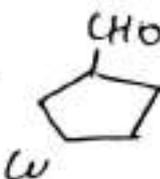
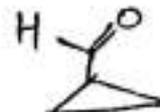
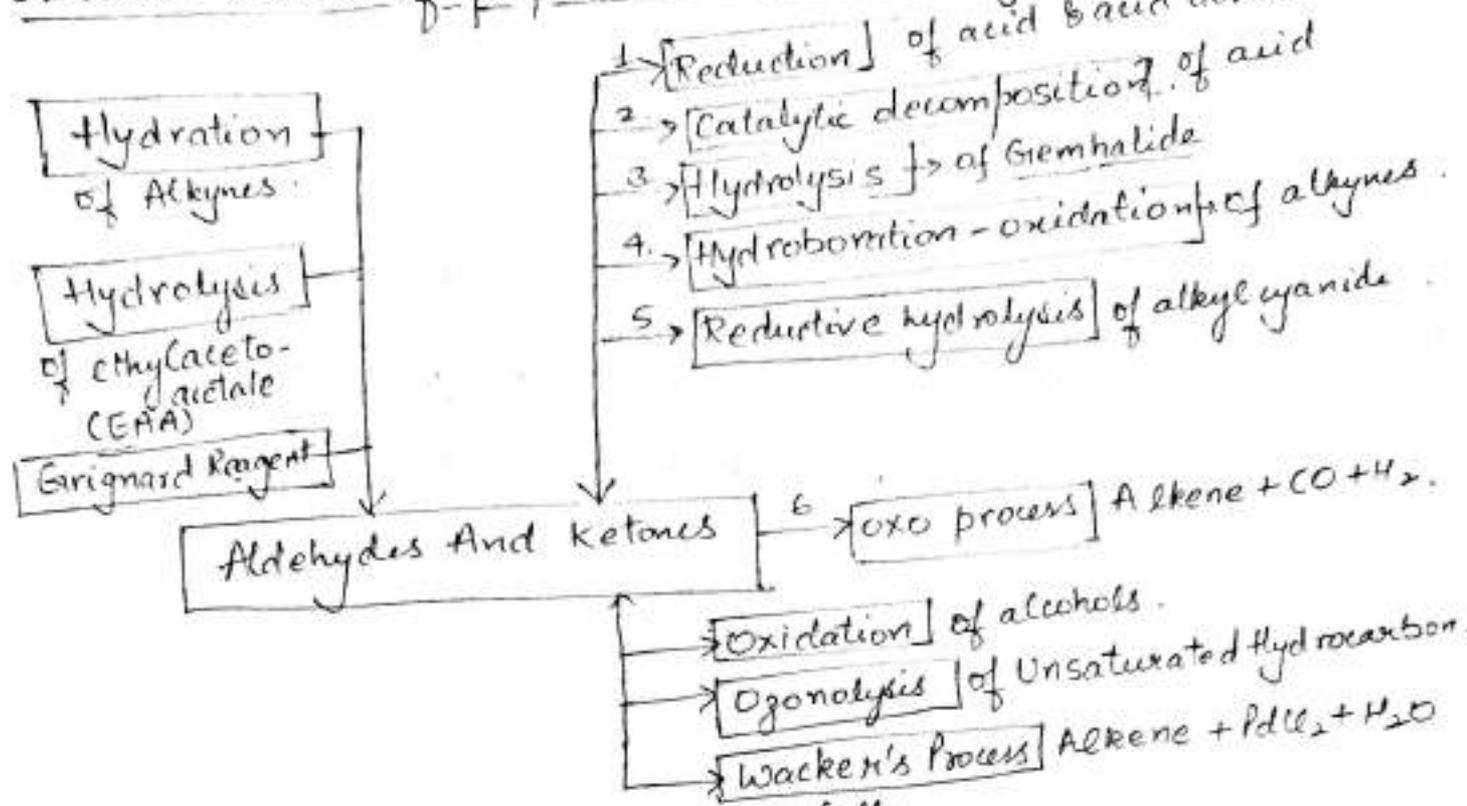


Pragati Education Aldehyde, ketone & Carboxylic Acid
 Day-1 Target.

