

Figure 17.003

Oxidation of a 2° Alcohol

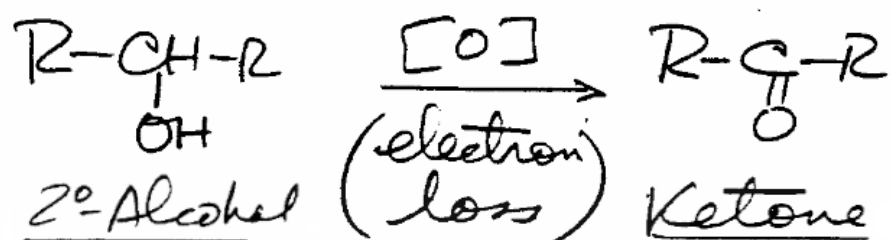


Figure 17.006

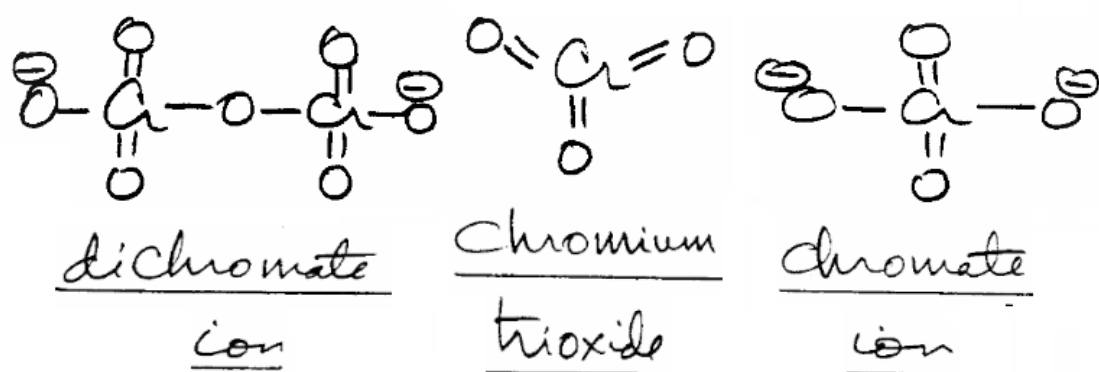


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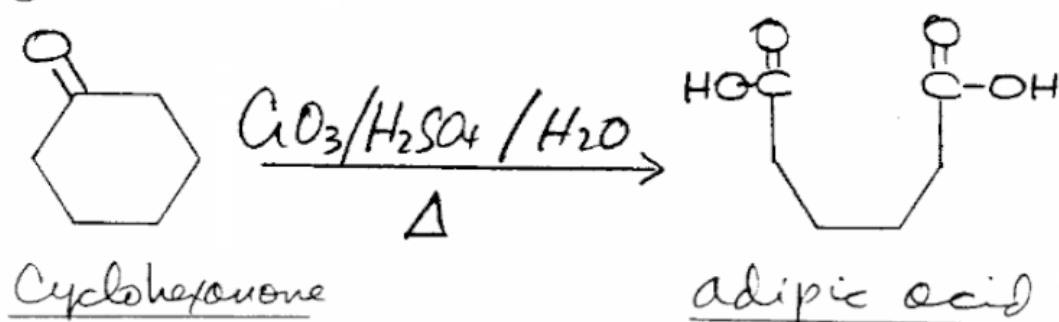


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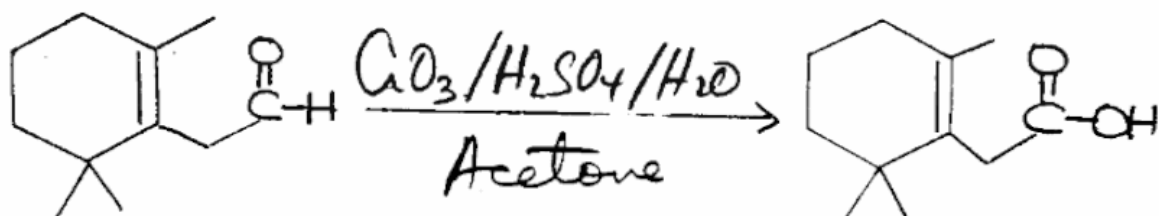


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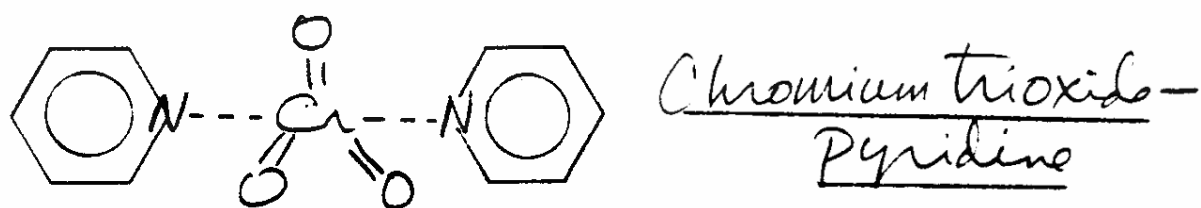
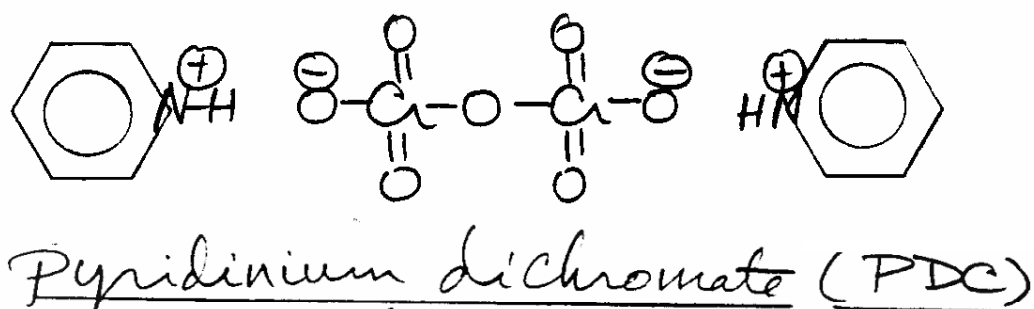


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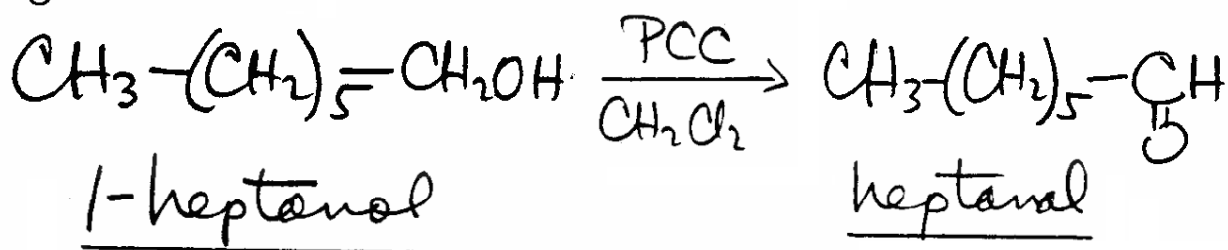


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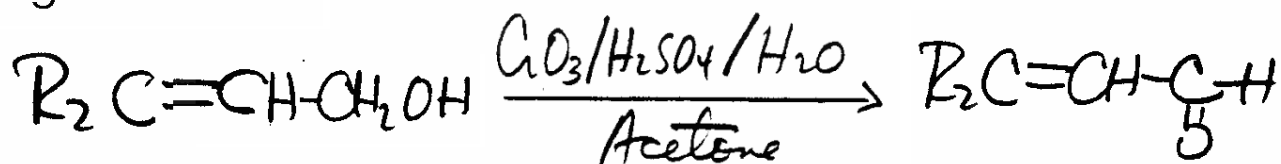
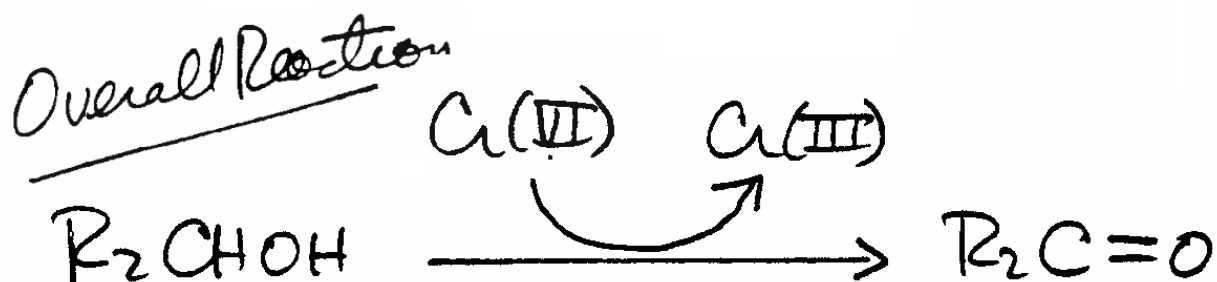


Figure 17.012 General Mechanism for Alcohol Oxidation by Cr(VI) Reagents

Overall Reaction



Types of Intermediate Processes

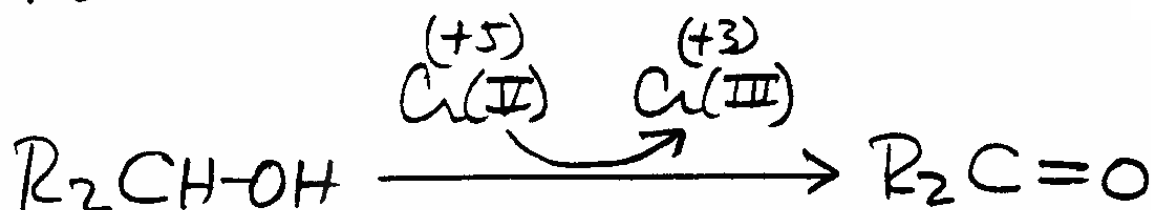
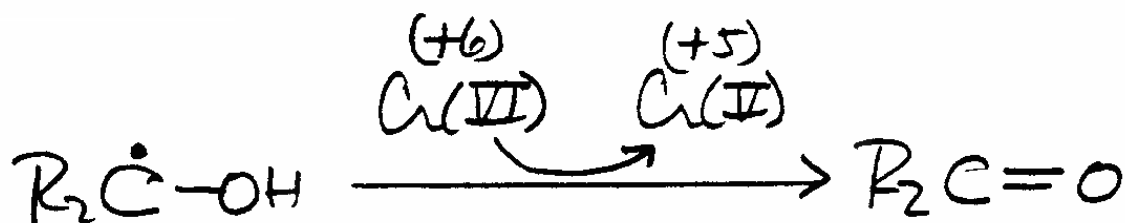
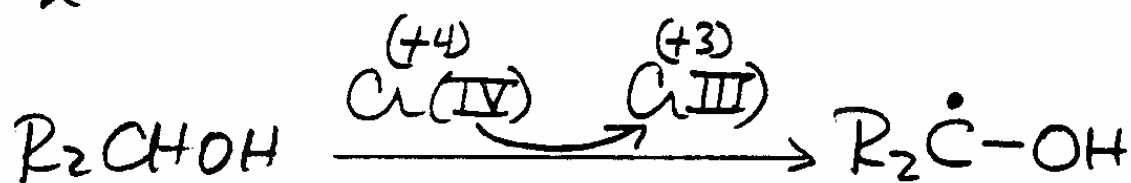
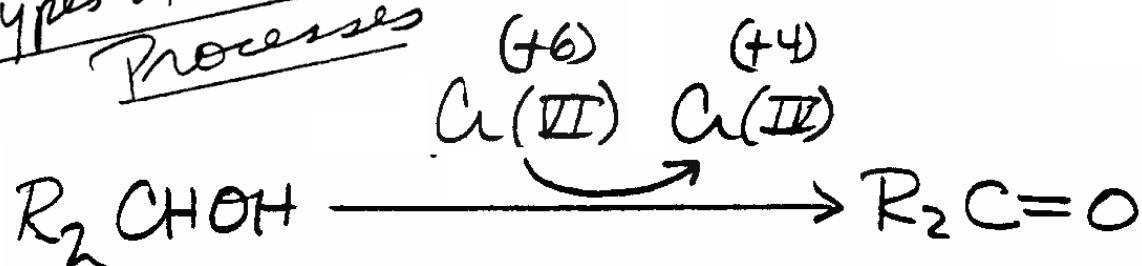


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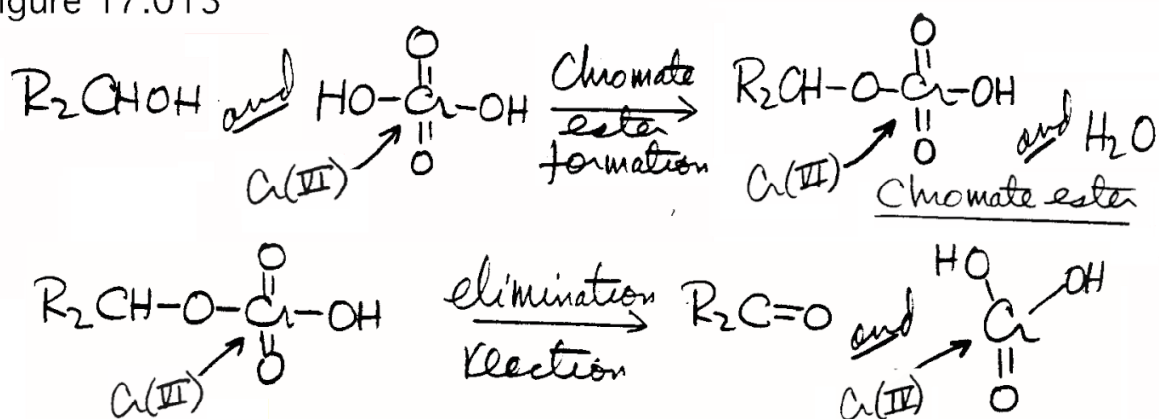


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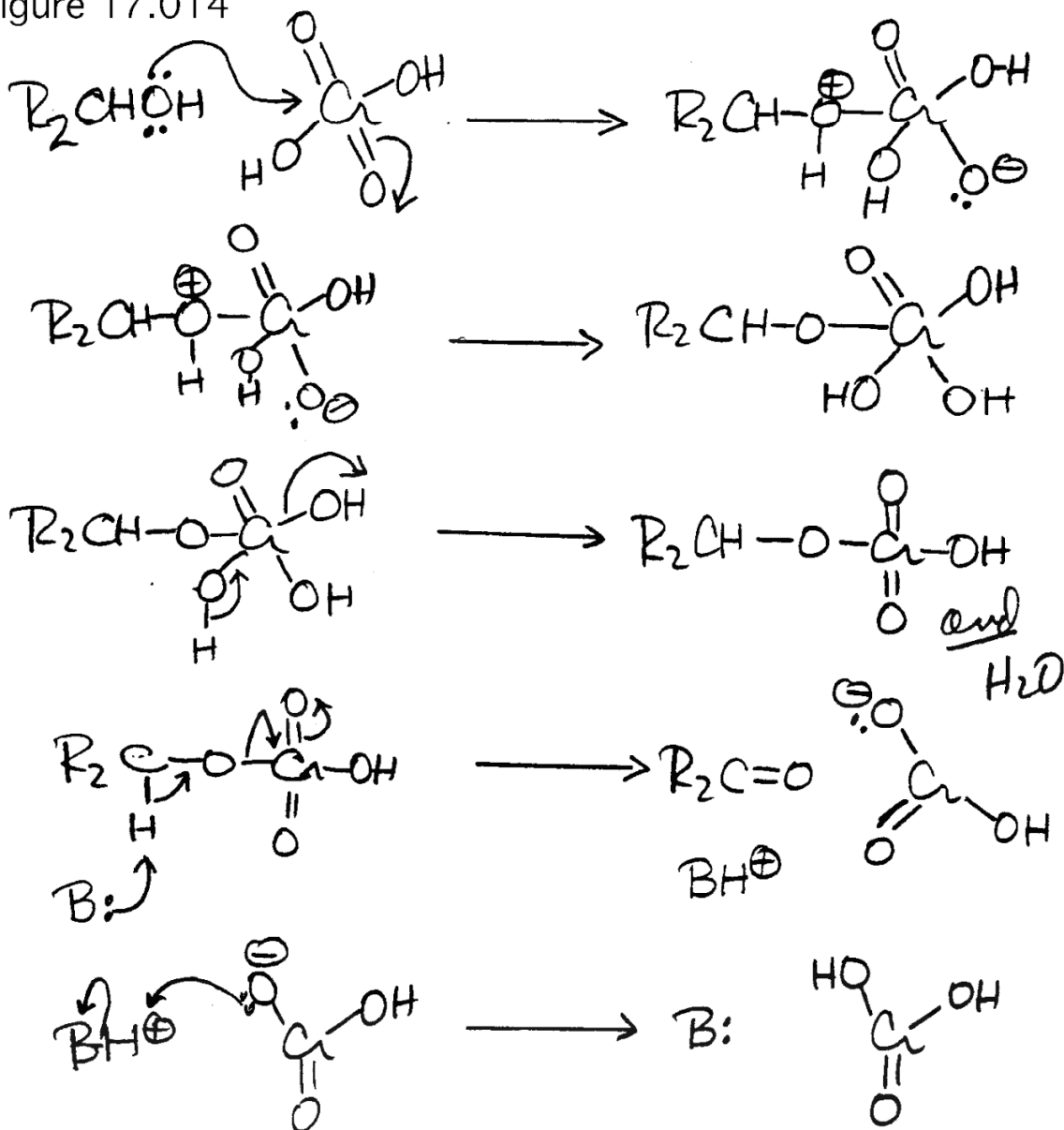


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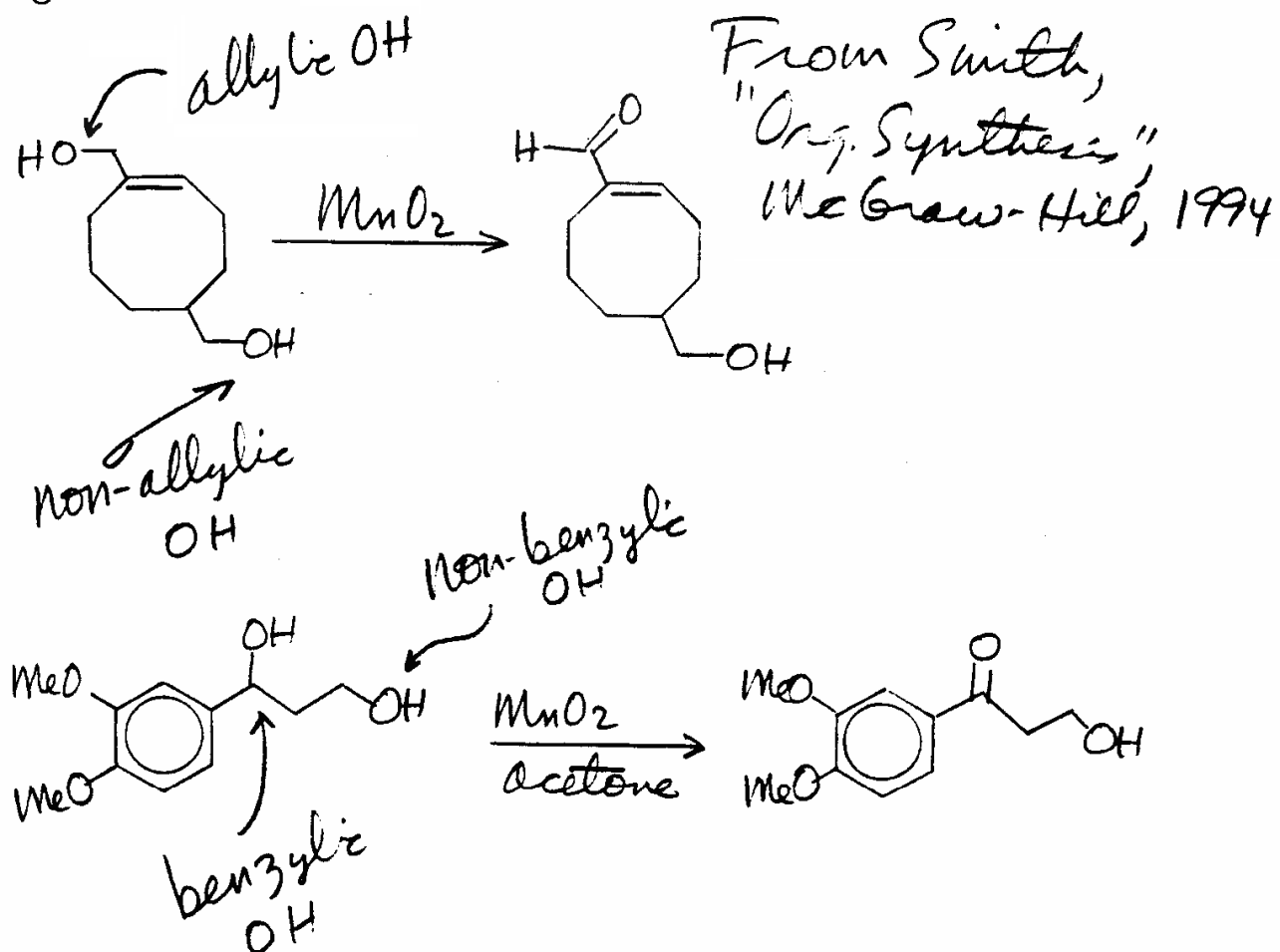


