

* Distinguishing Tests.

* 2 to 3 dist. tests.

* (a) write Reaction (b) write theory.

* Test for Aldehyde & Ketones. $\begin{matrix} \text{O} \\ \parallel \\ -\text{C}- \end{matrix}$

(a) Tollen's Reagent Test

(b) Fehling's Solⁿ Test

(c) Iodoform Test

(d) Schiff's Reagent Test.

* Test for Carboxylic Acid (*Stronger acid than Phenols & Alcohols).

(a) NaHCO_3 Test (Sod. bicarbonate Test).

(b) FeCl_3 Test.

(c) Esterification.



* Test for Amines:

- (a) Carbylamine Test
- (b) Hinsberg Reagent Test.

* Test for Aniline:

- (a) Br-H₂O Test.
- (b) Dye-Test.

(1) Tollen's Reagent Test: Only aldehyde (Aliphatic | Aromatic | No Ketones.

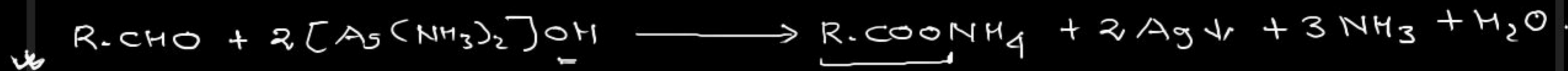
"Silver Mirror Test"

"Ammonical AgNO₃ Test"

Aldehyde is heated with Tollen's Reagent in a water-bath for 15 mts.
Deposition of Grey colour (Silver) on the walls.



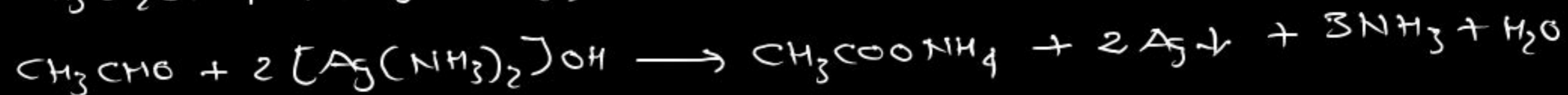
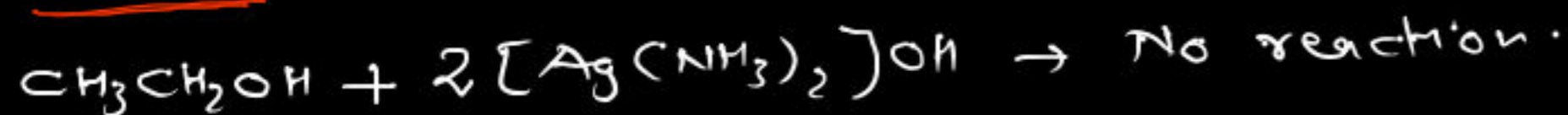
Diammine Silver (I) hydroxide = Tollen's Reagent.



Q. Complete the following reaction:



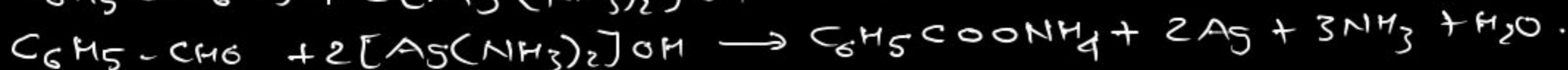
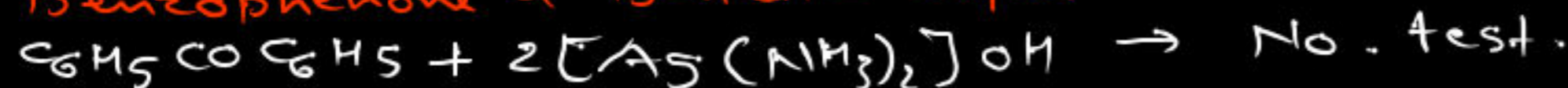
Q. Ethanol & Ethanal



Q. Butan-2-one & Butanal



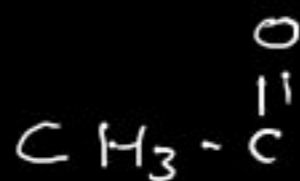
Q. Benzophenone & Benzaldehyde



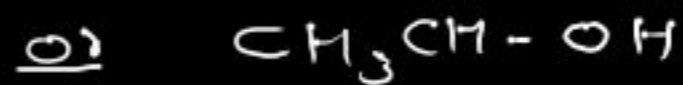
Q. Propanal & Propanone



(2) Iodoform Test.

