

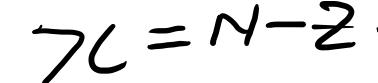
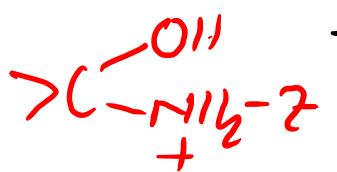
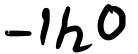
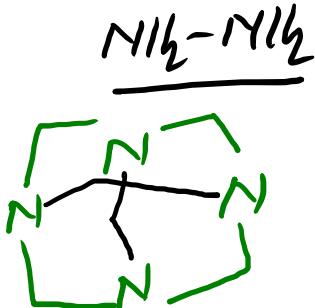
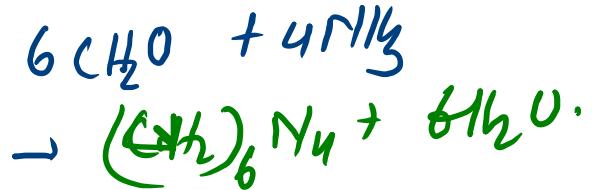
: Reaction with $\text{NiH}-\text{Z}$:



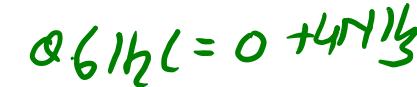
$\frac{\text{Z}}{-\text{H}}$	CPd	PdL	$>\text{C}=\text{NH}$ (Imine)	When 1° amine RNH_2 reacts with aliphatic/aromatic aldehyde
$-\text{R}$	RNH_2		$>\text{C}=\text{N-R}$ (Schiff's base)	NiH-OH : Hydroxy Lamine.
$-\text{OH}$	NiH-OH		$>\text{C}(\text{=N-OH})$ (oxime)	NiH-NiH : Hydrazine.
$-\text{NH}_2$	NiH-NiH		$>\text{C}(\text{=N-NH}_2)$ (Hydrazone)	
$-\text{NH}-\langle \cdot \rangle$	NiH-NHPh		$>\text{C}(\text{=N-NH-Ph})$: (Phenyl Hydrazone)	
$-\text{NH}-\text{C}_6\text{H}_3(\text{NO}_2)_2$	$2,4,\text{D. N. P}$	(Brady's reagent)	yellow, orange, red color pdt. This reaction is used to identify RCHO / R-CG-R	
$-\text{NH}-\text{C}_6\text{H}_3(\text{NO}_2)_2$	$\frac{1}{\text{H}_2}, \frac{2}{\text{H}_2\text{N}}, \frac{3}{\text{H}_2\text{O}}$	$\text{NiH}-\text{NH}-\text{C}_6\text{H}_3(\text{NO}_2)_2-\text{NH}_2$	$>\text{C}(\text{=N-NH-C}_6\text{H}_3(\text{NO}_2)_2-\text{NH}_2)$	(Semicarb azide. (N ⁺ is the donor atom; localized lone pair))



(nucleophilic addition)
NAR



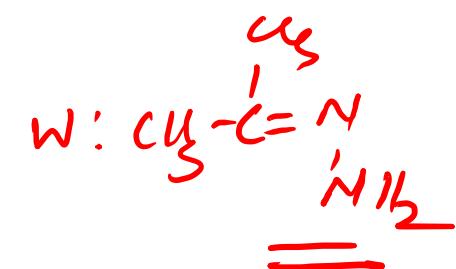
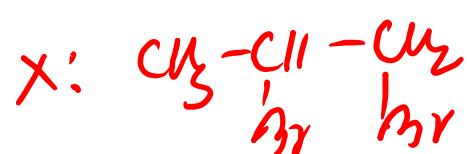
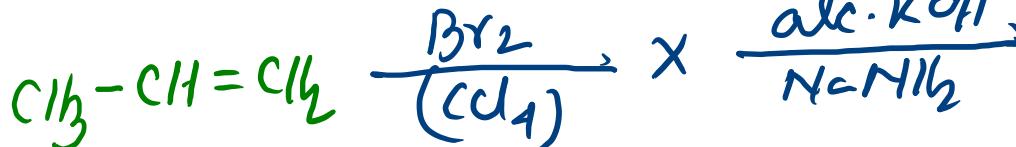
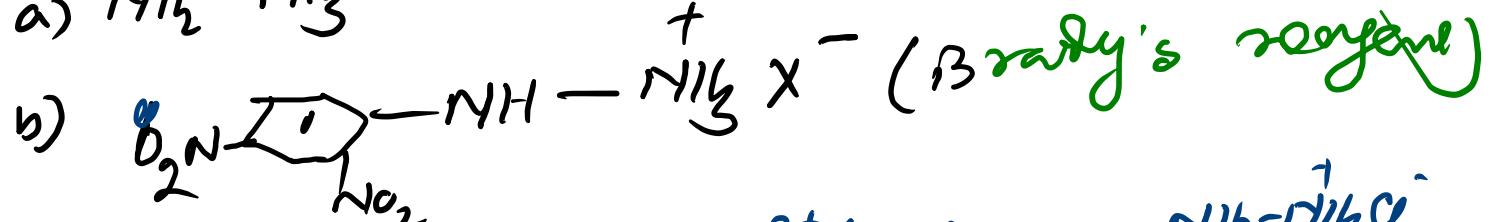
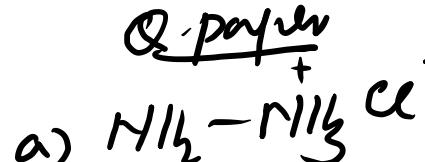
$$\text{pH} = \frac{4.5 - 5.5}{\text{mild acidic medium}}$$

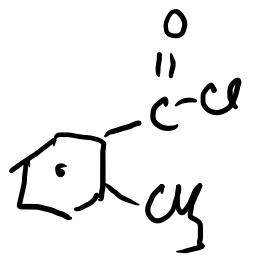


most reactive
carboxyl.