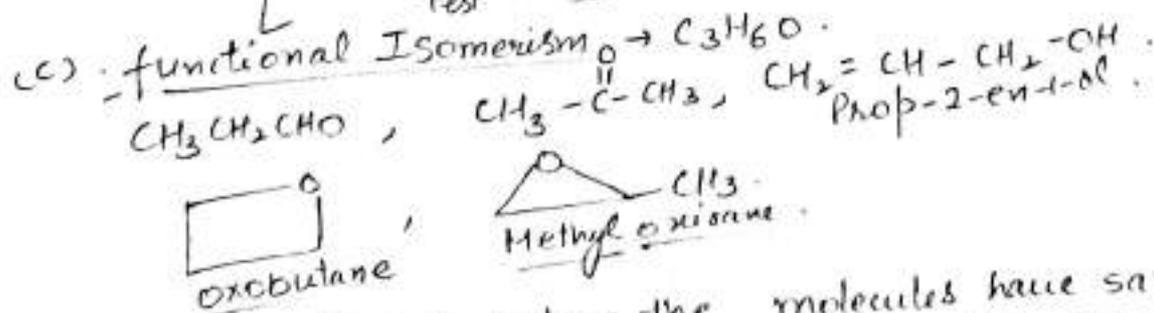
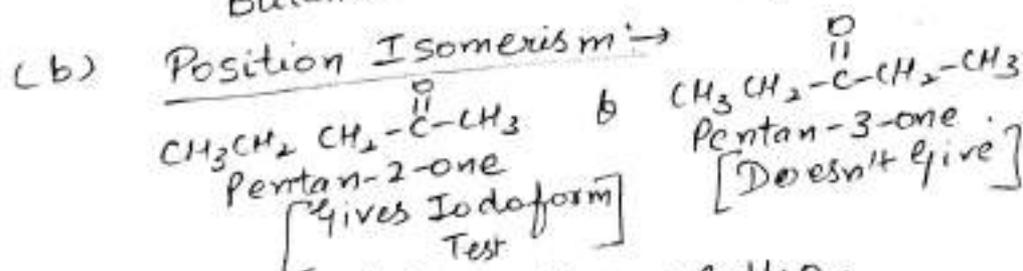
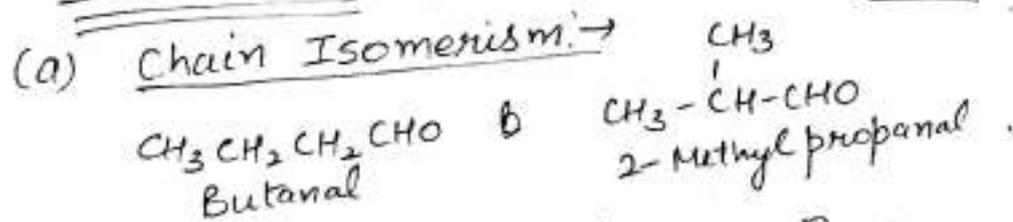
IUPAC & Common names of Aldehydes.		IUPAC	Common.
1.	$\text{H}-\overset{\text{O}}{\parallel}{\text{C}}-\text{H}$	Methanal	Formaldehyde.
2.	CH_3CHO	Ethanal	Acetaldehyde
3.	$\text{CH}_3\text{CH}_2\text{CHO}$	Propanal	Propionaldehyde.
4.	$\text{CH}_3\text{CH}_2\text{CH}_2\text{CHO}$	Butanal	Butyraldehyde.
5.	$\text{CH}_3-\underset{\text{CH}_3}{\underset{ }{\text{CH}}}-\text{CHO}$	2-Methylpropanal	ISO-butyraldehyde.
6.	$\text{CH}_3-\underset{\text{Br}}{\underset{ }{\text{CH}}}-\underset{\text{CH}_3}{\underset{ }{\text{CH}}}-\text{CHO}$	3-Bromo-2-methylbutanal	β -Bromo- α -methylbutyraldehyde.
7.	$\text{CH}_3-\text{CH}_2-\underset{\text{Cl}}{\underset{ }{\text{CH}}}-\underset{\text{Et}}{\underset{ }{\text{CH}}}-\text{CHO}$	3-chloro-2-ethylpentanal	β -chloro- α -ethylvaleraldehyde.
8.	$\text{CH}_3\text{CH}_2-\underset{\text{CH}_3}{\underset{ }{\text{CH}}}-\text{CH}_2-\text{CHO}$	(β -methylvaleraldehyde) → common name. 3-Methylpentanal.	
9.			Cyclopentane carbaldehyde.
10.			Cyclohexane carbaldehyde.
11.			Cyclopropane carbaldehyde.
12.			Benzene carbaldehyde.