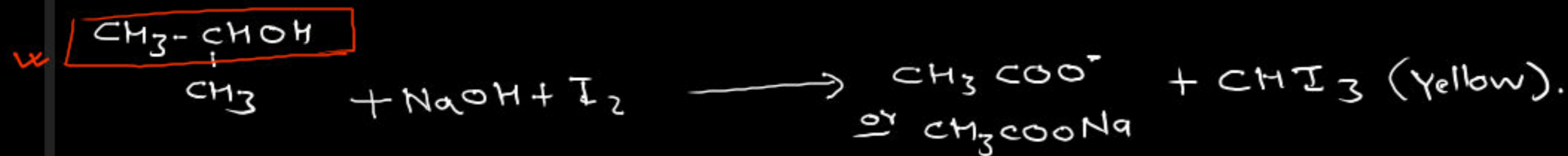
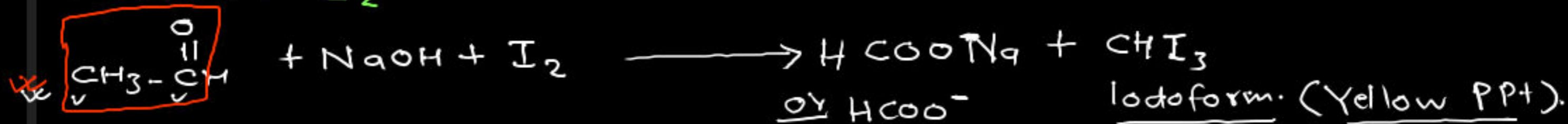


Methyl Ketone

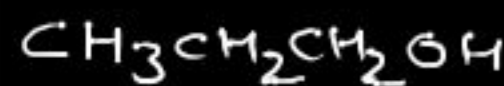


Methyl carbinol

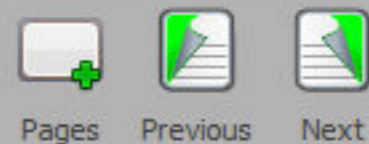
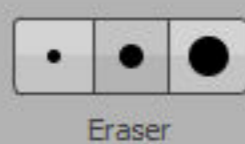
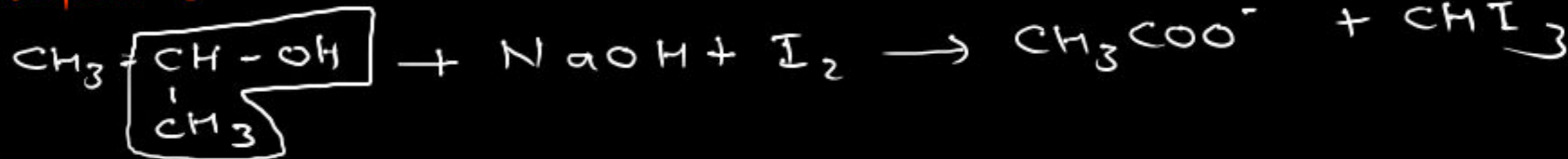
* $\text{NaOH} + \text{I}_2$



Q. Propanol & Propan-2-ol



↓
No Iodoform Test



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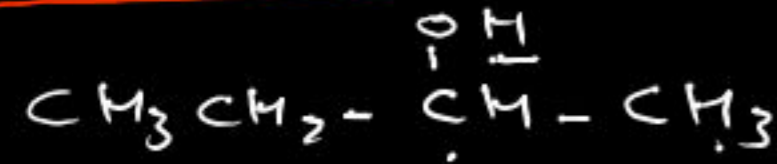
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Q. Butan-2-ol & Butanal



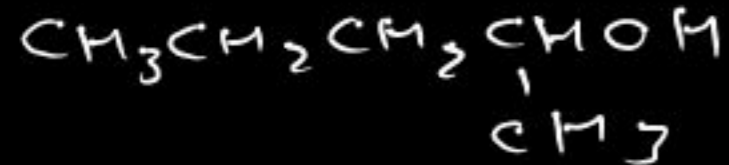
Q. Benzophenone & Acetophenone.



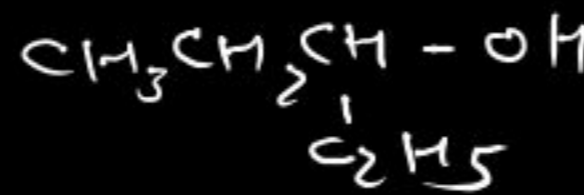
↓
No reaction



Q. Pentan-2-ol & Pentan-3-ol



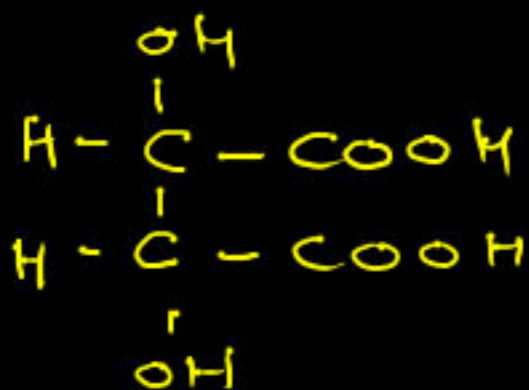
↓



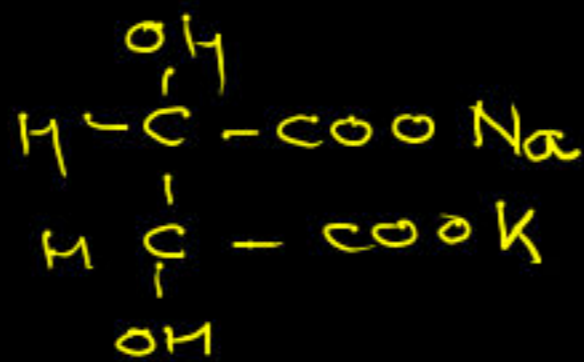
(3) Fehling Solution Test : only Aliphatic Aldehyde

Fehling - A : CuSO_4 solⁿ

Fehling B : Alkaline solⁿ of Sodium Pot. Tartrate (Rochelle Salt).



