



Padalsalai's Telegram Groups!

(தலைப்பிற்கு கீழே உள்ள லிங்கை கிளிக் செய்து குழுவில் இணையவும்!)

- Padalsalai's NEWS - Group
https://t.me/joinchat/NIfCqVRBNj9hhV4wu6_NqA
- Padalsalai's Channel - Group
<https://t.me/padasalaichannel>
- Lesson Plan - Group
<https://t.me/joinchat/NIfCqVWwo5iL-21gpzrXLw>
- 12th Standard - Group
https://t.me/Padalsalai_12th
- 11th Standard - Group
https://t.me/Padalsalai_11th
- 10th Standard - Group
https://t.me/Padalsalai_10th
- 9th Standard - Group
https://t.me/Padalsalai_9th
- 6th to 8th Standard - Group
https://t.me/Padalsalai_6to8
- 1st to 5th Standard - Group
https://t.me/Padalsalai_1to5
- TET - Group
https://t.me/Padalsalai_TET
- PGTRB - Group
https://t.me/Padalsalai_PGTRB
- TNPSC - Group
https://t.me/Padalsalai_TNPSC

Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi



Praise the Lord

**MOUNT CARMEL MISSION MATRICULATION
HIGHER SECONDARY SCHOOL**

Mount Road, Carmel Nagar, Kallakurichi - 606 202



12th standard *organic chemistry name reaction in*

(unit-11)

Hydroxy compounds and ethers,

(unit -12)

Carbonyl compounds And Carboxylic Acids

&

(unit -13)

Organic nitrogen Compounds



in Department



Send Your Materials To : contactkalvikipedia@gmail.com

Send Your Question Papers & Answer Keys to Our E-mail ID: Padasalai.Net@gmail.com

Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi

Important NAME REACTIONS of chemistry in

CLASS 12TH

INDEX

1. Lucas test
2. Victor meyer's test
3. Saytzeff's rule
4. Swern oxidation
5. Dows process
6. Saponification reaction
7. Schotten-baumann reaction
8. Williamson ether synthesis
9. Kolbe's (or) kolbe's schmit reaction
10. Riemer-tiemann reaction
11. Phthalein reaction
12. Coupling reaction
13. Rosenmund reduction
14. Stephen's reaction
15. Etard reaction
16. Gattermann-koch reaction
17. Friedel-crafts acylation
18. Urotropine
19. Popoff's rule
20. Clemmensen reduction
21. Wolf kishner reduction
22. Haloform reaction
23. Aldol condensation
24. Crossed aldol condensation

Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi

25. Claisen-schmit condensation
26. Cannizaro reaction
27. Crossed cannizaro reaction
28. Perkin's reaction
29. Knoevenagal reaction
30. Tollens reagent & Fehlings solution test
31. Esterification
32. Decarboxylation reaction
33. Kolbe's electrolytic decarboxylation
34. Hall-Volhard-Zelinsky(HVZ) reaction
35. Transesterification
36. Claisen condensation
37. Nef reaction (or) nef carbonyl synthesis
38. Gabriel phthalimide synthesis
39. Hoffmann's degradation reaction
40. Hoffmann's ammonolysis
41. Mendius reaction
42. Libermann's nitroso test
43. Carbylamine reaction
44. Mustard oil reaction
45. Hofmann-mustard oil reaction
46. Sandmeyer reaction
47. Gattermann reaction
48. Baltz-schiemann reaction
49. Gomberg reaction
50. Levine and Hauser acetylation
51. Diazotization reaction
52. Alcohol from grignard reagent(RMgX)
53. Acid from grignard reagent(RMgX)

Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi

Important another more reaction

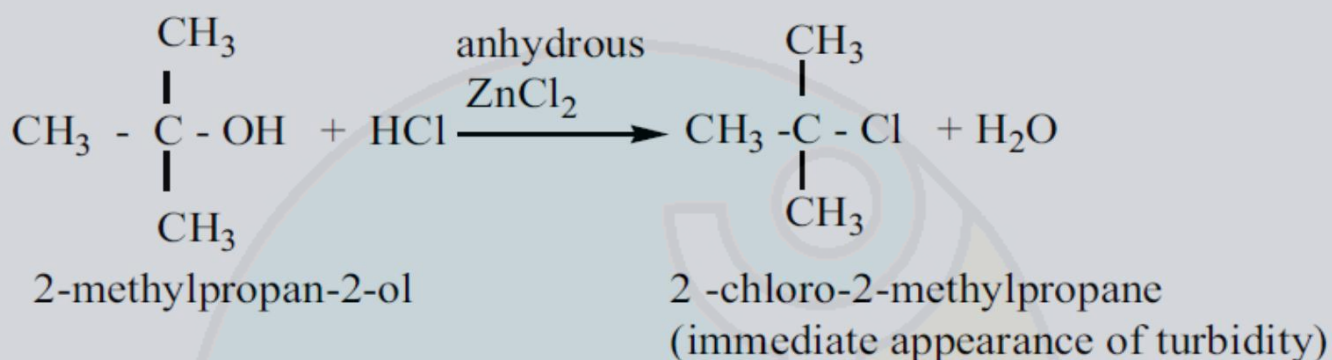
1. Using baeyer's reagent
2. Biological oxidation
3. 1,4-dioxane
4. TNG (TriNitroGlycerine)
5. Acrolein
6. Glycerose
7. Phenol to benzene
8. Phenol to 1,4 benzoquinone
9. Phenol to cyclohexanol
10. Phenol to picric acid
11. Diethyl ether react with some compounds
12. Calcium salt of carboxylic acid
13. Ketone reduction to pinacols
14. benzoin condensation
15. Schiff's base
16. malachite green dye
17. Benzaldehyde react with chlorine presence and absence of catalyst
18. Reducing property of formic acid
19. Amphoteric character of acetamide
20. Dehydration of amide
21. Preparation of nitro benzene
22. Reduction of nitro alkane
23. Chloropicrin
24. Reduction to nitrobenzene
25. Amine react with nitrous acid
26. $C_6H_5N_2Cl$ to iodobenzene
27. $C_6H_5N_2Cl$ to phenol
28. $C_6H_5N_2Cl$ to benzoic acid
29. $C_6H_5N_2Cl$ to phenyl hydrazine
30. Thore nitrile condensation
31. $C_6H_5N_2Cl$ to nitrobenzene

Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi

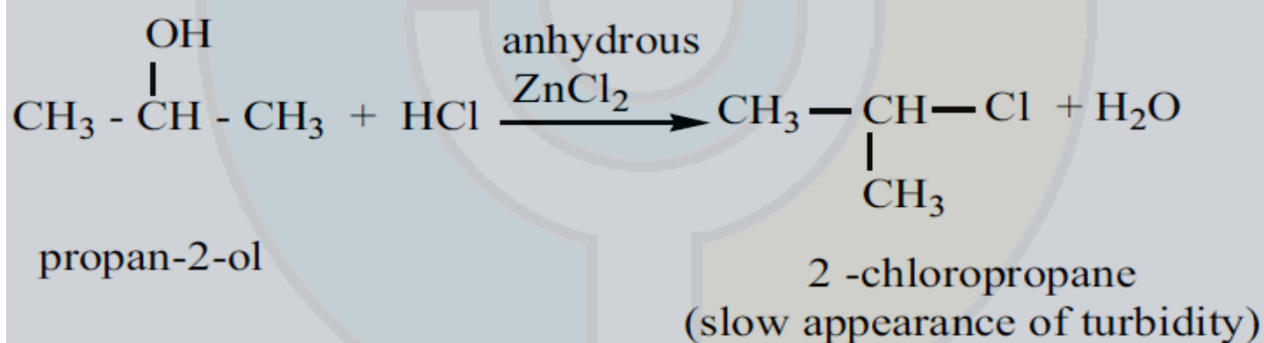
01.LUCAS TEST

Lucas reagent is conc. HCl + anhyd. $ZnCl_2$. Lucas reagent reacts with alcohols to form alkyl halides.

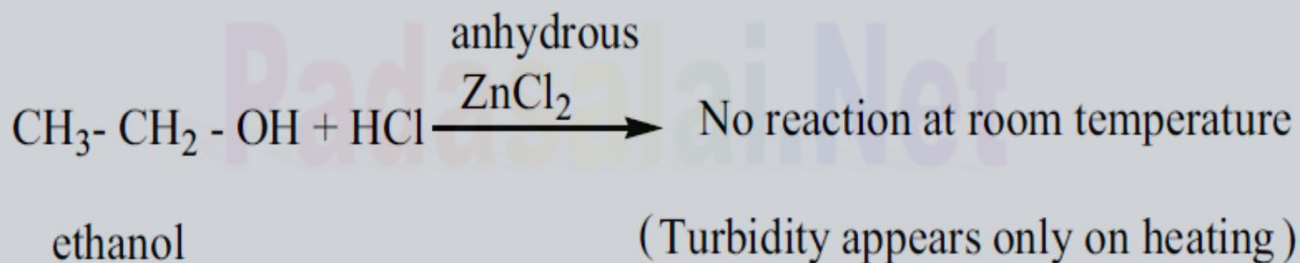
i) Test for tertiary alcohol :



ii) Test for secondary alcohol :



iii) Test for primary alcohol:



RESULT:

1.tertiary alcohol is immediately turbidity form.

Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi

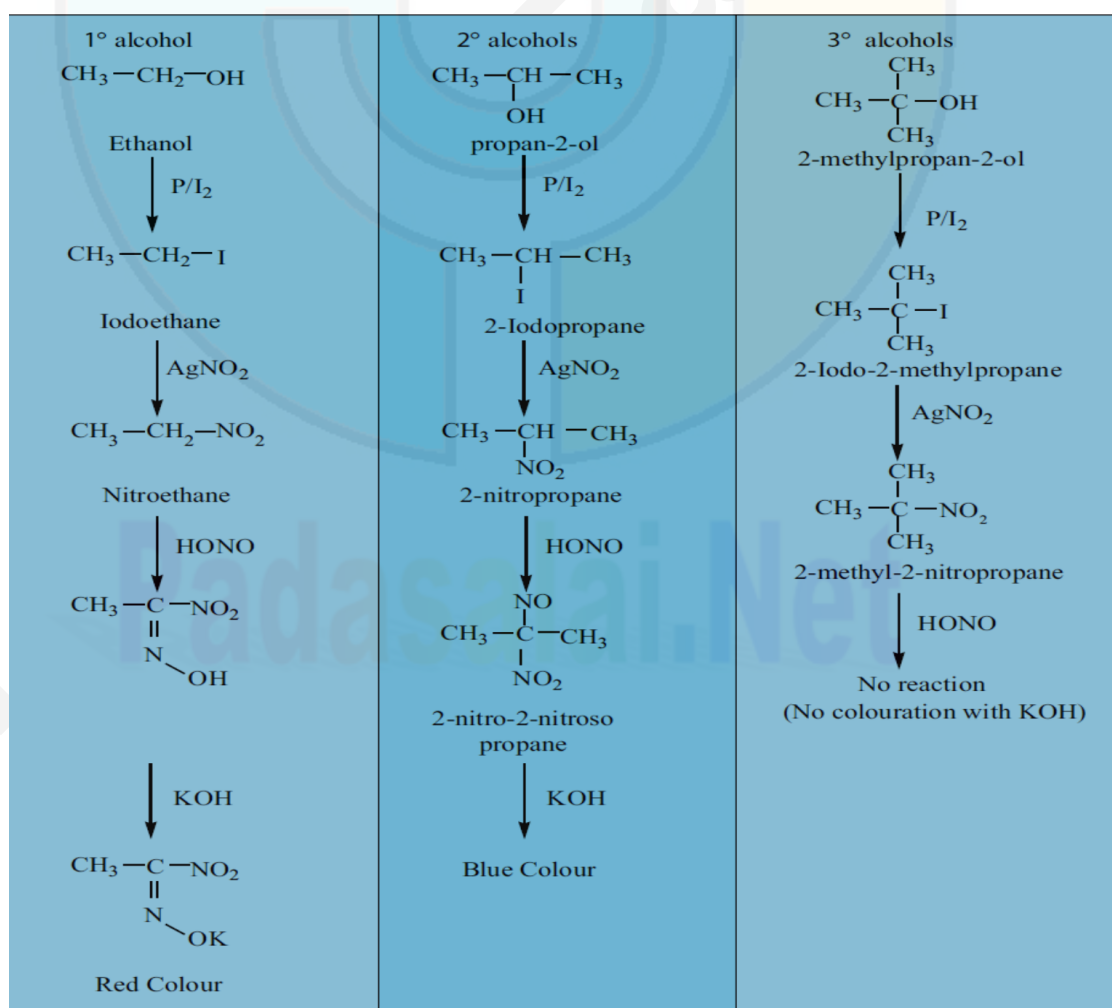
2.Secondary alcohol is within 10 minutes turbidity form.

3.Primary alcohol is no turbidity at room temperature

2.VICTOR MEYER'S TEST

This test based on the behaviour of the different nitro alkanes formed by the three types of alcohols with nitrous acid and it consists of the following steps.

- Alcohols** are converted into **alkyl iodide** by treating it with I_2/P
- Alkyl iodide** so formed is then treated with $AgNO_2$ to form **nitro alkanes**
- Nitro alkanes** are finally treated with HNO_2 (mixture of $NaNO_2/HCl$) and the resultant solution is made **alkaline with KOH**



Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi

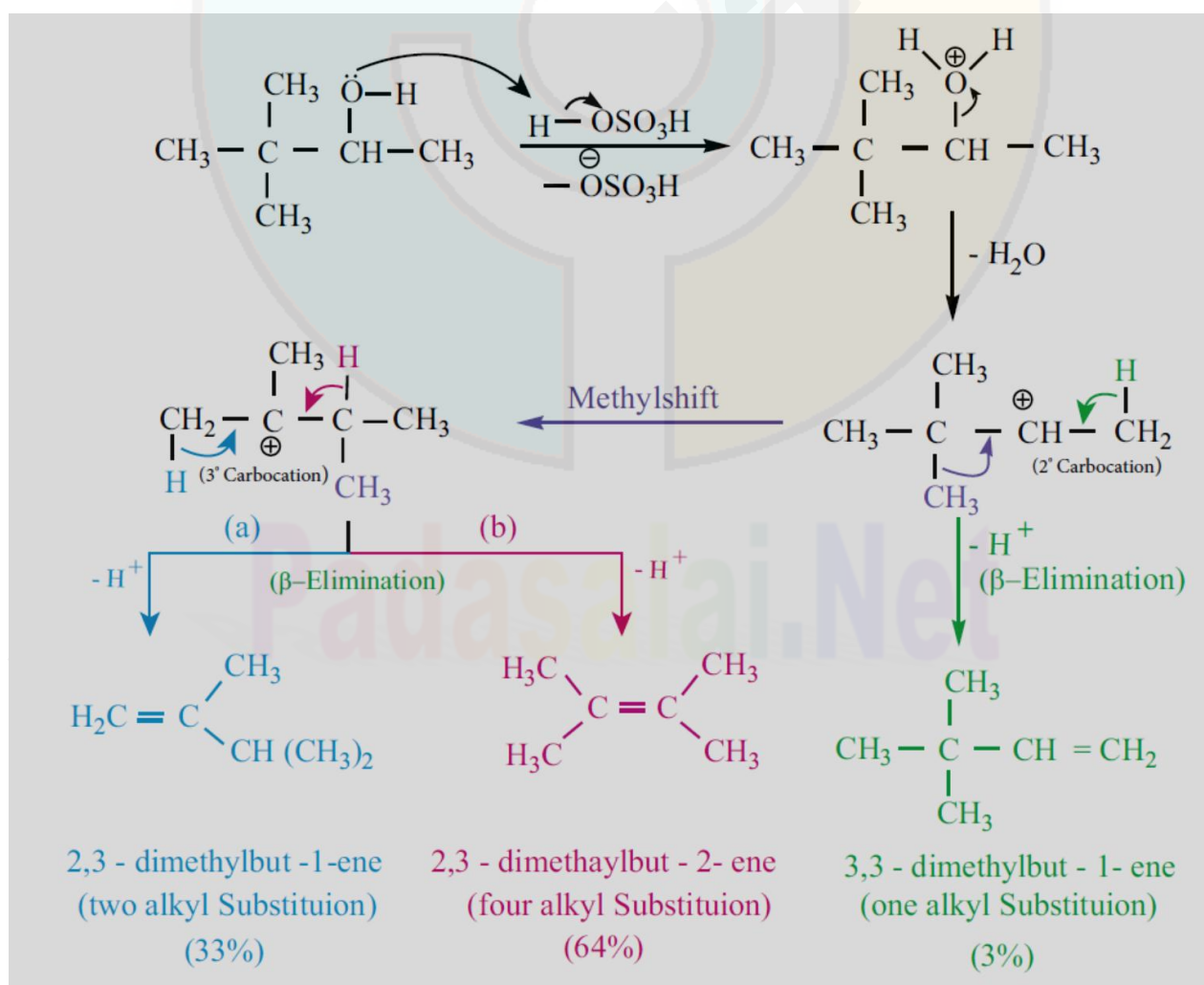
Result

- Primary alcohol gives **red colour**
- Secondary alcohol gives to **blue colour**
- **No colouration** will be observed in case of tertiary alcohol.

3.SAYTZEFF'S RULE

During intramolecular dehydration, if there is a possibility to form a carbon-carbon double bond at different locations the preferred location is the one that gives the more (highly) substituted i.e., the stable alkene.

For example the dehydration of **3,3-dimethyl-2-butanol** gives a **mixture of alkenes**. The secondary carbocation formed in this reaction undergoes rearrangement to form a more stable tertiary carbocation.

