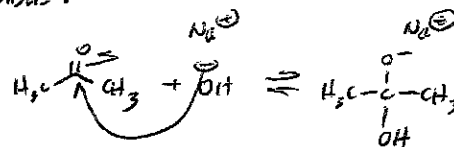


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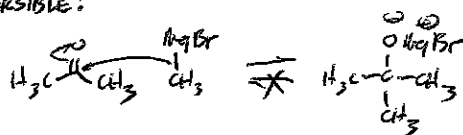
Submit notes to the Undergraduate Chemistry Office for posting.
PLEASE COMPLETE NOTES IN INK AND DO NOT STAPLE.

RECALL! RXNS INVOLVING NUCLEOPHILIC ADDITION OF
 NUCLEOPHILE TO C=O OF ALDEHYDE OR
 KETONE: REVERSIBLE VS. IRREVERSIBLE

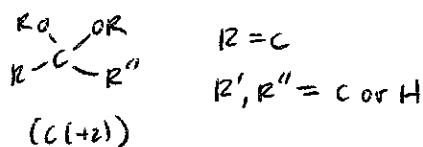
REVERSIBLE:



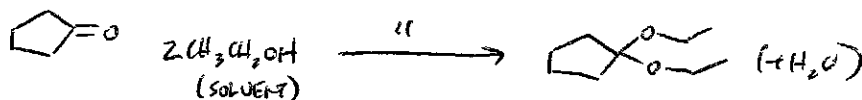
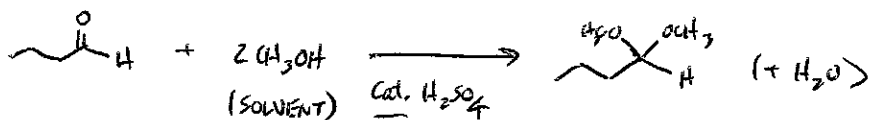
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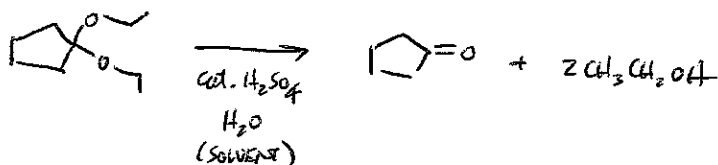
ACETALS ("PROTECTING GROUP")



EXAMPLES:

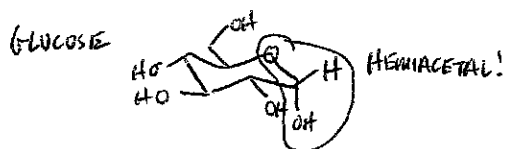


- FORMATION OF ACETALS IS REVERSIBLE. (← GRATEFUL'S PRINCIPLE TO CONTROL RXN PRODUCT.)
- IT IS POSSIBLE TO "HYDROLYSE" ACETALS TO GENERATE THE ALDEHYDE / KETONE



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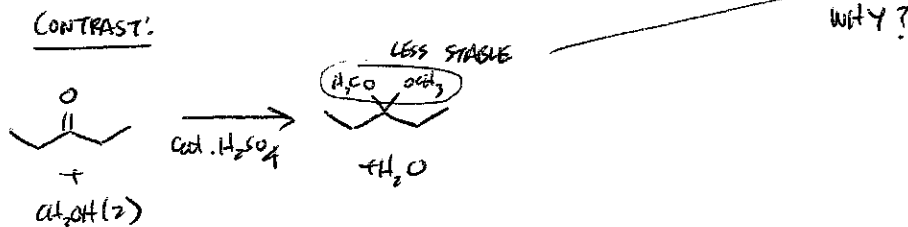
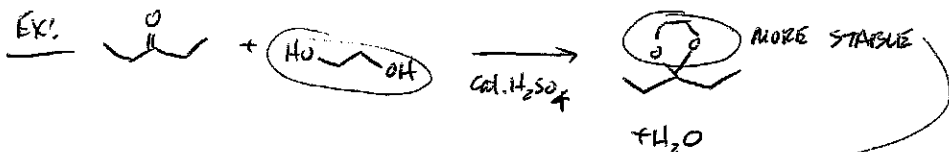
IMPORTANT FOR CARBOHYDRATES:



3) FORMATION OF HEMIACETAL IS EXACTLY ANALOGOUS TO MECHANISM FOR
 AUTO-CATALYZED HYDRATE FORMATION.

PART OF MECHANISM IS "NEW", BUT NOT VERY NEW

4) 1,2- & 1,3-DIOLS FORM ESPECIALLY STABLE ACETALS

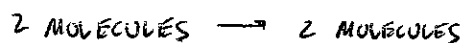


WHY IS CYCLIC ACETAL MORE STABLE? ENTROPY ADVANTAGE

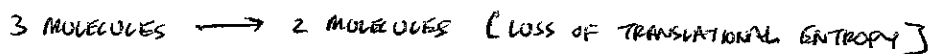
$$\Delta G = \Delta H - T\Delta S$$

(ENTHALPY) (ENTROPY)

FOR CYCLIC ACETAL,



FOR ACYCLIC ACETAL



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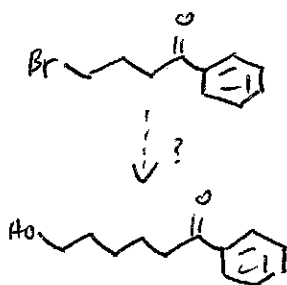
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CONCEPT FOR ORGANIC SYNTHESIS

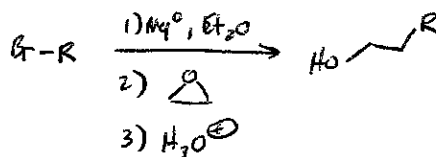
= PROTECTING GROUP (PG)

PG IS A MASKED FORM OF A FUNCTIONAL GROUP THAT
 AVOIDS UNDESIRABLE REACTIVITY

EX:



RECOGNIZE:



PROBLEM: INTERNAL INCOMPATIBILITY



SOLVE THIS PROBLEM BY USING ACETAL AS PG FOR KETONE C=O

THUS,