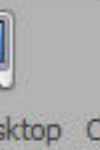
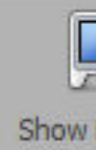
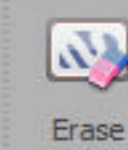
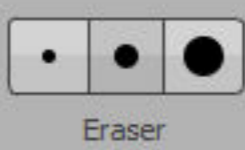
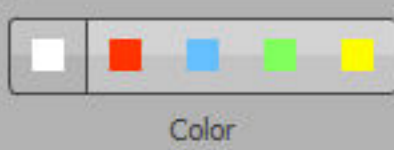
Tartaric Acid.



Sod. Pot. Tartrate (Rochelle Salt).



Red Ppt.
Cuprous oxide.



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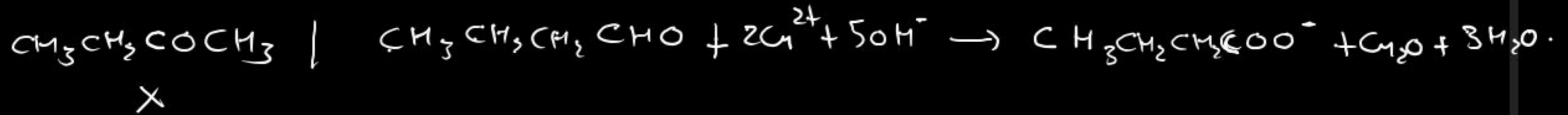
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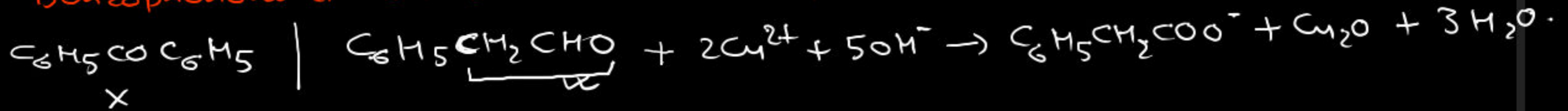
Q. Ethanol & Ethanal



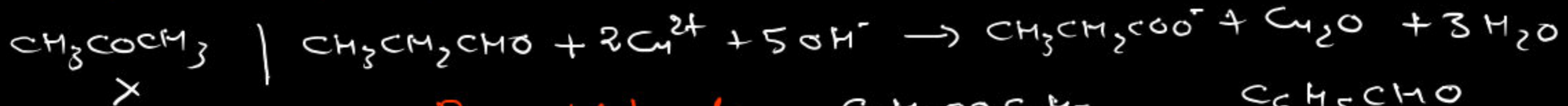
Q. Butan-2-one & Butanal.



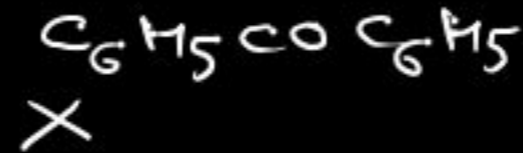
Q. Benzophenone & Benzene Carbaldehyde.



Q. Propanone & Propanal



Q. Benzophenone & Benzaldehyde



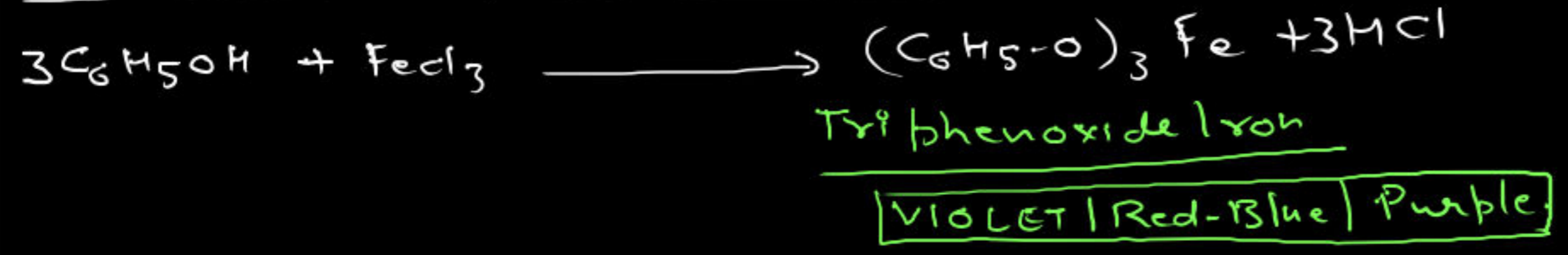
C_6H_5CHO
X
(Tollen's R.T. will give the ppt)

(4) Litmus Test.