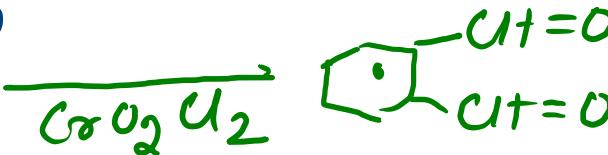
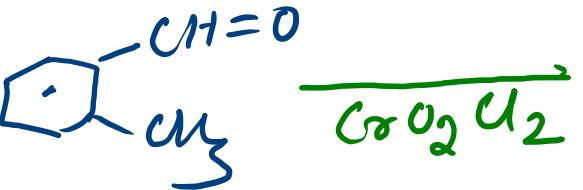
when it reacts with NH_3 ,
wrotopin is formed which

is used as antiseptic in urinary tract.



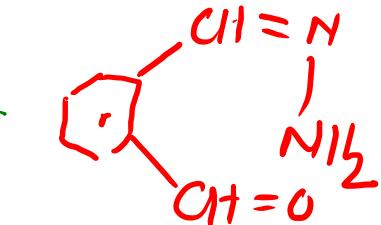


DIBALH
 $-78^{\circ}\text{C}.$

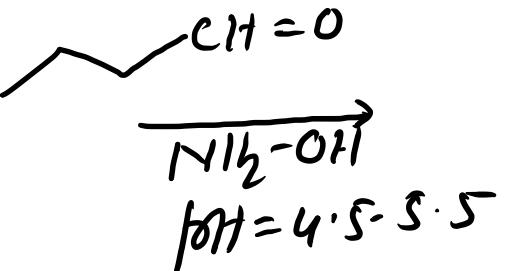


NI_2-NI_2

Phthalaldehyde.



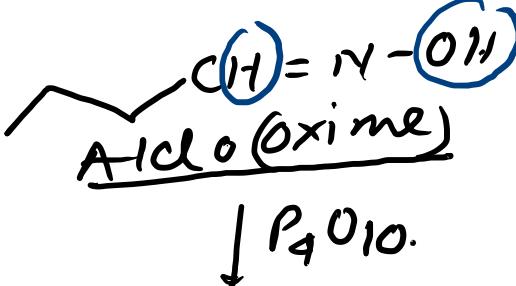
PCC



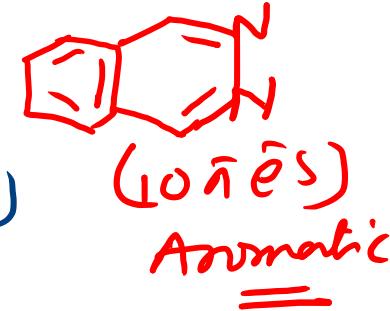
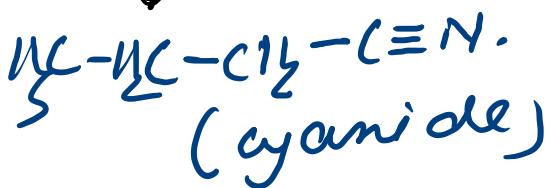
$\text{CH}=0$

NI_2-OH

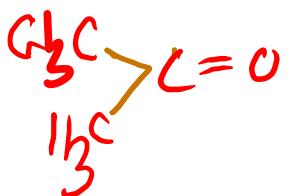
$\text{IUPAC} = \text{4-} \text{S}-\text{S}-\text{S}$



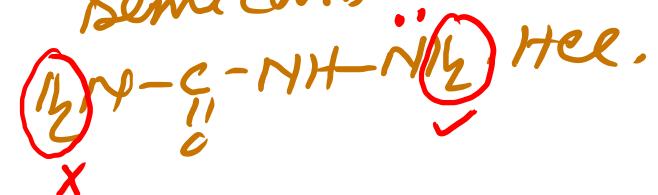
$\downarrow \text{P}_2\text{O}_{10}$



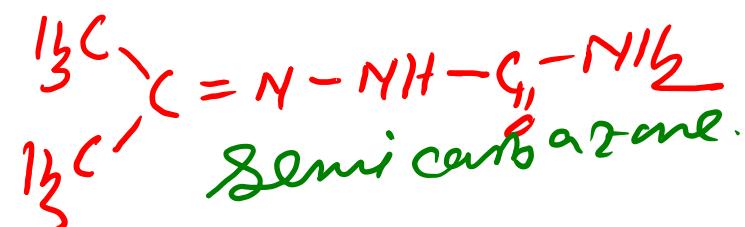
$\alpha \times (\text{C}_3\text{H}_6\text{O})$
+ve iodoform test
but -ve fehling test



Semicarbazide



HCl.

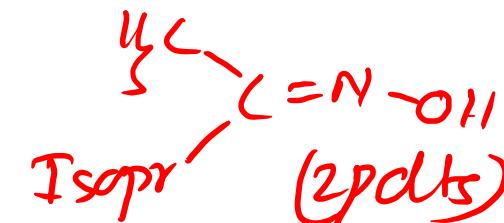
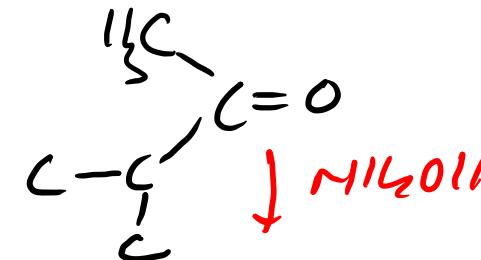
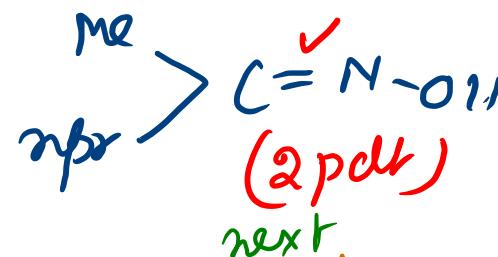
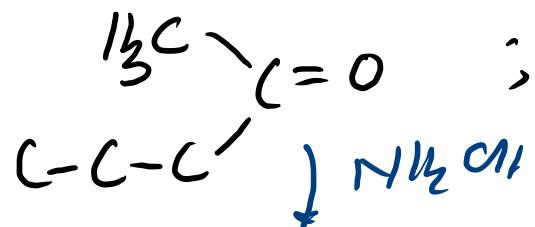
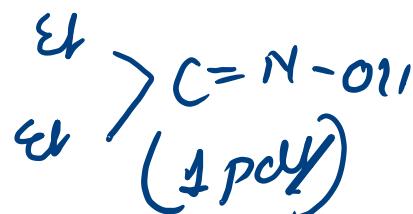
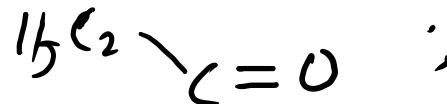


Aliphatic ketone (M.wt 86) reacts with NH_2OH .
How many oximes can be formed?