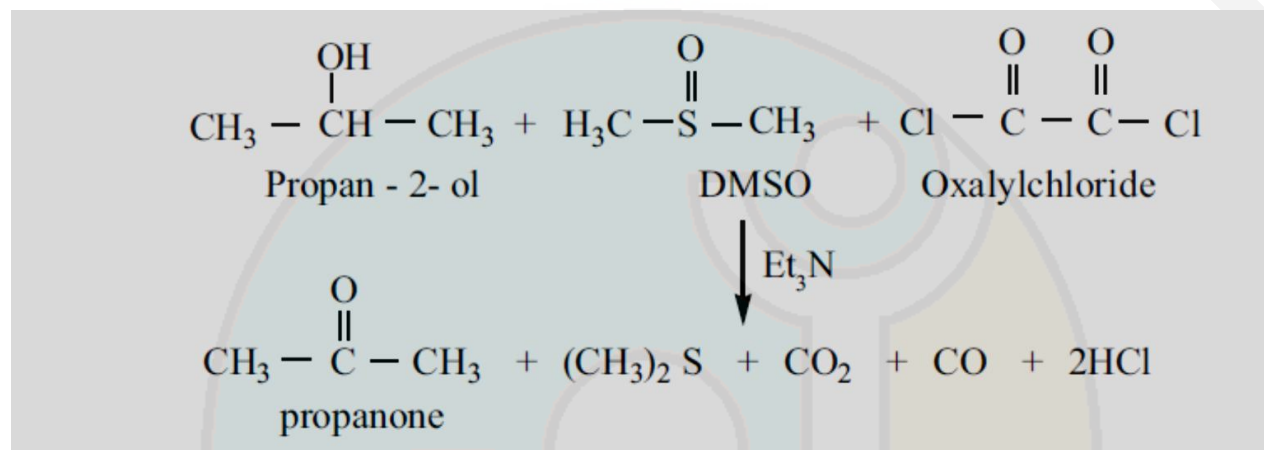


Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi

4. SWERN OXIDATION

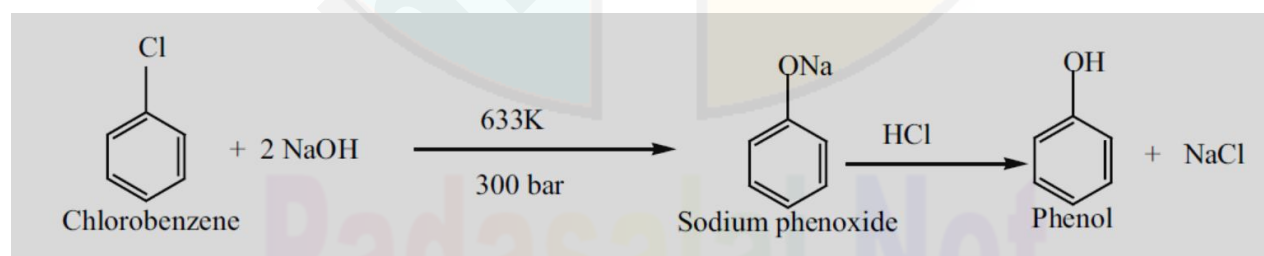
In this method, **dimethyl sulfoxide (DMSO)** is used as the oxidising agent, which **converts alcohols to ketone / aldehydes**.

In this method an alcohol is treated with DMSO and oxalyl chloride followed by the addition of triethylamine.



5. DOWS PROCESS

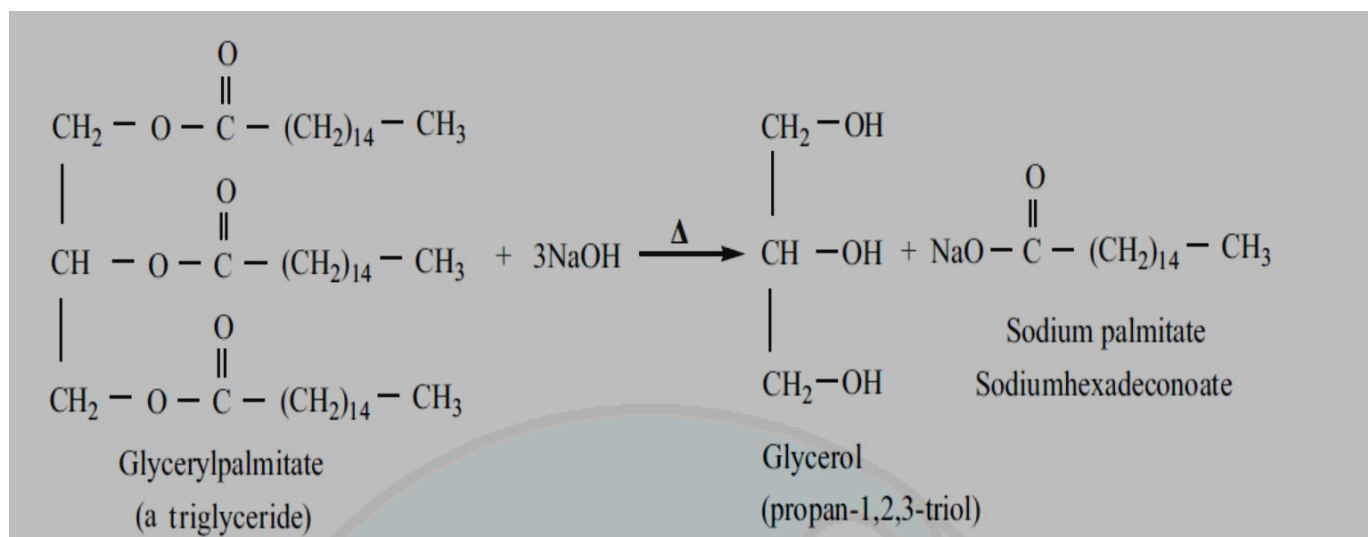
When **chlorobenzene** is hydrolysed with 6-8% **NaOH** at 300 bar and 633K in a closed vessel, **sodium phenoxide** is formed which on treatment with dilute HCl gives **phenol**.



6. SAPONIFICATION REACTION

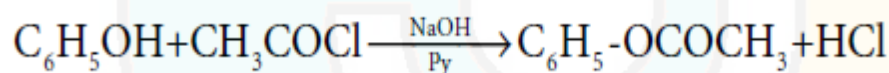
Glycerol occurs in many natural fats and it is also found in long chain fatty acids in the form of **glyceryl esters (Triglycerides)**. The alkaline hydrolysis of these fats gives **glycerol** and the reaction is known as **saponification reaction**.

Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi



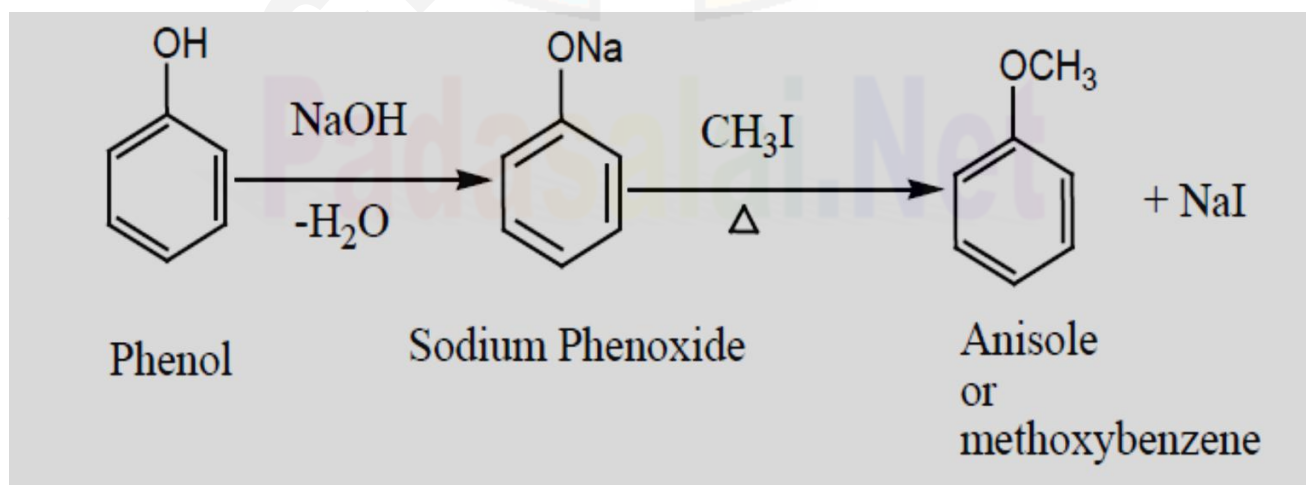
7.SCHOTTEN –BAUMANN REACTION

Phenol on treatment with **acid chlorides** gives **esters**. The acetylation and benzylation of phenol are called **Schotten-Baumann reaction**.



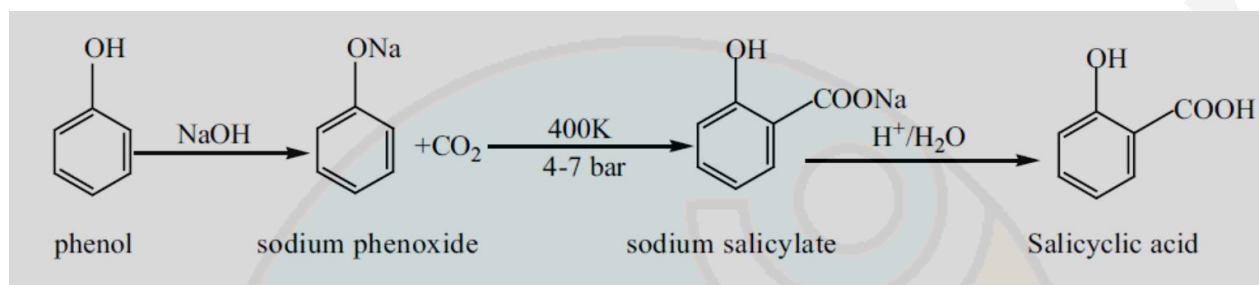
8.WILLIAMSON ETHER SYNTHESIS

An alkaline solution of **phenols** reacts with **alkyl halide** to form **phenyl ethers**. The alkyl halide undergoes nucleophilic substitution by the phenoxide ion in the presence of alkali.



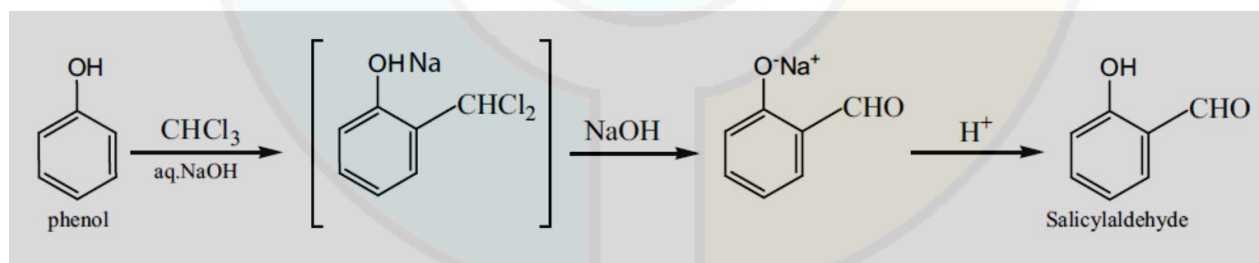
9.KOLBE'S (OR) KOLBE'S SCHMIT REACTION

In this reaction, **phenols** is first converted into **sodium phenoxide** which is more reactive than phenol towards electrophilic substitution reaction with **CO₂**. Treatment of sodium phenoxide with CO₂ at 400K, 4-7 bar pressure followed by acid hydrolysis gives **salicylic acid**.



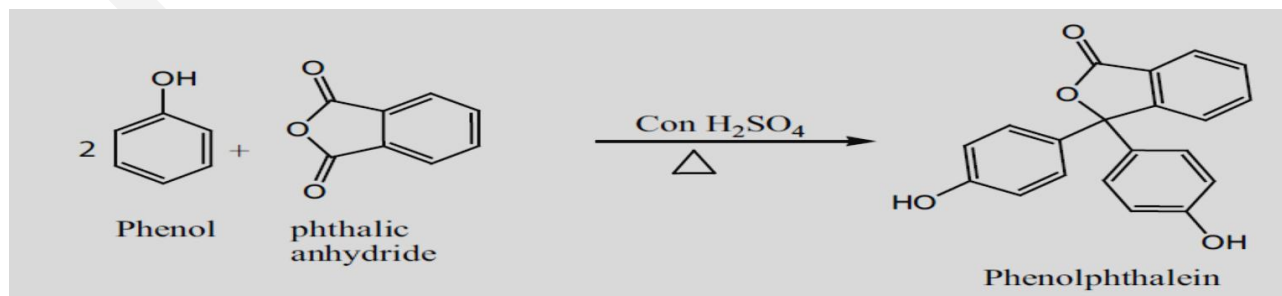
10.RIEMER-TIEMANN REACTION

On treating **phenol** with **CHCl₃/NaOH**, -CHO group is introduced at ortho position. The reaction proceeds through the formation of substituted benzal chloride intermediate.



11.PHTHALEIN REACTION

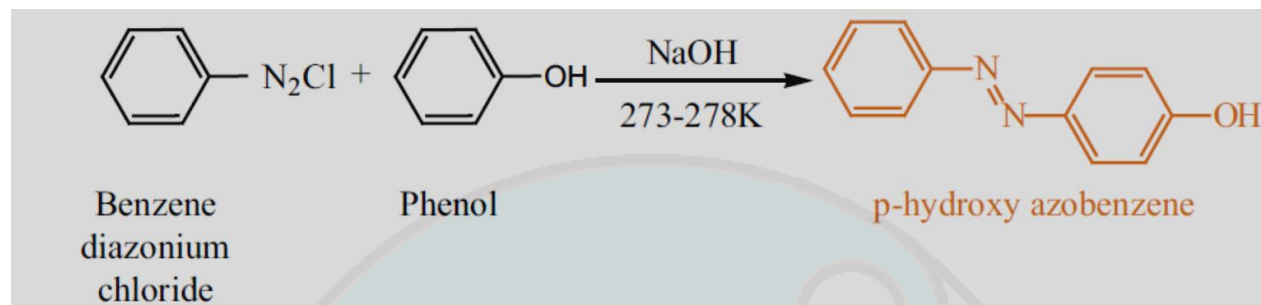
On heating **phenol** with **phthalic anhydride** in presence of con. H₂SO₄, **phenolphthalein** is obtained.



Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi

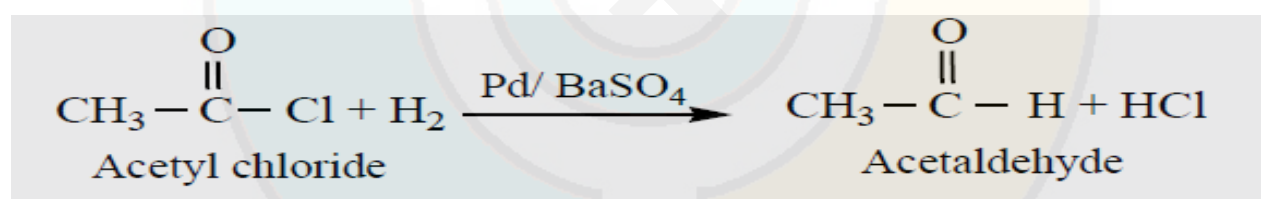
12.COUPLING REACTION

Phenol couples with **benzene diazonium chloride** in an alkaline solution to form **p-hydroxy azobenzene**(red orange dye).



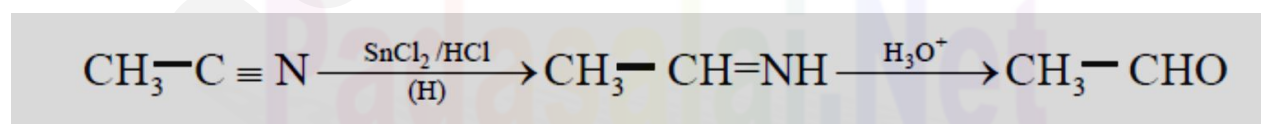
13.ROSENMUND REDUCTION

Aldehyde can be prepared by the **hydrogenation of acid chloride**, in the presence of palladium supported by barium sulphate. This reaction is called Rosenmund reduction.



14.STEPHEN'S REACTION

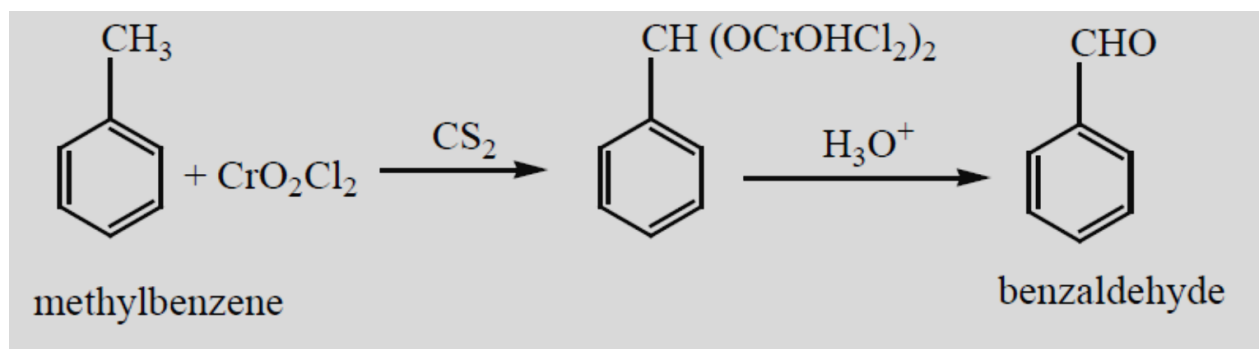
When **alkylcyanides** are reduced using **SnCl₂ / HCl**, imines are formed, which on hydrolysis gives corresponding **aldehyde**.