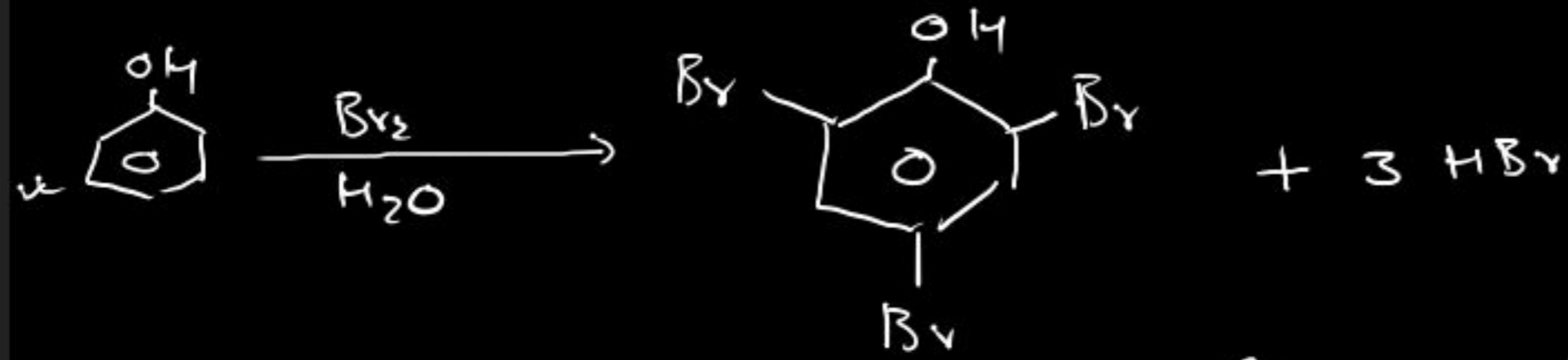
Q. Cyclohexanol & Phenol.
↓
It turns Red litmus to Blue.
↓
It turns blue litmus to Red.

(5) FeCl₃ Test. : "Ferric Chloride Test"



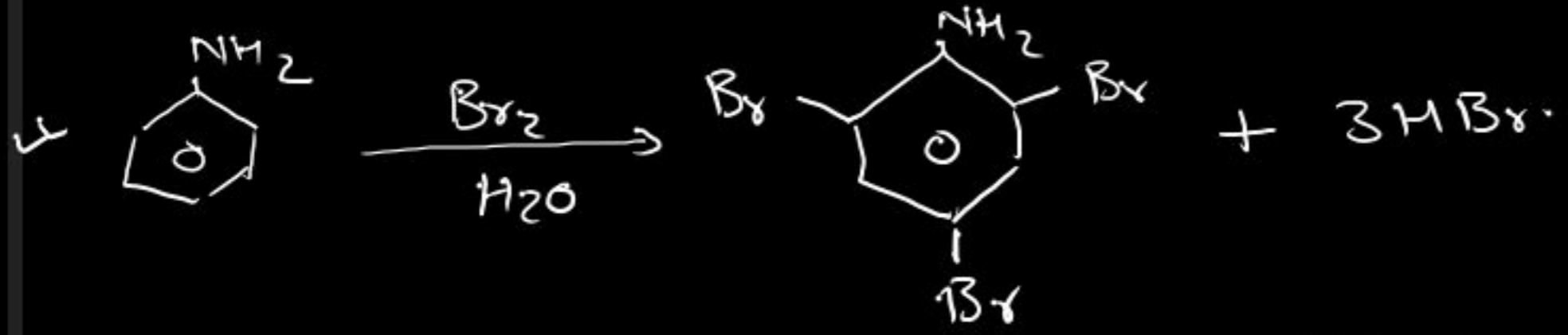
Q. Ethanol & Phenol
↳ FeCl₃.

(6) Br₂ - H₂O Test.



white ppt.

(2,4,6-tribromophenol).



white ppt.

(2,4,6-tribromoaniline).

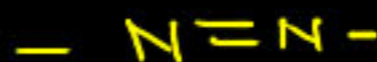
Q. Ethanol & Phenol.

(7) DYE TEST : "Coupling Reaction"

↳



Benzene dia. Salt couples with electron-rich aromatic compound (Phenol & Aniline) to give AZO Compound.



p-Hydroxy azobenzene

Reddish orange Dye

Q. Ethanol & Phenol.

Q. Ethanol & Aniline.

Q. Methylamine & Aniline.

Q. Aniline.

Aniline (Base)

Phenol (Acid)