Pragati Education Oxygen Containing Compounds II

Outline method of preparation these carbonyl compounds



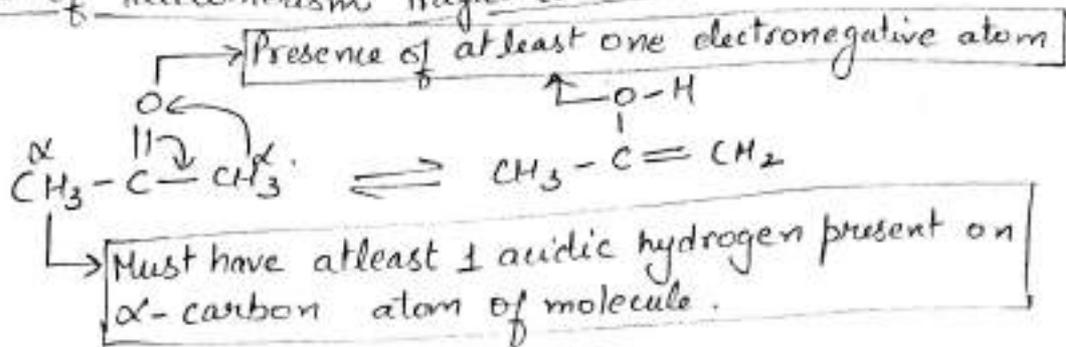
ISOMERISM General formula $\rightarrow C_n H_{2n} O$



(d) Tautomerism \rightarrow When the molecules have same molecular formulae, but different structural formulae due to wandering nature of hydrogen atom in between two polyvalent atom, isomers are called tautomers.

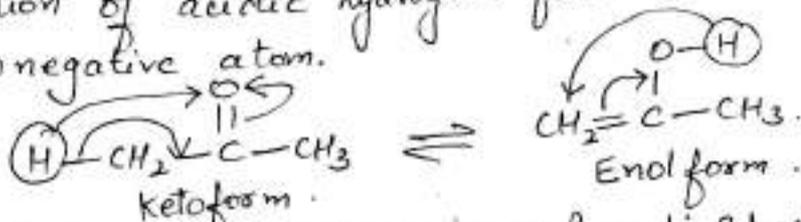
Tautomerism is also known as kryptomerism or allelotropism or desmotropism or dynamic isomerism.

Conditions of Tautomerism Pragati Education



Basic Cause of Tautomerism

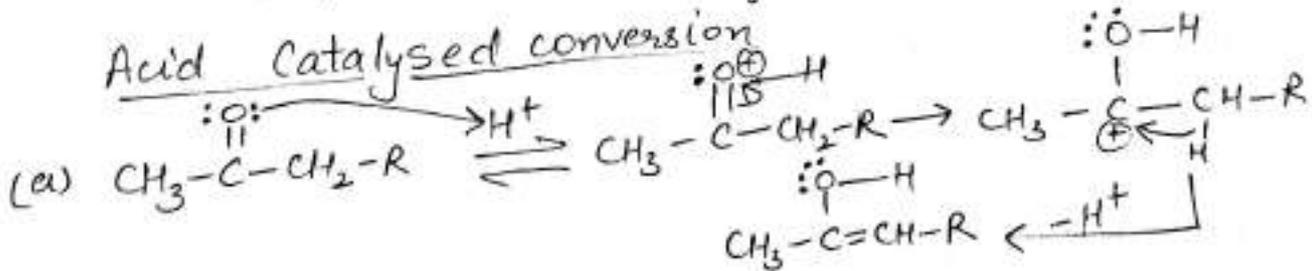
Migration of acidic hydrogen from carbon to multiple bonded electronegative atom.



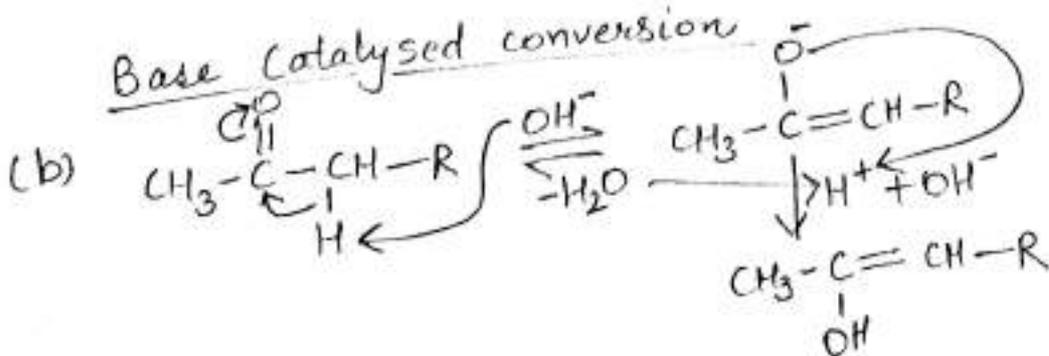
Characteristics of Tautomerism Pragati Education

- Dynamic equilibrium.
- No. of electrons and lone pair in both tautomers always remains the same.
- It takes place in liquid & gaseous phase only & not in solid phase.
- Reactions can be catalysed by acid as well as base.