15.ETARD REACTION

When **chromylchloride** is used as an agent ,**toluene** gives **benzaldehyde**. This reaction is called etard reaction. Acetic anhydride and CrO_3 can also be used for this reaction.

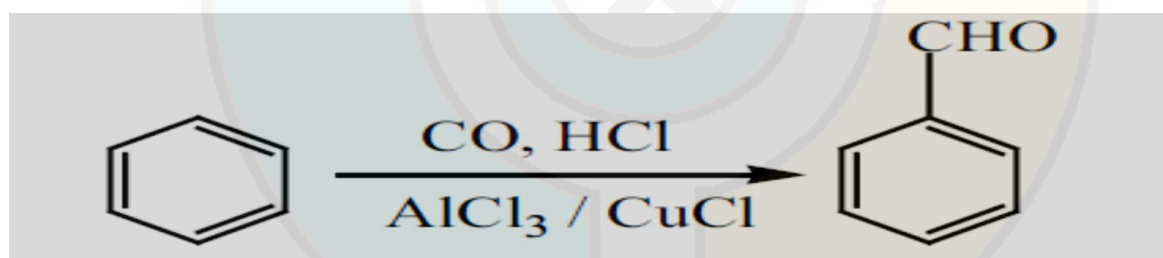
Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi



Oxidation of toluene by chromic oxide gives benzylidene diaetate which on hydrolysis gives benzaldehyde.

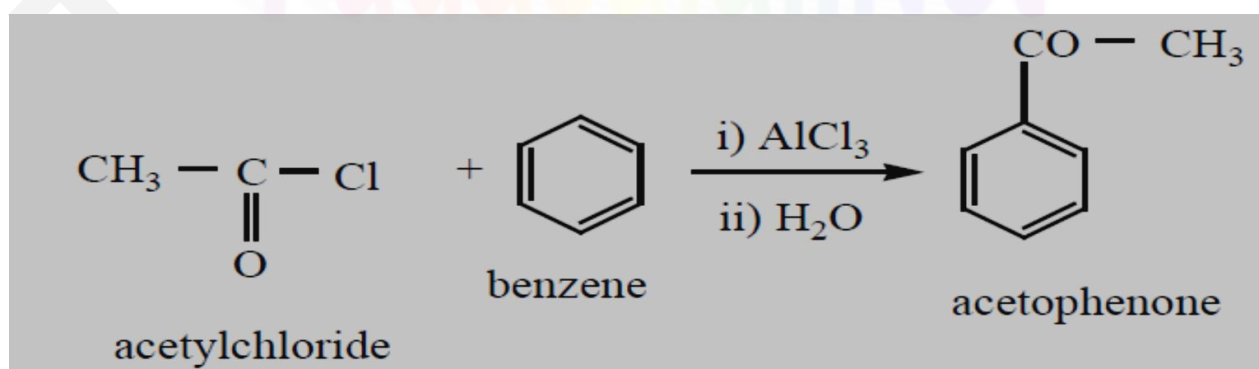
16.GATTERMANN-KOCH REACTION

When **benzene** (or) its derivative is treated with **CO/HCl** in the presence of anhydrous **AlCl_3 (or) CuCl_2** , it gives **benzaldehyde** (or) substituted benzaldehyde. In this method, reaction of carbon monoxide and HCl generate an intermediate which reacts like formyl chloride.



17.FRIEDEL-CRAFTS ACYLATION

It is the best method for preparing alkyl aryl ketones or diaryl ketones. This reaction succeeds only with benzene and activated benzene derivatives.



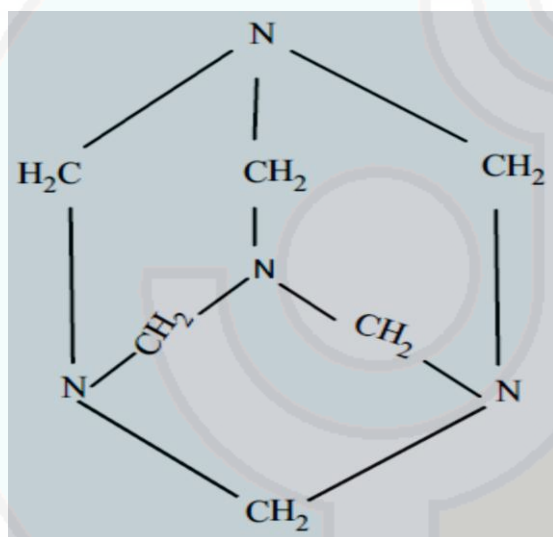
Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi

18.UROTROPINE

Formaldehyde reacts with ammonia to form hexa methylene tetramine, which is also known as urotropine.

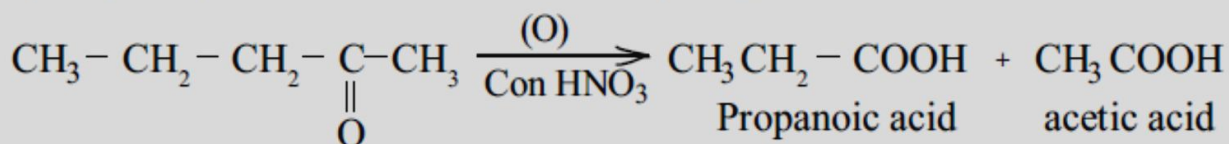


STRUCTURE



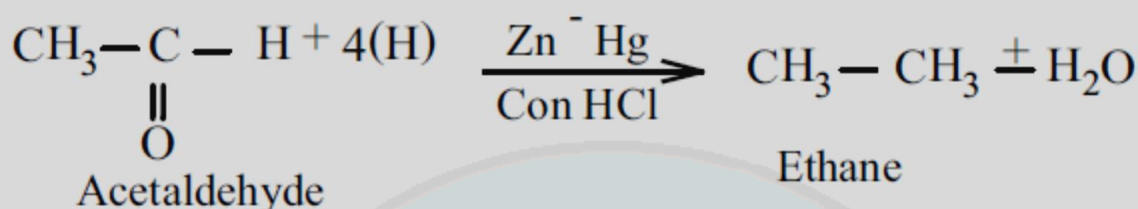
19.POPOFF'S RULE

The oxidation of **unsymmetrical ketones** is governed by **popoff's rule**. It states that during the oxidation of an unsymmetrical ketones, a(C-CO) bond is cleaved in such a way that the **keto group** stays with the **smaller alkyl group**.



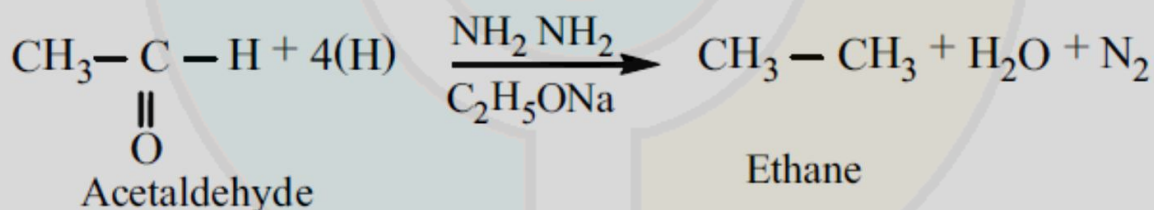
20.CLEMMENSEN REDUCTION

Aldehyde and ketones when heated with zinc amalgam and conc.HCl gives hydrocarbons.



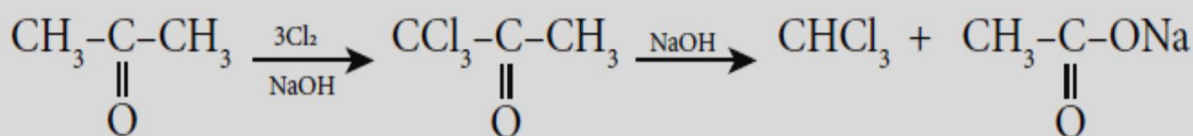
21.WOLF KISHNER REDUCTION

Aldehyde and ketones when heated with hydrazine(NH₂NH₂) and sodium ethoxide, hydrocarbons are formed. Hydrazine acts as a reducing agent and sodium ethoxide as a catalyst.



22.HALOFORM REACTION

Acetaldehyde and methyl ketones, containing >C=O group, when treated with halogen and alkali give the corresponding haloform. This is known as Haloform reaction.



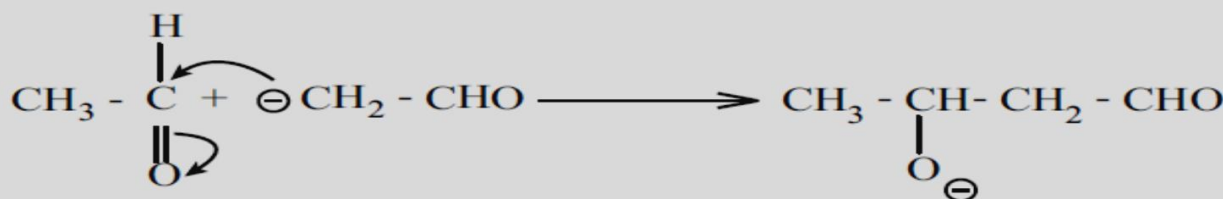
acetone

chloroform

sodium acetate

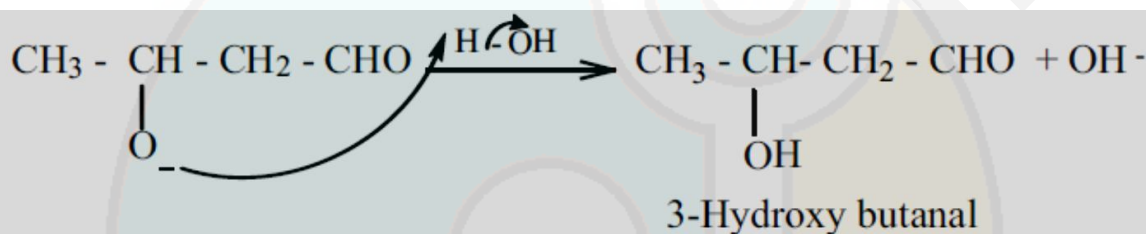
Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi

The carbanion attacks the carbonyl carbon of another unionized aldehyde to form an alkoxide ion.



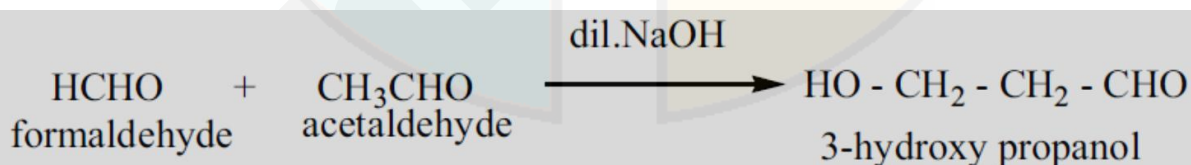
Step 3 :

The alkoxide ion formed is protonated by water to form aldol



24.CROSSED ALDOL CONDENSATION

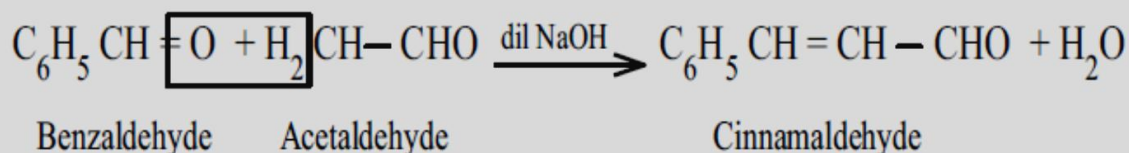
Aldol condensation can also take place between two different aldehydes or ketones or between one aldehyde and one ketone such an aldol condensation is called crossed or mixed aldol condensation.



25.CLAISEN-SCHMIT CONDENSATION

Benzaldehyde condenses with aliphatic aldehyde or methyl ketone in the presence of dil.alkali at room temperature to form unsaturated aldehyde or ketone . This type of reaction is called claisen-schmidt condensation.

Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi

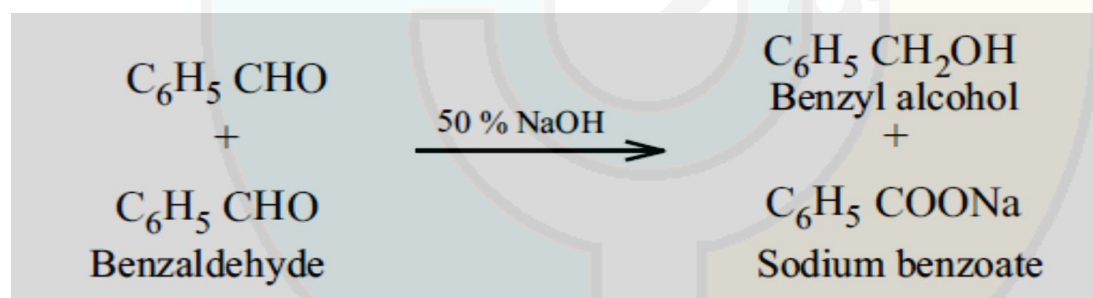


26.CANNIZARO REACTION

In the presence of concentrated aqueous or alcoholic alkali, aldehydes which do not have α -hydrogen atom under go self oxidation and reduction to give a mixture of alcohol and a salt of carboxylic acid. This reaction is called cannizaro reaction.

Benzaldehyde on treatment with concentrated NaOH (50%) gives benzyl alcohol and sodium benzoate.

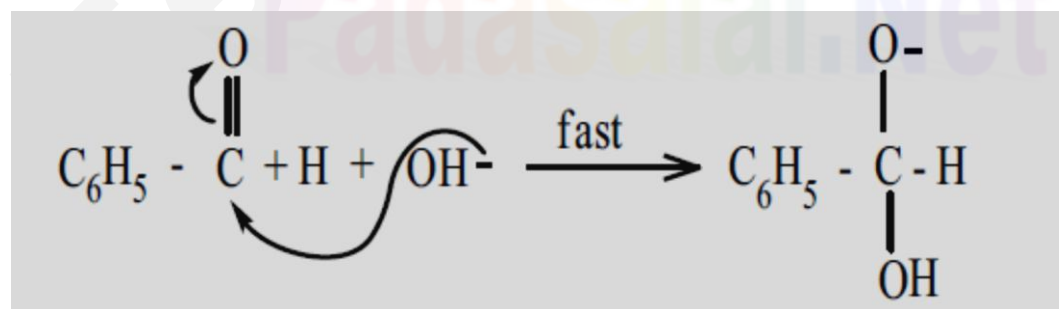
Reaction :



Mechanism:

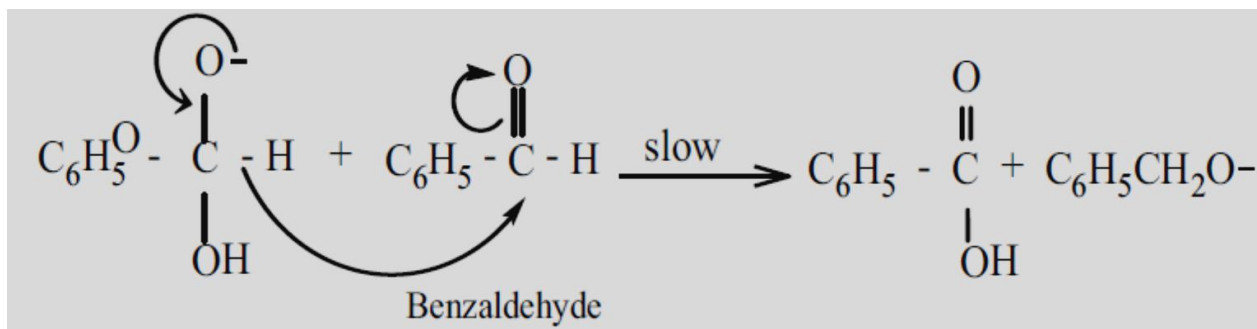
cannizaro rection involves three steps.

Step 1 : Attack of OH^- the carbonyl carbon.

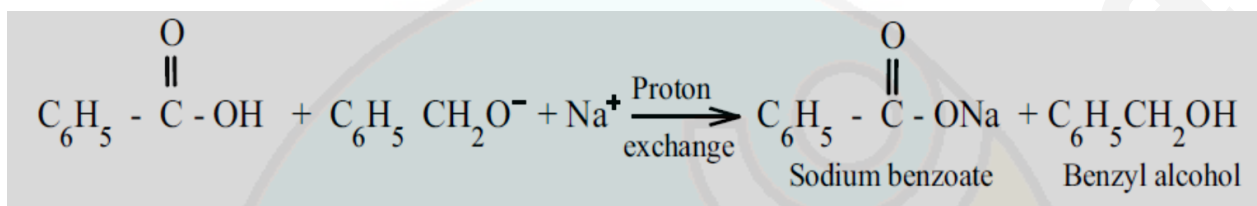


Step 2 : Hydride ion transfer

Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi

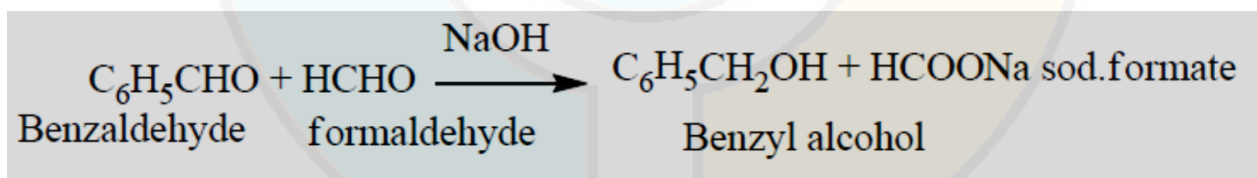


Step 3 : Acid-base reaction.