↓
Red → Blue

↓
Blue → Red

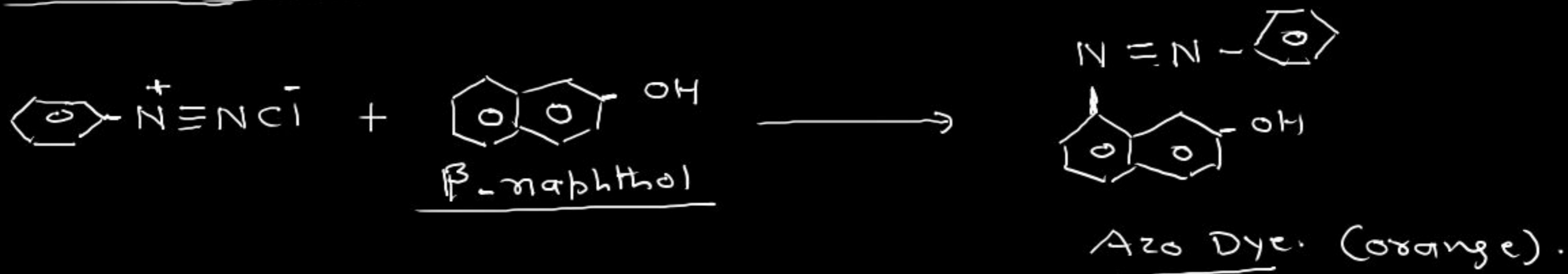
& Phenol. given by both.
Dye Test $\text{Br}_2 - \text{H}_2\text{O}$

* Aromatic 1° amine (only Aniline).

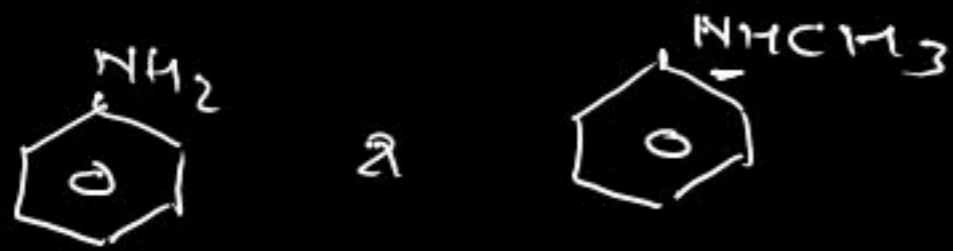
* Aromatic 1° Amine with $\text{HNO}_2 \rightarrow$ Diazonium Salt

* Diazonium salt undergoes "coupling Reaction" with β -naphthol \rightarrow

Orange Azo Dye.

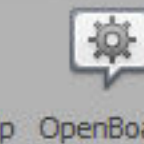
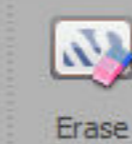
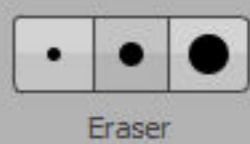
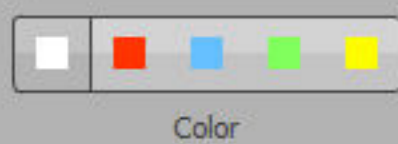


g. Aniline & N-Methylaniline.



Aniline & N-methylaniline can not be distinguished by azo dye test.

* Carbylamine Test \rightarrow By Aniline.



(8) NaHCO_3 Test.

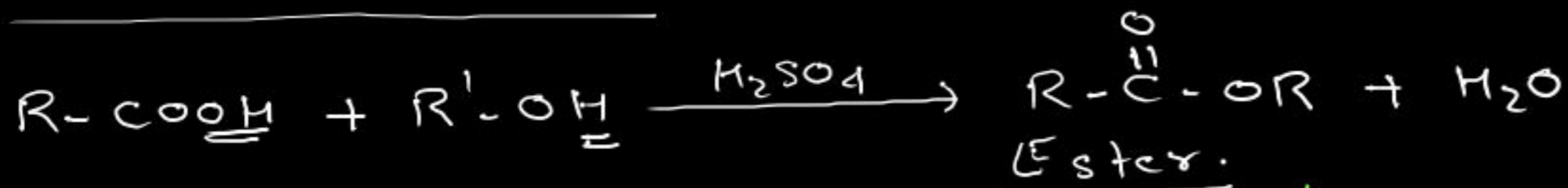


(If Higher R-COOH is used,
 R-COONa is a SOAP).

"Brisk
Effervescence."
 \hookrightarrow due to $\text{CO}_2 \uparrow$.

Q. Ethanol & Acetic Acid.

(9) Esterification Test:



Sweet Smell | Fruity Smell.

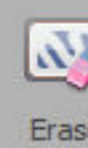
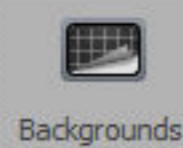
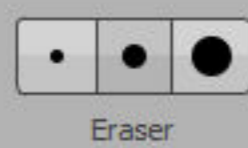
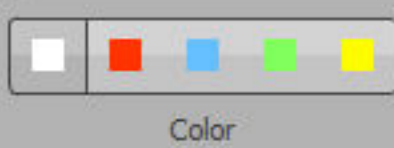
Q. Ethanol & Acetic Acid.