Acid Catalysed conversion

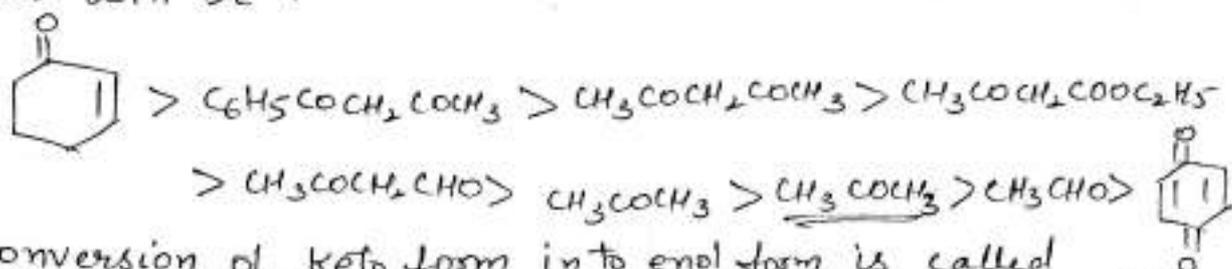


Base Catalysed conversion



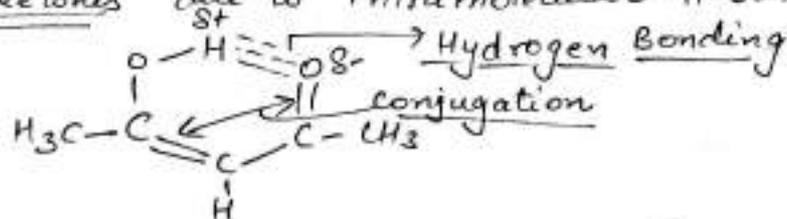
(a) Content of keto form is always greater than enol form i.e. keto form is more stable than enol form.

(b) % of enolic content of some common compounds in decreasing order will be.



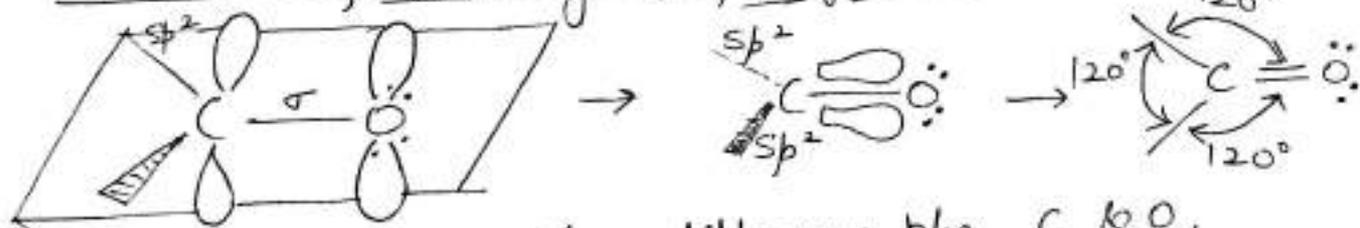
(c) conversion of keto form into enol form is called enolisation. & depends upon (a) resonance & hydrogen bonding, temperature & nature of solvents.

(d) keto form dominates in simple monocarbonyl compounds like CH_3CHO , CH_3COCH_3 (due to greater bond strength of $C=O$ in comparison to $C=C$). Enolic form dominates in β -diketones due to intramolecular H-bonding & resonance.

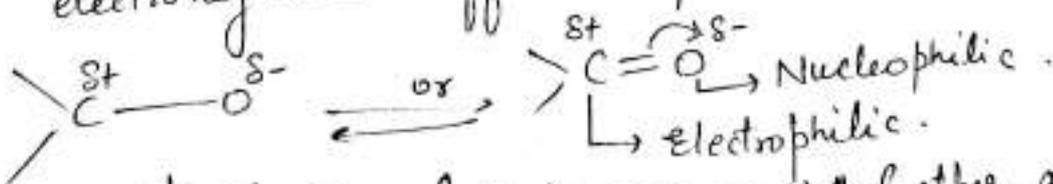


(e) $CH_2=CH-CH_2OH$ & $\begin{matrix} CH_2-CH_2 \\ | \\ CH_2-O \end{matrix}$ Alkenol & cyclic ether

(f) TRIAD System - $\begin{matrix} O \\ || \\ C-CH_3 \end{matrix}$ 3 atoms involved in tautomerism.
Structure of Carbonyl group Pragati Education



* Due to electronegative difference b/w C & O,



* Dipole moment of ethanal, propanone & diethyl ether are 2.72, 2.88 & 1.8D.