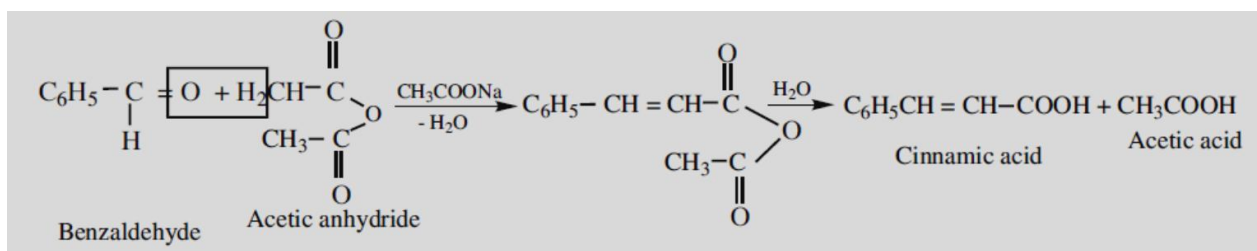
27.CROSSED CANNIZARO REACTION

When Cannizzaro reaction takes place between two different aldehydes (neither containing an α hydrogen atom), the reaction is called as crossed cannizaro reaction.



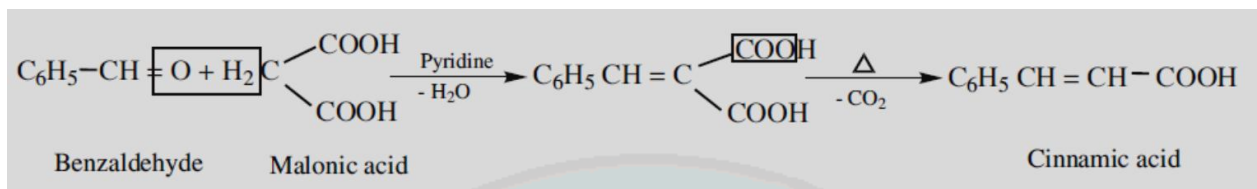
28.PERKIN'S REACTION

When an aromatic aldehyde is heated with an aliphatic acid anhydride in the presence of the sodium salt of the acid corresponding to the anhydride, condensation takes place and an $\alpha\beta$ unsaturated acid is obtained. this reaction is known as perkin's reaction.



29.KNOEVENAGAL REACTION

Benzaldehyde condenses with malonic acid in presence of pyridine forming cinnamic acid, pyridine act as the basic catalyst.



30.TOLLENS REAGENT & FEHLINGS SOLUTION TEST

TOLLENS REAGENT TEST :

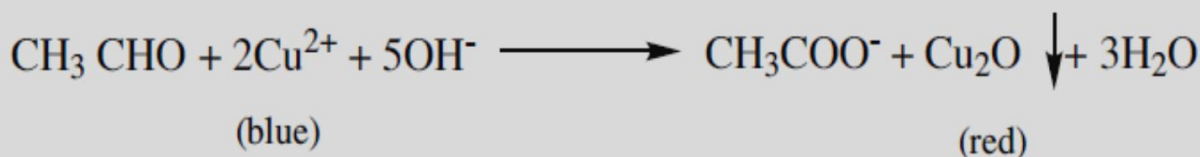
Tollens reagents is an ammonical silver nitrate solution. when an aldehyde is warmed with tollens reagents a bright silver mirror is produced due to the formation of silver metal. This reaction is called silver mirror test for aldehydes.



FEHLINGS SOLUTION TEST:

Fehlings solution is prepared by mixing equal volumes of fehling's solution 'A' aqueous copper sulphate and Fehling's solution 'B' containing alkaline solution of sodium potassium tartarate(Rochelle salt)

When aldehyde is warmed with Fehling's solution deep blue colour solution is changed to red precipitate of cuprous oxide.

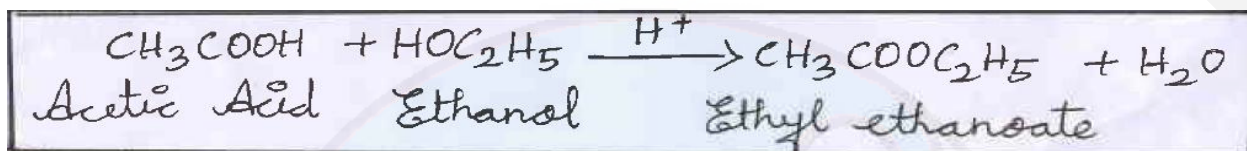


Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi

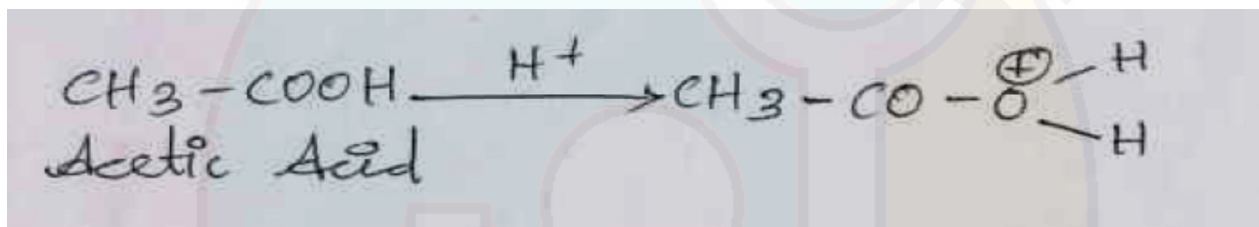
31. ESTERIFICATION

When carboxylic acids are heated with alcohols in the presence of conc. H_2SO_4 or dry HCl gas, esters are formed. The reaction is reversible and is called esterification.

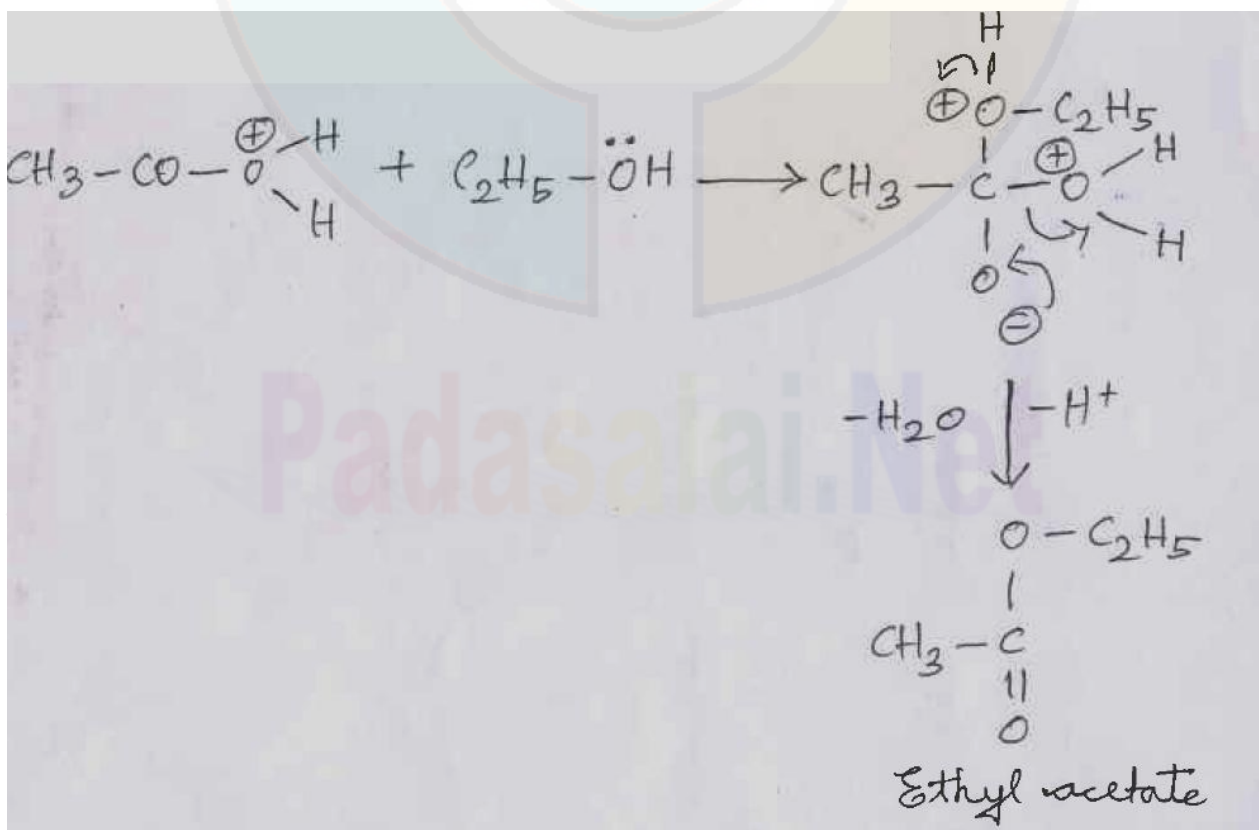
REACTION :



MECHANISM: step:1 protonation of carboxylic acid



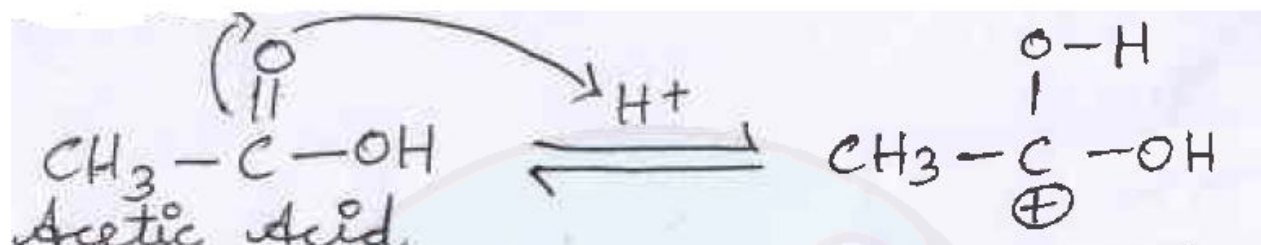
step:2 Attack by nucleophile



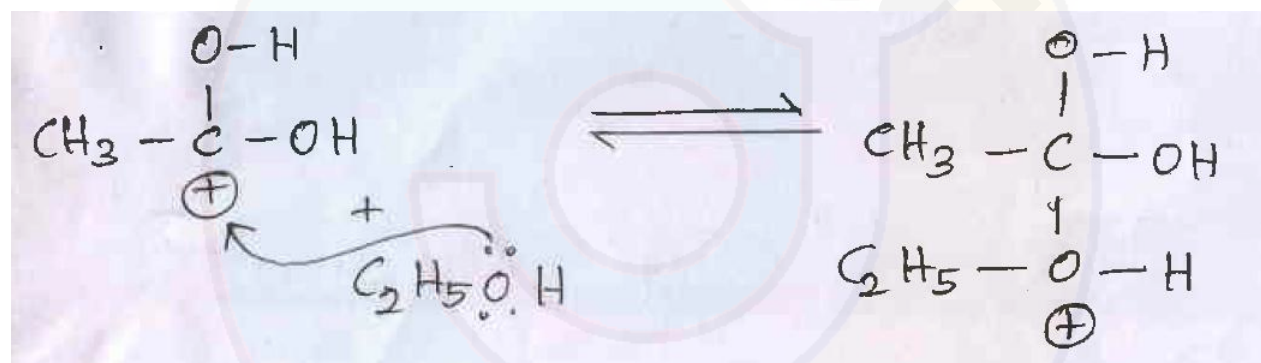
(OR)

Mechanism:

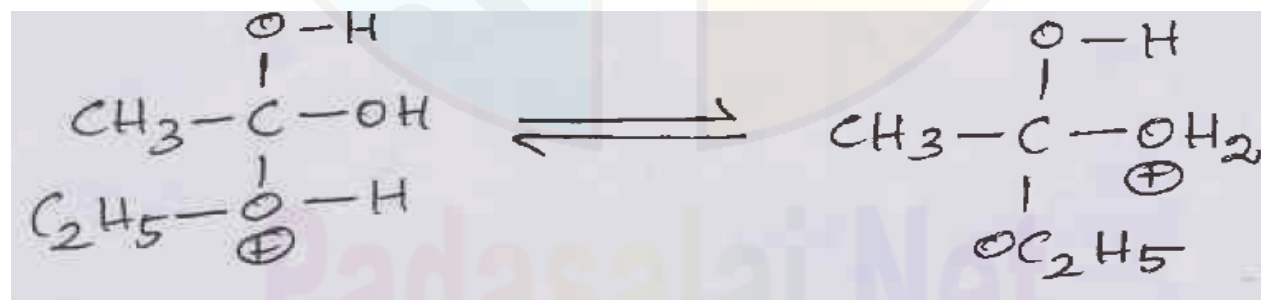
step:1 protonation of carboxylic acid



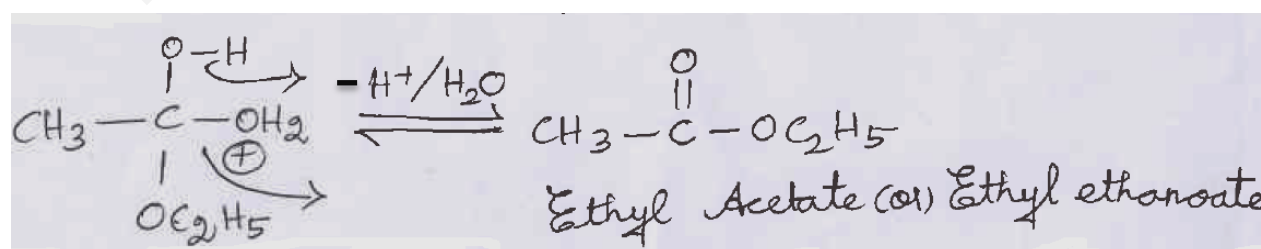
step:2 Attack by nucleophile



step:3 Hydrogen ion transfer

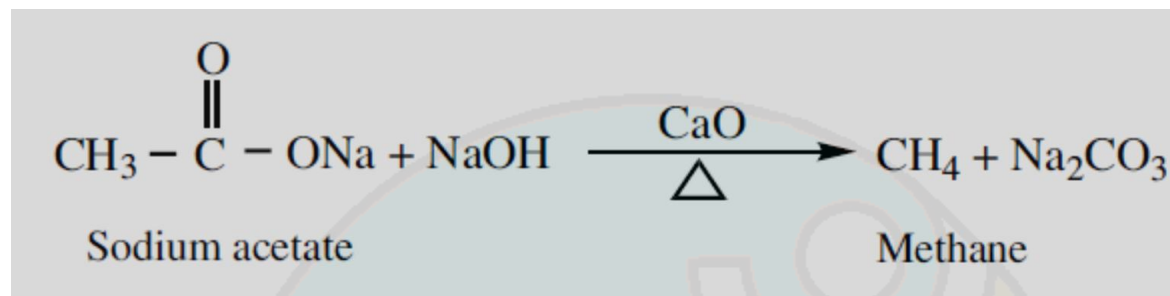


step:4 Elimination of proton and water



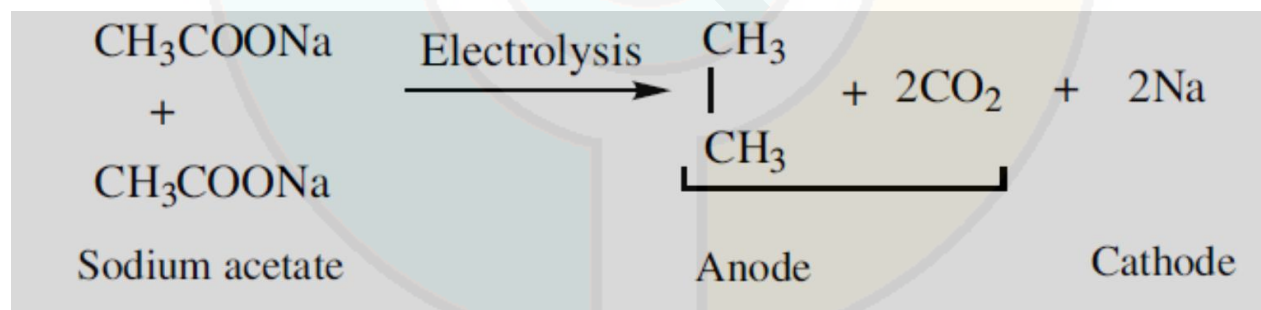
32.DECARBOXYLATION REACTION

Removal of CO_2 from carboxyl group is called as decarboxylation. carboxylic acids lose carbon di oxide to form hydrocarbon when their sodium salts are heated with soda lime (NaOH and CaO in the ratio 3:1)



33.KOLBE'S ELECTROLYTIC DECARBOXYLATION

The aqueous solutions of sodium or potassium salts of carboxylic acid on electrolysis gives alkanes at anode. This reaction is called kolbes electrolysis.

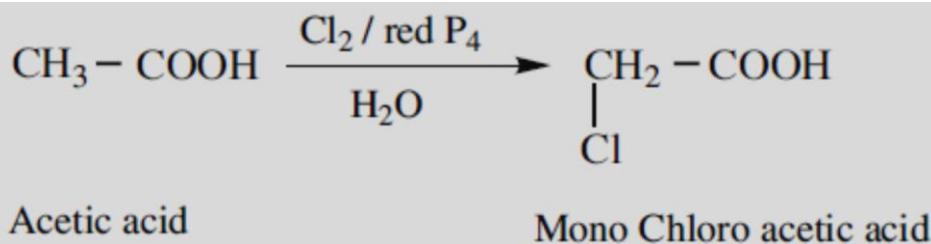


Sodium formate solution on electrolysis gives hydrogen.