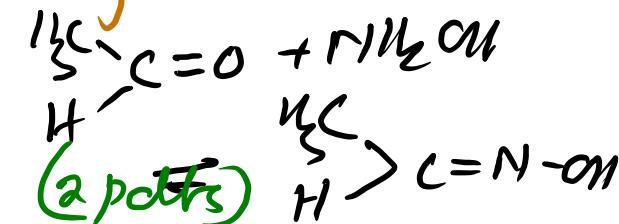


$$\underline{R + R' = 58}$$

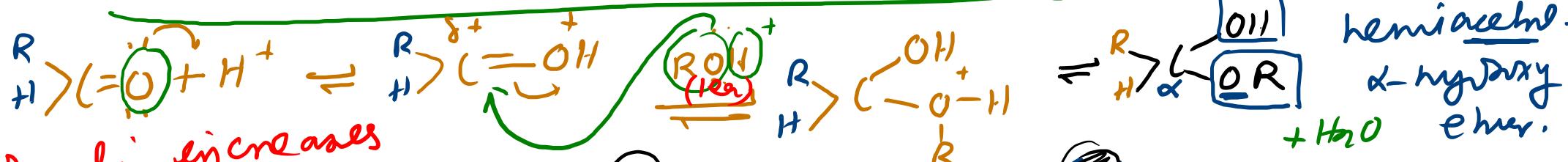
Total oximes = 5.



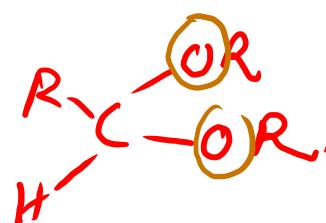
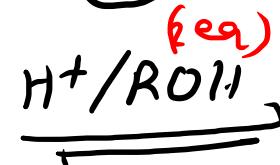
Q. Smallest aldehyde & its higher homologues when reacts with NH_2OH , how many oximes are formed.



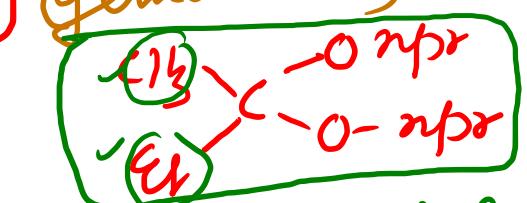
Reacn with ROH : Protection of carbonyl cpd:



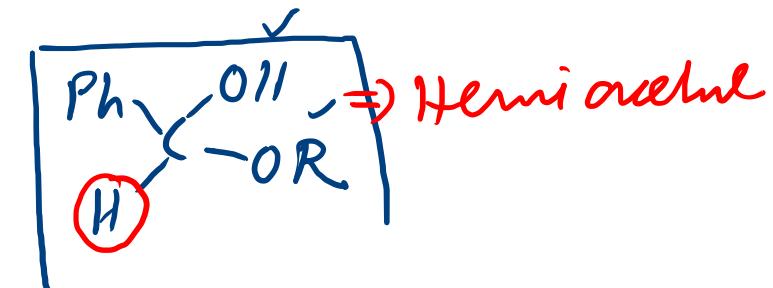
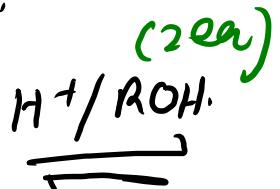
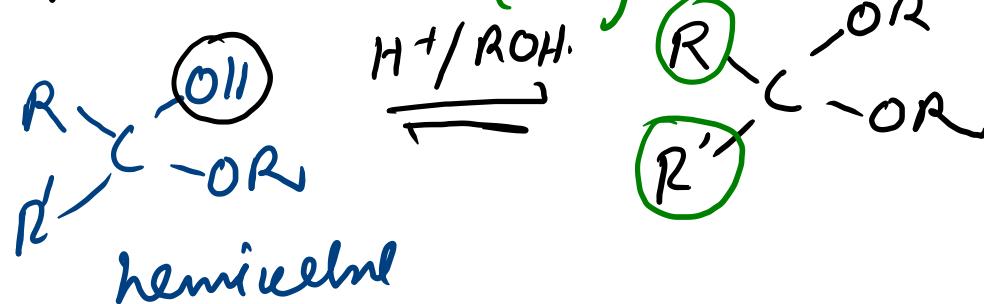
Protonation increases
electrophilic character.



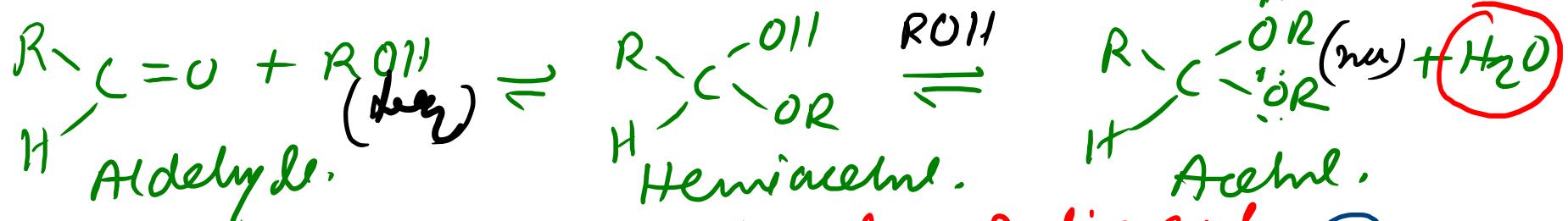
(Acetyl) (gemischter)



(reine) (gemischter Ketal)



(I)