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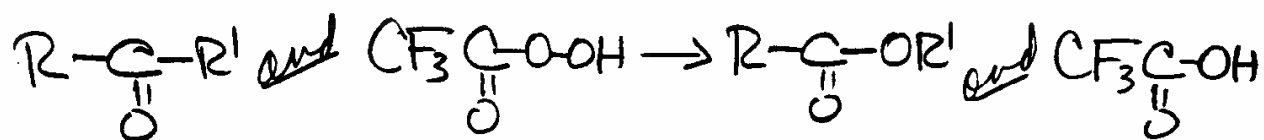


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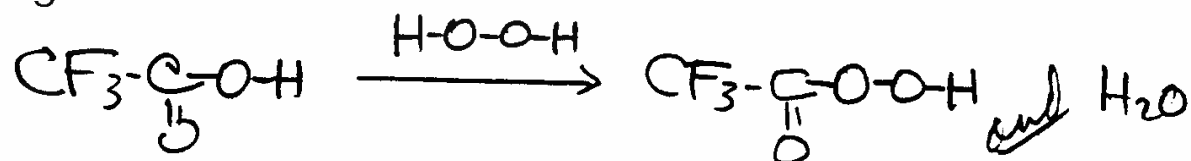


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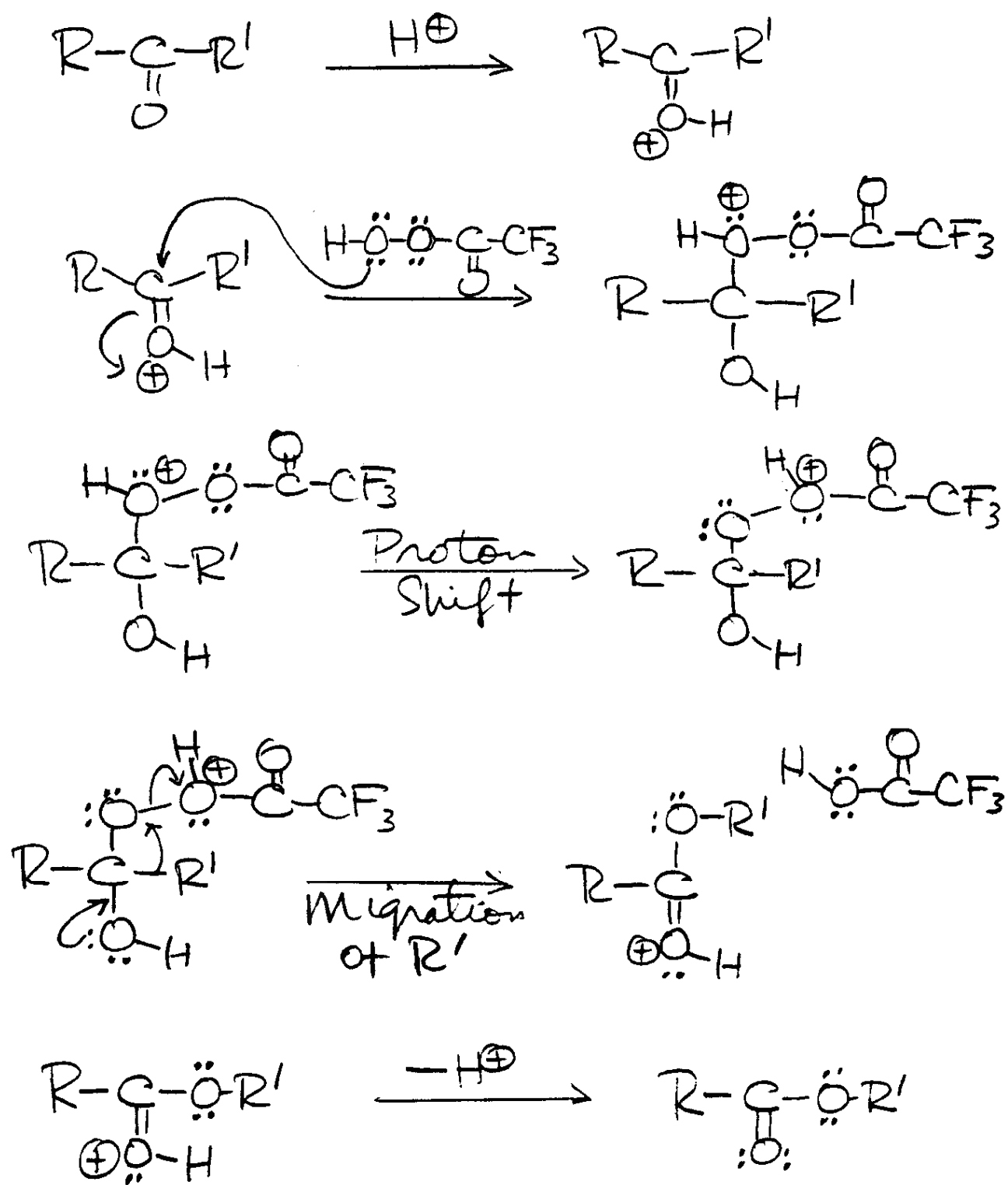
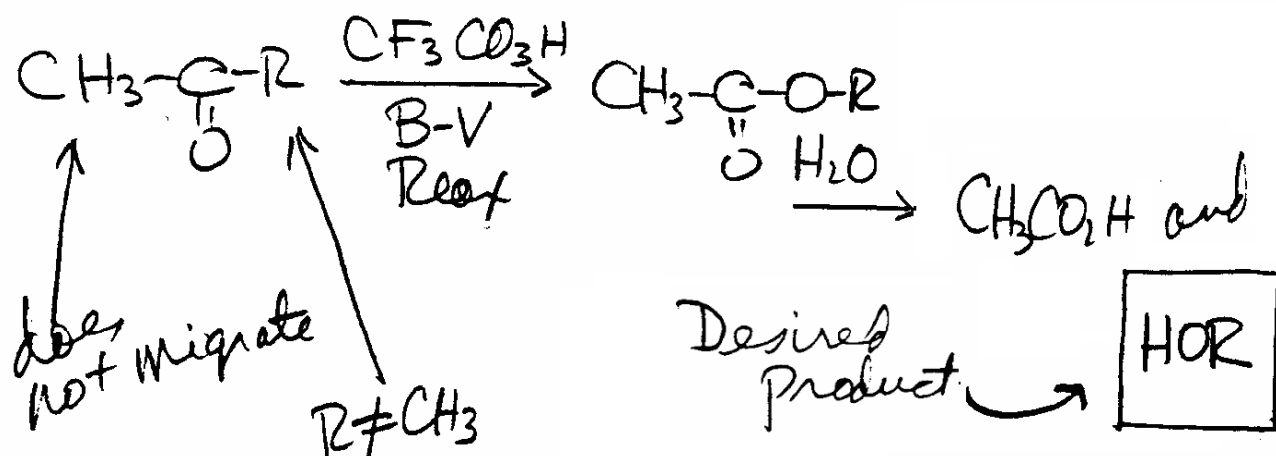


Figure 17.020

Alcohol Formation by B-V Rearrangement



Carboxylic Acid Formation by B-V Rearrangement

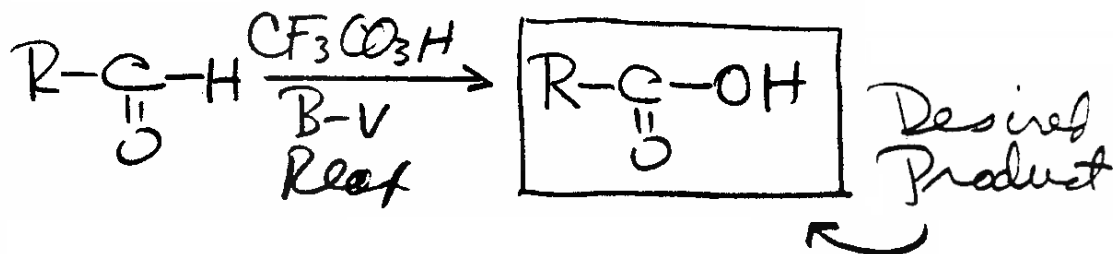


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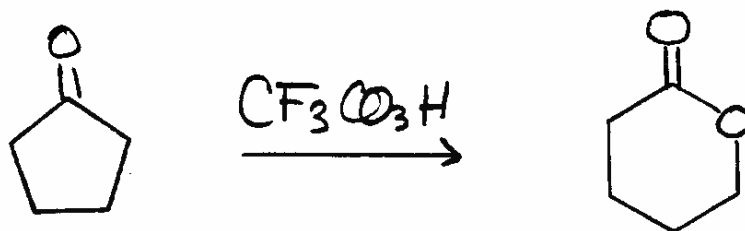


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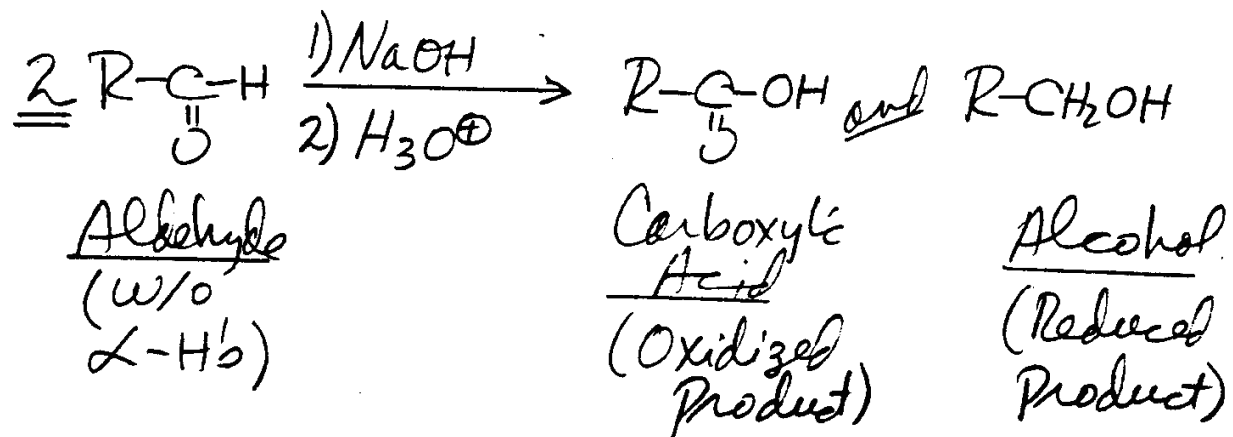


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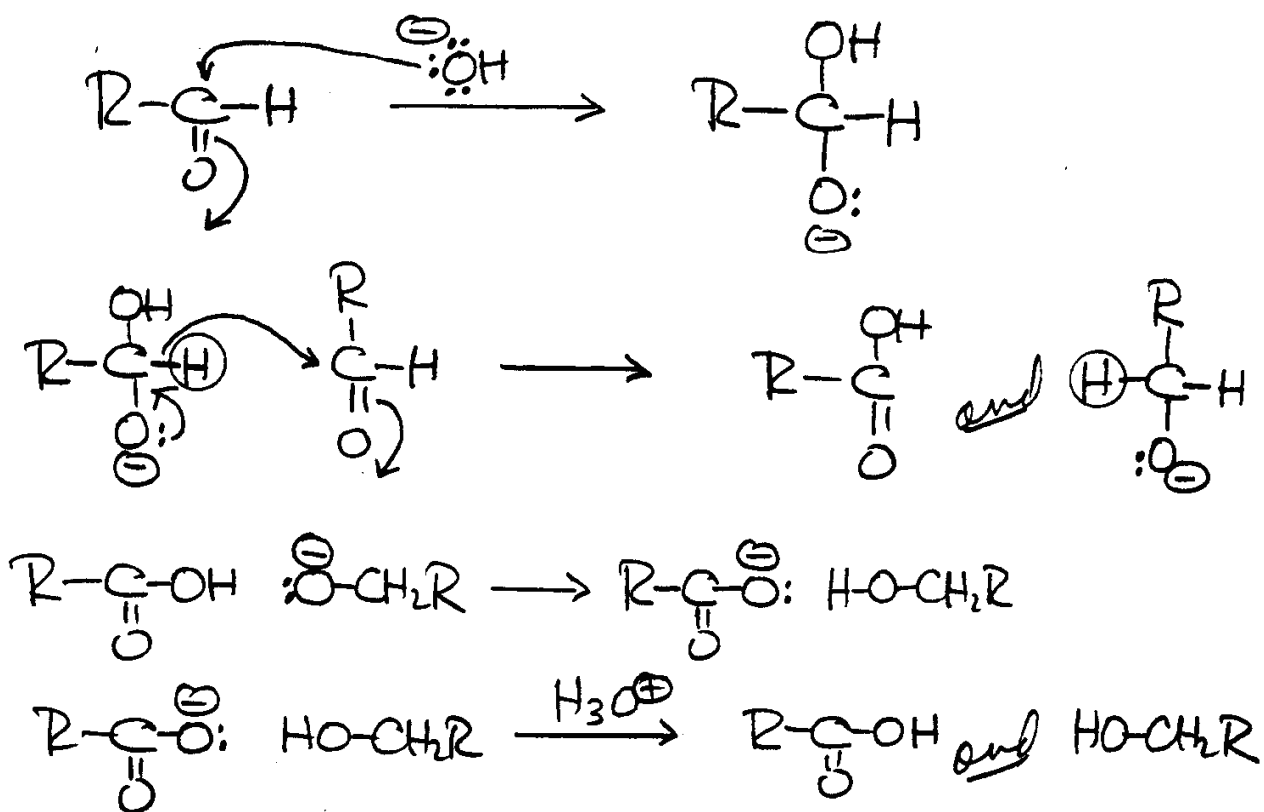


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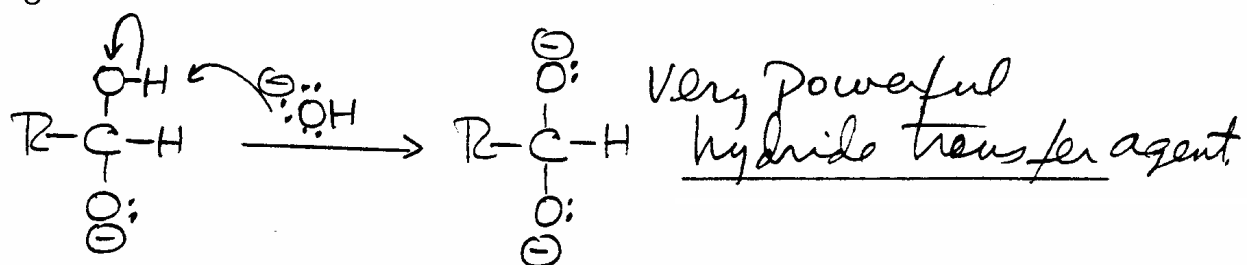


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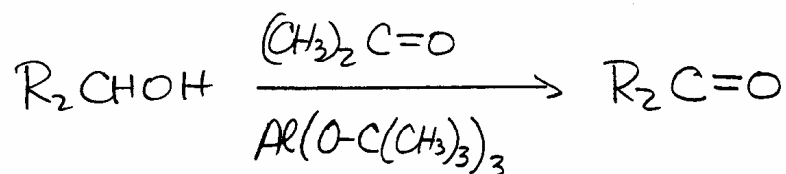


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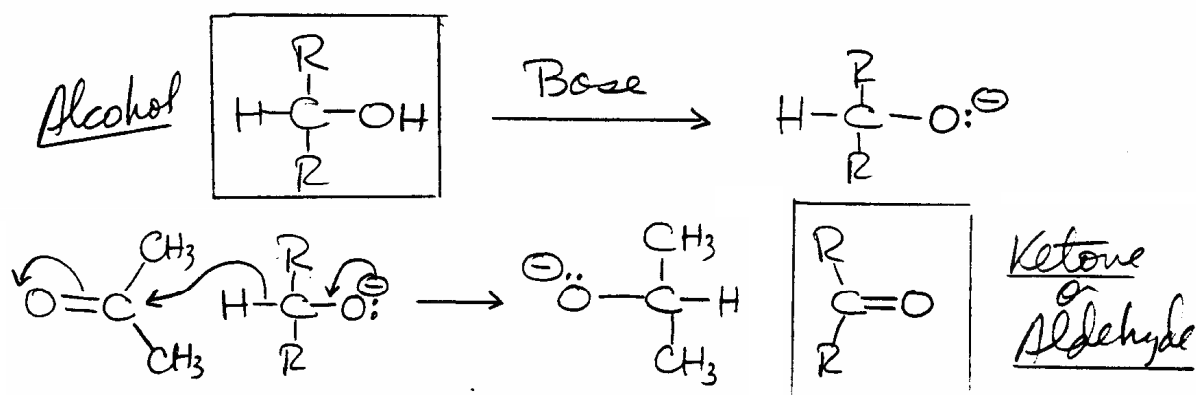


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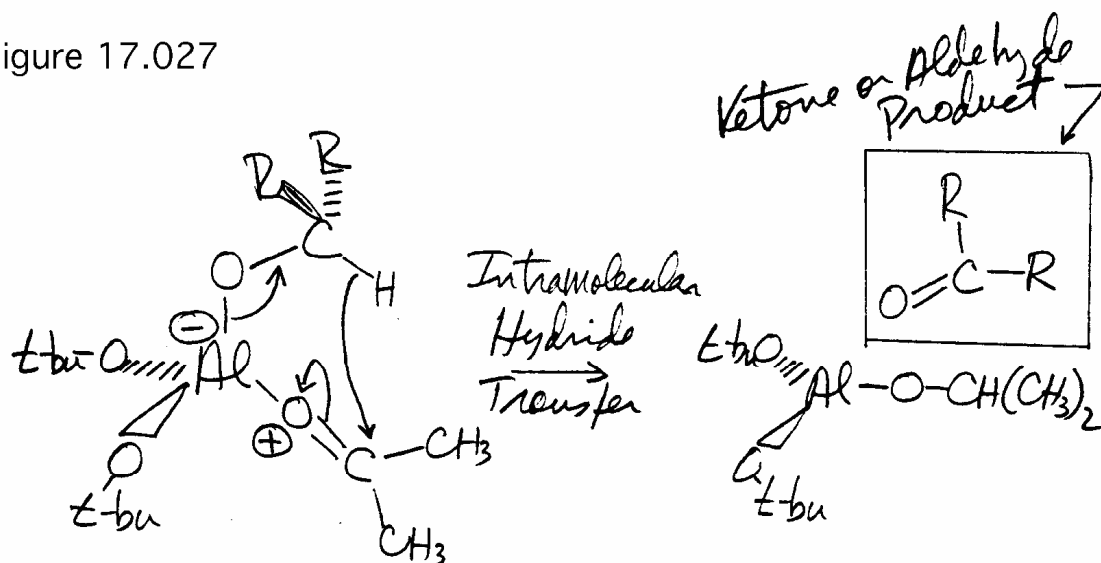