34.HELL-VOLHARD-ZELINSKY(HVZ)REACTION

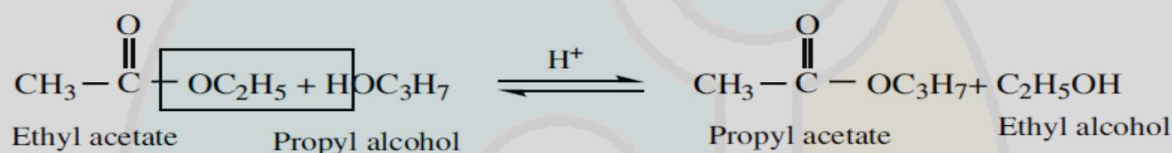
Carboxylic acids having an α - hydrogen are halogenated at the α - position on treatment with chlorine or bromine in the presence of small amount of red phosphorus to form α halo carboxylic acids. this reaction is known as Hell-Volhard-Zelinsky reaction (HVZ reaction).

Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi



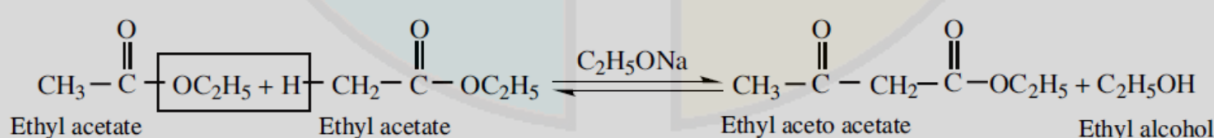
35. TRANSESTERIFICATION

Ester of an alcohol can react with another alcohol in the presence of a mineral acid to give the ester of second alcohol. The interchange of alcohol portions of the esters is termed transesterification.



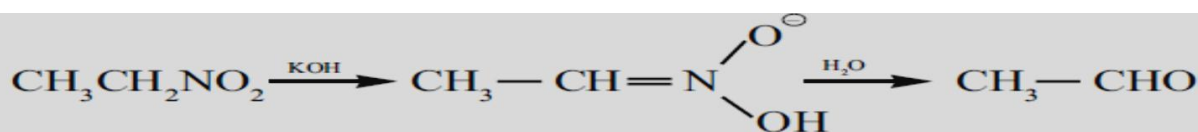
36. CLAISEN CONDENSATION

Esters containing at least one α - hydrogen atom undergo self condensation in the presence of a strong base such as sodium ethoxide to form β - keto ester.



37. NEF REACTION (OR) NEF CARBONYL SYNTHESIS

The conversion of nitro compounds into carbonyls is known as nef reaction.

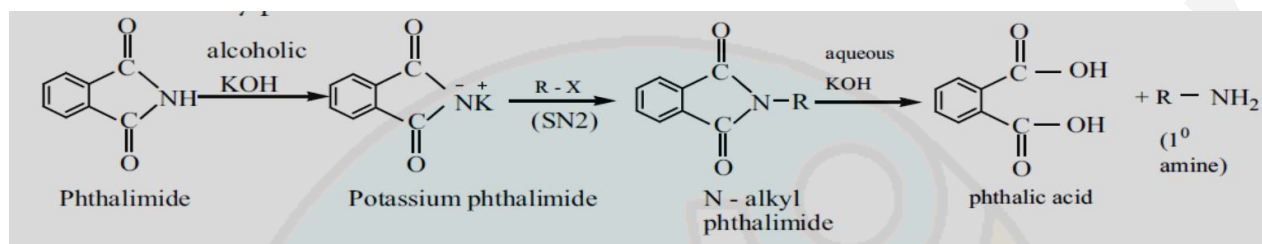


Nitro ethane

ethanal

38.GABRIEL PHTHALIMIDE SYNTHESIS

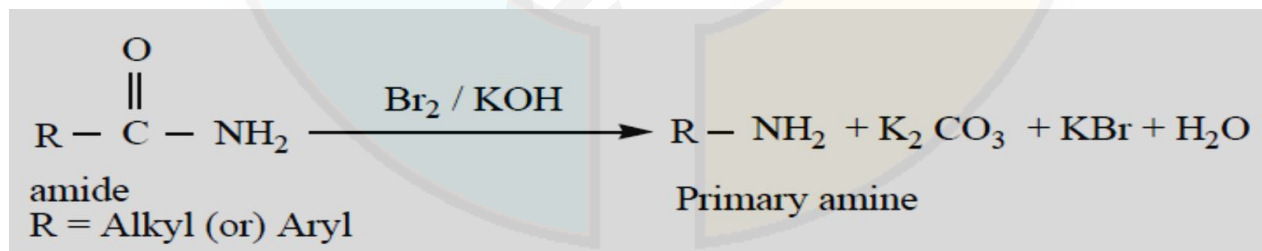
gabriel synthesis is used for the preparation of aliphatic primary amines. Phthalimide on treatment with ethanolic KOH forms potassium salt of phthalimide which on heating with alkyl halide followed by alkaline hydrolysis gives primary amines.



39.HOFFMANN'S DEGRADATION REACTION

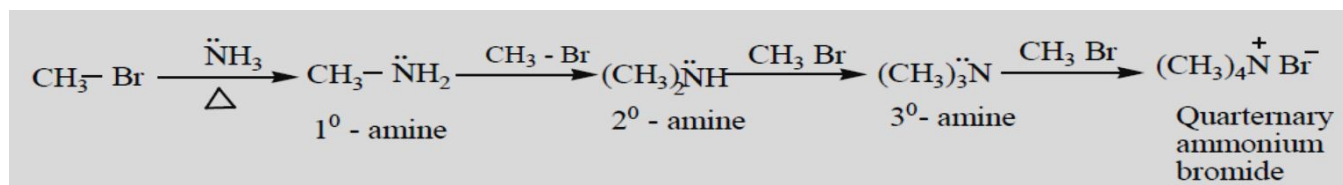
(or) HOFMANN BROMIDE REACTION

When Amide are treated with bromine in the presence of aqueous or ethanolic solution of KOH, primary amines with one carbon atom less than the parent amide are obtained.



40.HOFFMANN'S AMMONOLYSIS

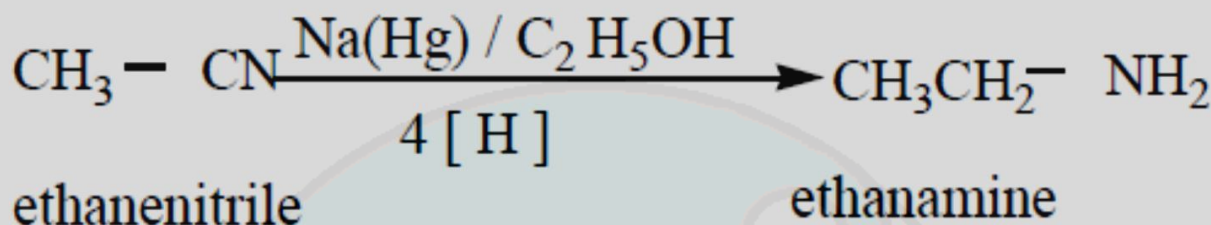
When alkyl halide or benzylhalides are heated with alcoholic ammonia in a sealed tube, mixture of 1° 2° and 3° amines and quaternary ammonium salts are obtained.



Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi

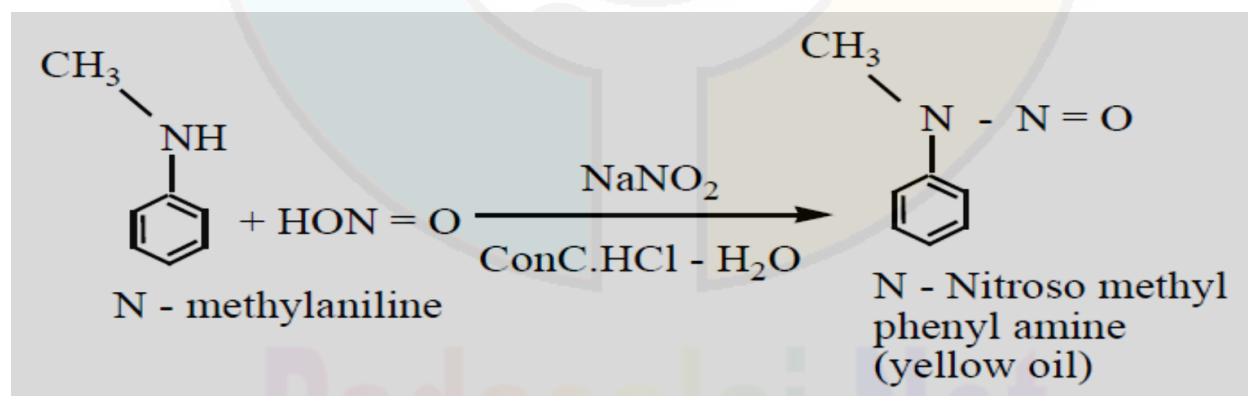
41.MENDIUS REACTION

Reduction of alkyl or aryl Cyanides with H_2/Ni or $LiAlH_4$ or Na / C_2H_5OH gives primary amines. The reduction reaction in which Na / C_2H_5OH is used as a reducing agent is called mendius reaction.



42.LIBERMANN'S NITROSO TEST

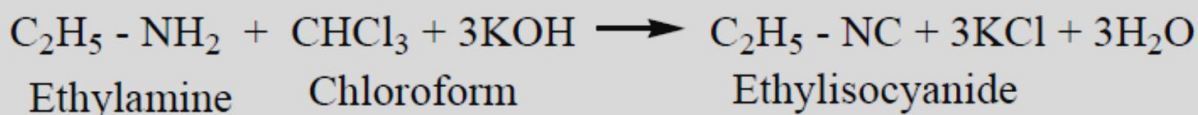
Alkyl and aryl secondary amines react with nitrous acid to give N-nitroso amine as yellow oily liquid which is insoluble in water . This reaction is known as Libermann's nitroso test.



43.CARBYLAMINE REACTION

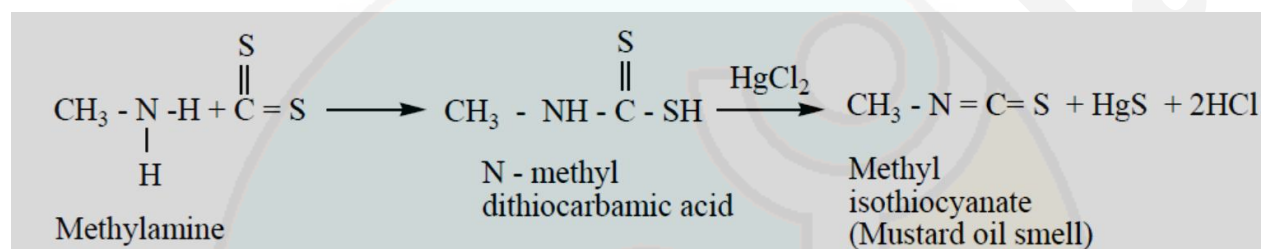
Aliphatic or aromatic primary amines react with chloroform and alcoholic KOH to give isocyanides (carbylamines), which has an unpleasant smell. This reaction is known as carbylamines test. This test used to identify the primary amines.

Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi



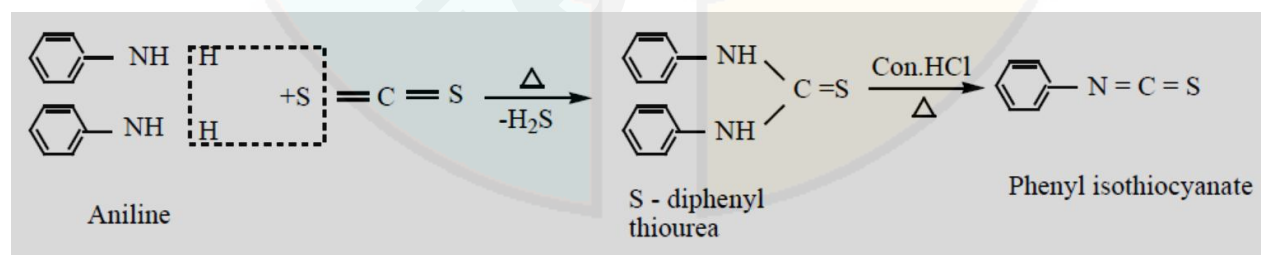
44.MUSTARD OIL REACTION

When primary amines are treated with carbon disulphide (CS_2), N-alkyldithio carbonic acid is formed which on subsequent treatment with HgCl_2 , give an alkyl isothiocyanate.



45.HOFMANN- MUSTARD OIL REACTION

when aniline is treated with carbon disulphide, or heated together, S-diphenylthio urea is formed which on boiling with strong HCl , phenyl isothiocyanate(phenyl mustard oil), is formed.



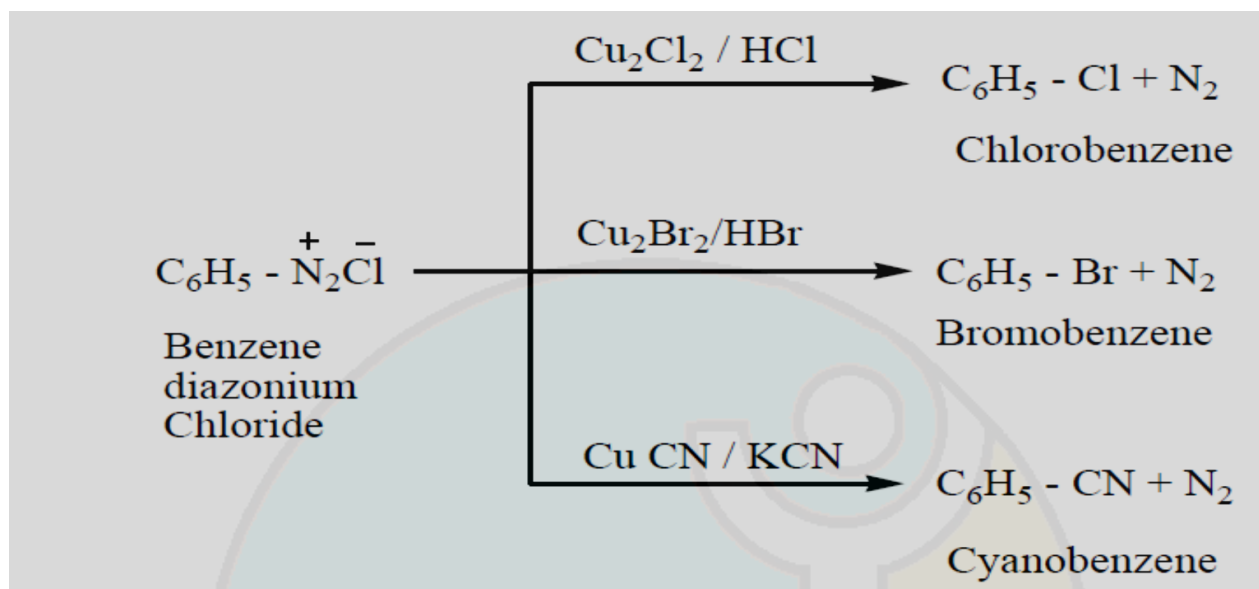
These reactions are known as Hofmann_Mustard oil reaction. This test is used to identify the primary amines.

46.SANDMEYER REACTION

On mixing freshly prepared solution of benzene diazonium chloride with cuprous halides (chlorides and bromides), aryl halides are obtained. This reaction is called sandmeyer reaction.

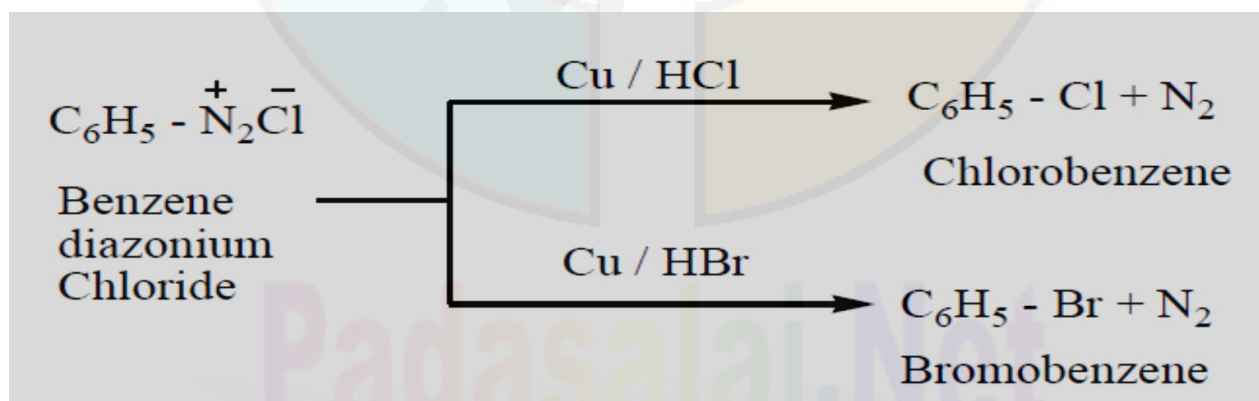
Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi

When diazonium salts are treated with cuprous cyanide, cyanobenzene is obtained.



