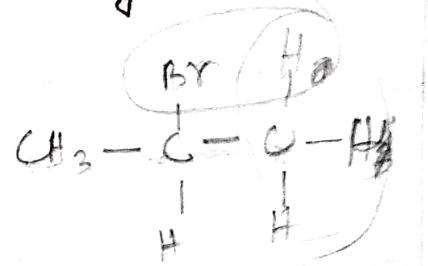
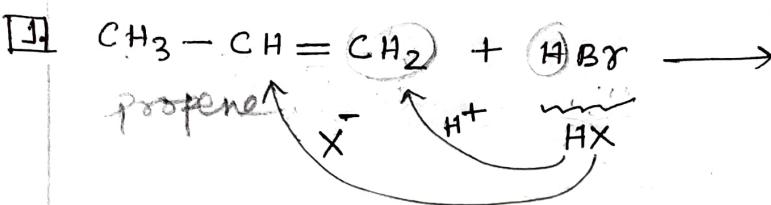


Worksheet : 01

① Identify the compounds, products or reagents :

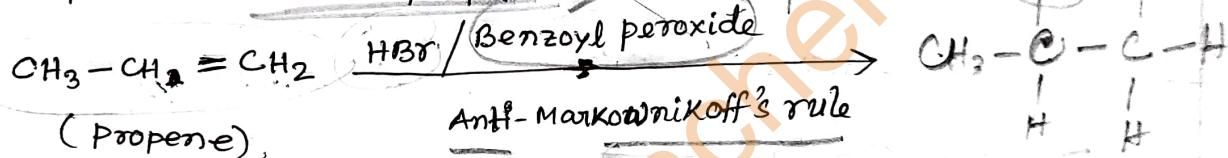


Ans. 2-bromo propane

Note: unsymmetrical alkenes undergo addition reactions to yield haloalkanes, when treated with halogen acids. Halogen acid takes place in accordance to "Markovnikoff's rule".

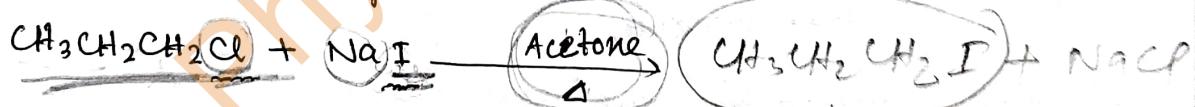
② How will you convert the following :

Propene to 1-bromopropane



Note In the presence of organic peroxides, the addition of HBr to unsymmetrical alkenes takes place contrary to Markovnikoff's rule. This is known as "peroxide effect or Kharasch effect". This effect is applicable only to the addition of HBr and not to the addition of HCl or HI.

③ Write the major organic product :



Note Halide exchange method / "Finkelstein reaction"

When chloroalkane or bromoalkane is heated with acetone or methanol, iodoalkane is obtained. [In this reaction iodo-propane]

④ Fluoroalkane (CF_2Cl_2 or Freon) preparation :-

$3\text{CCl}_4 + 2\text{SbF}_3 \xrightarrow{\text{SbCl}_5 \text{ (antimony ion } +5 \text{ state)}} 3\text{CF}_2\text{Cl}_2 + 2\text{SbCl}_3$

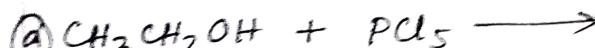
(chloro) (antimony trifluoride) Freon

or
Carbon tetrachloride

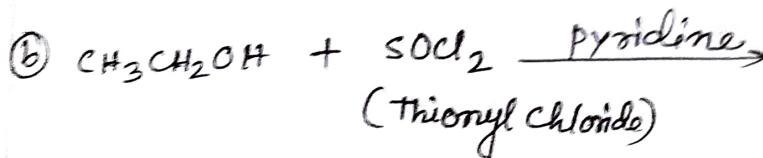
Note "Swarts reaction"

* from $[\text{CF}_2\text{Cl}_2]$

5 complete the equation :

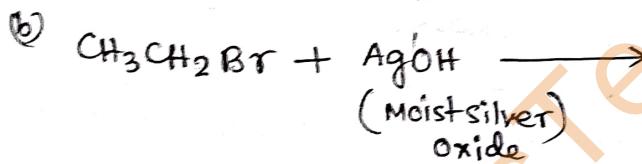
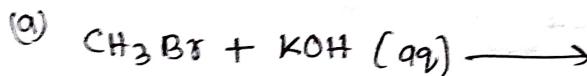