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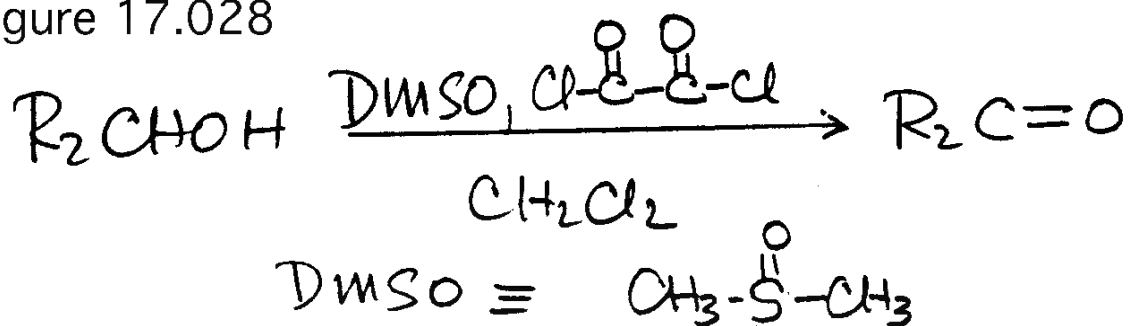


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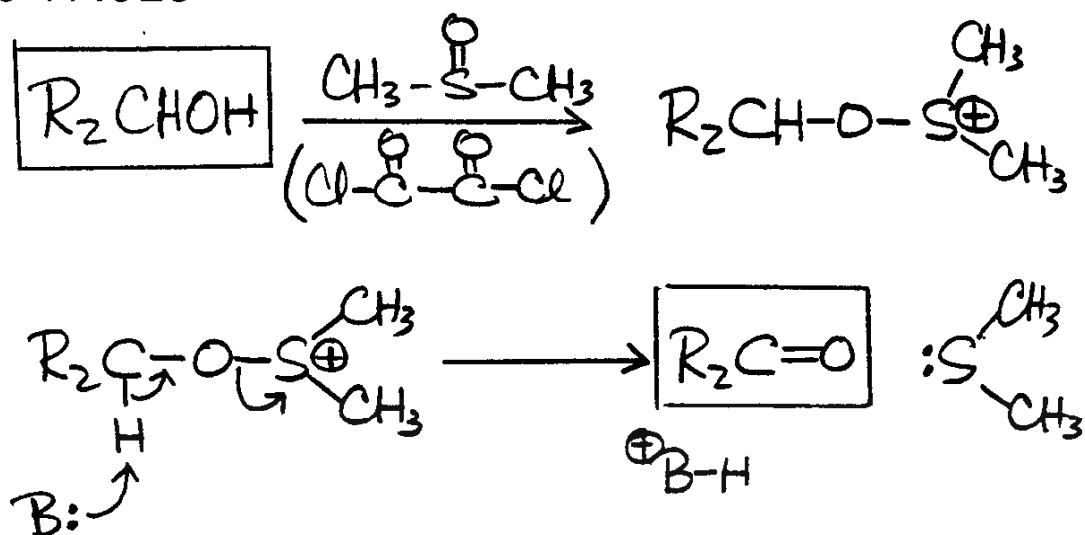
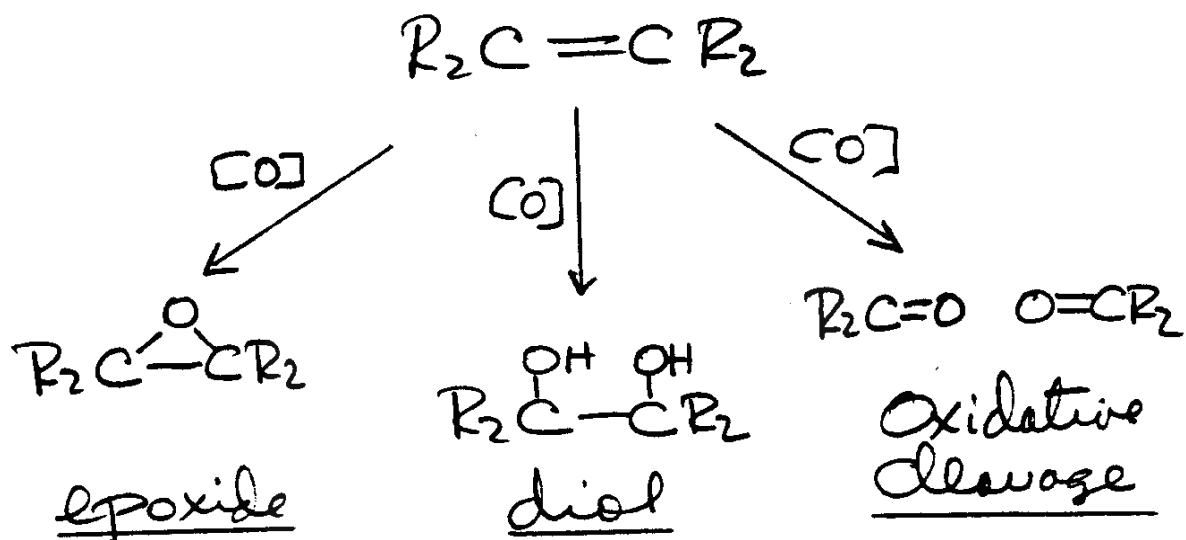
Figure 17.030 Types of C=C Oxidations

Figure 17.031

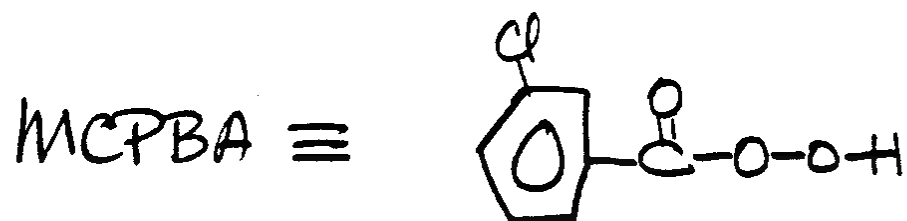
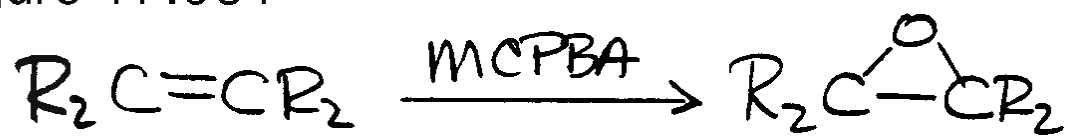


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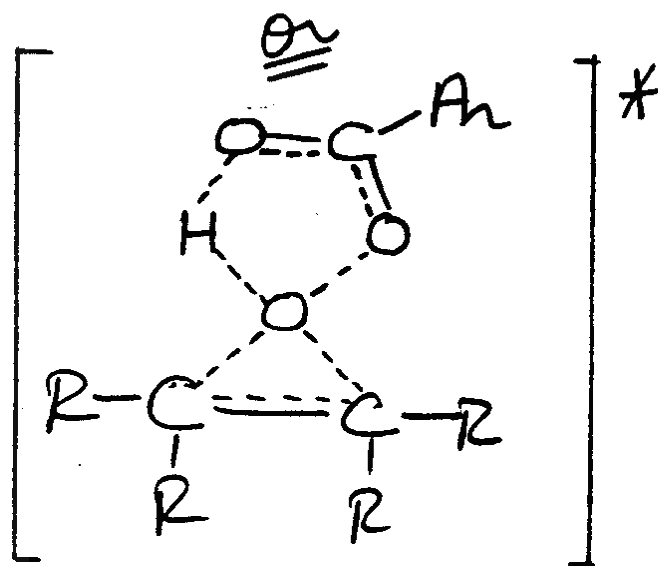
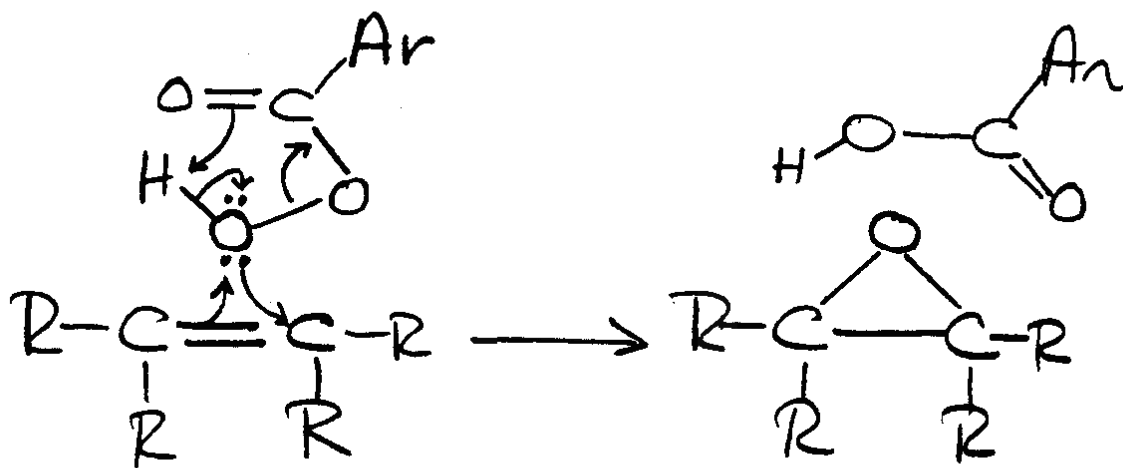


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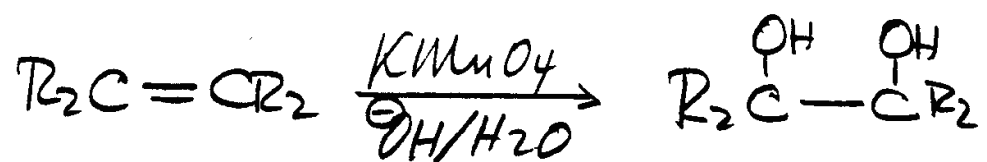
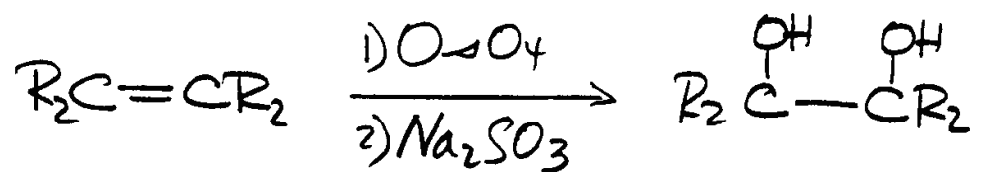


Figure 17.034

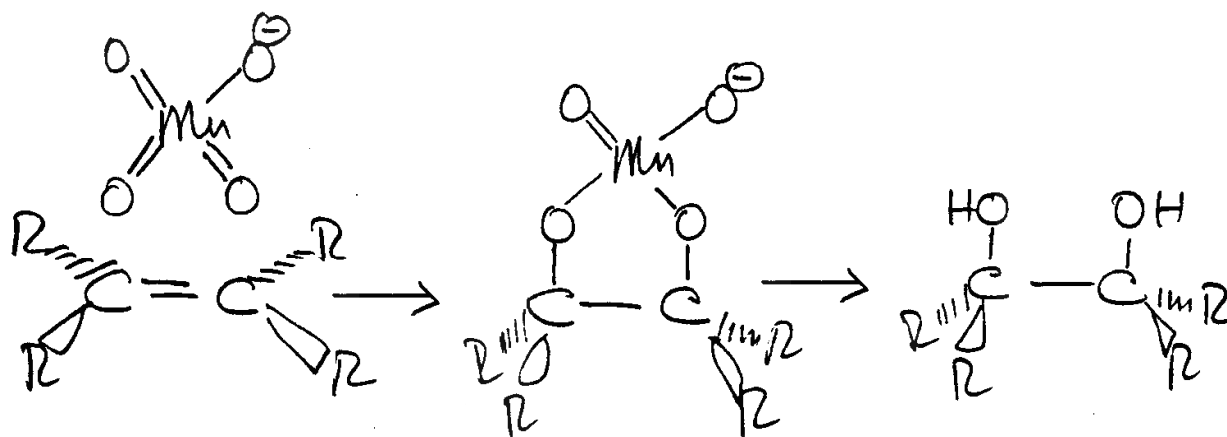
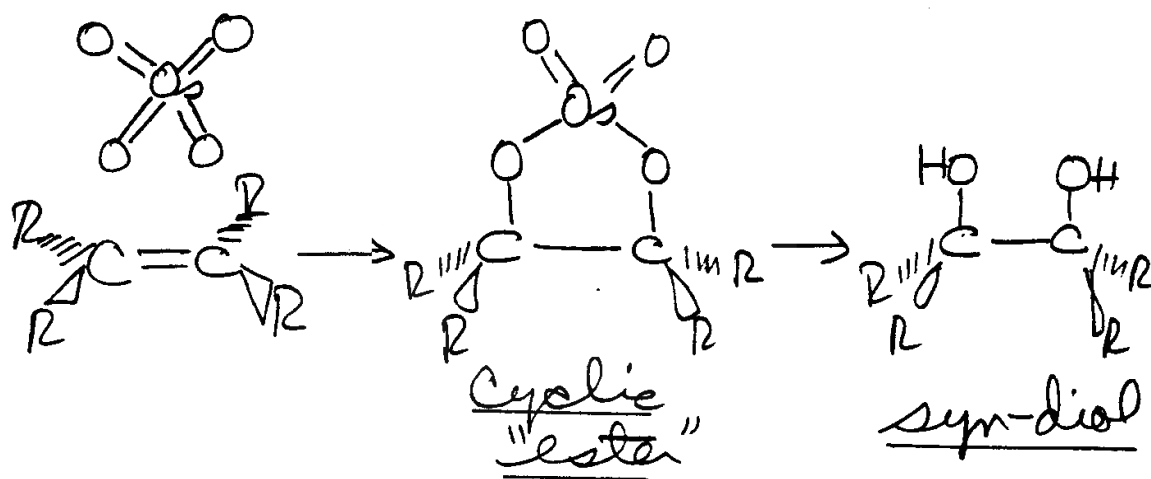


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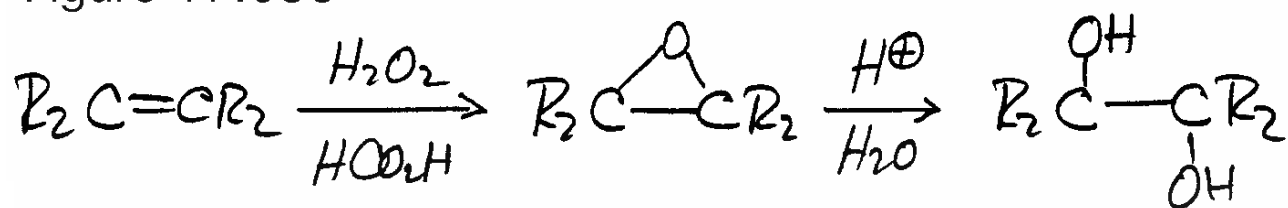


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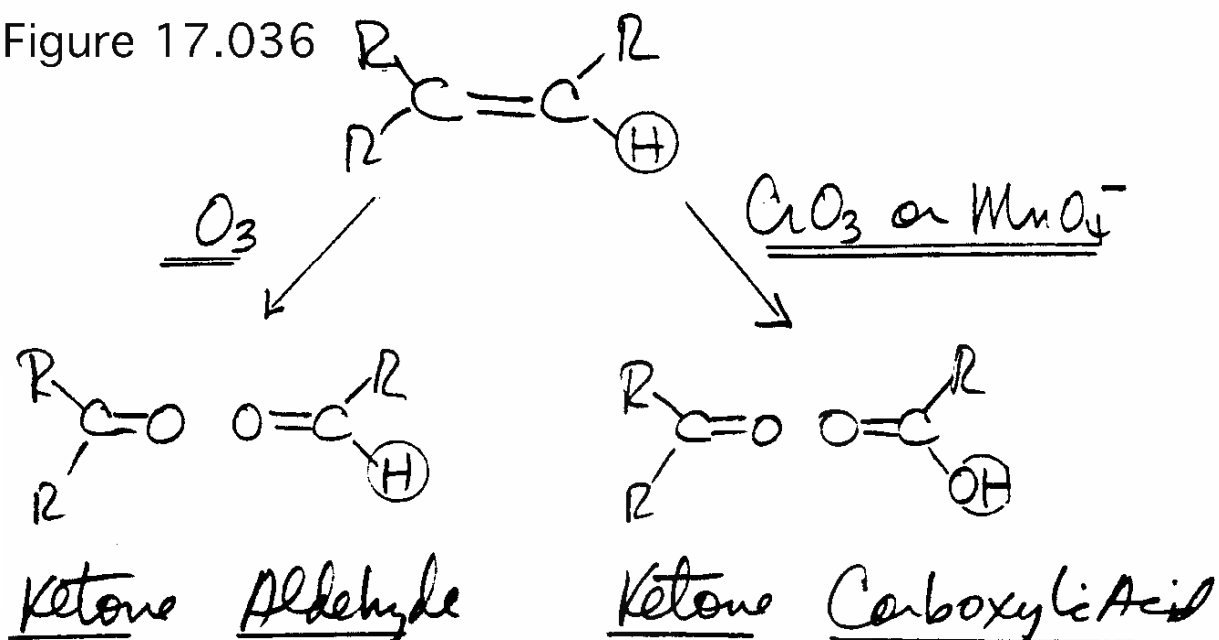


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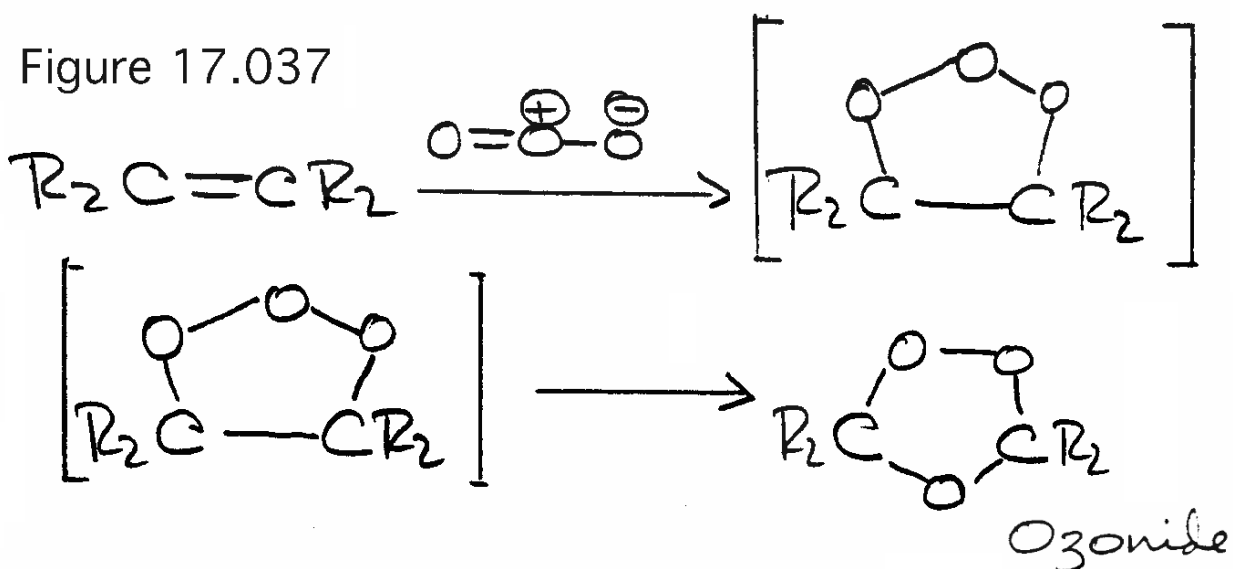