Acetone +
water
is stable
at

alkaline
medium

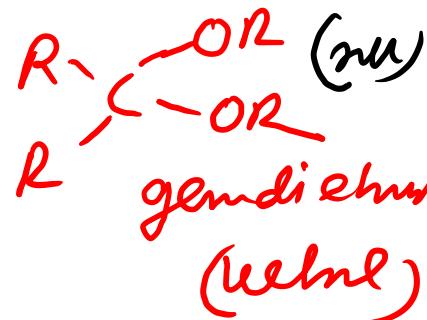
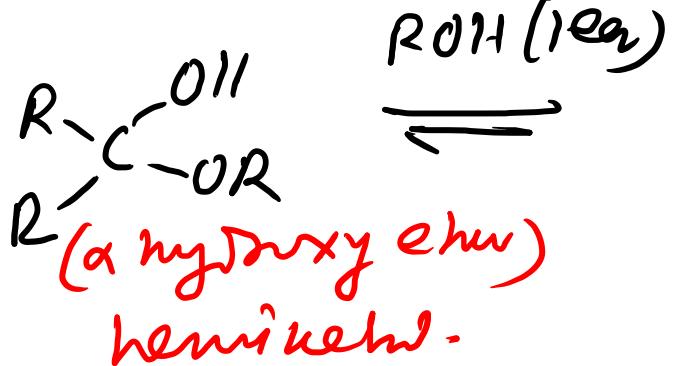
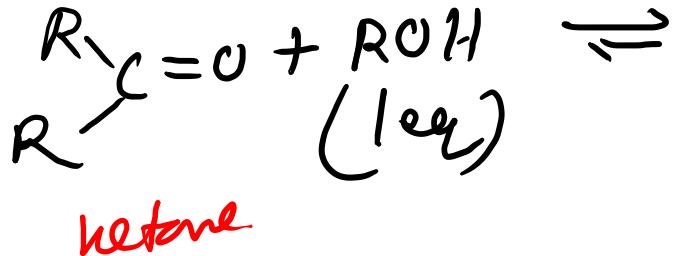
Acidic
medium

it is again
(II)

conjugate

with
aldehyde

to
ketone

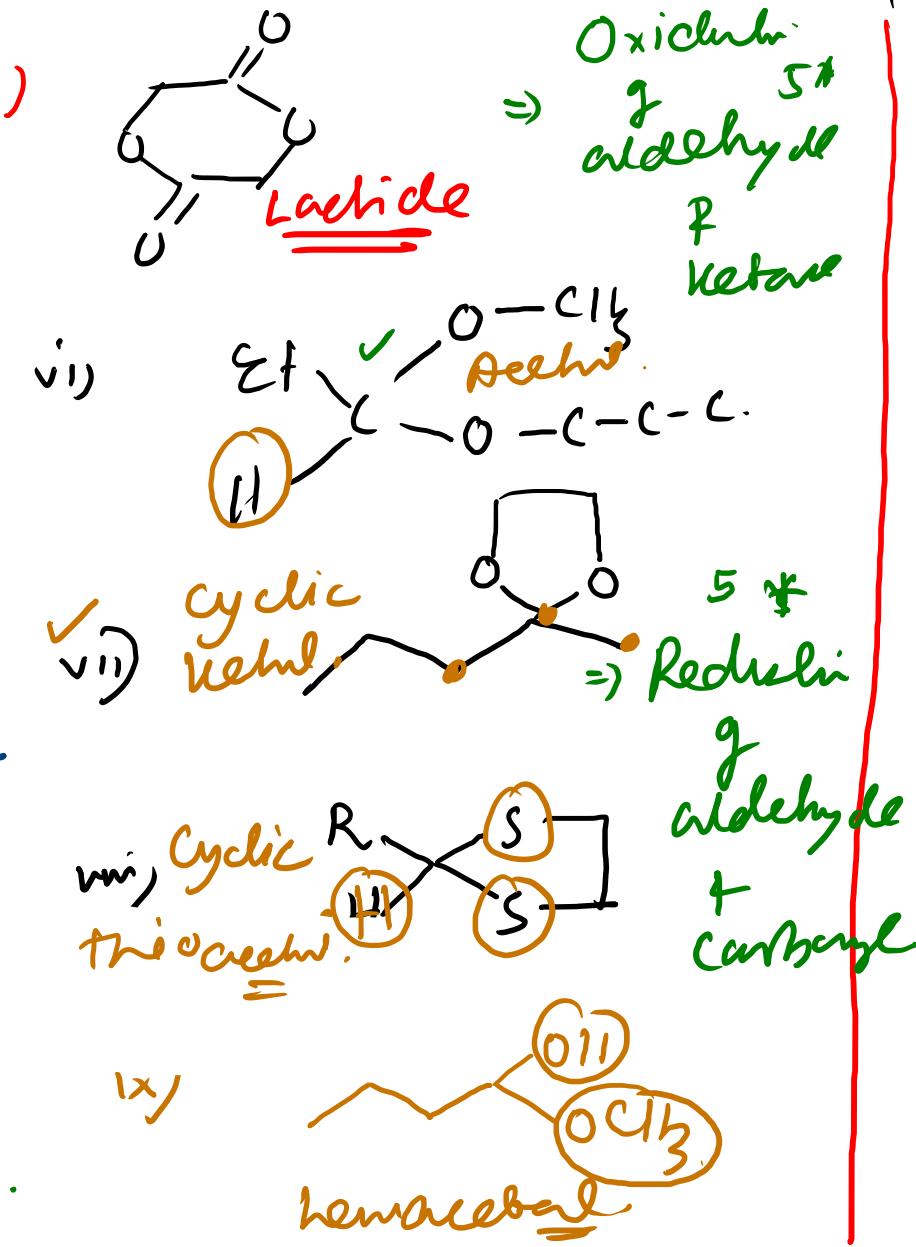
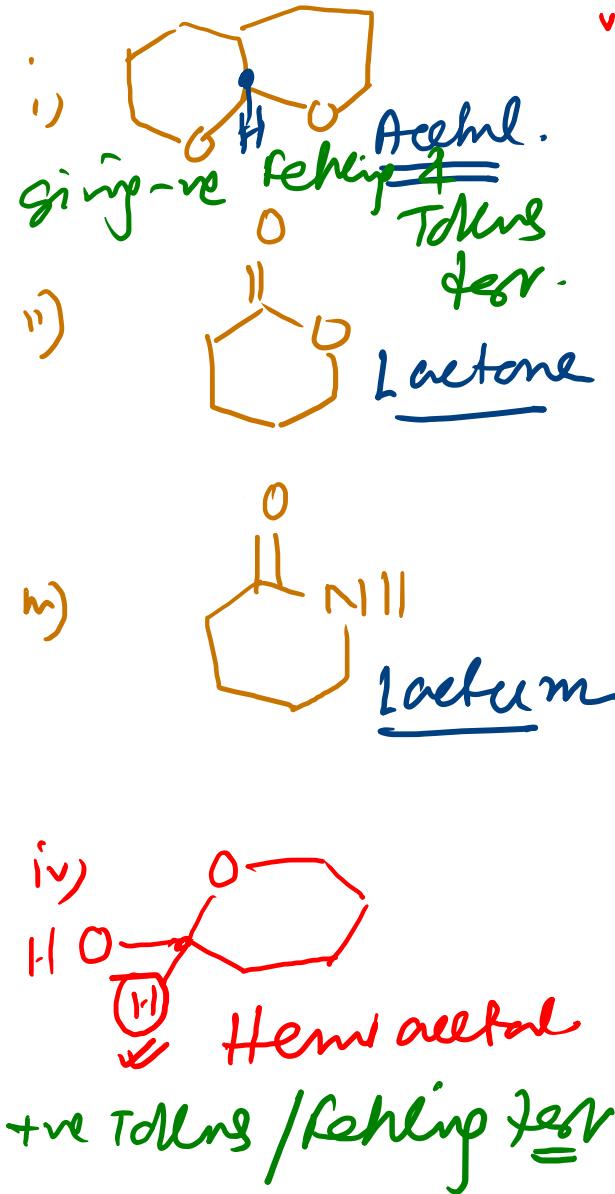


