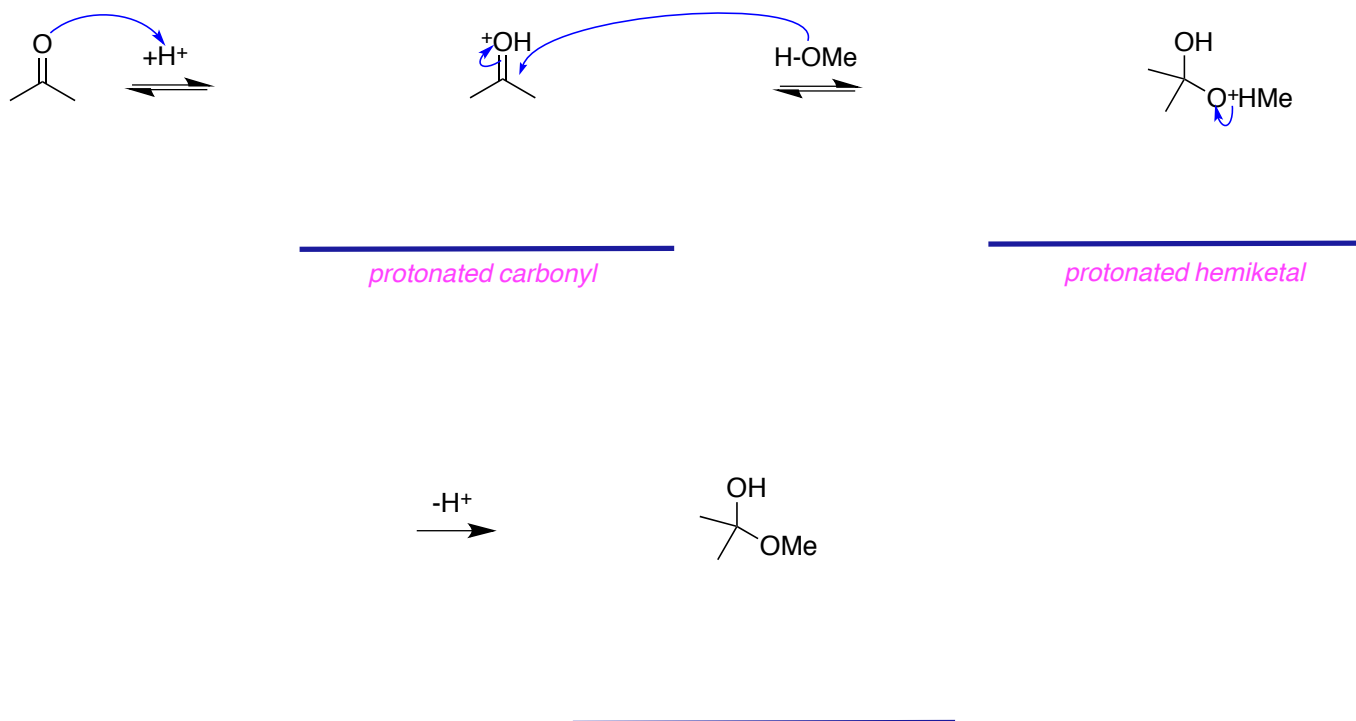


Draw the key intermediates for hydration of acetone using curly arrows to show electron flow.



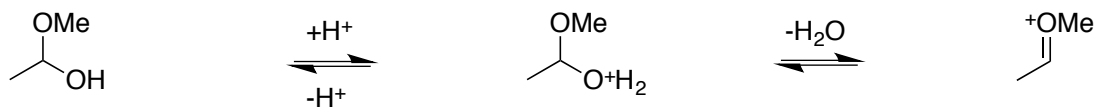
exactly 2 %.  
disfavored  
does

## E. Additions Of Alcohols



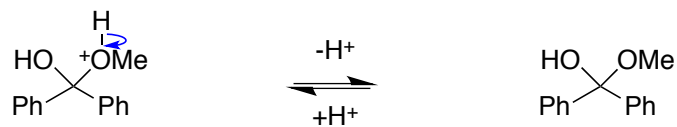
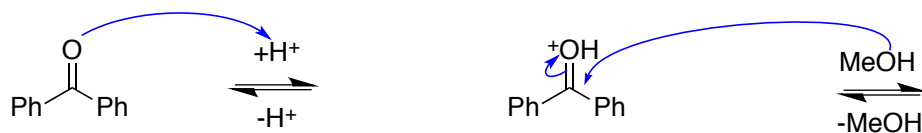
hemiketal  
called a *hemiacetal*.