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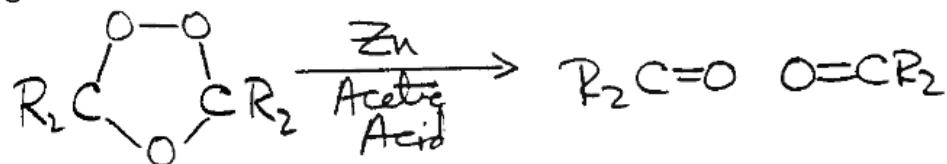


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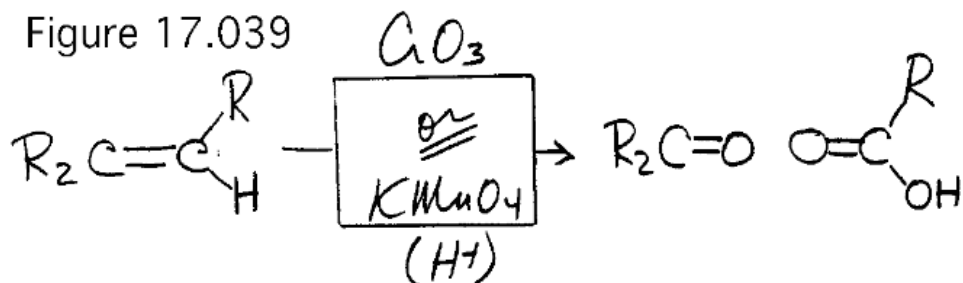


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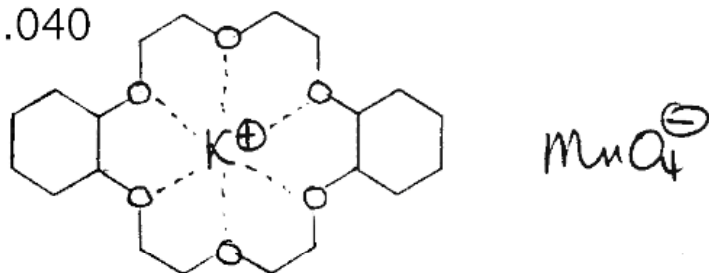


Figure 17.041

Probable Stepwise Oxidation
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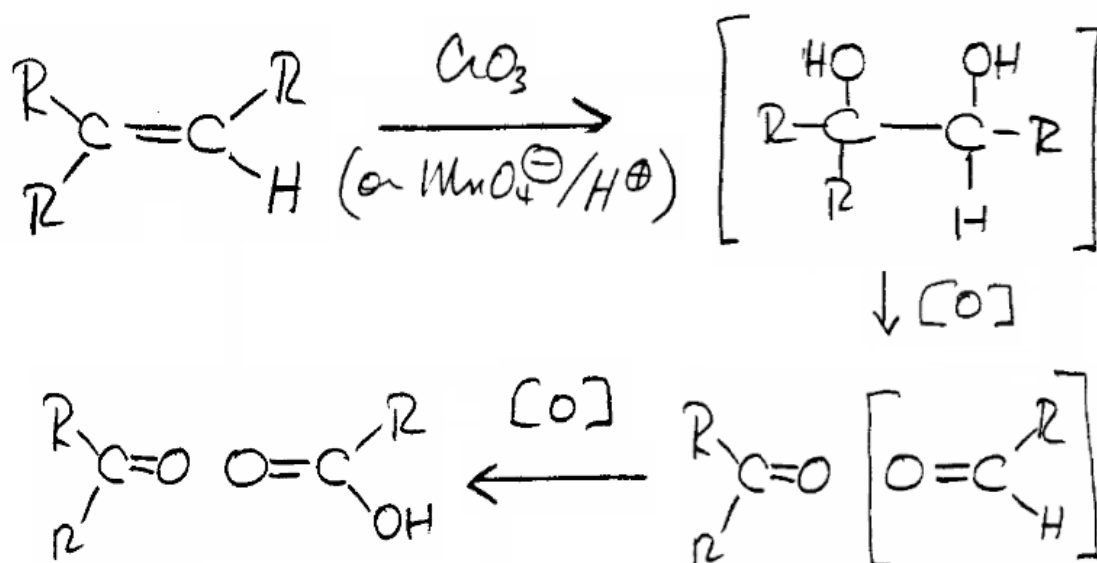


Figure 17.042

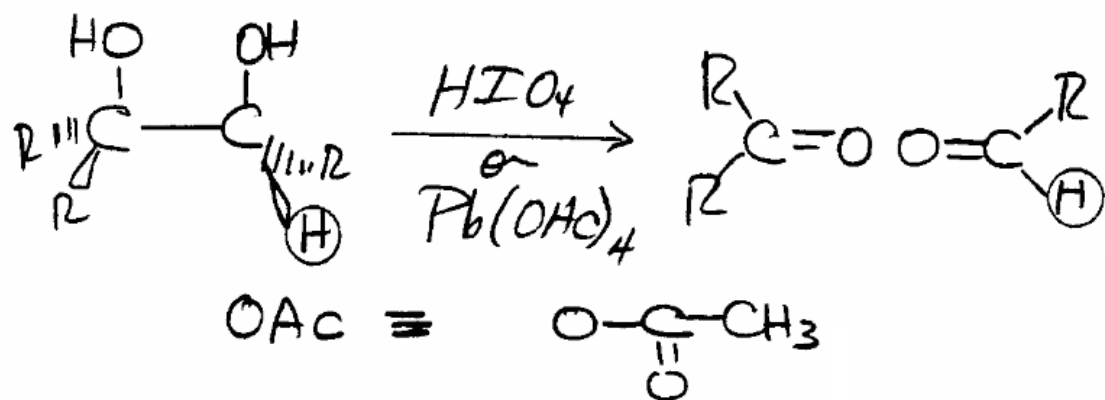
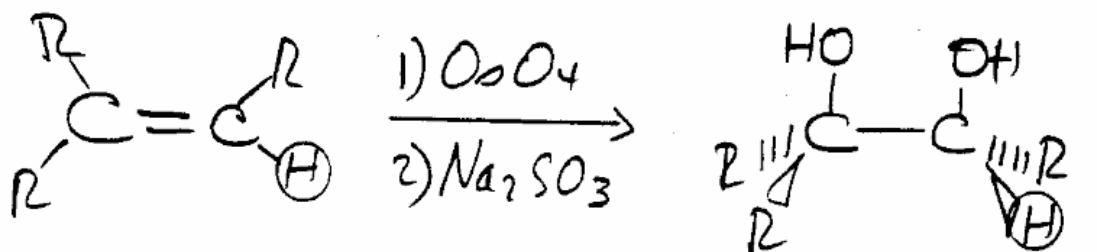


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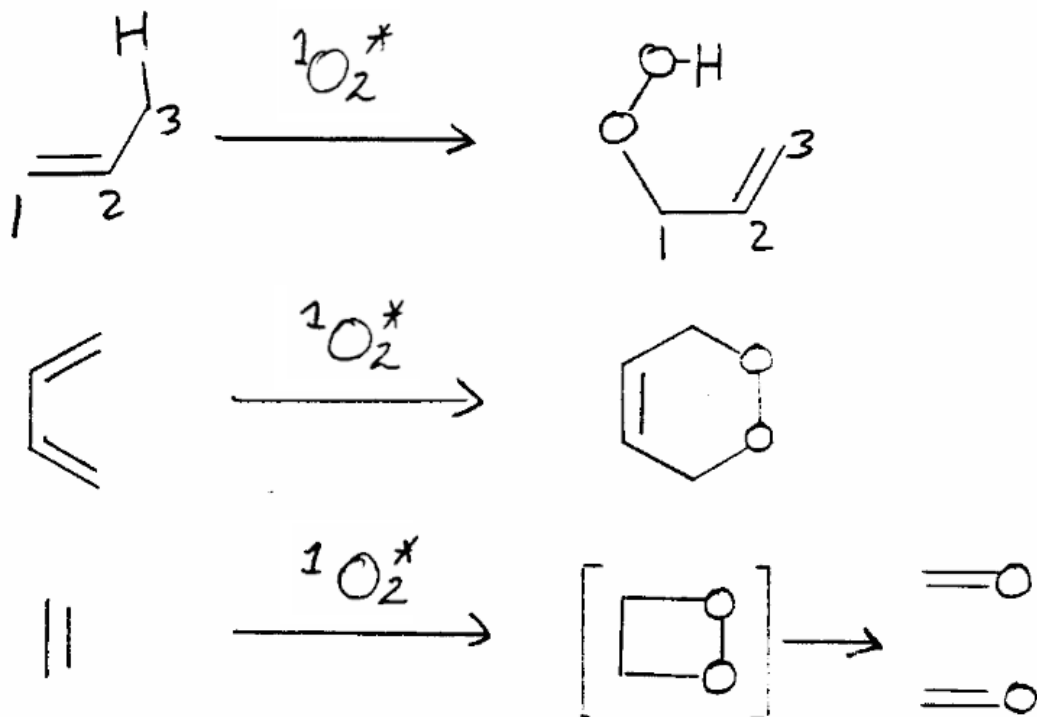


Figure 17.044 Types of Oxidation of Allylic (or Benzylic) Alkyl Groups

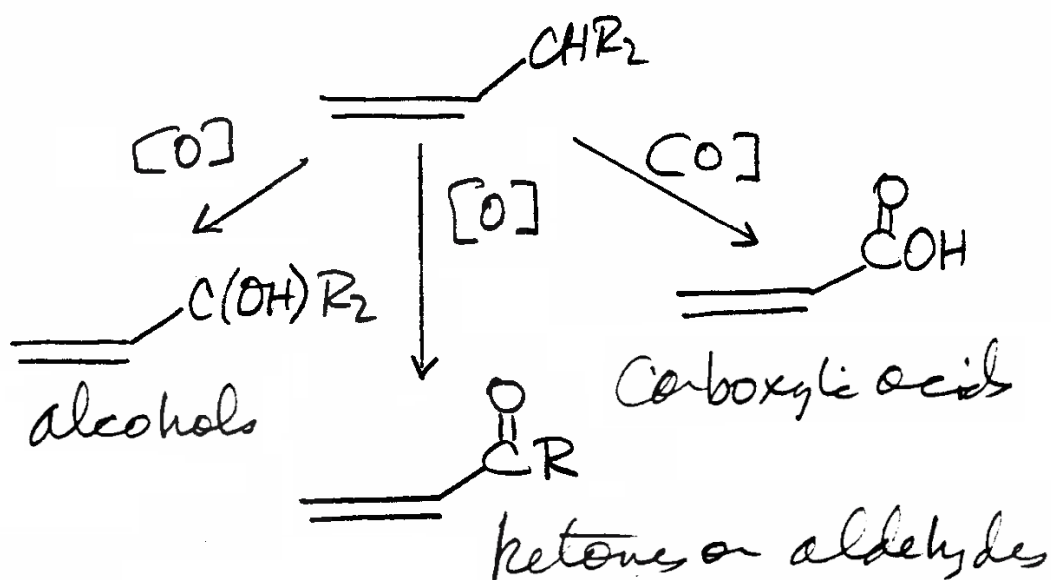


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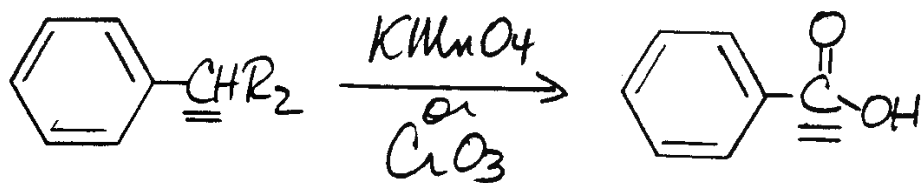


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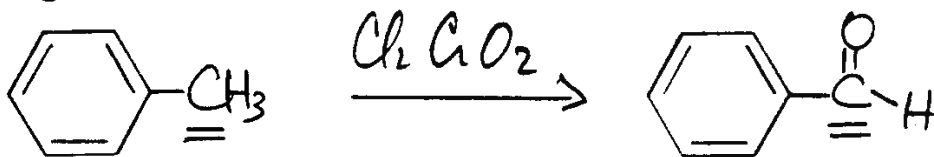


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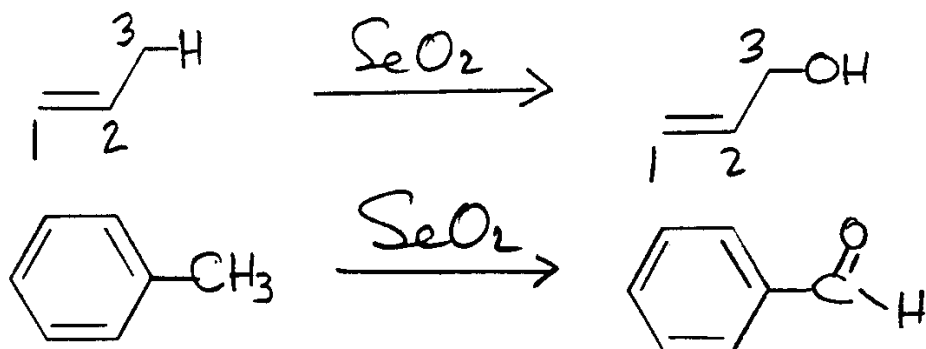


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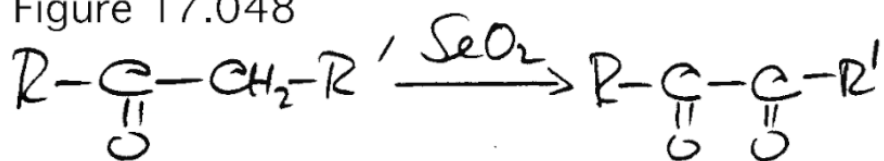


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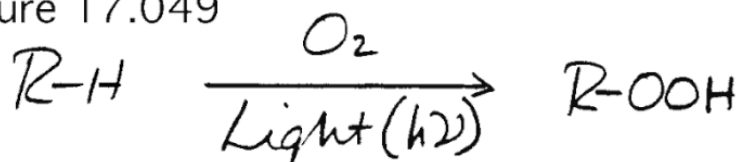


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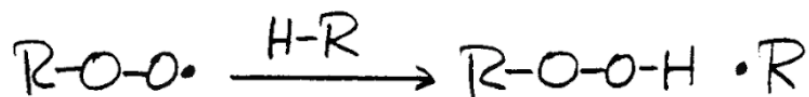
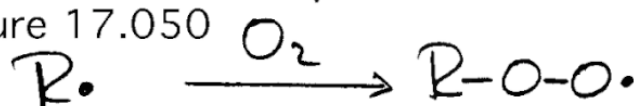


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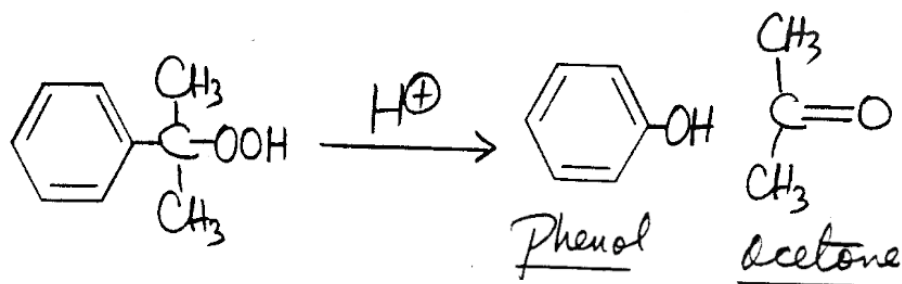
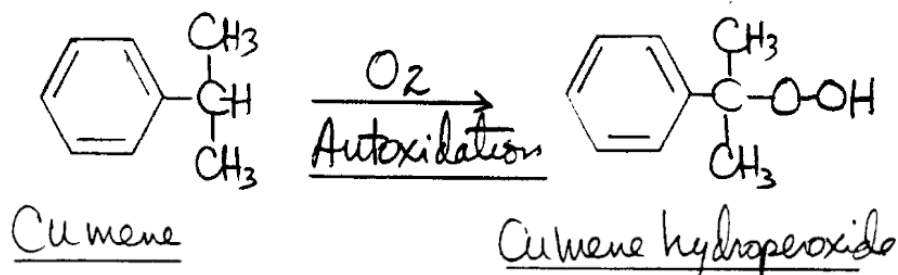


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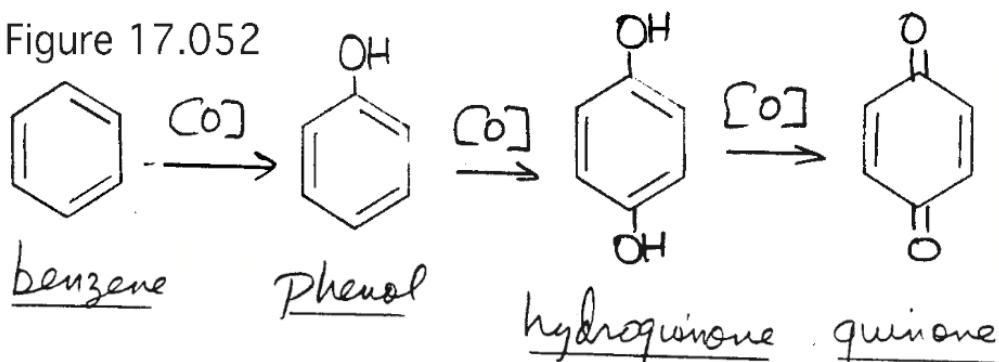


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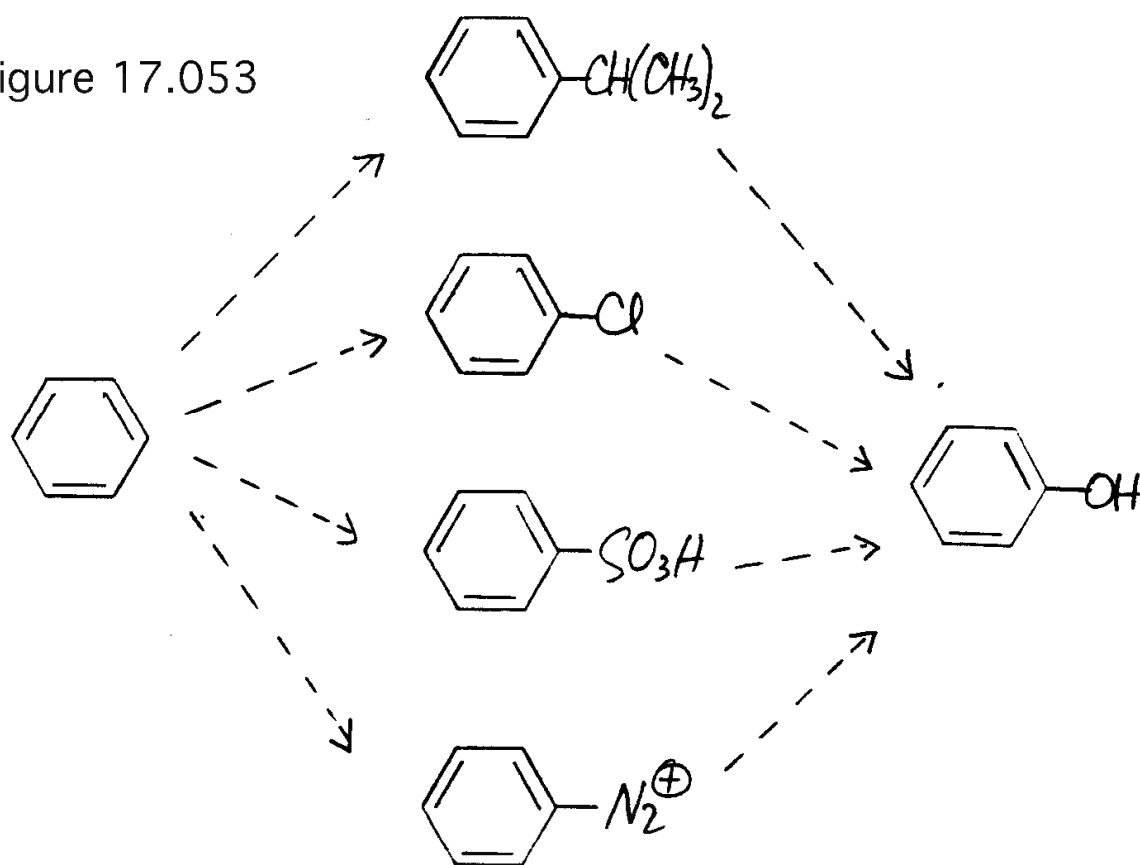