forward reaction: dry HCl / H^+

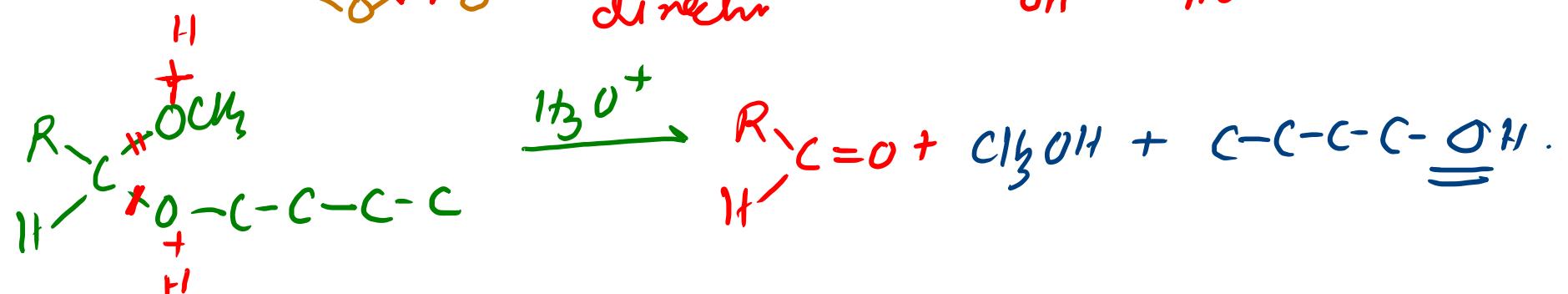
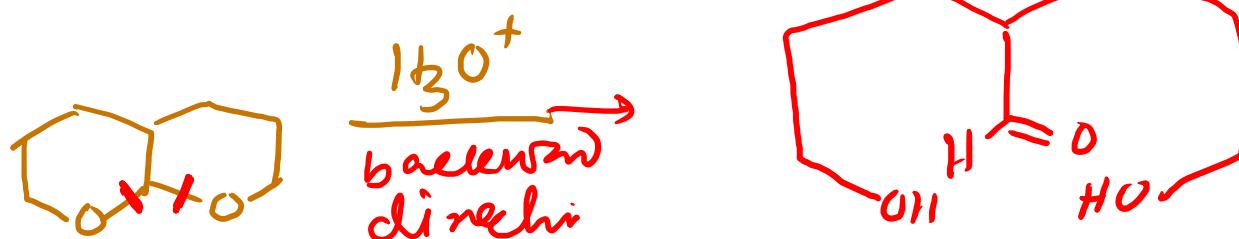
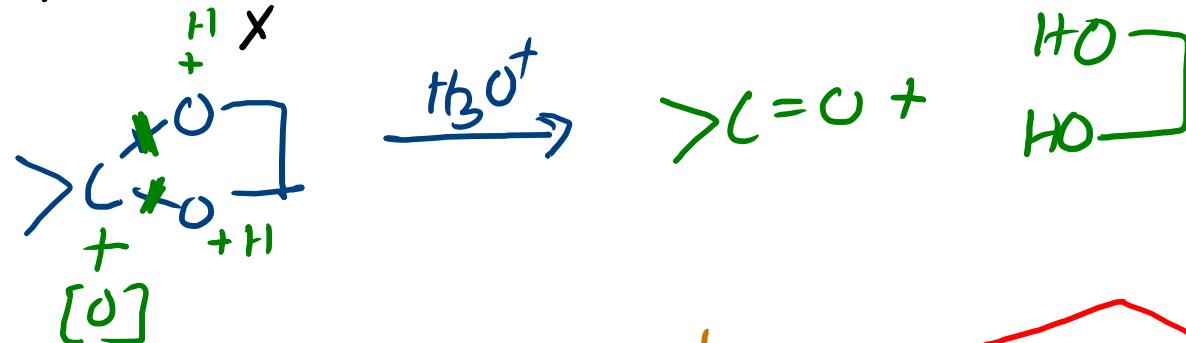
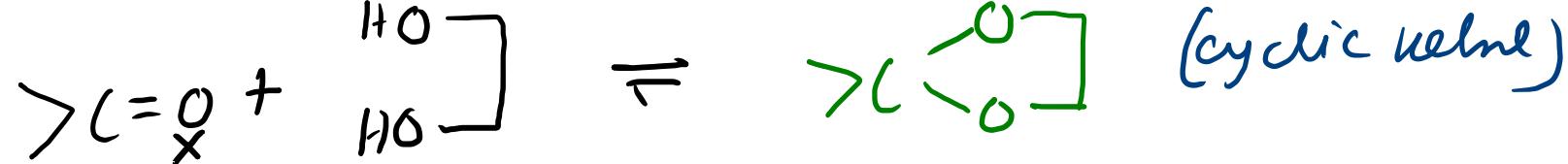
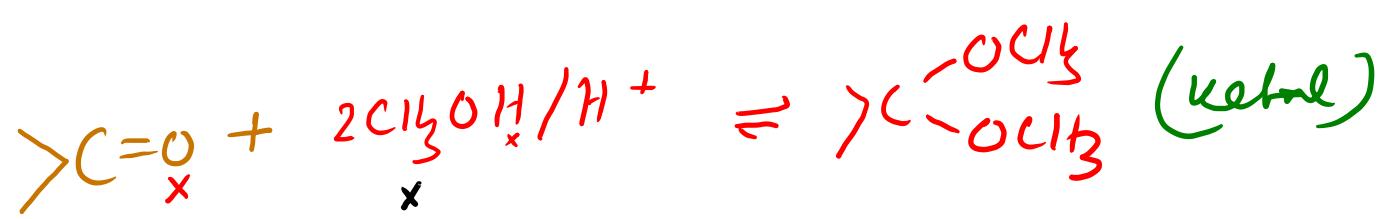
backward reaction: dilute acid H_3O^+