47. GATTERMANN REACTION.

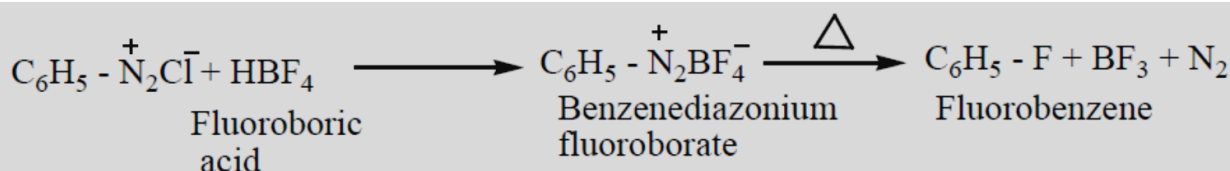
Conversion of benzene diazonium chloride into chloro/bromo arenes can also be effected using hydrochloric/hydrobromic acid and copper powder. This reaction is called gattermann reaction



48. BALTZ-SCHIEMANN REACTION

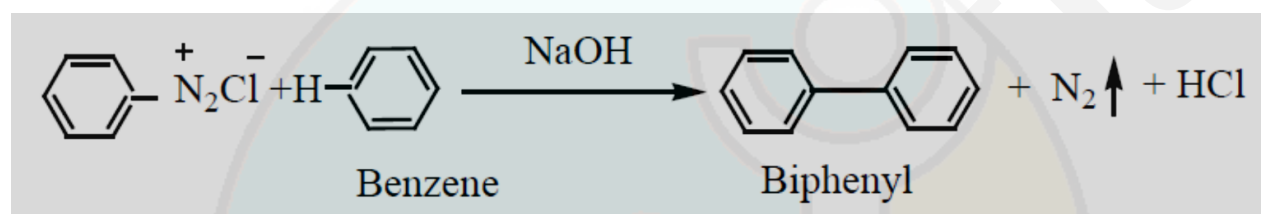
When benzene diazonium chloride is treated with fluoroboric acid, benzene diazonium tetra fluoroborate is precipitated which on heating decomposes to give fluoreobenzene .

Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi



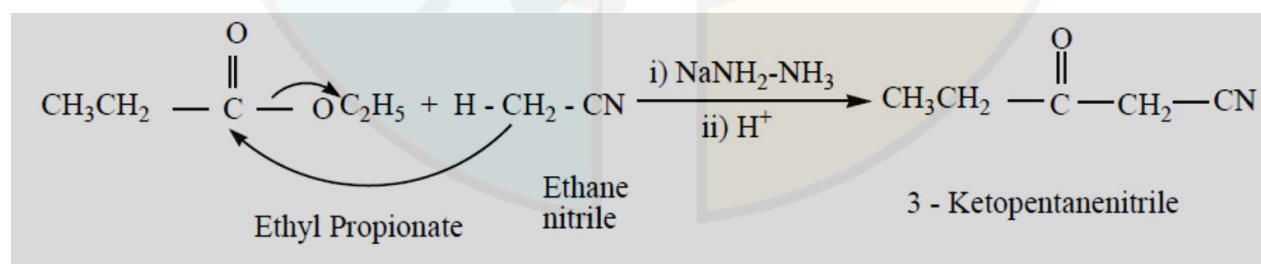
49. GOMBERG REACTION

Benzene diazonium chloride reacts with benzene in the presence of sodium hydroxide to give biphenyl. This reaction is known as the Gomberg reaction.



50. LEVINE AND HAUSER ACETYLATION

The nitriles containing α -hydrogen also undergo condensation with esters in the presence of sodamide in ether to form ketonitriles. This reaction is known as Levine and Hauser acetylation.

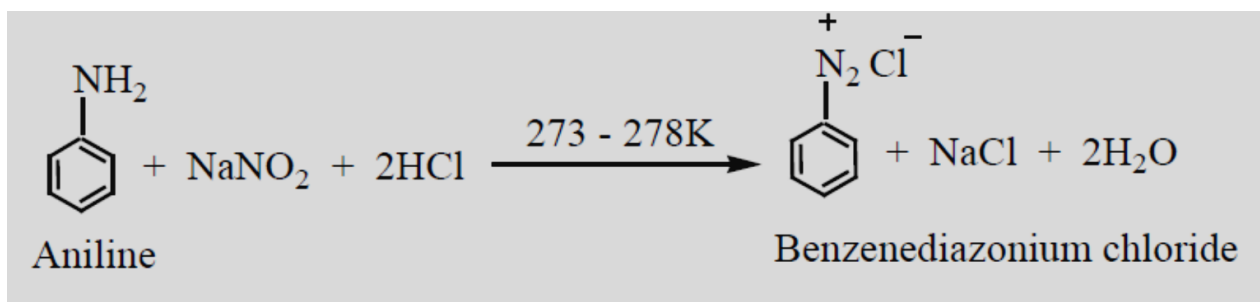


This reaction involves replacement of ethoxy (OC_2H_5) group by methylnitrile ($-\text{CH}_2\text{CN}$) group and is called as cyanomethylation reaction.

51. DIAZOTIZATION REACTION

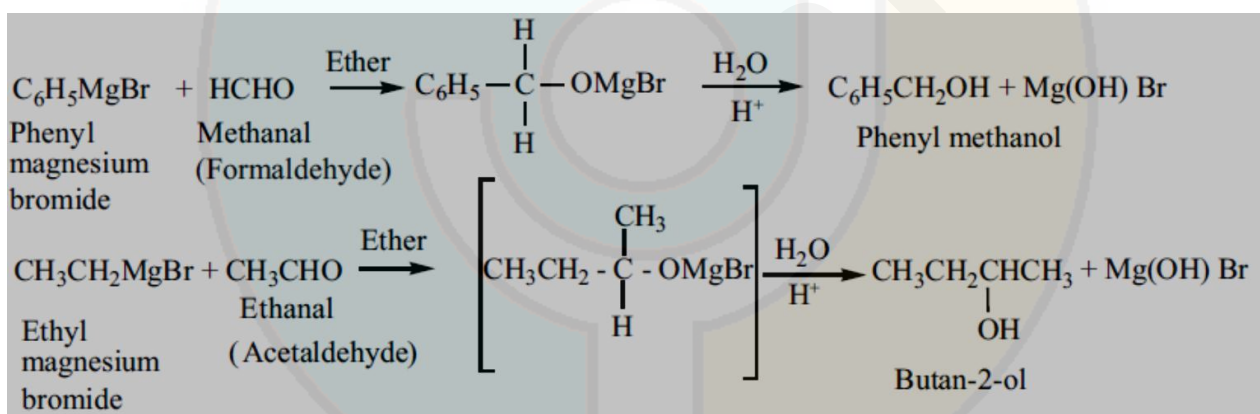
Aniline reacts with nitrous acid at low temperature (273-278K) to give benzene diazonium chloride which is stable for a short time and slowly decomposes even at low temperature. This reaction is known as diazotization.

Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi



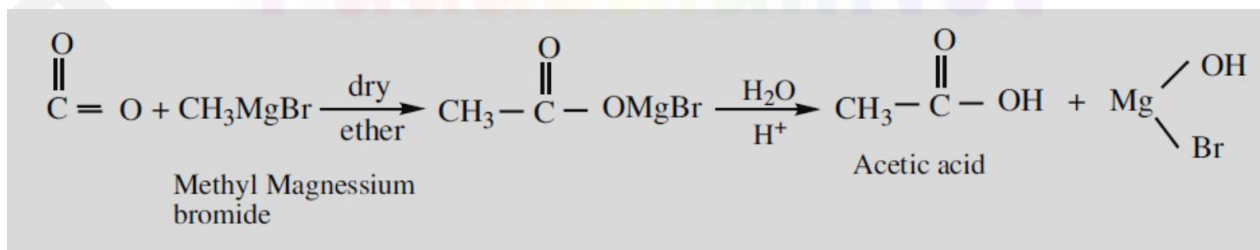
52.ALCOHOL FROM RMgX

Nucleophilic addition of Grignard reagent(RMgX) to aldehyde /ketones in presence of dry ether followed by the acid hydrolysis gives alcohols. formaldehyde gives primary alcohol and other aldehydes give secondary alcohols Ketones give tertiary alcohols.



53.ACID FROM RMgX

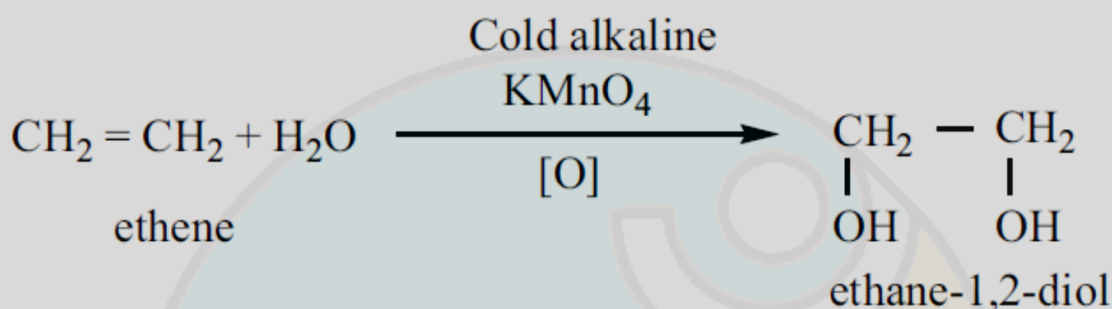
Grignard reagent(RMgX) react with carbon di oxide (dry ice) to forms salts of carboxylic acid which in turn give corresponding carboxylic acid after acidification with mineral acid.



ANOTHER MORE IMPORTANT REACTIONS

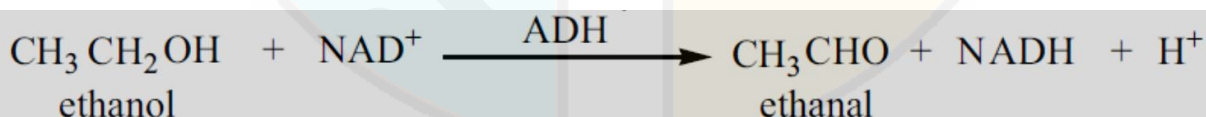
1.USING BAEYER'S REAGENT :

Ethylene using cold alkaline solution of potassium permanganate (baeyer's reagent) gives ethylene glycol.



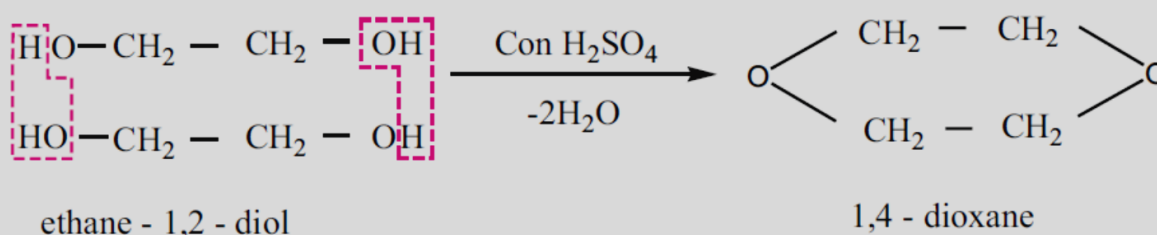
2.BIOLOGICAL OXIDATION :

The fermentation of the food consumed by an animal produces alcohol. To detoxify the alcohol the liver produces an enzyme called alcohol dehydrogenase (ADH). Nicotinamide adenine dinucleotide(NAD) present in the animals act as a oxidizing agent and ADH catalyses the oxidation of toxic alcohol into non-toxic aldehyde.



3.1.4 dioxane :

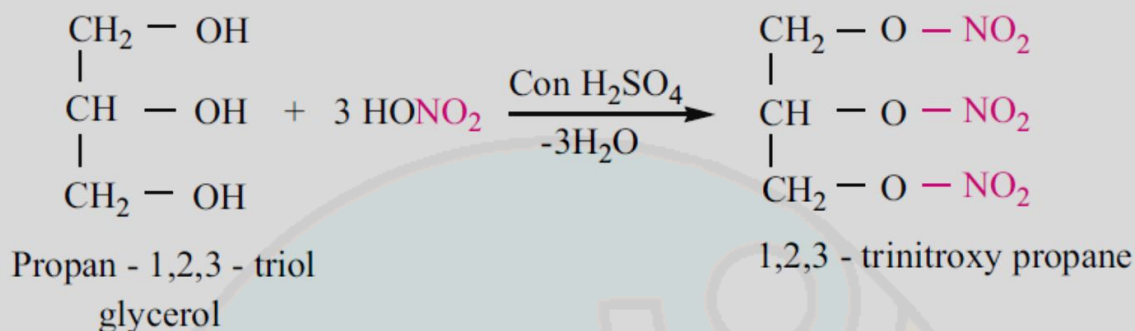
When distilled with conc.H₂SO₄, glycol forms dioxane.



Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi

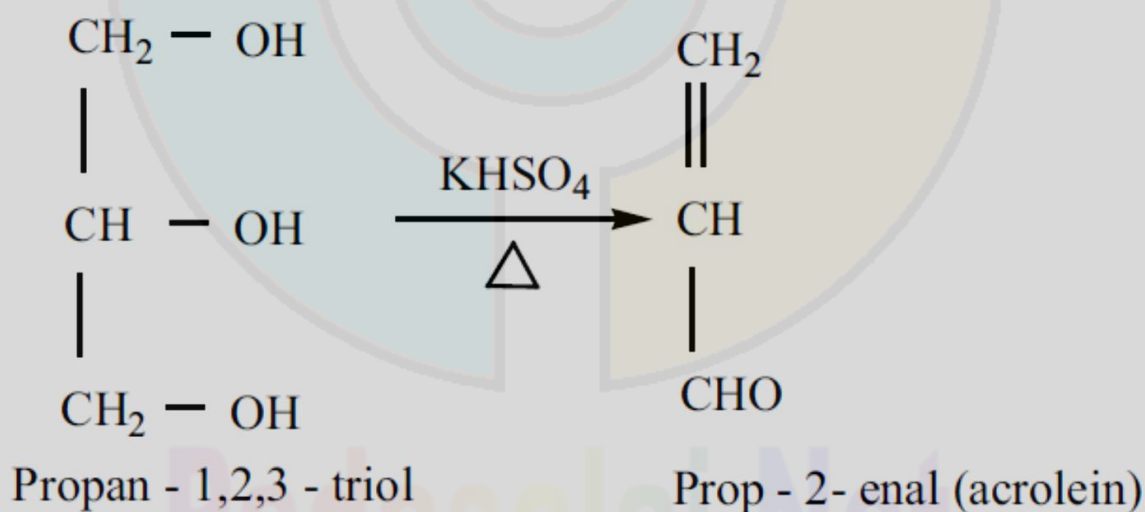
4.TNG(TRINITROGLYCERINE) :

Glycerol reacts with con.HNO_3 in the presence of $\text{con.H}_2\text{SO}_4$ to form TNG(nitroglycerine).



5.AGROLEIN :

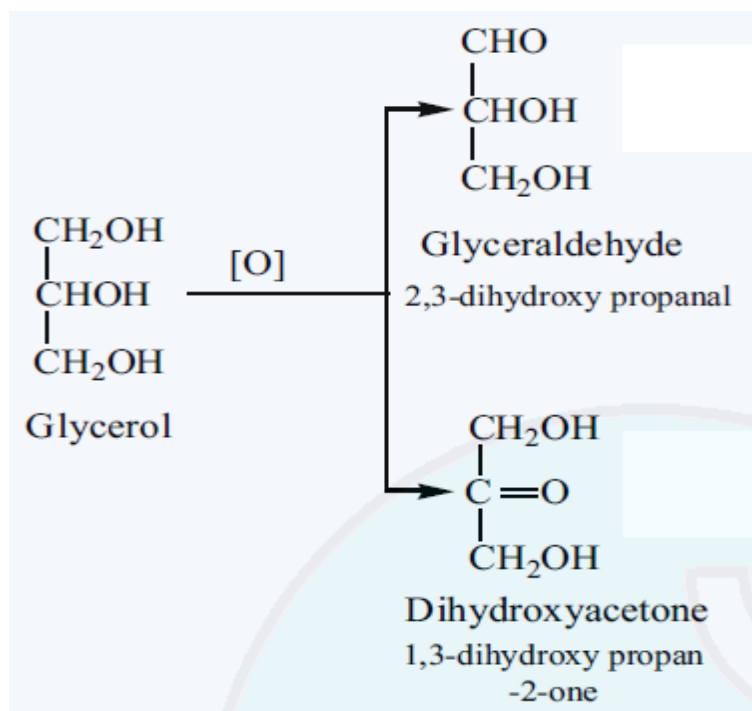
When glycerol is heated with dehydrating agents such as $\text{con.H}_2\text{SO}_4$, KHSO_4 . It undergoes dehydration to form acrolein.



6.GLYCEROSE :

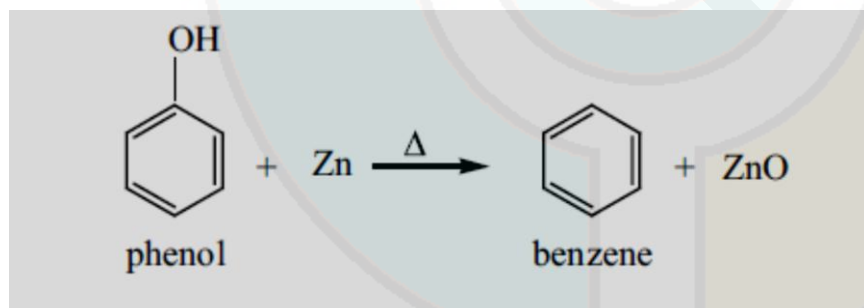
Oxidation of glycerol with $\text{Br}_2/\text{H}_2\text{O}$ or NaOBr or Fenton's reagent ($\text{FeSO}_4 + \text{H}_2\text{O}_2$) gives a mixture of glyceraldehyde and dihydroxy acetone (This mixture is named as glycerose).

Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi



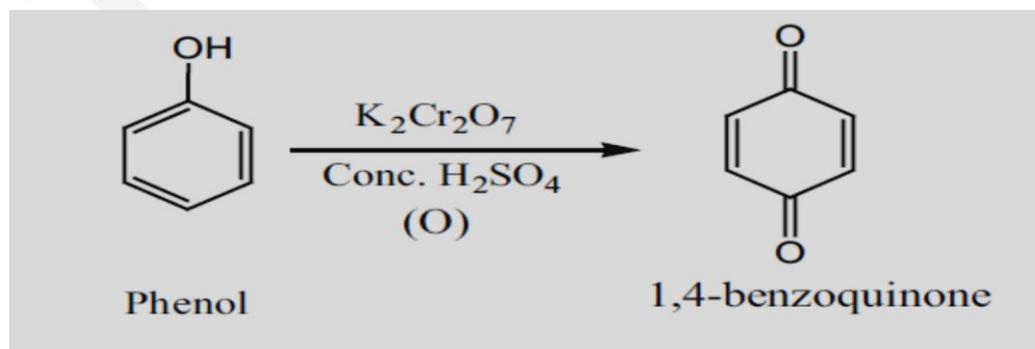
7.PHENOL TO BENZENE :

Phenol is converted to benzene on heating with zinc dust.



8.PHENOL TO 1,4- BENZOQUINONE :

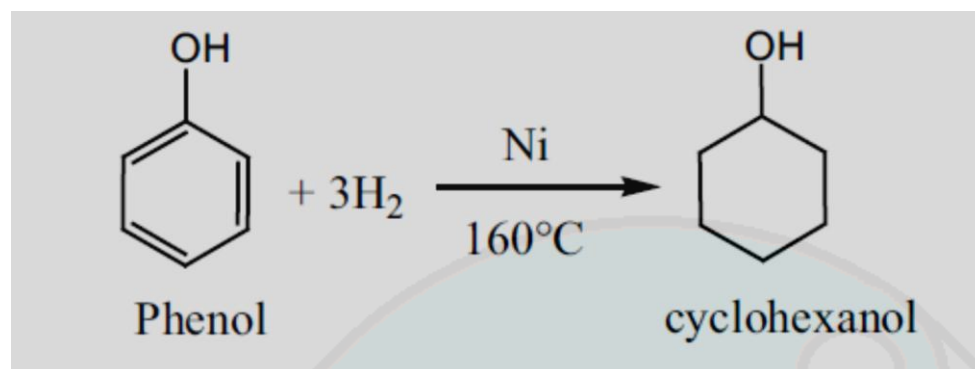
Phenol undergoes oxidation with air or acidified $\text{K}_2\text{Cr}_2\text{O}_7$ with conc. H_2SO_4 to form 1,4-benzoquinone.



Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi

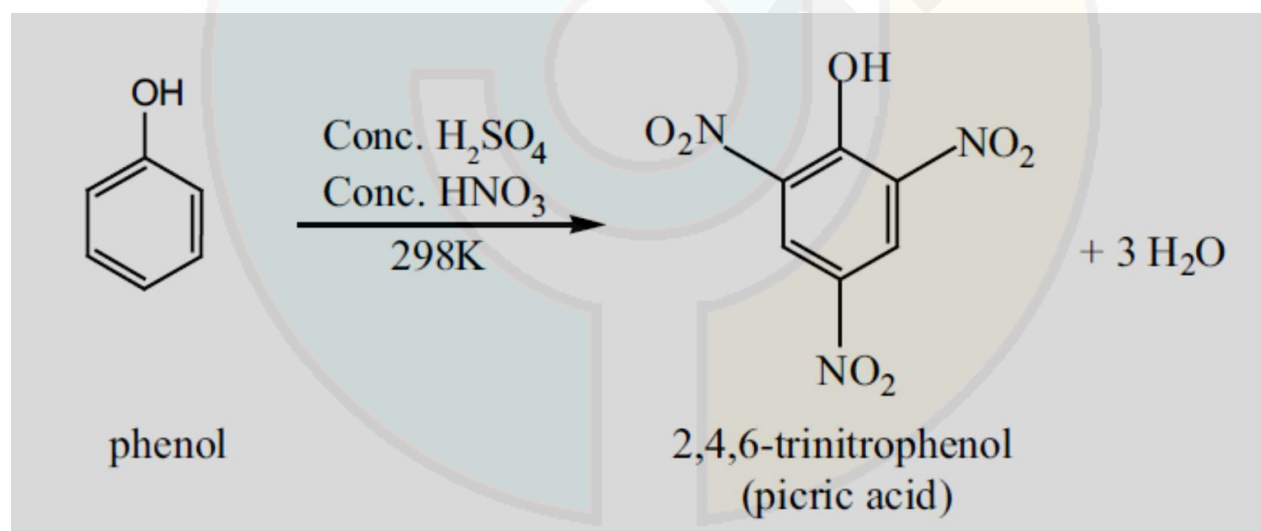
9.PHENOL TO CYCLOHEXANOL :

Phenol on catalytic hydrogenation gives cyclohexanol.

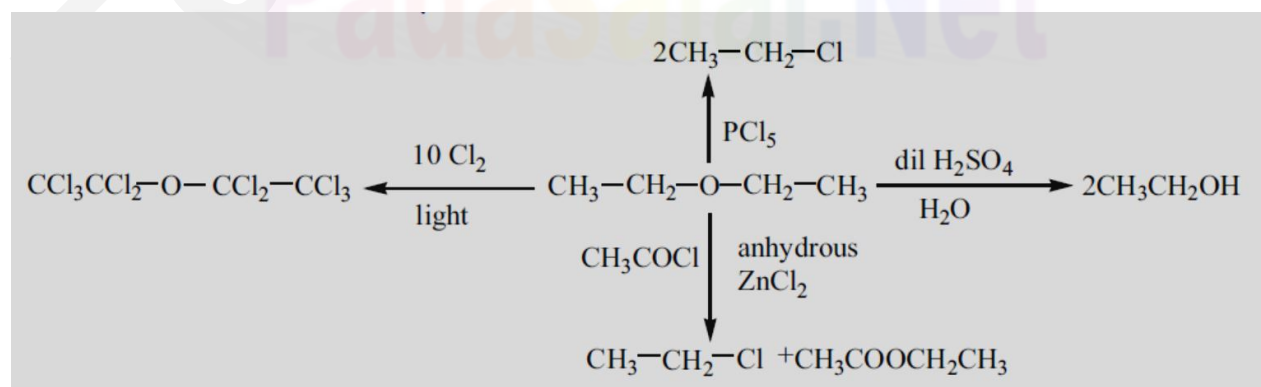


10.PHENOL TO PICRIC ACID :

Phenol can be nitrated with conc.HNO₃ + Conc. H₂SO₄ gives picric acid.



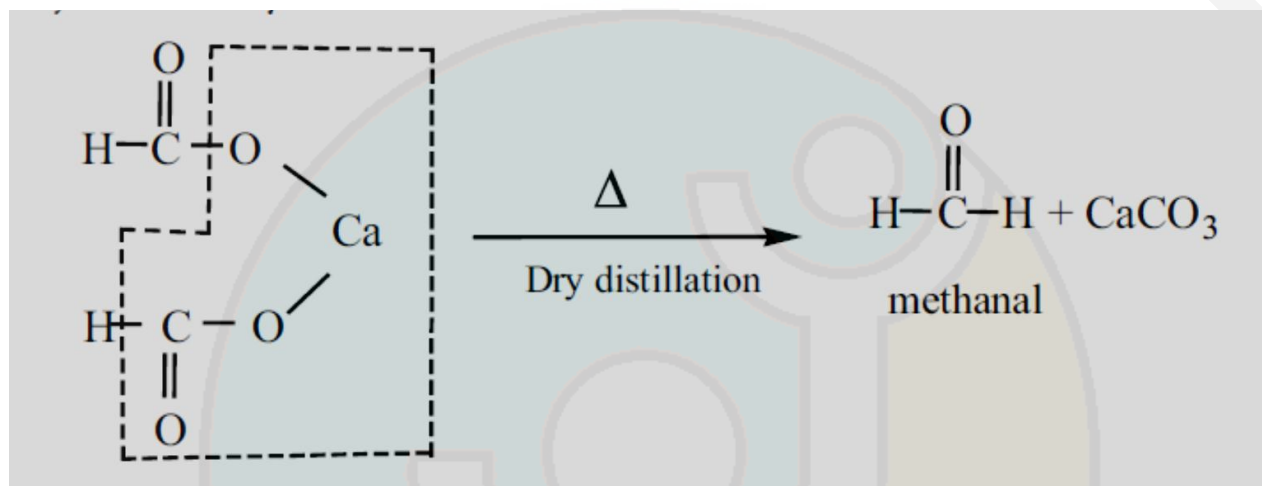
11.DIETHYL ETHER REACT WITH SOME COMPOUNDS :



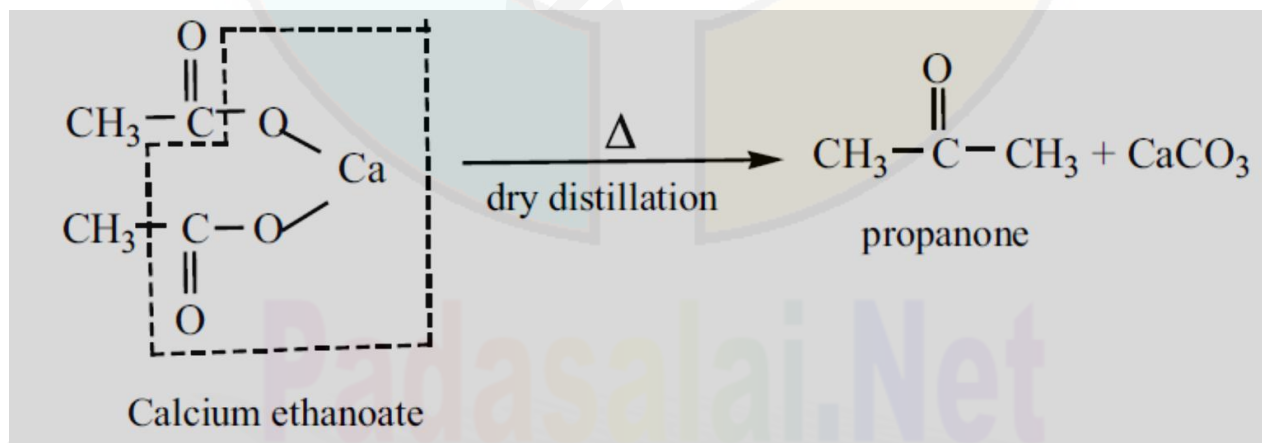
12.CALCIUM SALTS OF CARBOXYLIC ACID :

Aldehyde and ketones may be prepared by the dry distillation of calcium salts carboxylic acids.

Aldehyde are obtained when the mixture of calcium salts of carboxylic acid calcium formate is subjected to dry distillation.



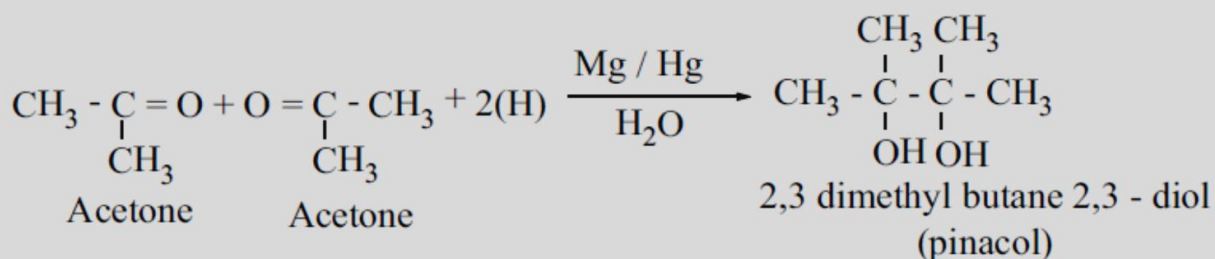
Symmetrical ketone can be obtained by dry distillation of the calcium salt of carboxylic acids.



13.KETONE REDUCTION TO PINACOLS :

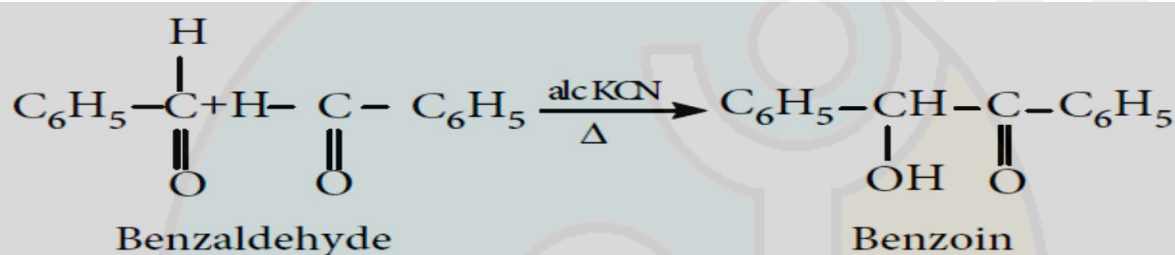
Ketones on reduction with magnesium amalgam and water, are reduced to symmetrical diols known as pinacol.

Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi



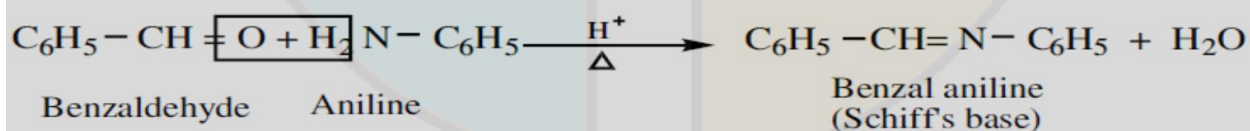
14.BENZOIN CONDENSATION :

Benzaldehyde reacts with alcoholic KCN to form benzoin.



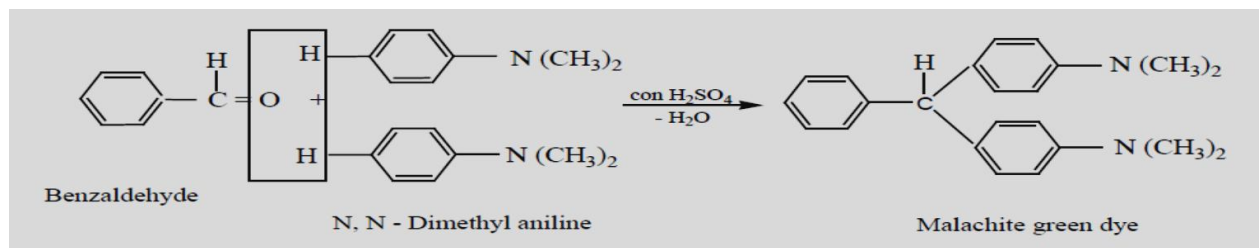
15.SCHIFF'S BASE :

Aromatic aldehydes react with primary amines (aliphatic or aromatic) in the presence of an acid to form Schiff's base.



16.MALACHITE GREEN DYE :

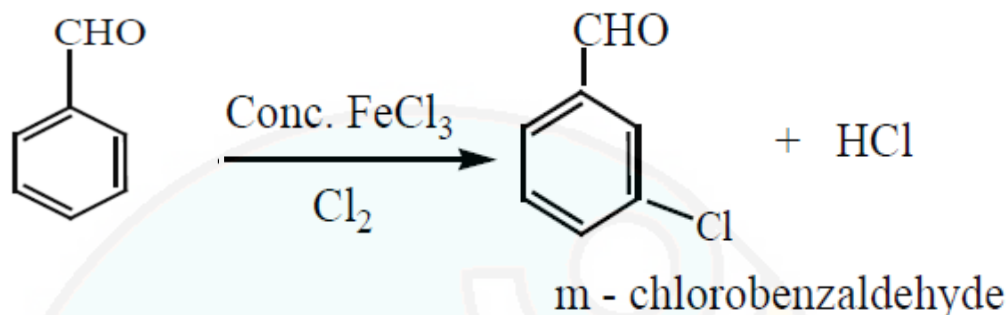
Benzaldehyde condenses with tertiary aromatic amines like N,N-dimethyl aniline in the presence of the strong acids to form triphenyl methane dye.



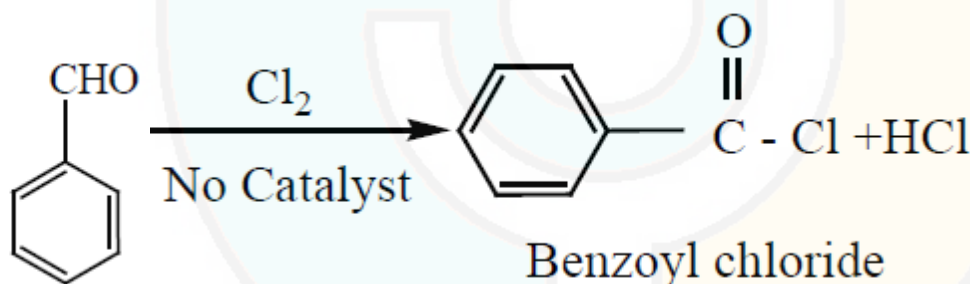
Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi

17.BENZALDEHYDE REACT WITH CHLORINE PRESENCE AND ABSENSE OF CATALYST :

Benzaldehyde react with chlorine in presence of catalyst :



Benzaldehyde react with chlorine in absence of catalyst :



18.REDUCING PROPERTY OF FORMIC ACID :

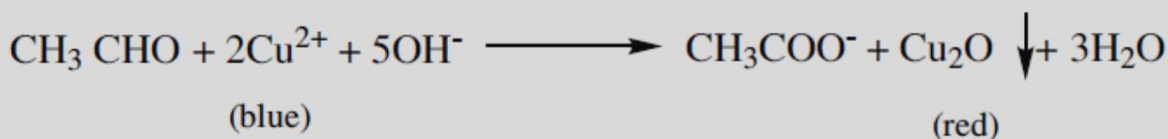
Formic acid contains both an aldehyde as well as an acid group. Hence, like other aldehyde, formic acid can easily be oxidized and therefore acts as a strong reducing agent.

- i) Formic acid reduces tollens reagents (ammonical silver nitrate solution) to metallic silver.



Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi

Formic acid reduces Fehlings solution. It reduces blue coloured cupric ions to red coloured cuprous ions.