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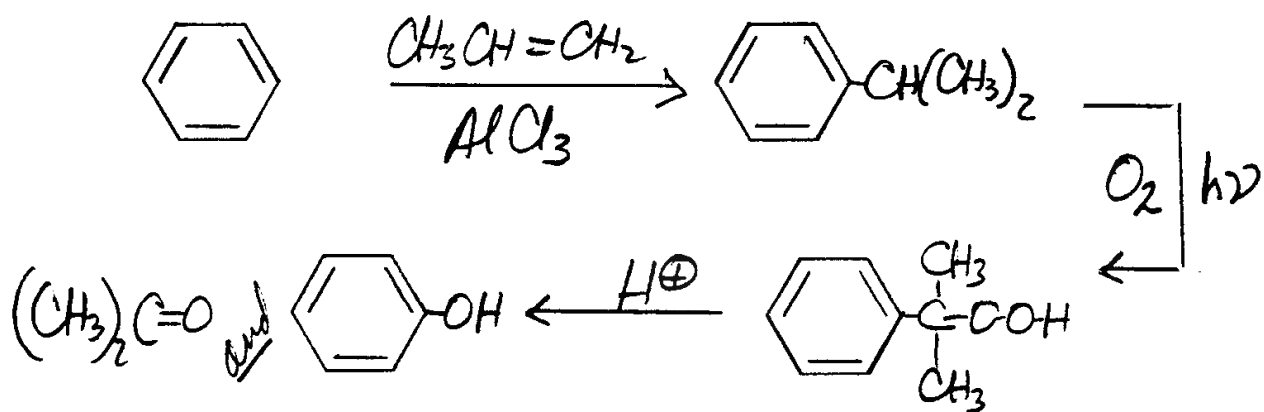


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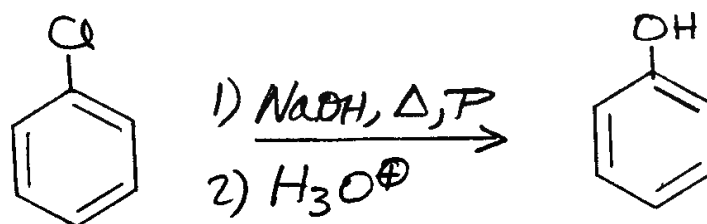


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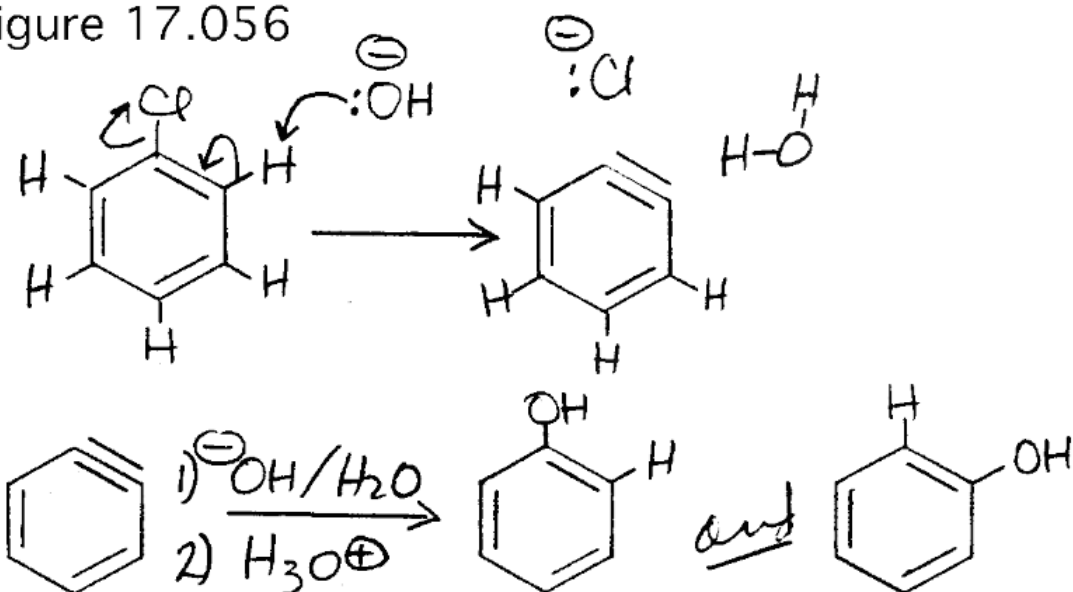


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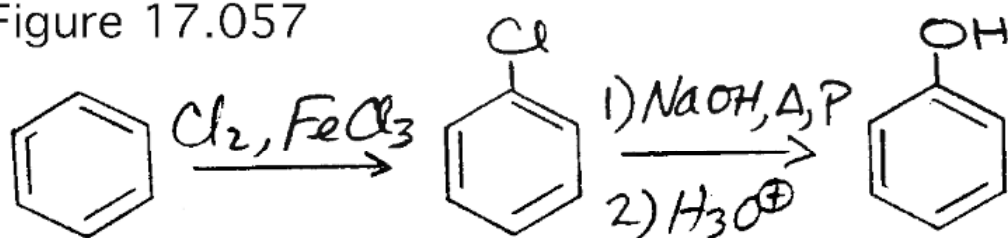


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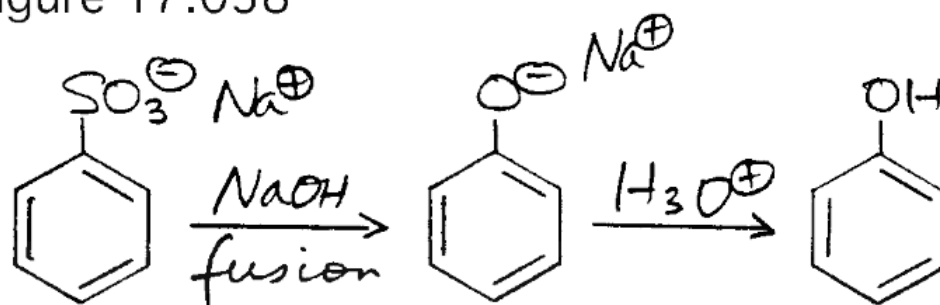


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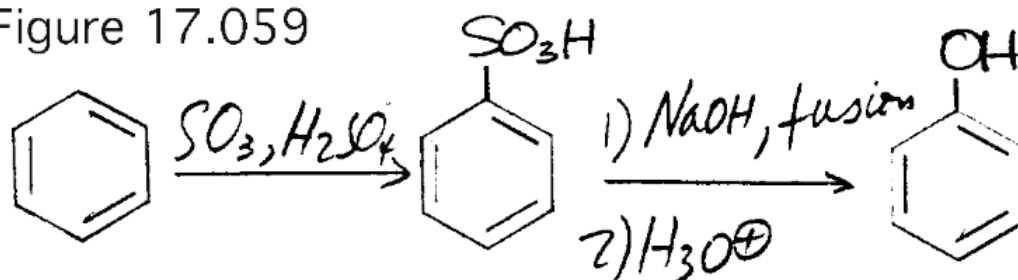


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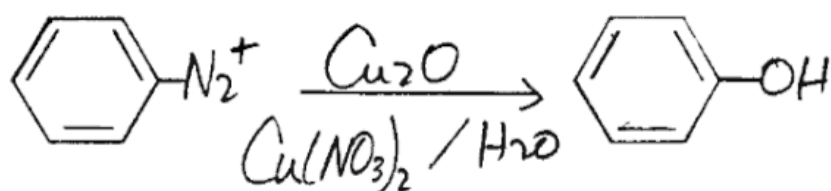


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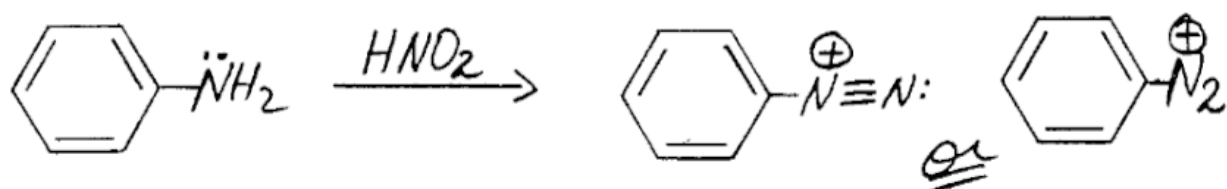


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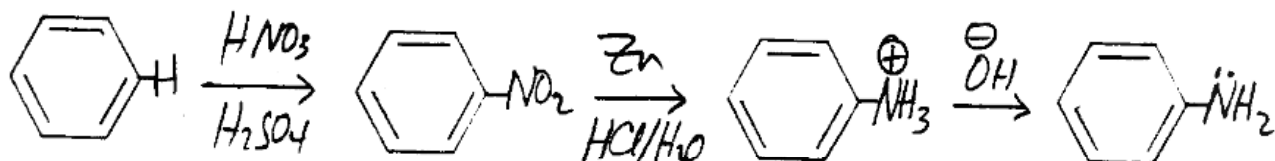


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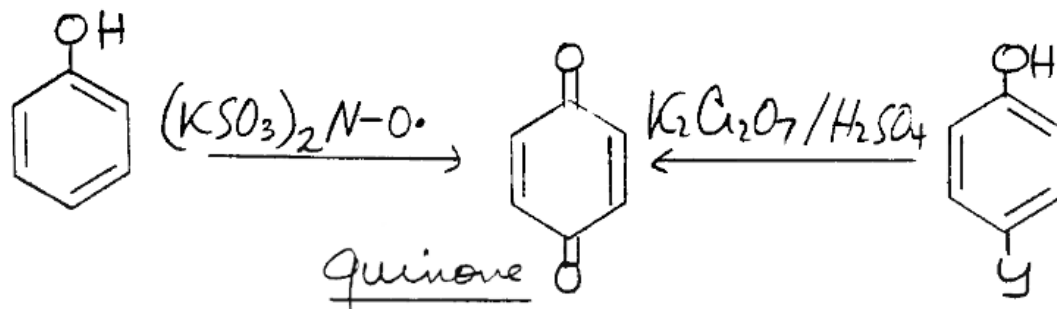


Figure 17.064

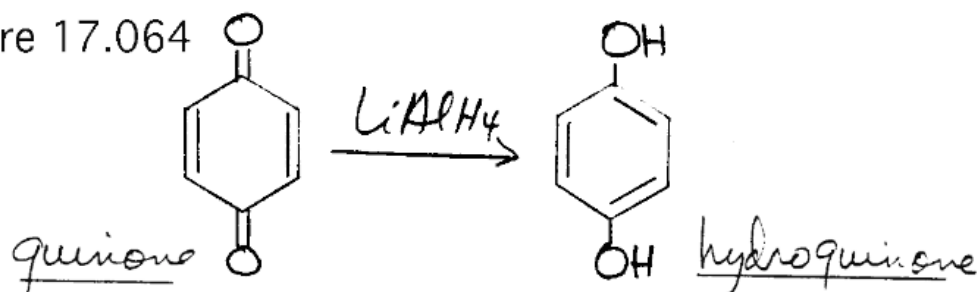


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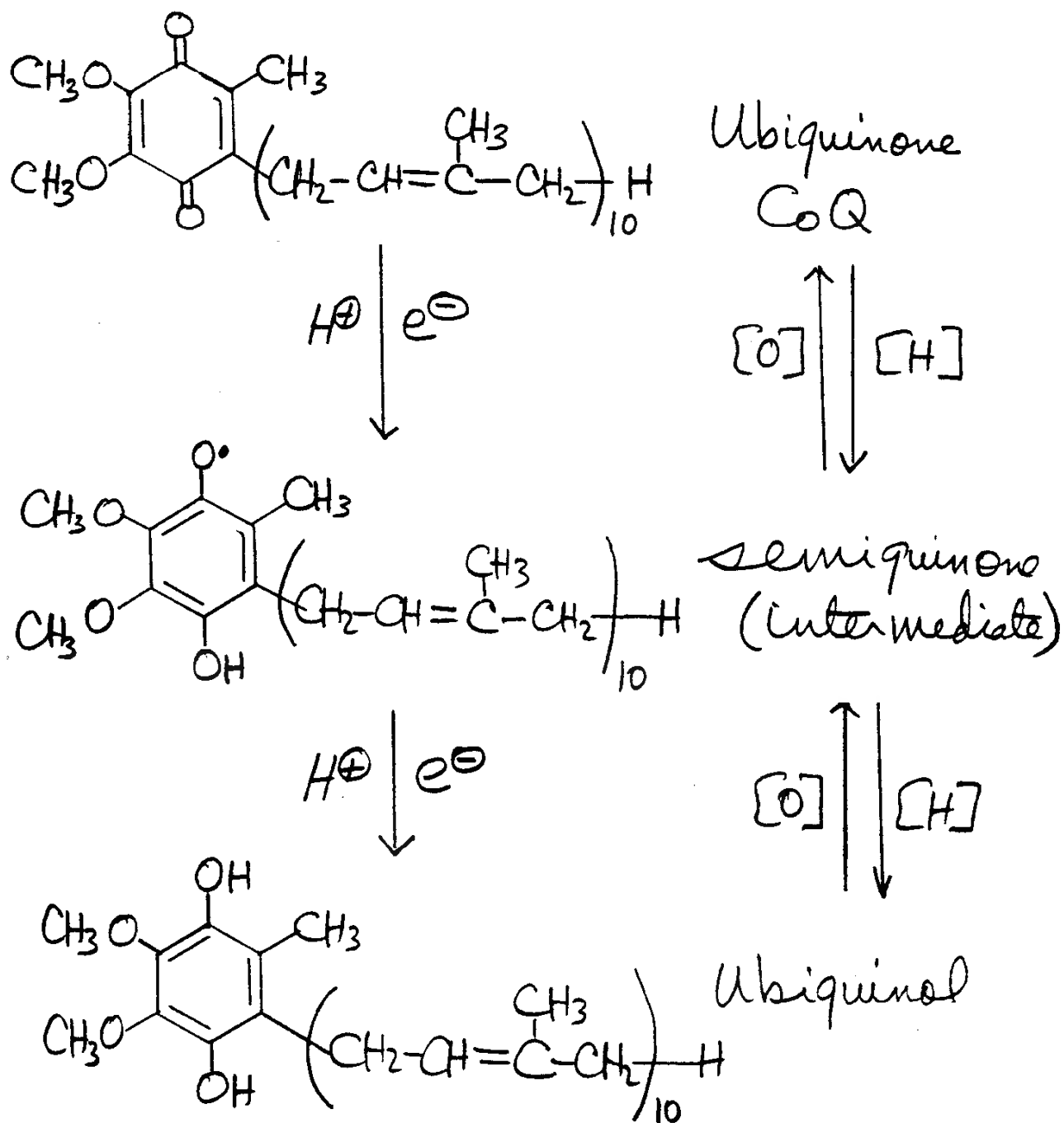


Figure 17.067

Reduction Reactions Look Like H-H
Adds Across Multiple Bonds

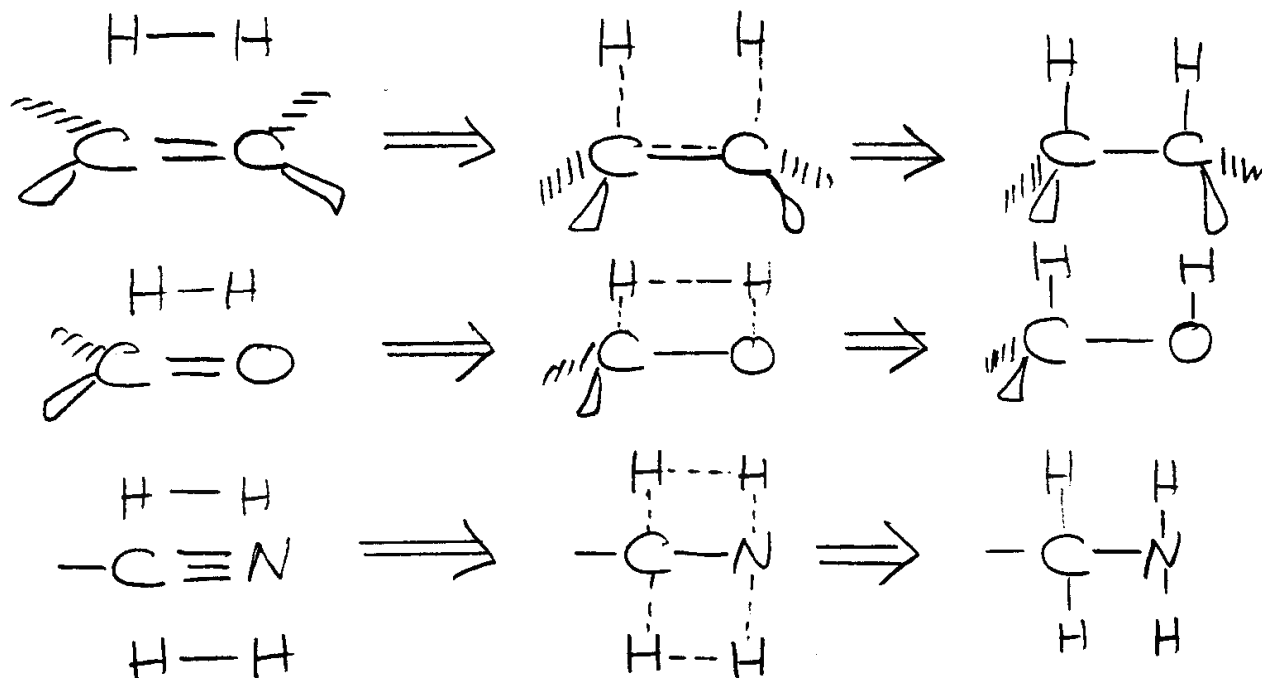


Figure 17.068

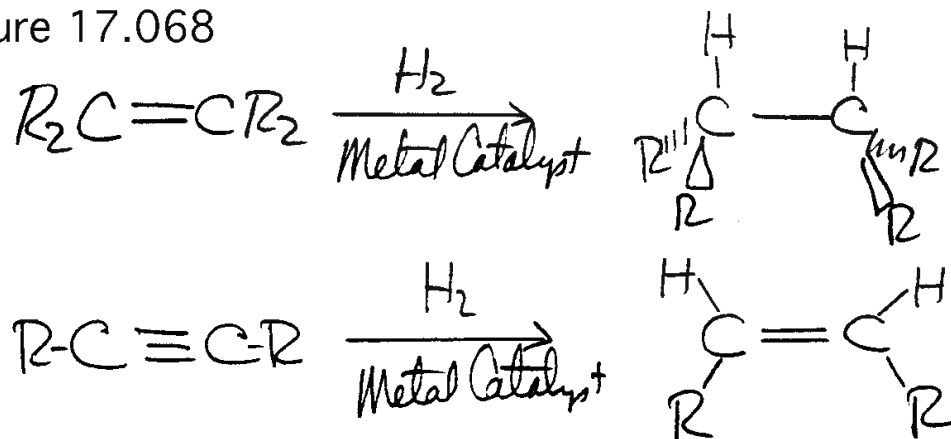
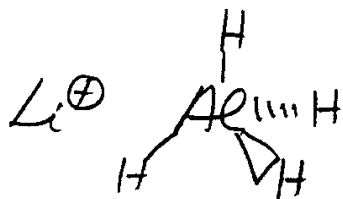
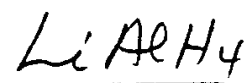
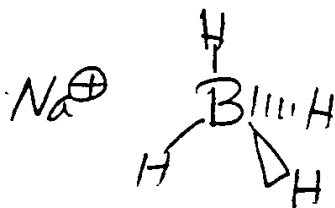