*hemiacetal*  
*acetal.*

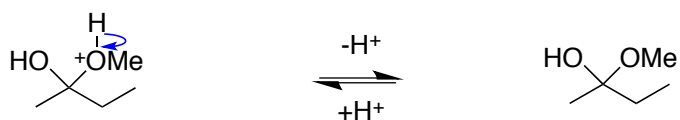
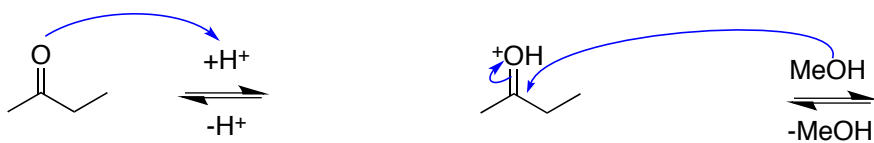


*protonated acetal*

*do* react



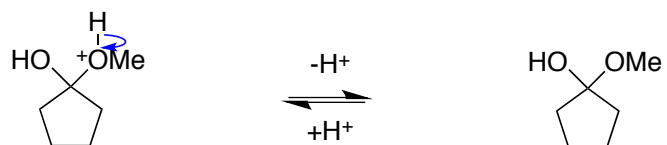
*hemiketal*



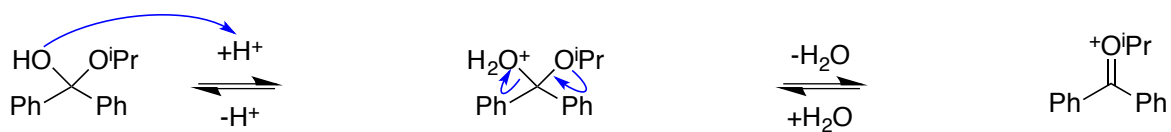
*hemiketal*



*starting material?*

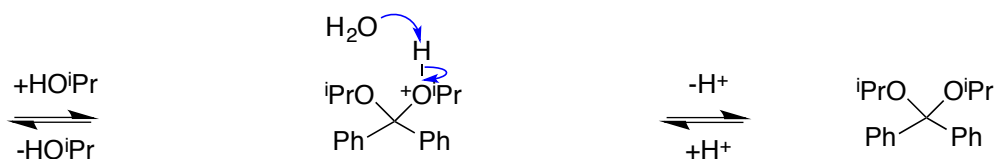






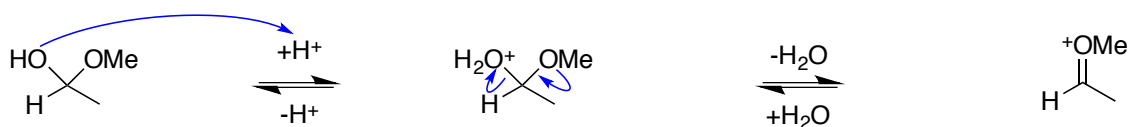
*protonated on OH*

*oxonium ion*



*protonated ketal*

*an alcohol*



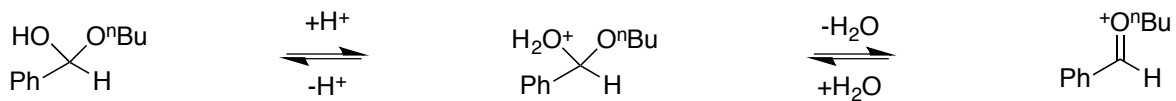
*protonated on OH*

*oxonium ion*



*protonated acetal*

*acetal*




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*protonated on OH*

---

*oxonium ion*




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*protonated acetal*

---

*acetal*

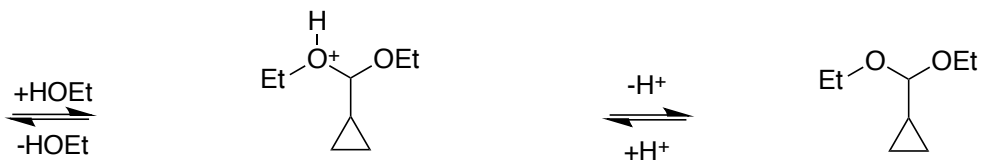



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*protonated on OH*

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*oxonium ion*

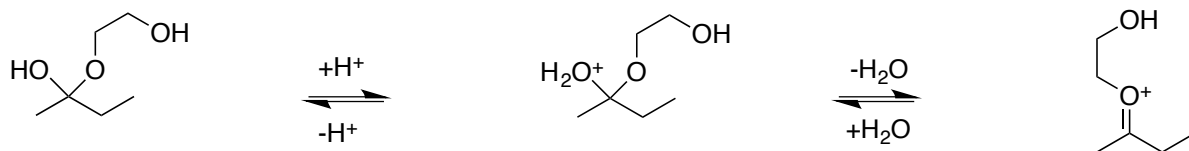



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*protonated acetal*

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*acetal*



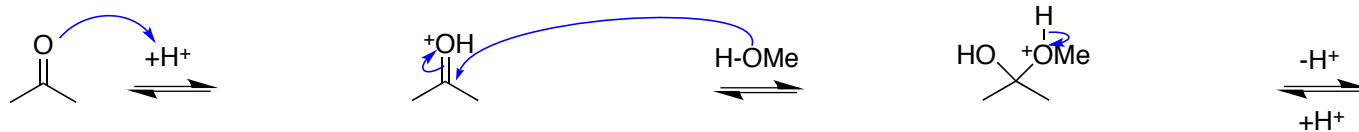
*protonated on OH*

*oxonium ion*



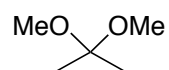
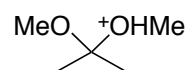
*protonated ketal*