Ethanol

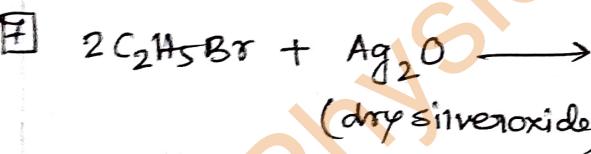


Note The use of SOCl_2 for the preparation of chloroalkane is preferred over the use of HCl or PCl_5 because the other products of the reaction (i.e. SO_2 and HCl) being gaseous escape out leaving behind the chloroalkane in almost pure form.

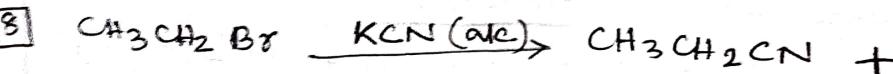
6 complete the reaction :



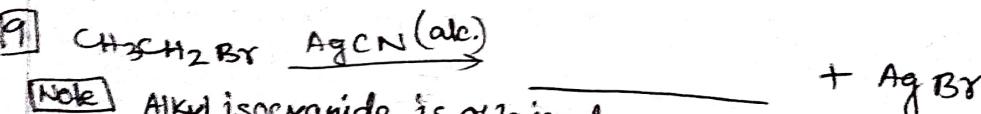
Note Halogen is substituted by the nucleophile OH^- .



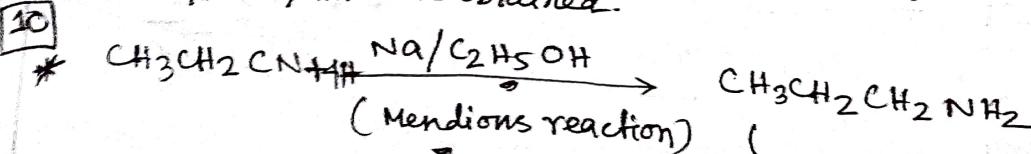
Note another method of 'ether' preparation.



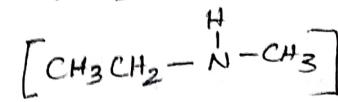
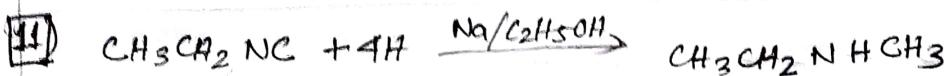
Note CN^- is an _____ ion and has two nucleophilic sites.



Note Alkyl isocyanide is obtained.

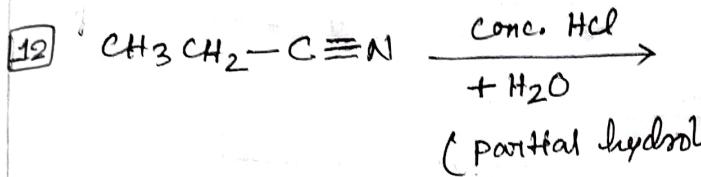


Note Alkene nitrile/alkyl cyanide can easily be converted into primary amine (1°)

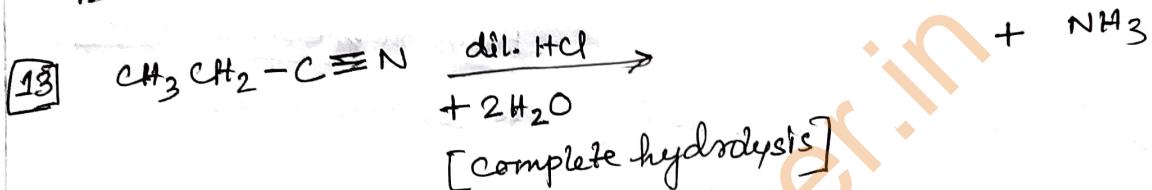


Note: - 2° amine is obtained, when alkyl isocyanide being reduced.