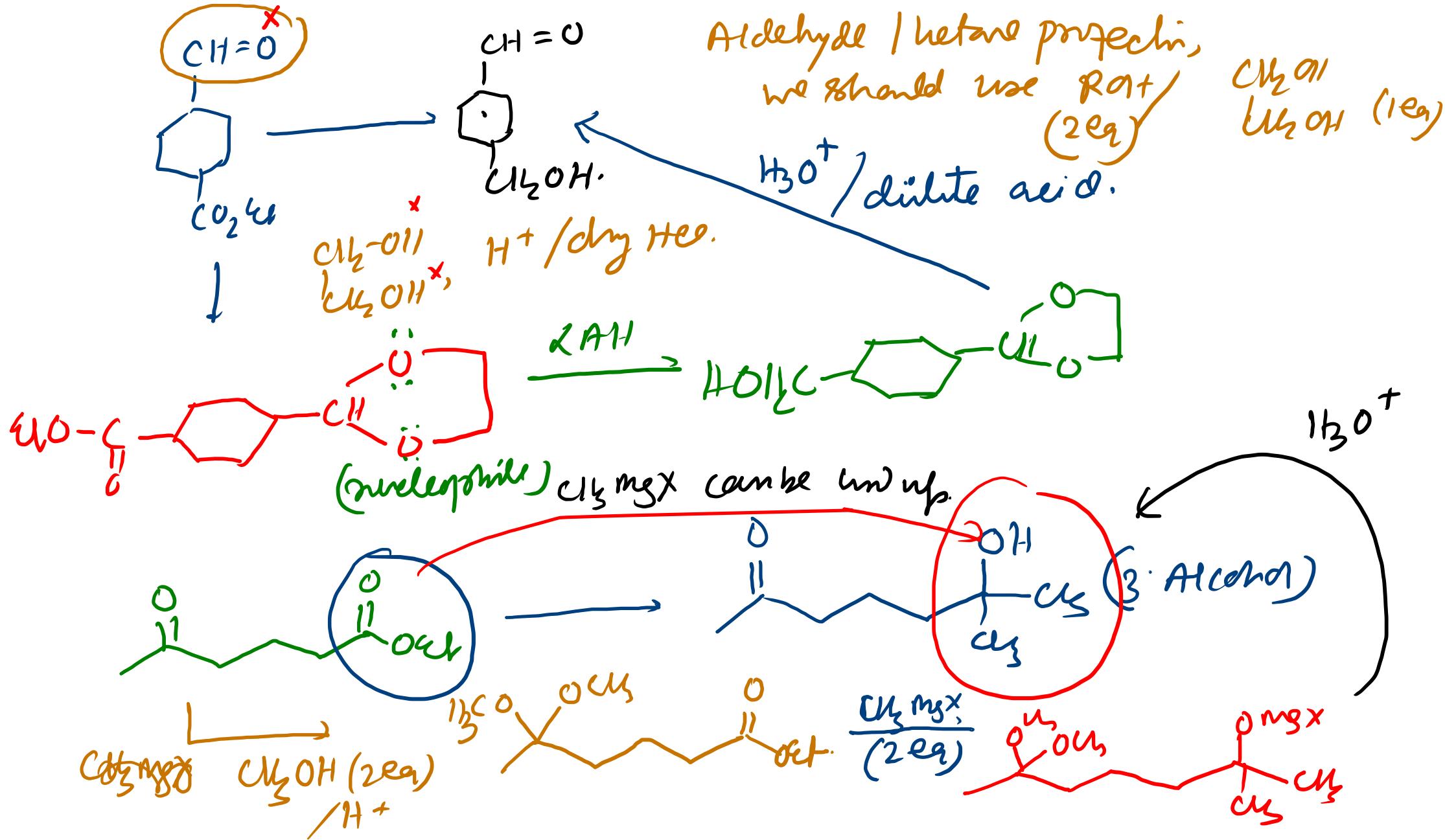
In H^+ / dry HCl, eqn^m is shifted to forward di reacn.
 In H_3O^+ / dil. HCl, eqn^m is shifted to
 backward reaction.
 (Acetone \downarrow
 forward)

(Acetone & alcohol is regenerated)



<u>For Mains:</u>	[Carboxyl Aldol. 5* compounds].
Cannizaro	5*
Perekin	3*
Claisen	3*
Iodoform	5*
HCN	4*
NaHSO_3	4*
H_2O_2	4*
ROH	5*
N_2H_4	5*
ΔAH	5*
SBH	5*
RMgX	5*
Polymer of carbonyl	3*





3*

: Polymers of Acetaldehyde:



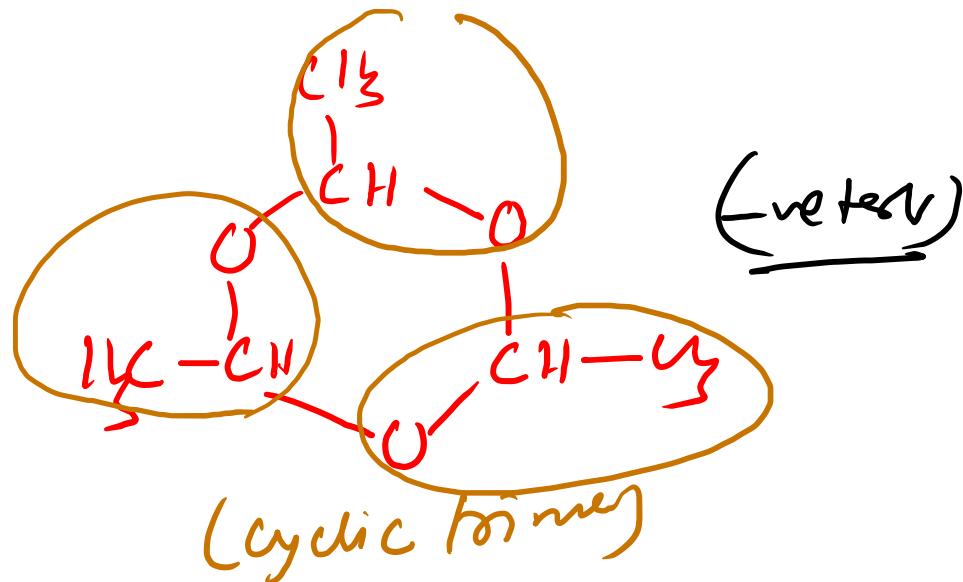
Tetramer.

(Paraldehyde)

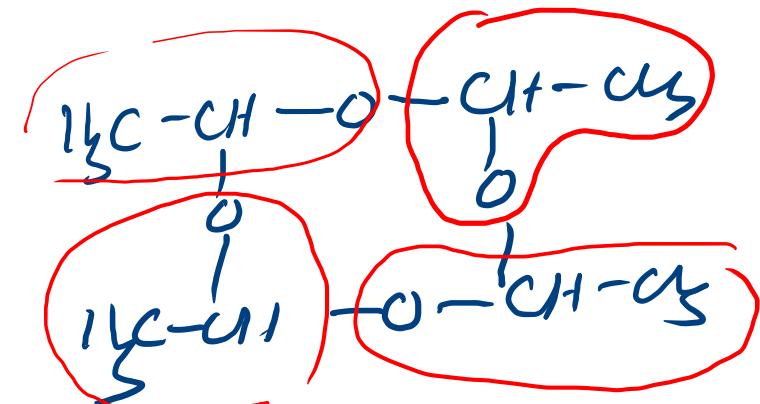
Boiling -ve Tollens) Fehling test.



Trimer. (Methyl aldehyde)



(ether)



tetramer.

(Paraldehyde).

no free $-CH=O$ present.

cyclic ether. (stable; nū)

stable at alkaline medium

Oxidation

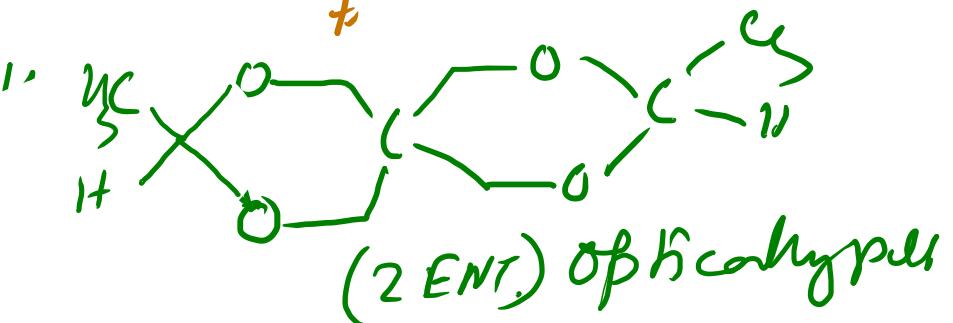
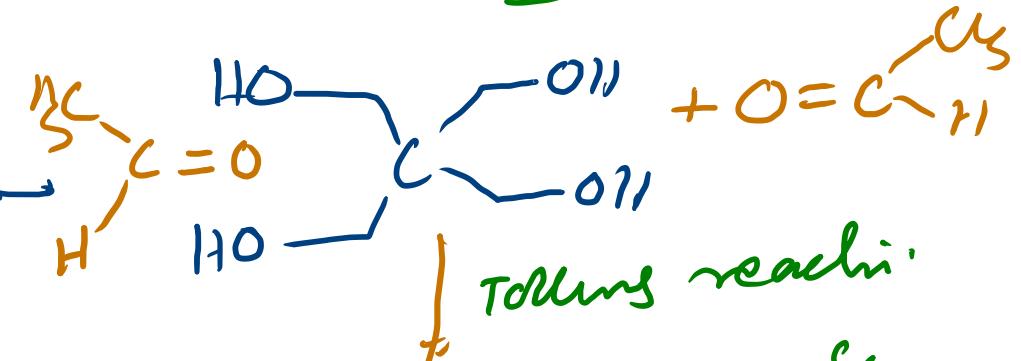
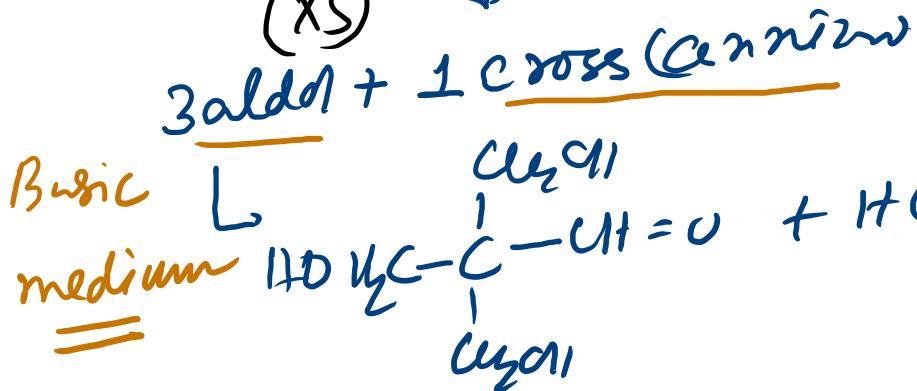
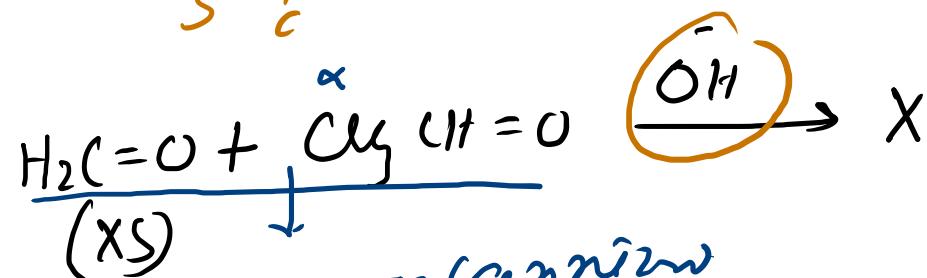
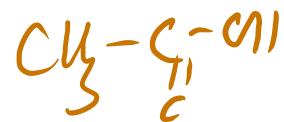
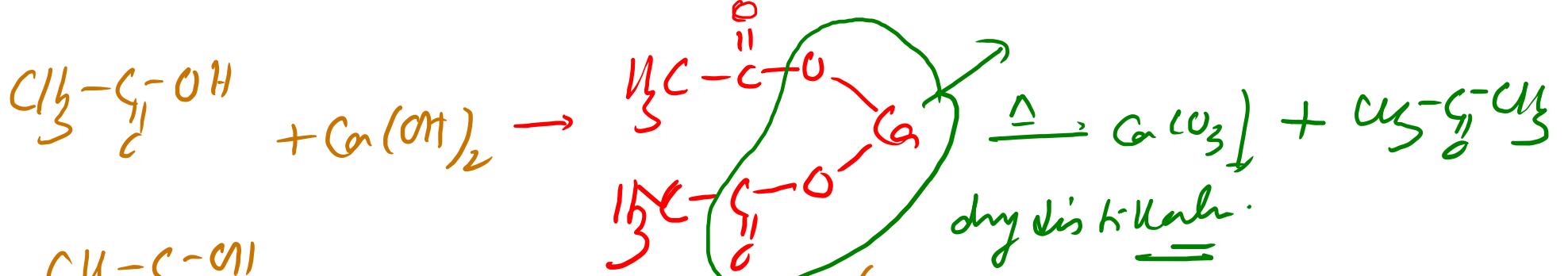
" " "