*ketal*



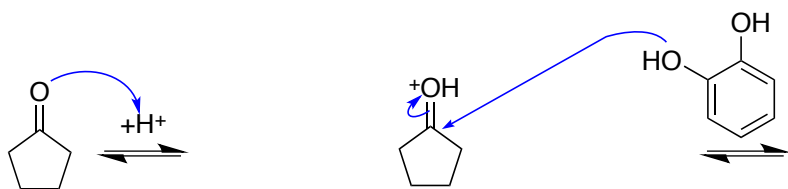
*protonated carbonyl*

*protonated hemiacetal*



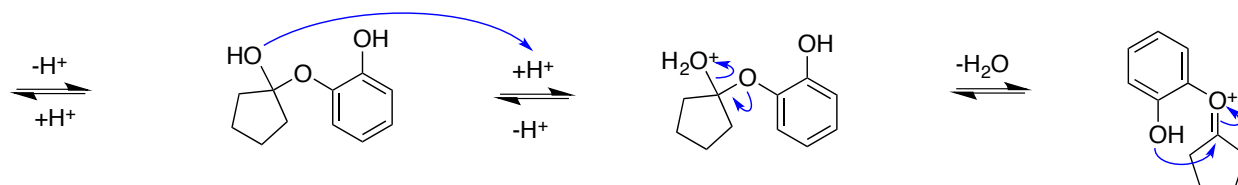
*protonated ketal*

*ketal*



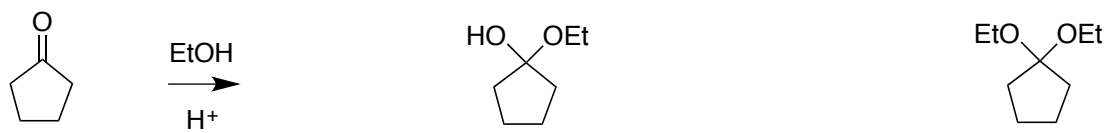
*protonated carbonyl*

*protonated hemiketal*



*protonated ketal*

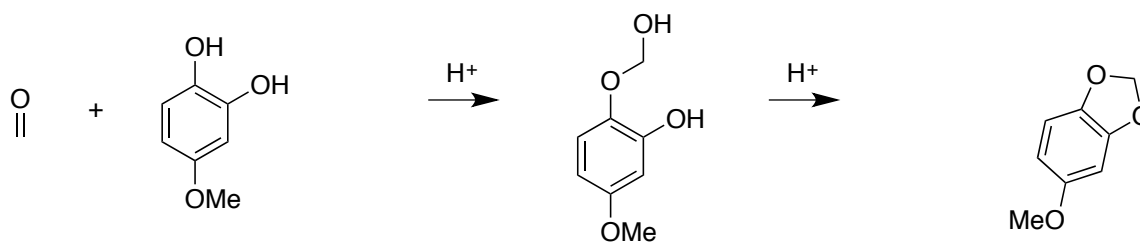
*ketal*



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*hemiketal*

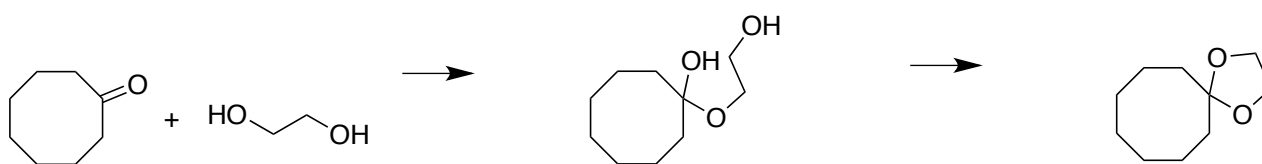
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*ketal*