19.AMPHOTERIC CHARACTER OF ACETAMIDE :

Amides behave both as weak acid as well as weak base and thus show amphoteric character.

Acetamide (as base) reacts with hydrochloric acid to form salts.

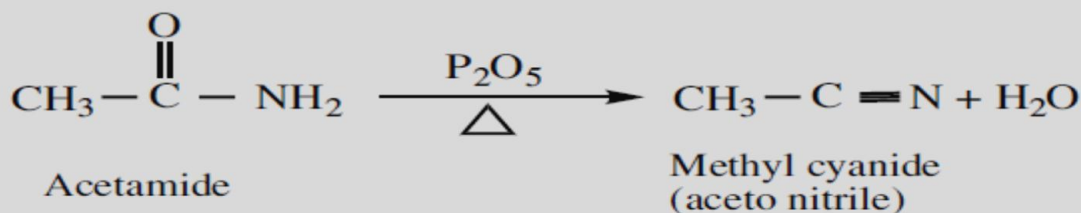


Acetamide (as acid) reacts with sodium to form sodium salt and hydrogen gas is liberated.



20.DEHYDRATION OF AMIDE :

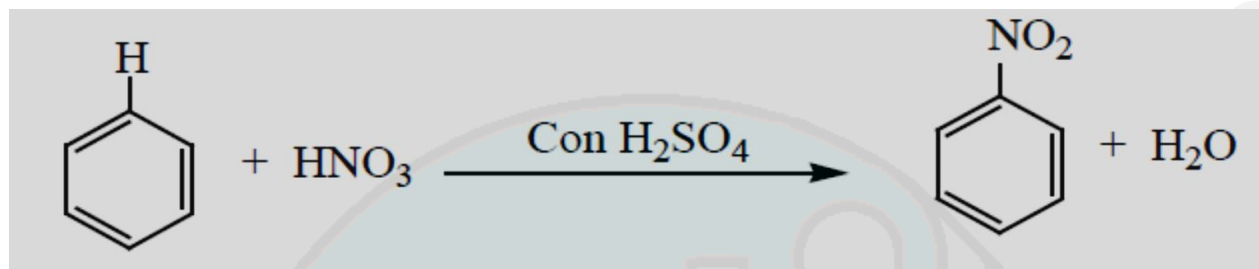
Amides on heating with strong dehydrating agents like P_2O_5 get dehydrated.



Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi

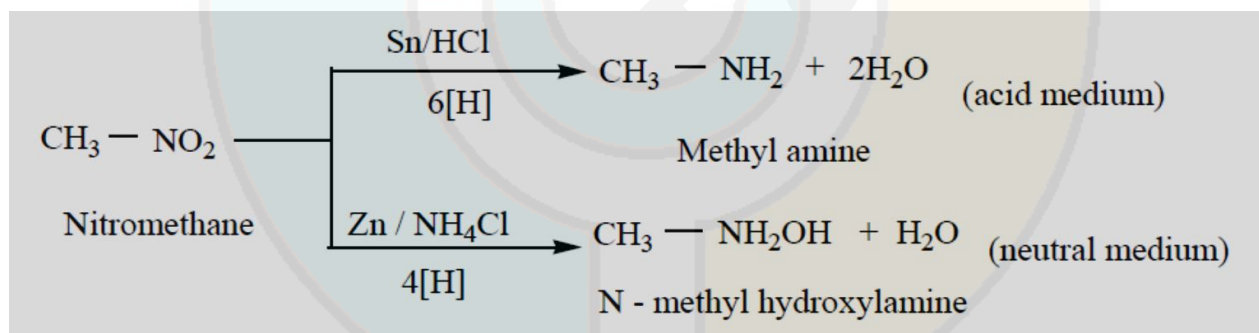
21. PREPARATION OF NITRO BENZENE :

When benzene is heated at 330K with a nitrating (Con.HNO₃ + Con.H₂SO₄) electrophilic substitution takes place to form nitro benzene. (oil of mirbane).



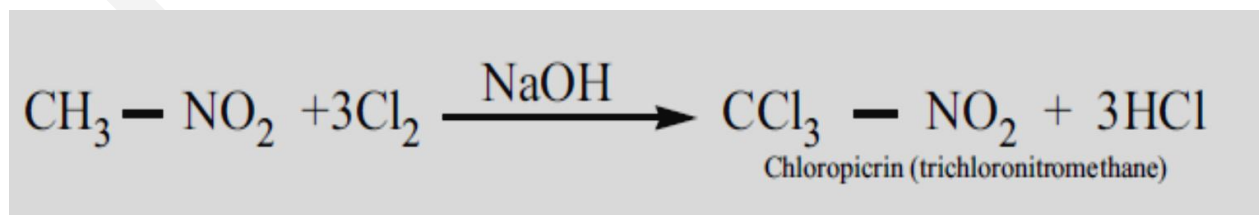
22. REDUCTION OF NITROALKANES :

The final product depends upon the nature of reducing agent as well as the P^H of the medium.

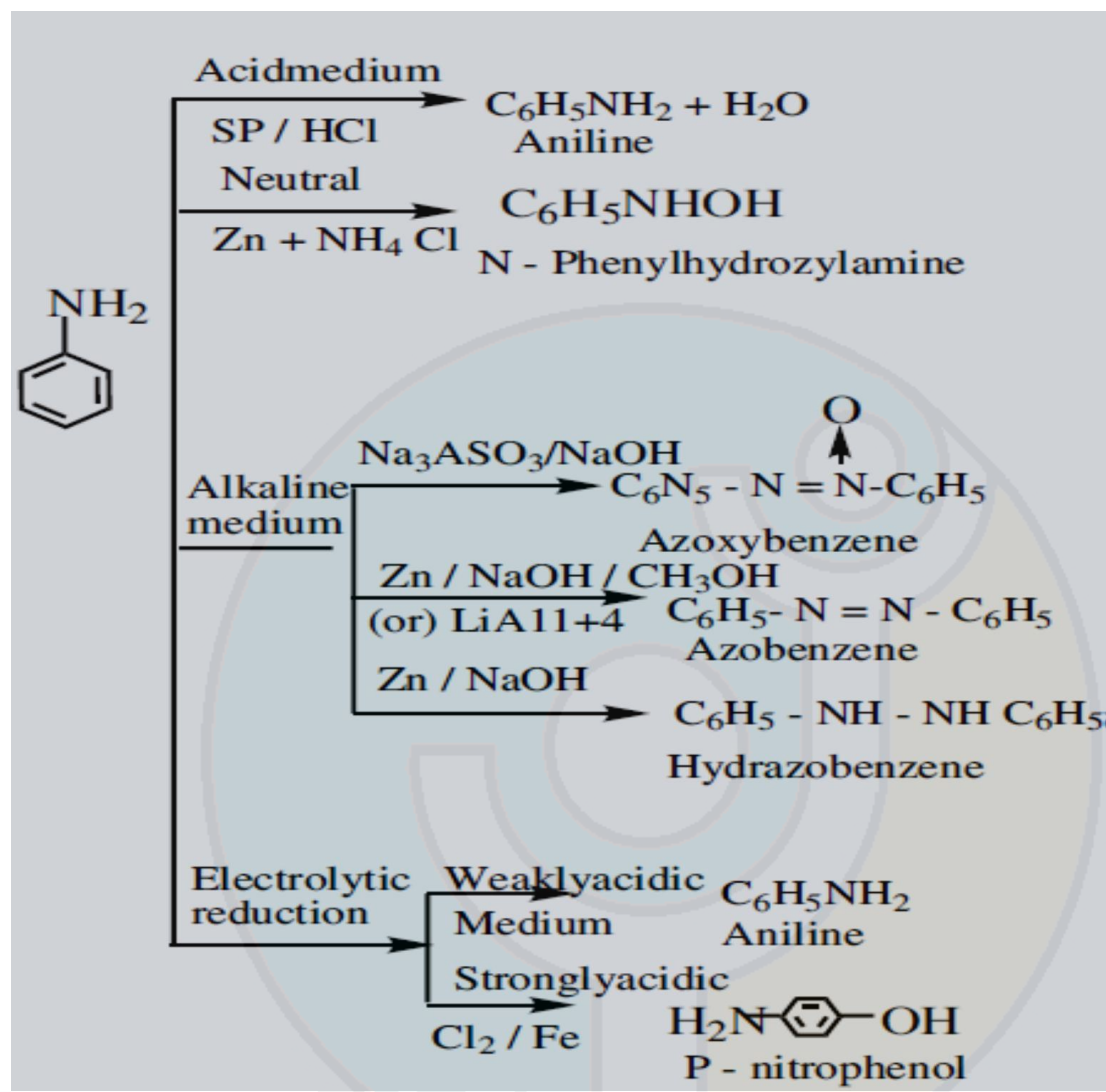


23. CHLOROPICRIN :

Primary and secondary nitroalkanes on treatment with Cl₂ or Br₂ in the presence of NaOH give halonitroalkanes. The α-H atom of nitroalkanes are successively replaced by halogen atoms.



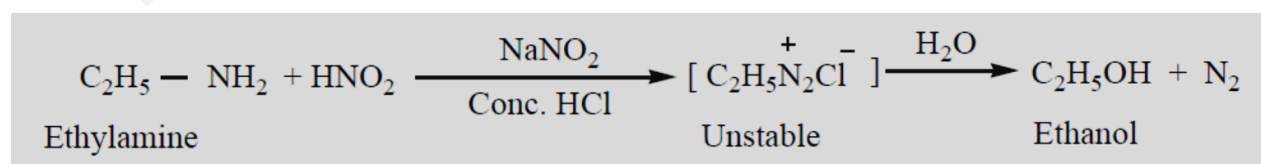
24. REDUCTION OF NITROBENZENE :



25. AMINE REACT WITH NITROUS ACID :

i) PRIMARY AMINE REACT WITH NITROUS ACID :

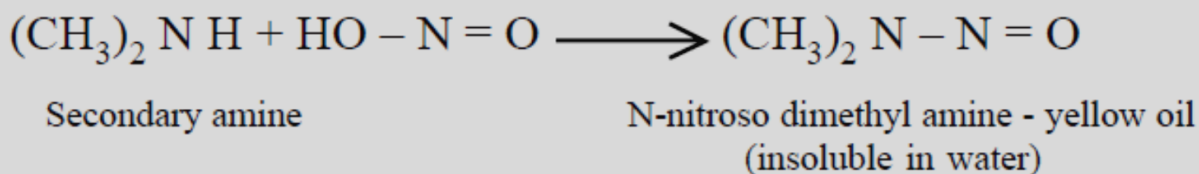
Ethylamine reacts with nitrous acid to give ethyl diazonium chloride, which is unstable and it is converted to ethanol by liberating N_2 .



ii) SECONDARY AMINE REACT WITH NITROUS ACID :

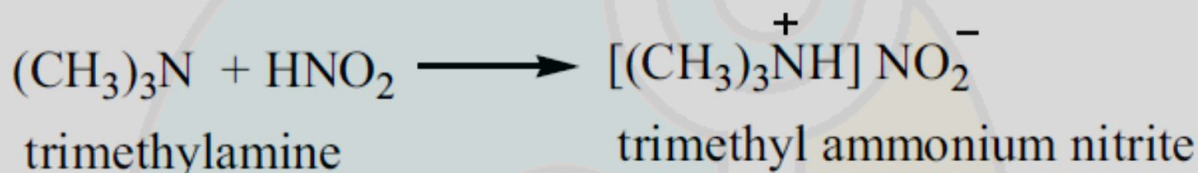
Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi

Alkyl and aryl secondary amines react with nitrous acid to give N-nitroso amine as yellow oily liquid which is insoluble in water.



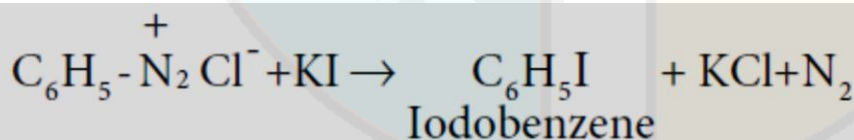
ii) TERTIARY AMINE REACT WITH NITROUS ACID :

Aliphatic tertiary amine reacts with nitrous acid to form trialkyl ammonium nitrite salt, which is soluble in water.



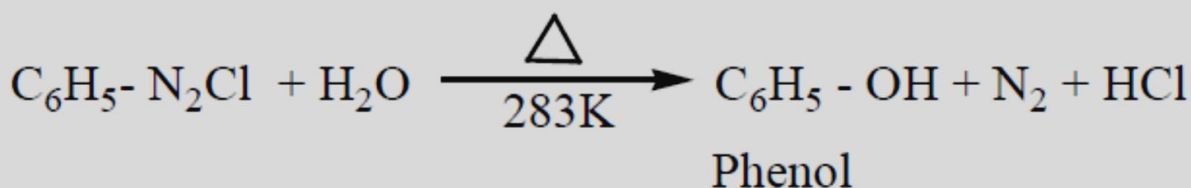
26. $C_6H_5N_2Cl$ to IODO BENZENE :

Aqueous solution of benzene diazonium chloride is warmed with KI to form iodobenzene



27. $C_6H_5N_2Cl$ to PHENOL :

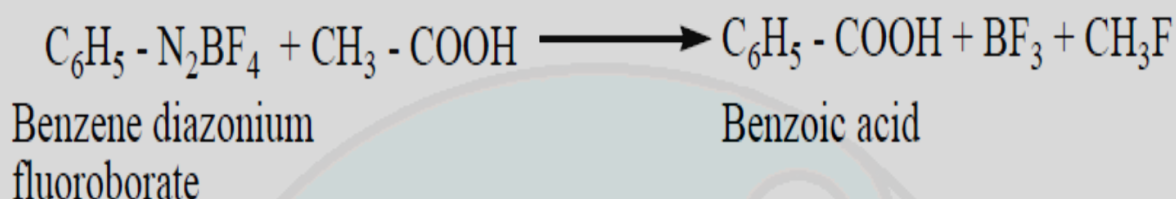
Benzene diazonium chloride solution is added slowly to a large volume of boiling water to get phenol.



Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi

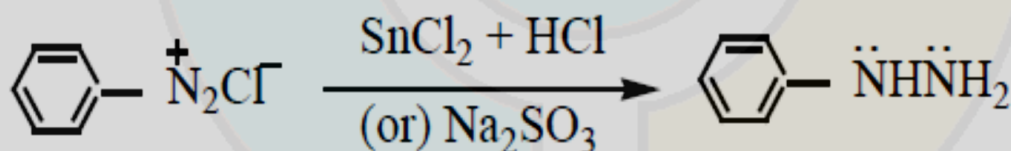
28. $C_6H_5N_2Cl$ to BENZOIC ACID :

When diazonium fluoroborate is heated with acetic acid, benzoic acid is obtained. This reaction is used to convert the of carboxylic acid into aromatic carboxylic acid .



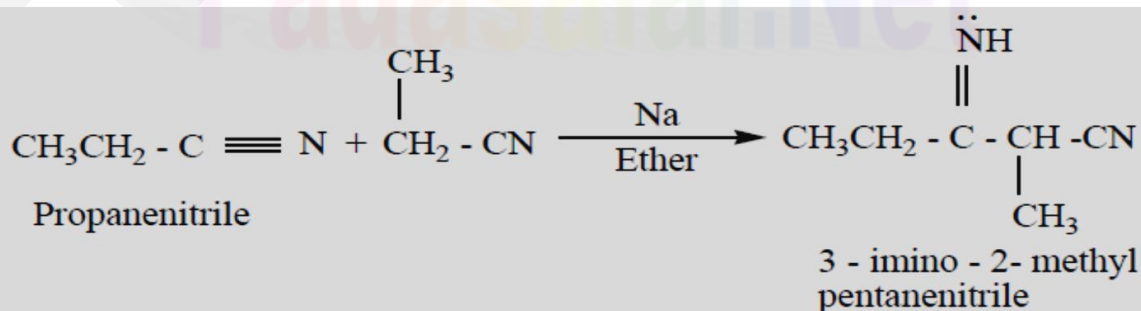
29. $C_6H_5N_2Cl$ to PHENYL HYDRAZINE :

Certain reducing agents like $SnCl_2/HCl$; Zn dust / CH_3COOH , sodium hydrosulphite, sodium sulphite. Reduce benzene diazonium chloride to phenyl hydrazine.



30. THORE NITRILE CONDENSATION :

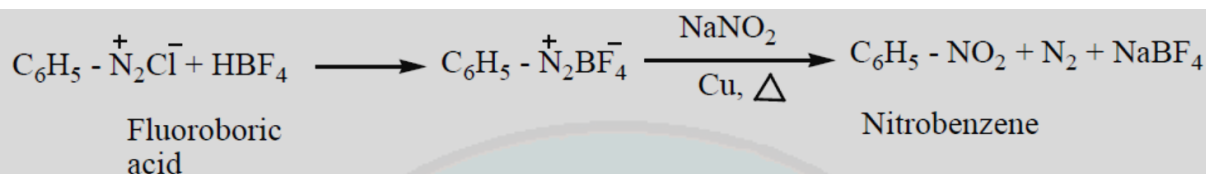
Self condensation of two molecules of alkyl nitrile (containing α -H atom) in the presence of sodium to form iminonitrile.



Mount Carmel Mission Mat. Hr. Sec. School, Kallakurichi

31. $C_6H_5N_2Cl$ to NITROBENZENE :

When diazonium fluoroborate is heated with aqueous sodium nitrite solution in the presence of copper, the diazonium group is replaced by – NO_2 group.



S. Manikandan, Msc, B.Ed.,
PG Assitant-7708543401
Department of Chemistry
Mount Carmel Mission Mat. Hr. Sec. School,
Kallakurichi

“Life is nothing without chemistry.

All are made up of atoms and molecules”