* Due to presence of π -bond b/w C & O atom of carbonyl compound, loosely held π -electrons can be readily shifted to oxygen atom. So magnitude of +ve & -ve charge

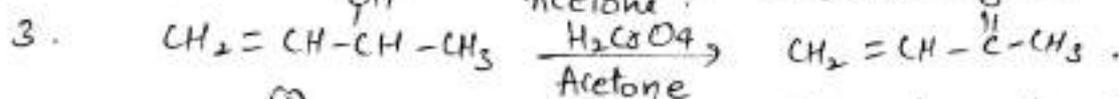
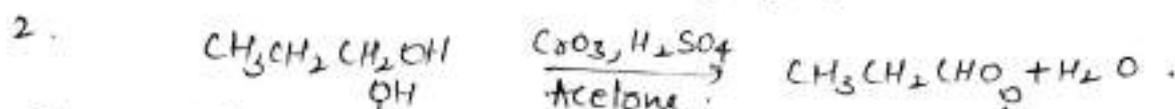
developed in $>C=O$ bond is higher than $C-O$ bond of alcohols.

Preparation

1. Oxidation of Alcohols

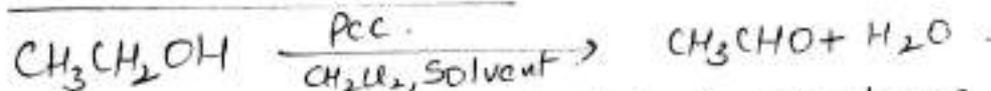
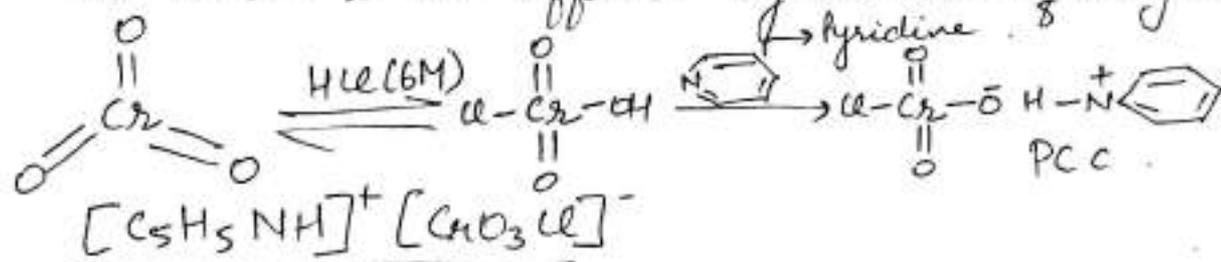


Aldehydes are very susceptible to further oxidation to carboxylic acid. It is controlled by distilling out aldehydes as soon as it is formed.

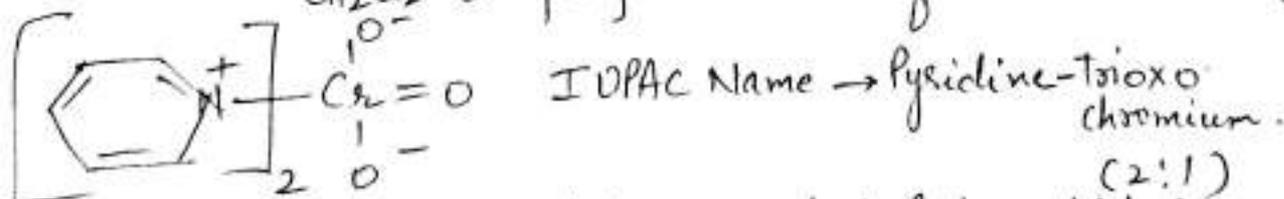


PCC 4. $C_5H_5NH^+CrO_3^-$ Pyridinium chlorochromate (PCC)
for 1° alcohol \longrightarrow Aldehyde.
 2° Alcohol \longrightarrow Ketone.

** $-C=C-$ is not affected by the use of reagent.



Collins reagent: 1 mole of CrO_3 & 2 moles of pyridine in CH_2Cl_2 & performs same function as PCC.



\longrightarrow selectively oxidize primary alcohol to aldehyde & can tolerate many functional gp in one molecule.