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*aldehyde + "diol"*

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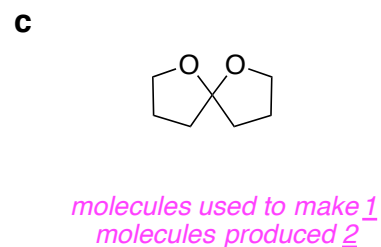
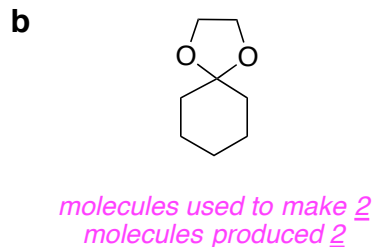
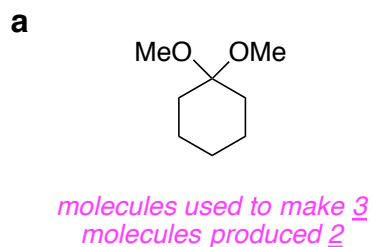
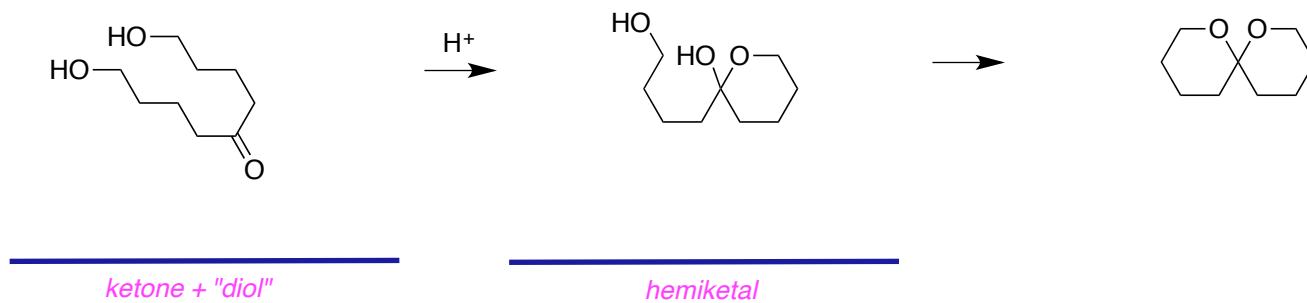
*acetal*

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*ketone + "diol"*

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*hemiketal*



to acid is **c**.