Figure 17.069

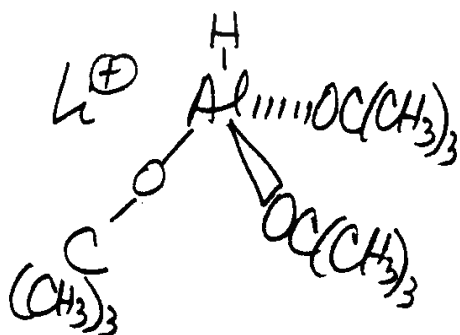
Some Metal Hydride Reducing Reagents



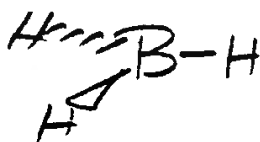
lithium
aluminum
hydride



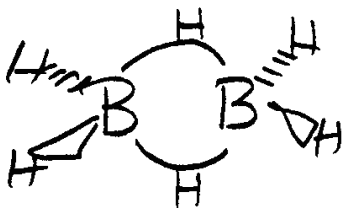
sodium
borohydride



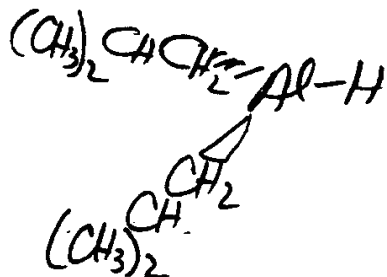
lithium
tri-*t*-butoxy-
aluminum
hydride



borane



diborane



diisobutyl-
aluminum
hydride

Figure 17.070

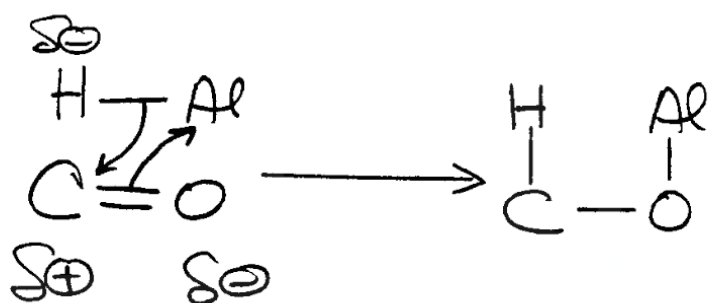


Figure 17.071

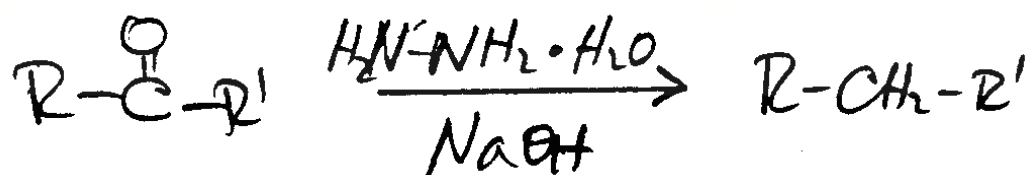
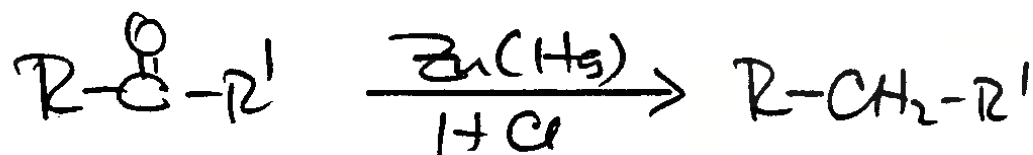
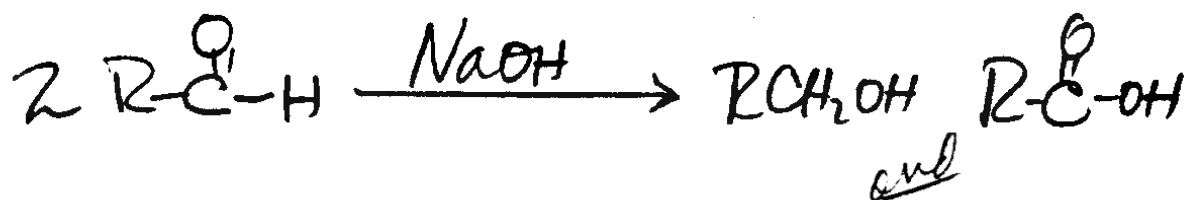
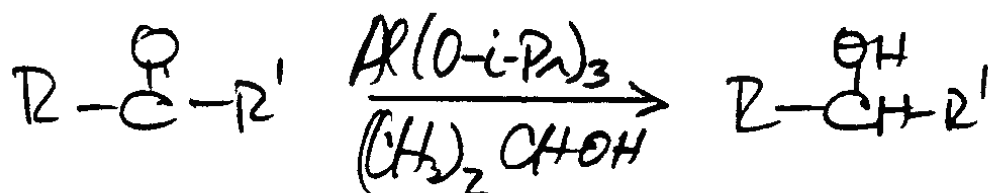
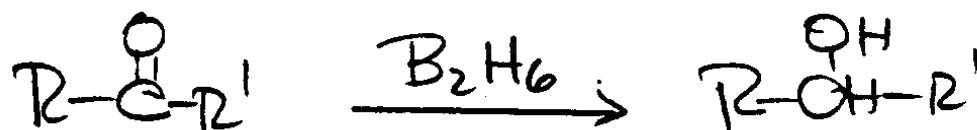
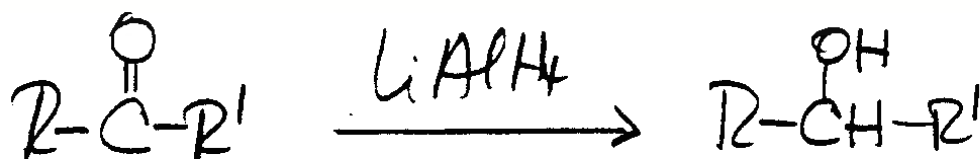


Figure 17.072

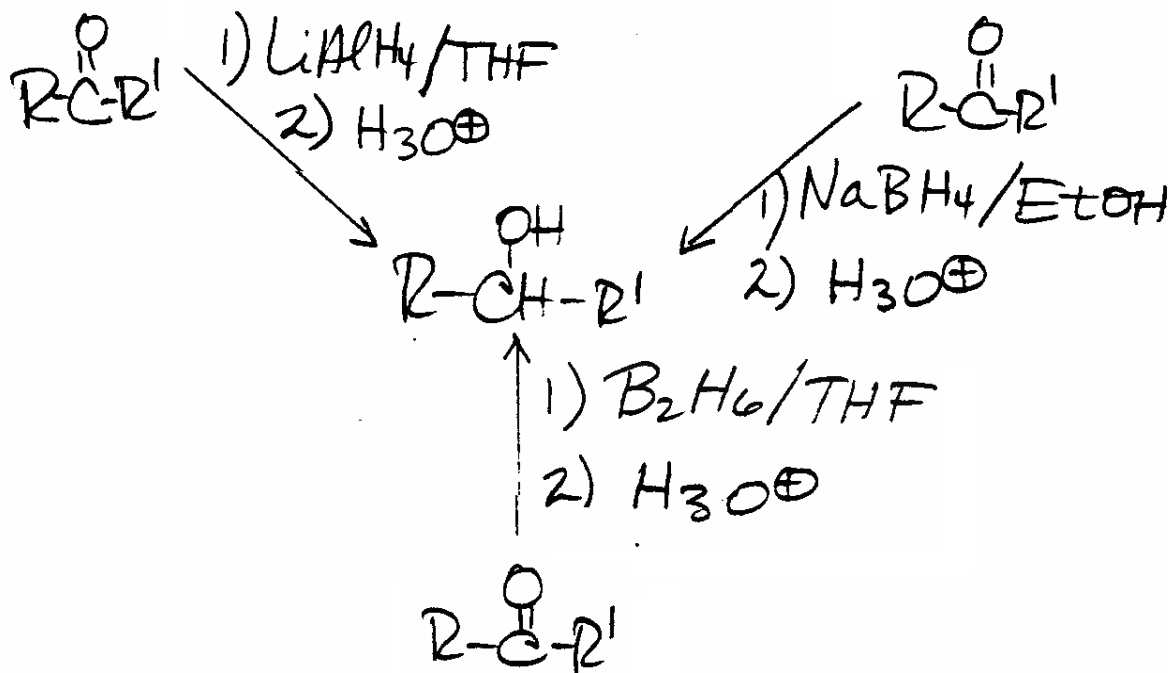


Figure 17.073 $LiAlH_4$ Reacts Violently with Protic Solvents

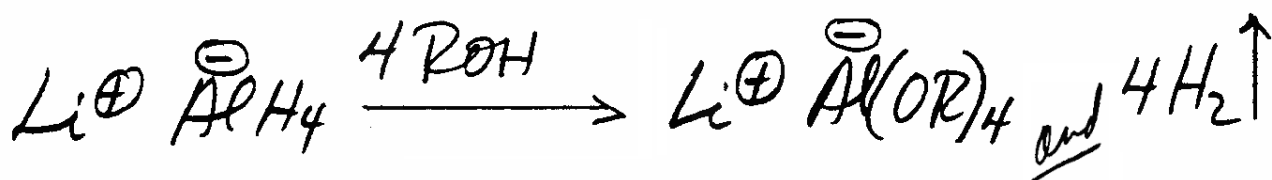


Figure 17.074

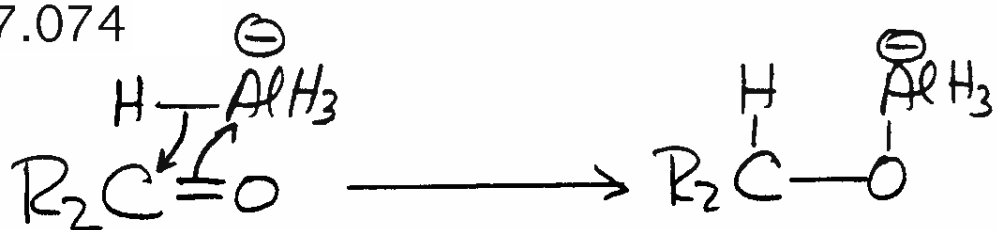


Figure 17.075

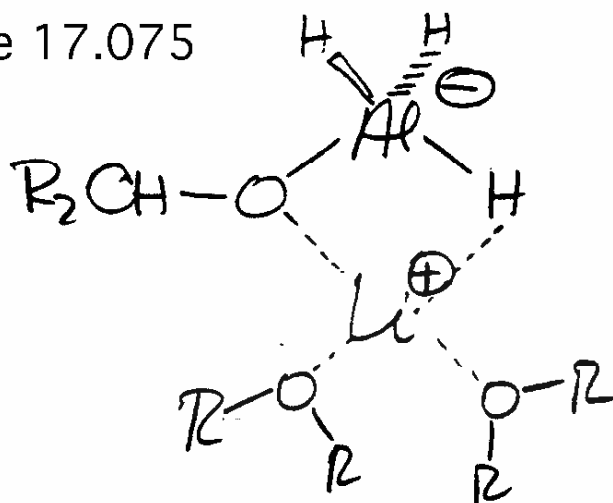


Figure 17.076

$R_2CH-O-AlH_3^-$ Can Serve as
A Hydride Transfer Reagent

$\approx$ As a source of AlH_4^-

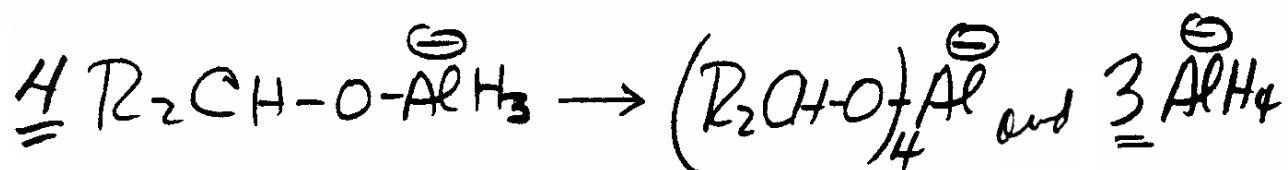


Figure 17.077

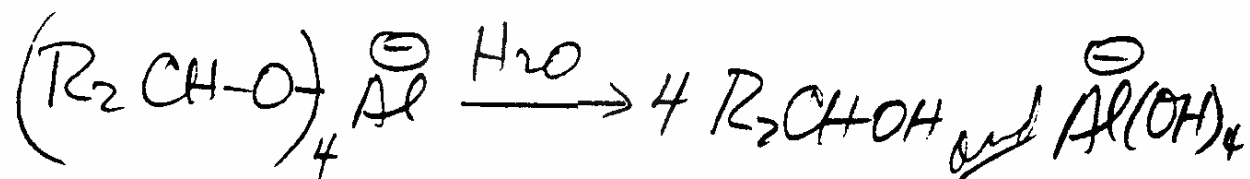


Figure 17.078

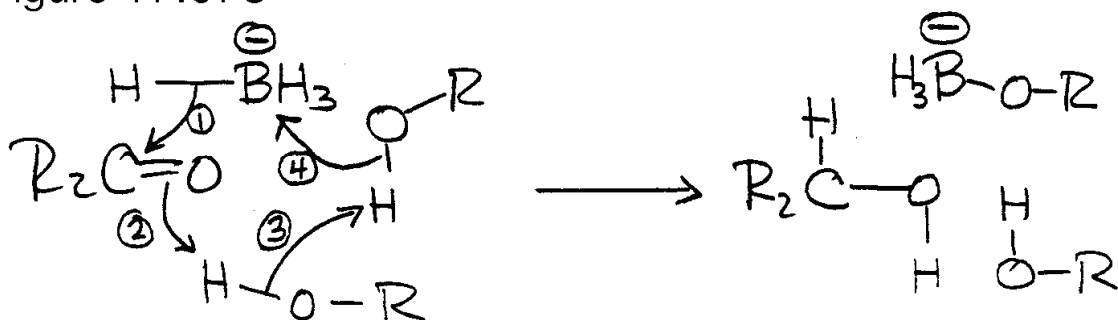
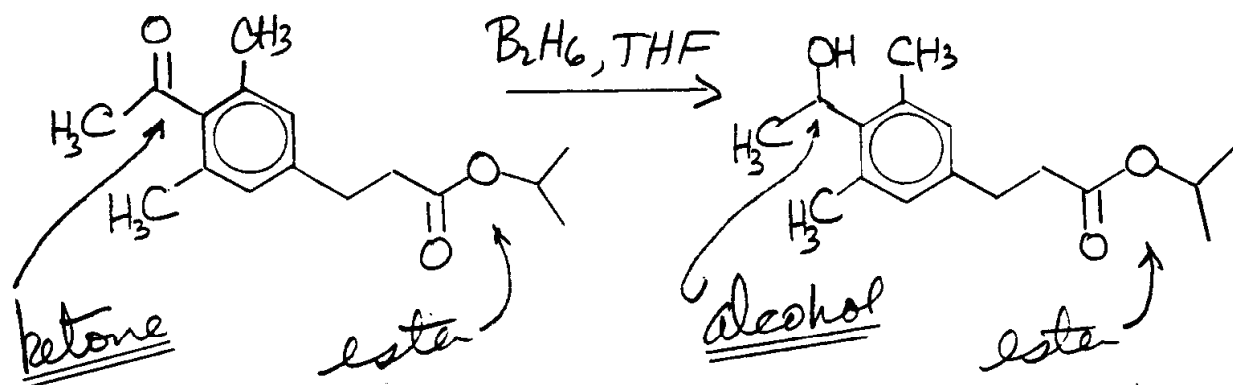


Figure 17.079



From Smith, "Organic Synthesis"
McGraw-Hill, 1994

Figure 17.080

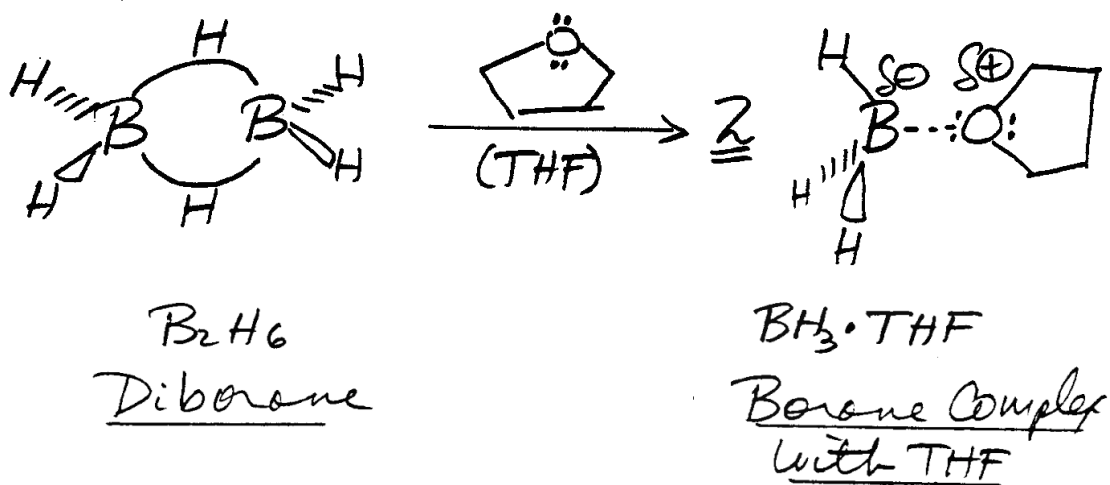


Figure 17.081

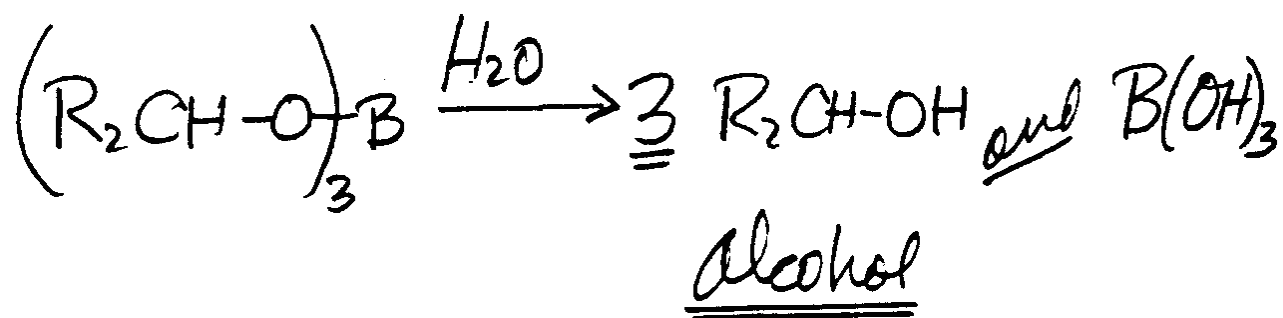
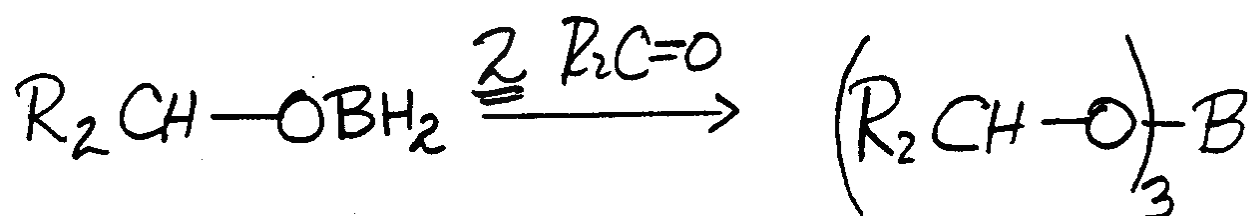
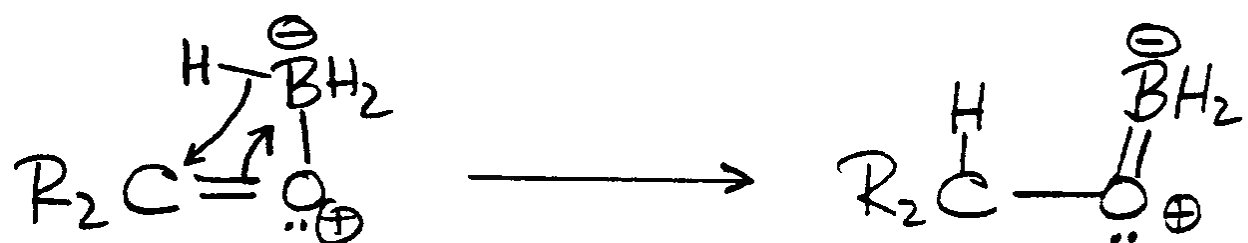
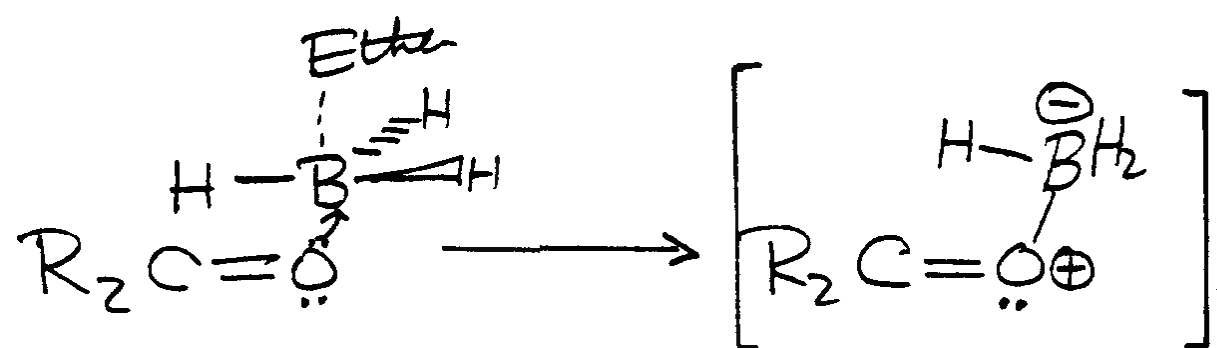
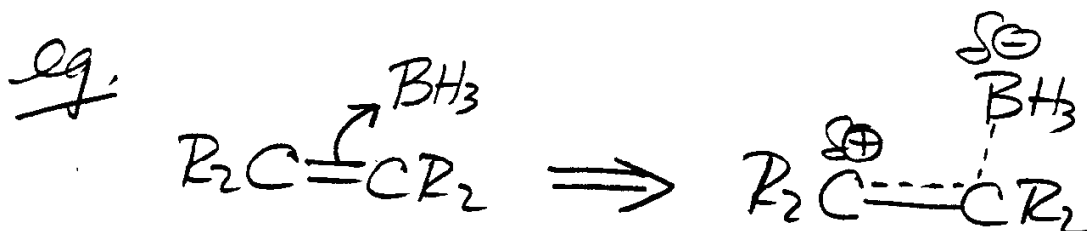