Q. Phenol & CH_3COOH

Q. Formic acid & Acetic Acid.

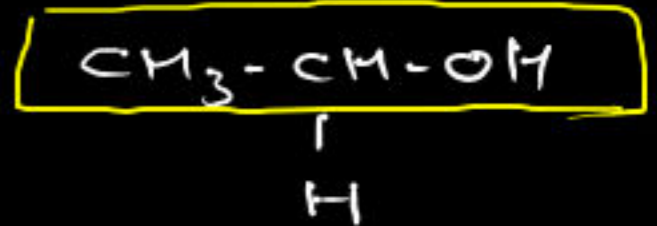
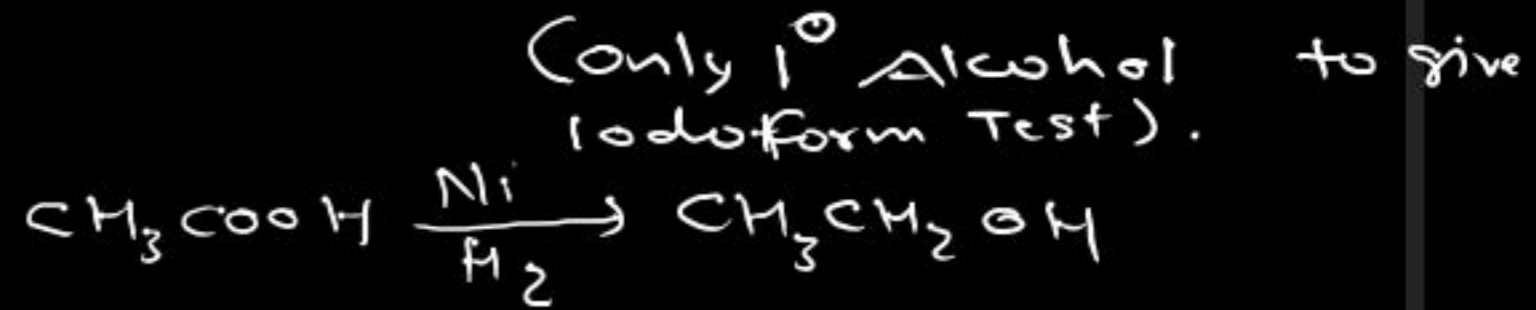
Both \rightarrow NaHCO_3 , Esterificatⁿ, Litmus

$\text{HCOOH} \rightarrow$ Tollen's Reagent Test.



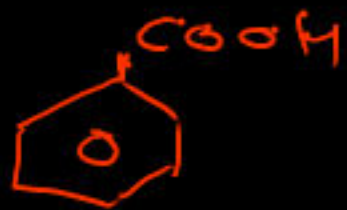
V.V.I.

Propanoic acid & Acetic Acid.

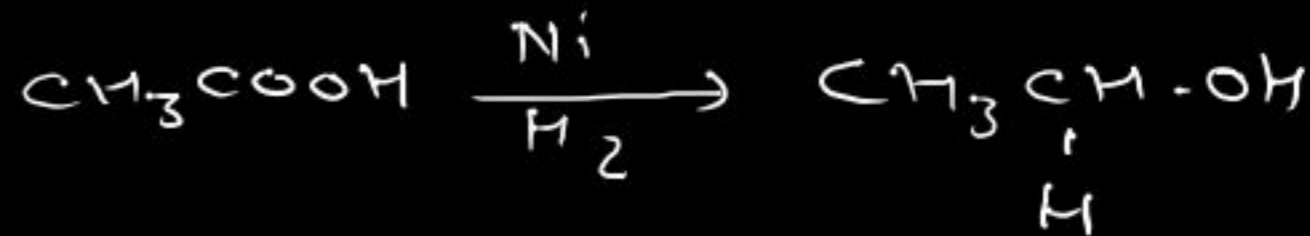
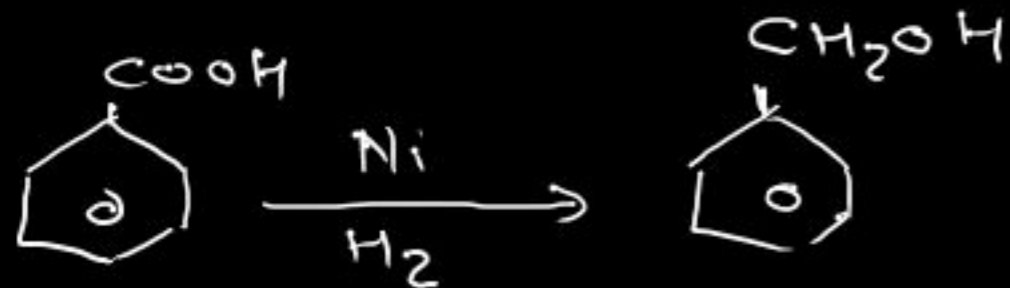


Iodoform = Yellow ppt.

V.V.I.



2 CH₃COOH



Iodoform Test.

(9) Carbylamine Test :

ONLY 1° Amine (Aliphatic | Aromatic).



Alkyl Isoyanide.