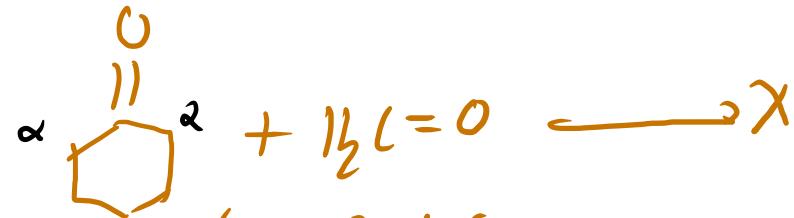
dry distillation to prepare aldehyde & ketone

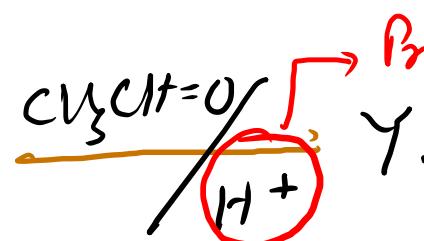
? 5* no free $-CH=O$ present

4*

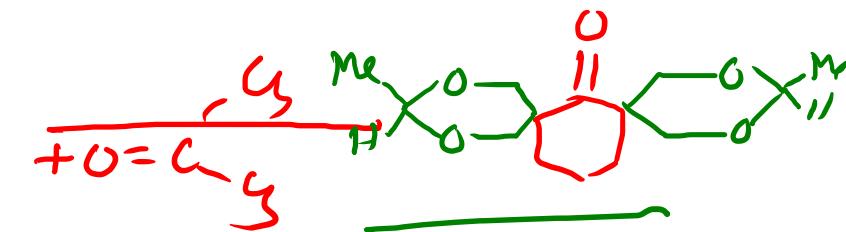
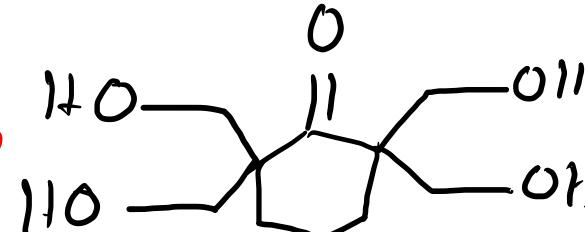
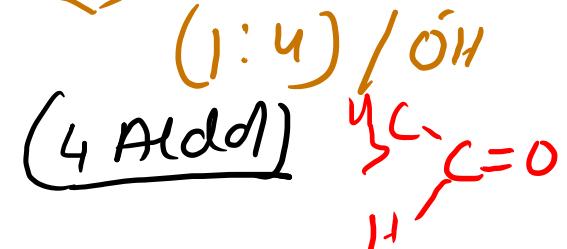
-ve test.





$\text{CuCl} + \text{H}^+$ 

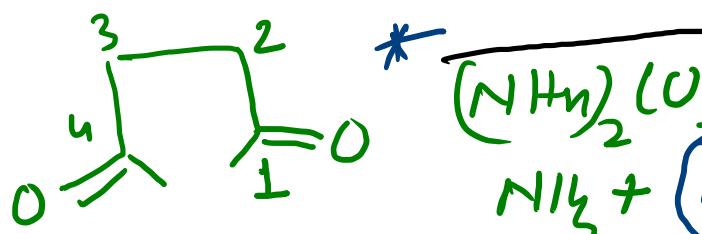
Protecting carbonyl.



Synthesis:

PAUL KNORR REACTION. (giving 8-hydroxy/ aromatic heterocyclic products).

It is applicable for 1,4 dicarbonyl compd.



Pyridine

medium pH < 7.
demineralized

NiC_2CO_3	Add 2
K_2CO_3	Cannizzaro reaction
NaOH	
KOH	

Exes (Aromatic heterocyclic compd).