Figure 17.082

Electron Donation from Alkene
is favorable



Electron Donation to Alkenes
is Unfavorable

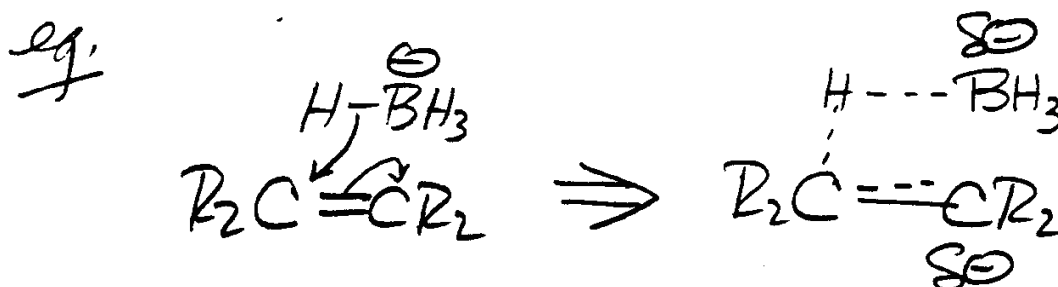
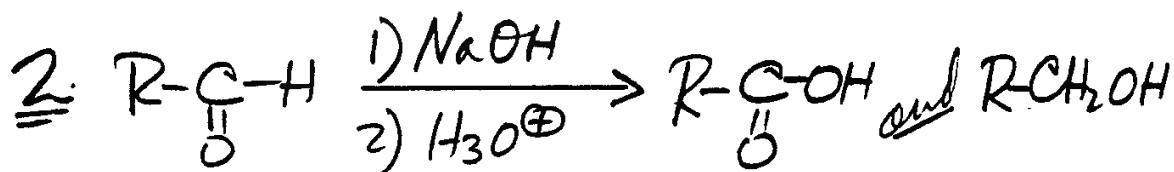


Figure 17.083



Aldehyde
(w/o
α-H's)

Carboxylic
Acid
(Oxidized
Product)

Alcohol
(Reduced
Product)

Figure 17.084

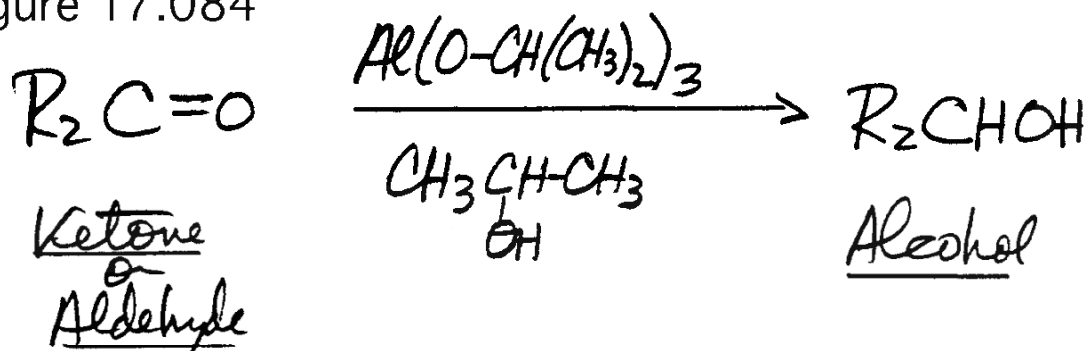


Figure 17.085

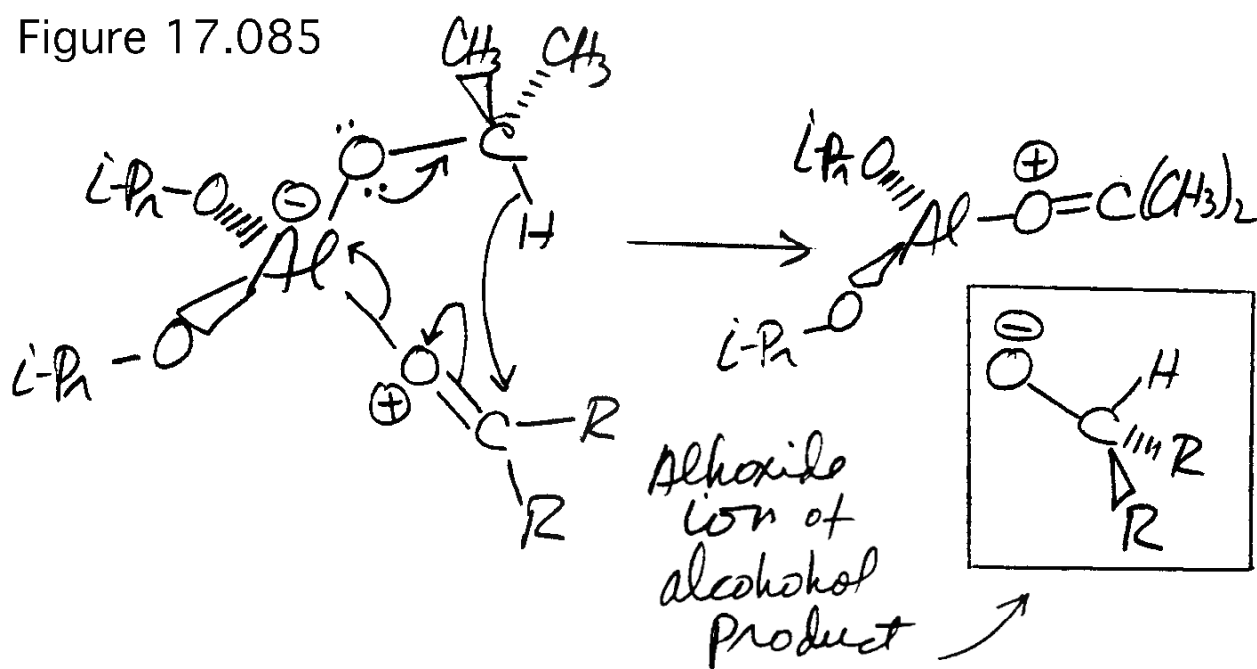


Figure 17.087

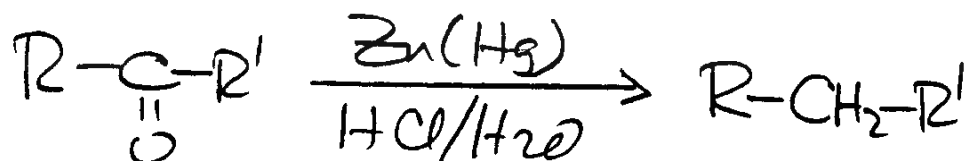


Figure 17.088

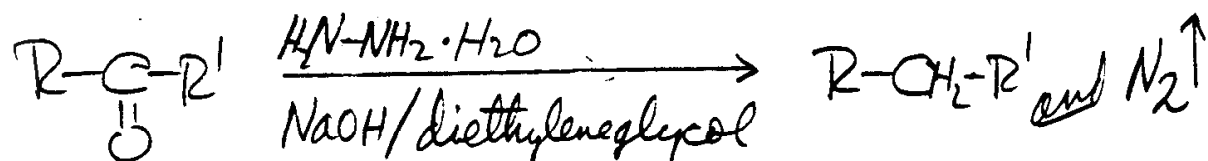


Figure 17.089

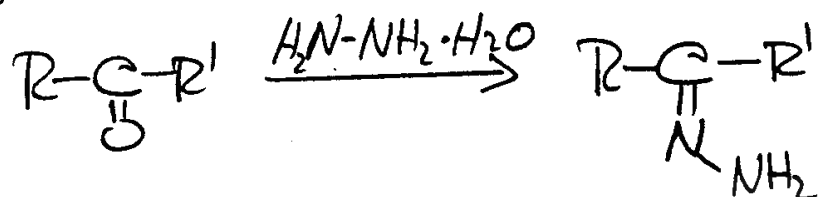


Figure 17.090

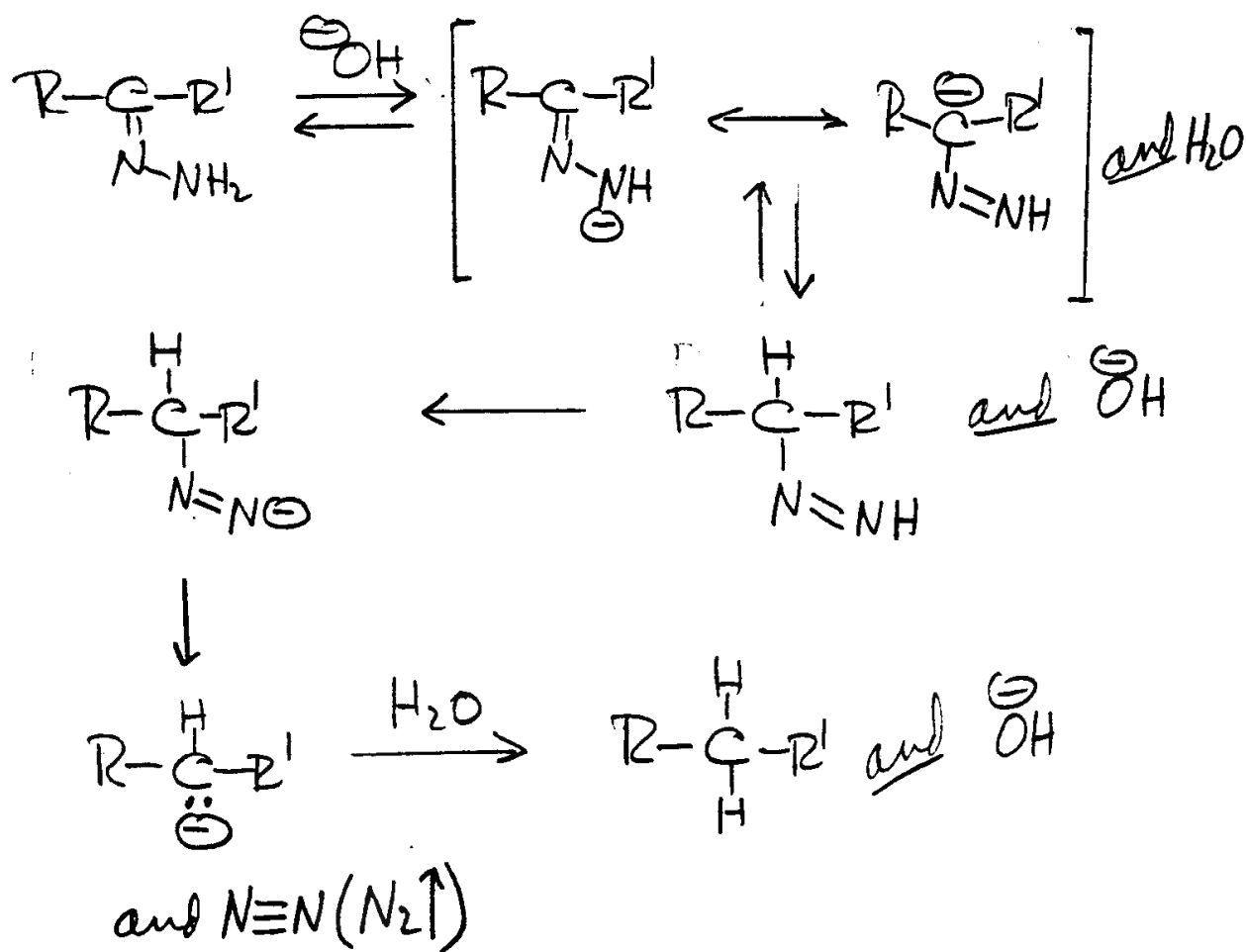
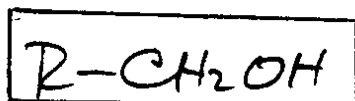
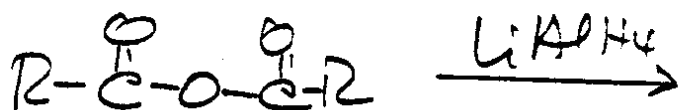
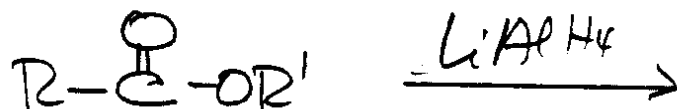
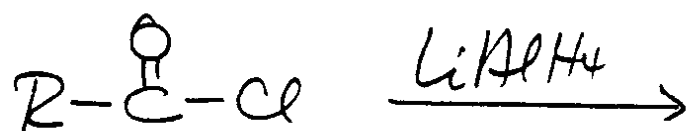
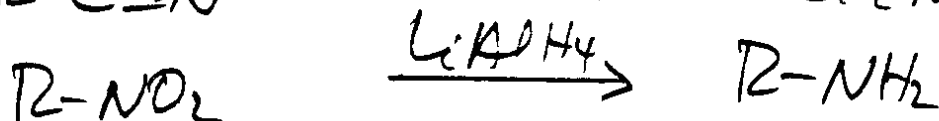
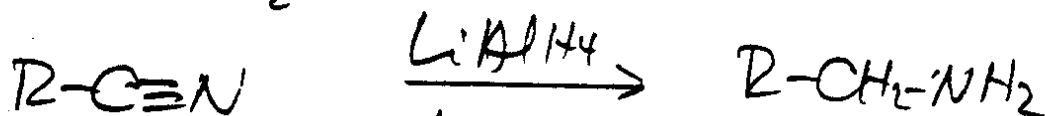
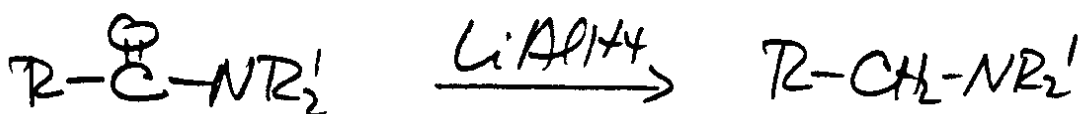