Alkyl carbylamine

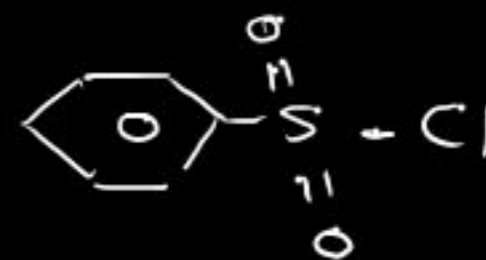
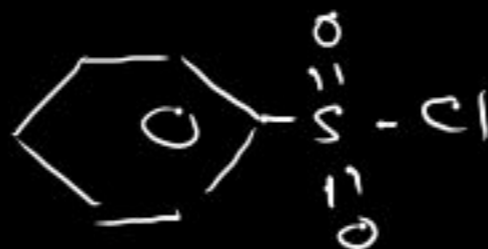
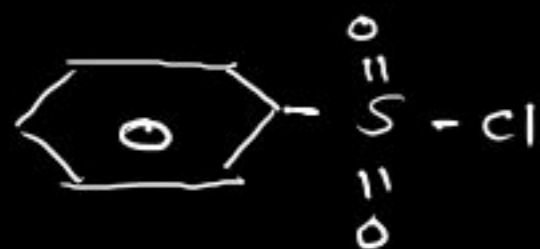
(Very Bad Smell).

Q. Ethanol & Ethanamine.

Q. Phenol & Aniline.

(Aniline give Carbylamine Test).

10. Hinsberg Reagent Test : "Benzene Sulphonyl chloride" $\text{C}_6\text{H}_5\text{SOCl}$.



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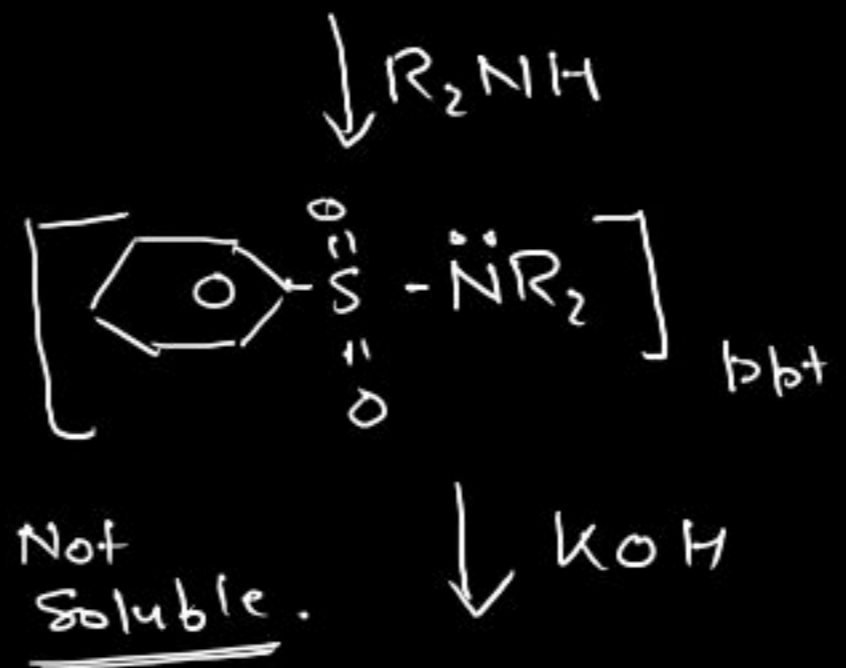
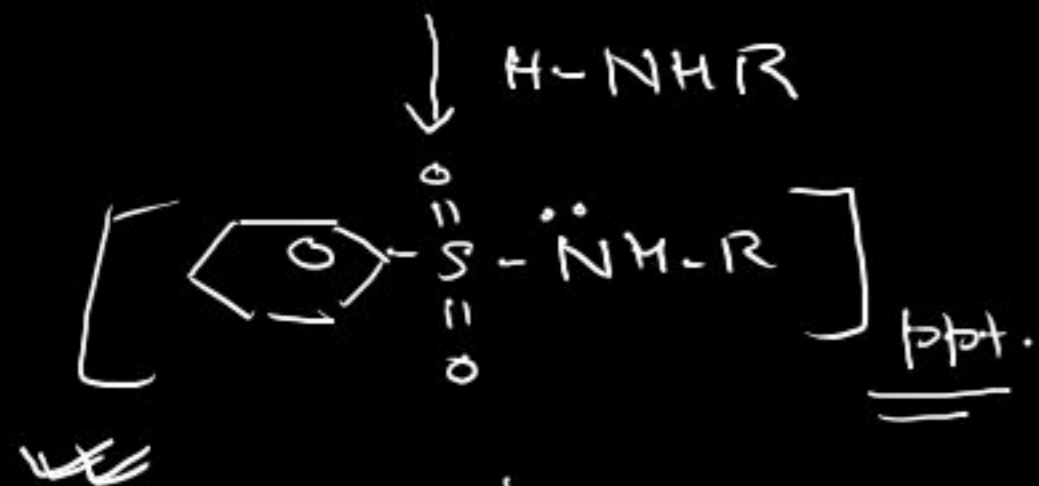
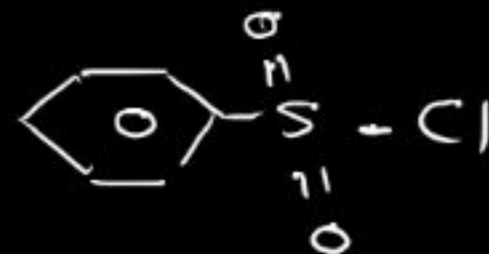
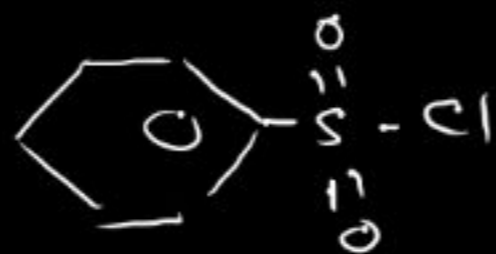
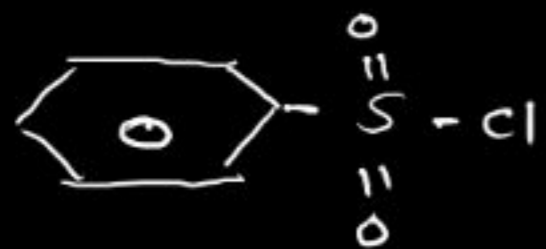