Figure 17.091 Alcohol Formation



Amino Formation



Aldehyde Formation

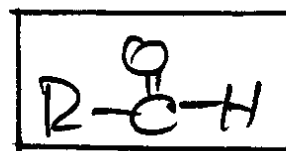


Figure 17.092

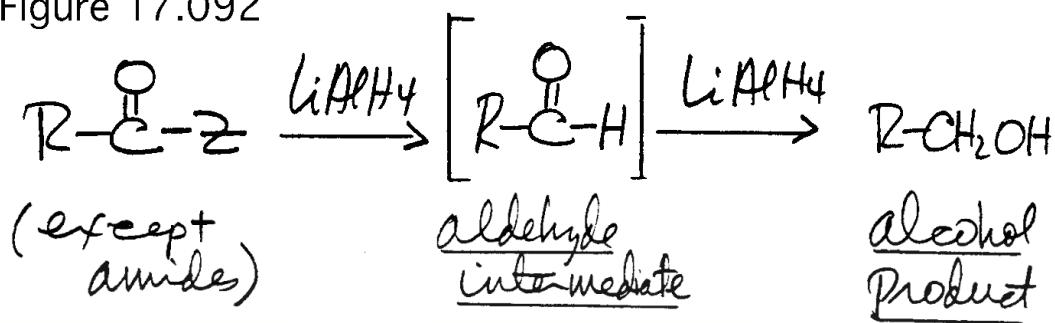


Figure 17.093

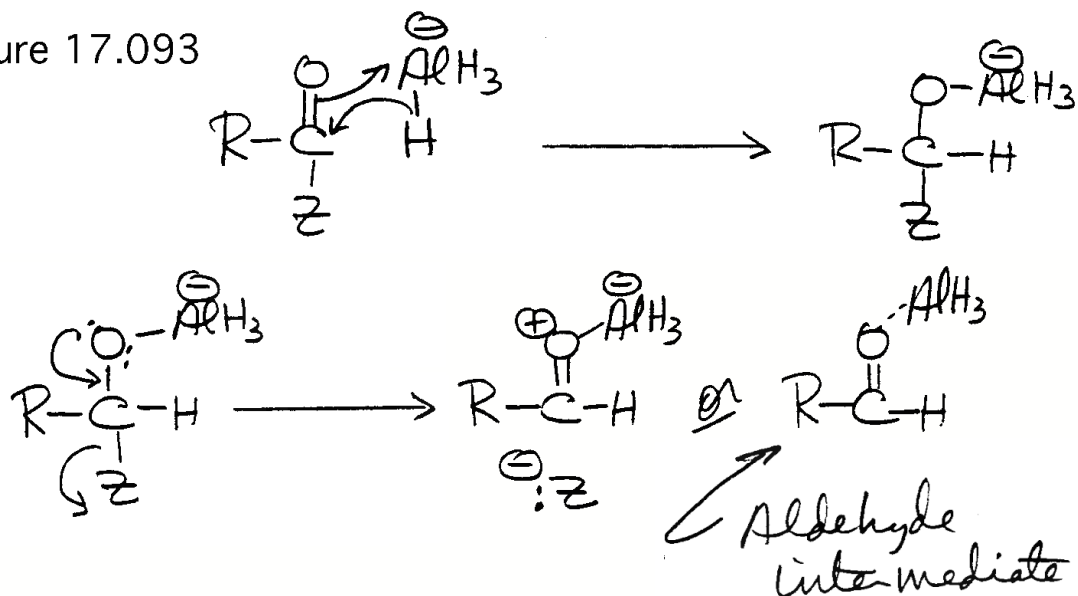


Figure 17.094

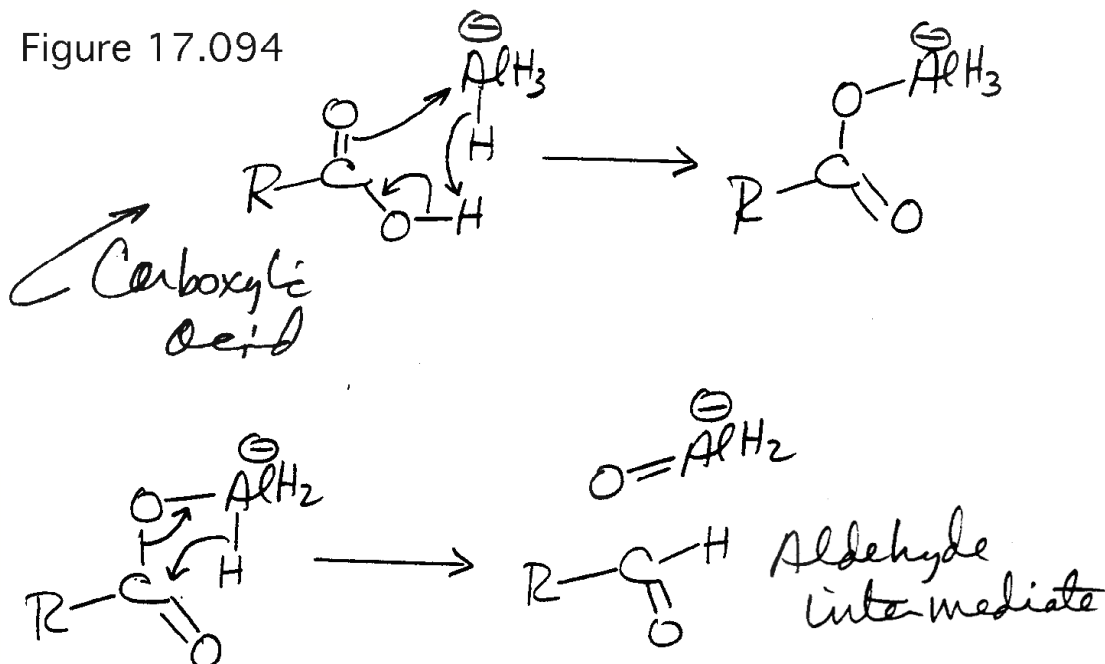


Figure 17.095

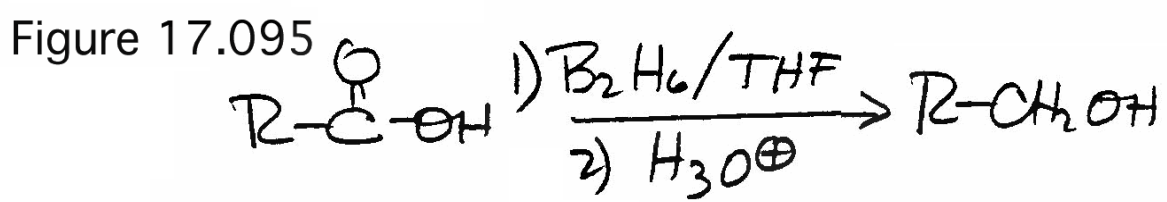


Figure 17.096

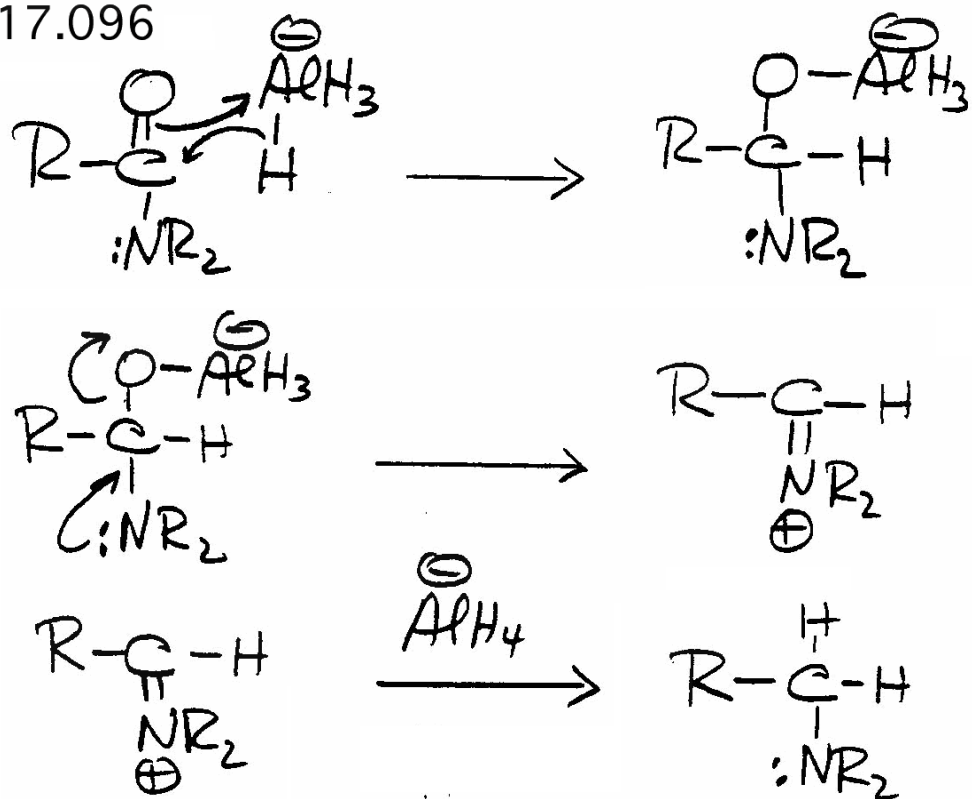


Figure 17.097

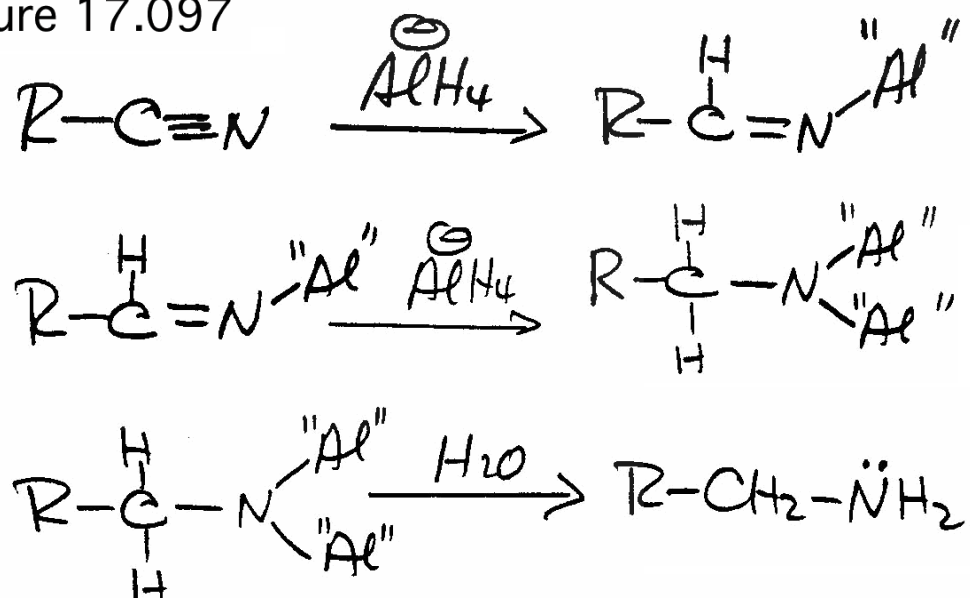


Figure 17.098

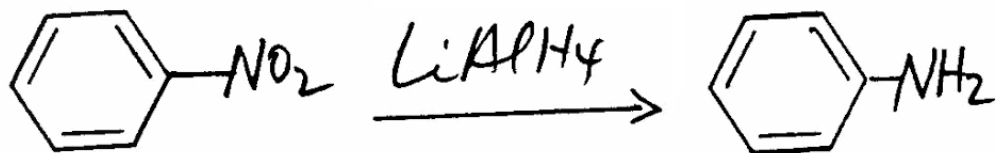


Figure 17.099

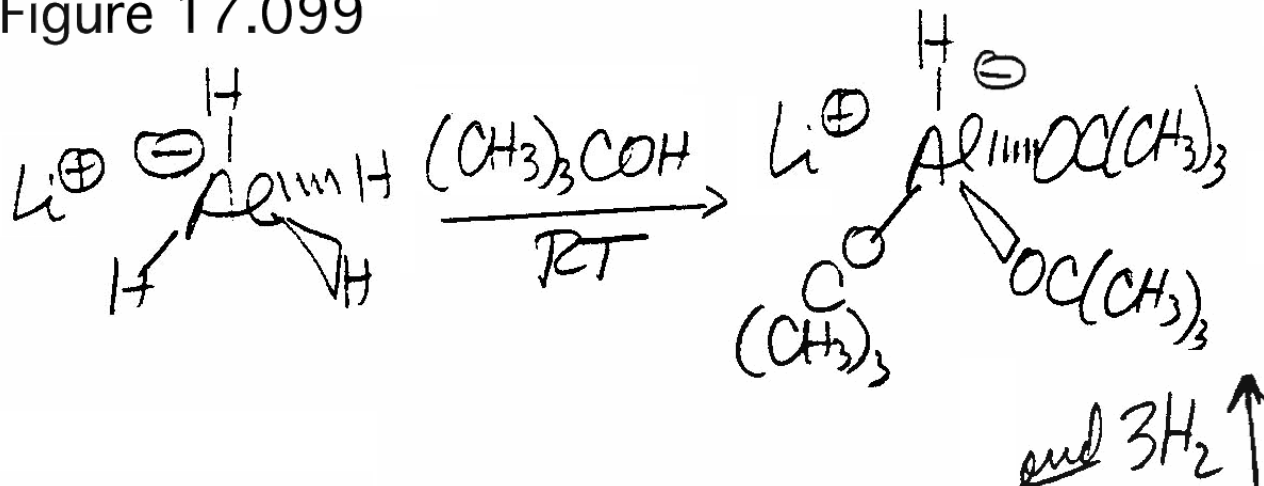


Figure 17.100

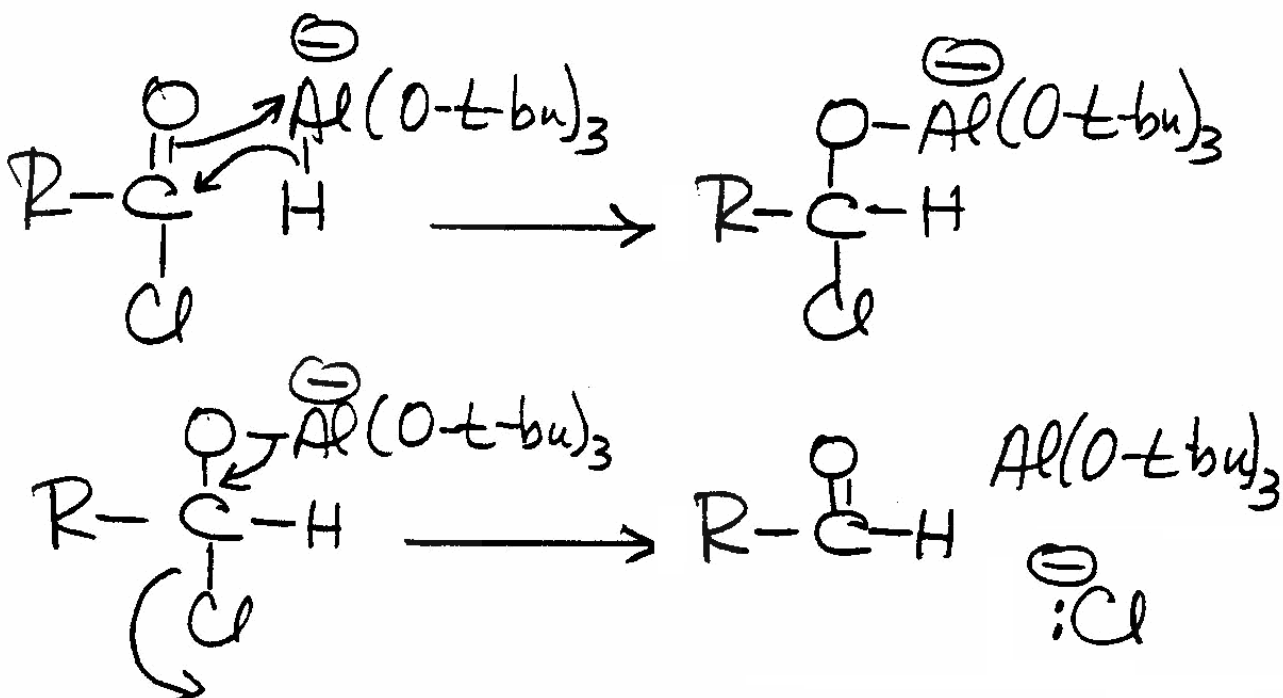


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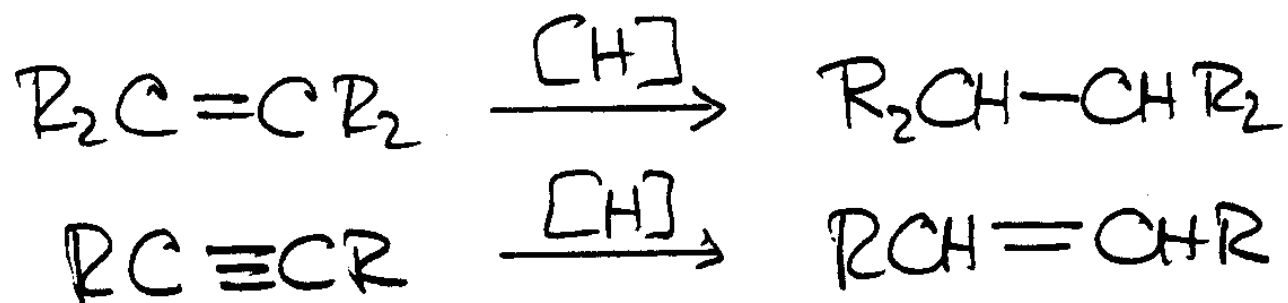


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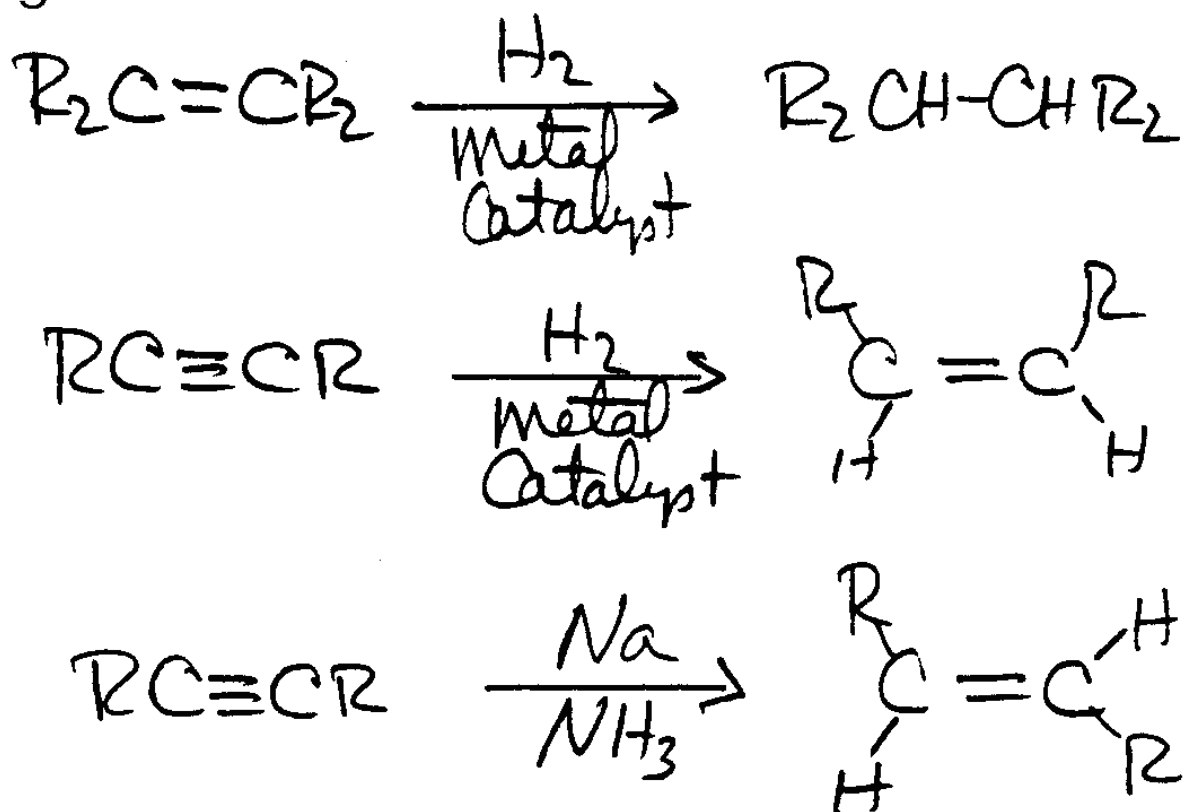


Figure 17.107

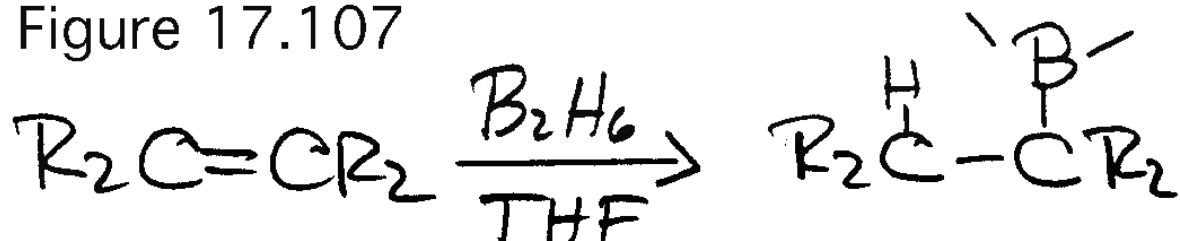


Figure 17.108

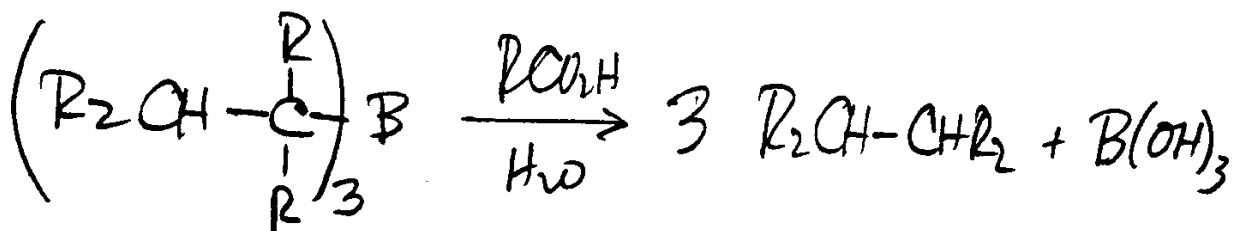


Figure 17.109

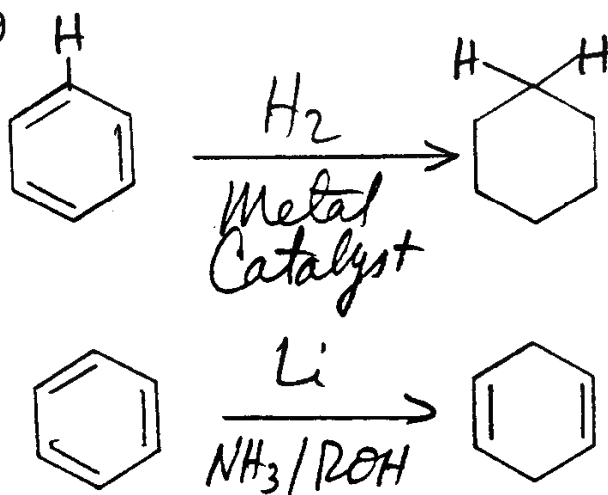


Figure 17.110