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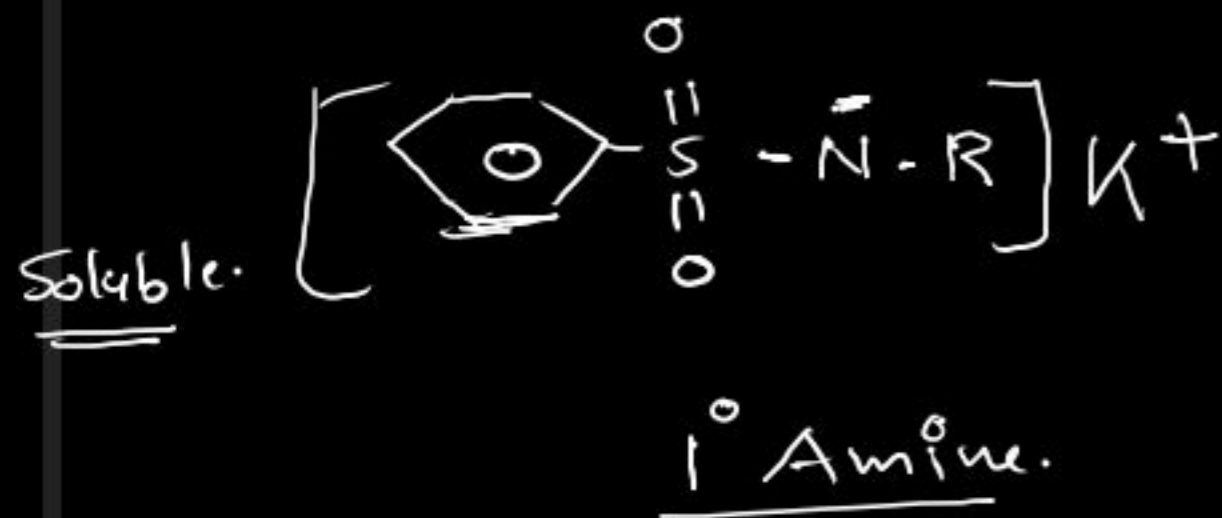
10. Hinsberg Reagent Test : "Benzene Sulphonyl chloride" C_6H_5SOCl .



\downarrow NR_3

No Reaction / No ppt.

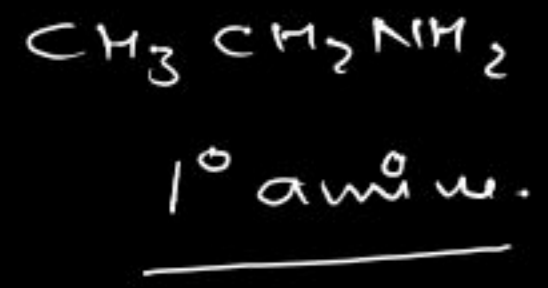
(Because No H-atom present)



2° Amine.

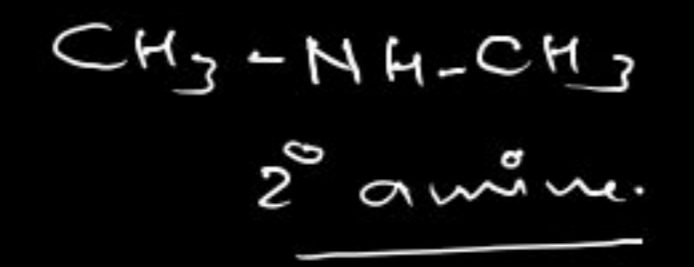
3° Amine.

Q. Ethanamine



↓
when reacted with Benzene Sulphonyl chloride, ppt obtained is SOLUBLE in KOH solⁿ.

N-methylmethanamine



↓
when reacted with C_6H_5SOCl , ppt got is INSOLUBLE in KOH solⁿ.

Q. Ethanamine



& Aniline.



Br-H₂O → white ppt.
Azo Dye Test

Q. Aniline & N-Methylaniline