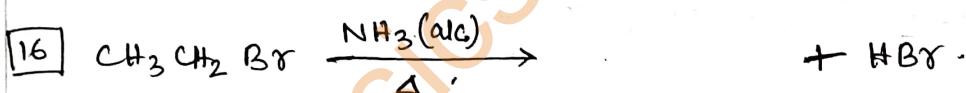
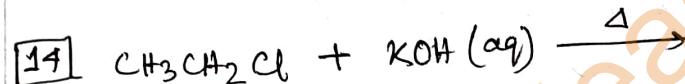
N-methyl ethanamine
(2° amine)



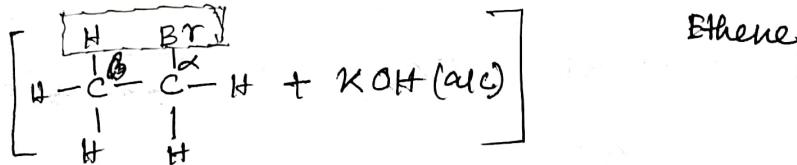
Note Acid amide is obtained.



Note carboxylic acid is obtained.



Note Primary amine is obtained. The reaction is known as Hoffmann ammonolysis of alkyl halide.

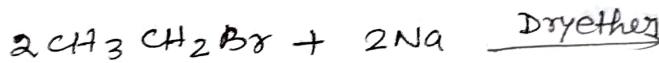


Note When haloalkanes are treated with alc. KOH, they undergo the elimination of hydrogen halide (HX) to form alkenes.

* Such reaction is known as dehydrohalogenation.

* β -hydrogen is removed and the reactions are also referred to as β -elimination reactions.

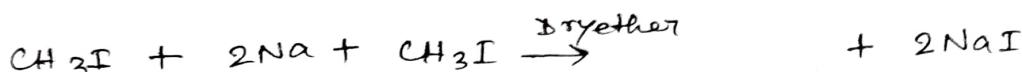
18



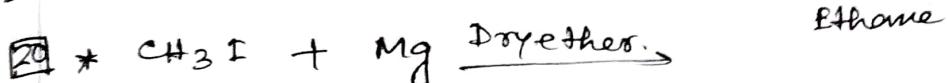
Butane

Note preparation of higher symmetrical alkanes (alkanes containing even no. of carbon atoms)
the reaction is called Wurtz reaction.

19

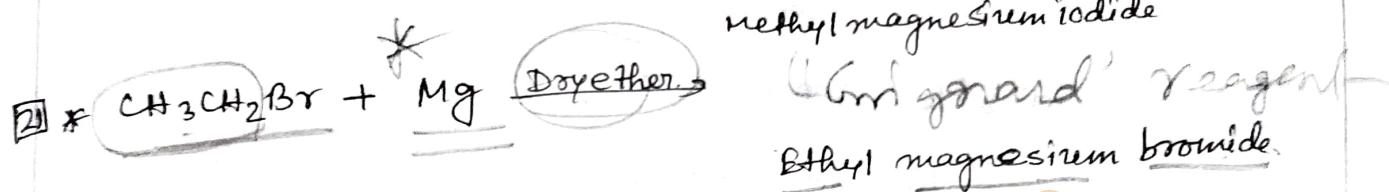


20



Ethane

21



methyl magnesium iodide

(Grignard's reagent)

ethyl magnesium bromide.

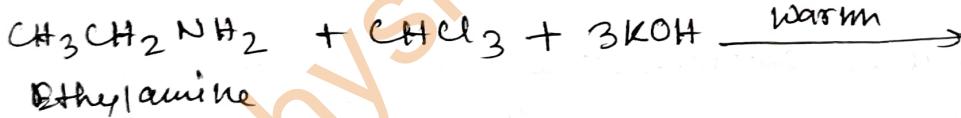
Note Alkyl magnesium halides are commonly known as,
Grignard's reagents.

22

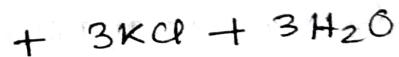
chloroform is prepared in the laboratory by heating ethanol or acetone with CaOCl₂. The reaction is called Haloform reaction.

Note $\text{CaOCl}_2 \rightarrow$ Bleaching powder.

23



Ethylenimine



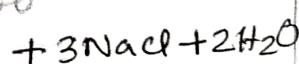
Note This reaction is known as.

24



Phenol

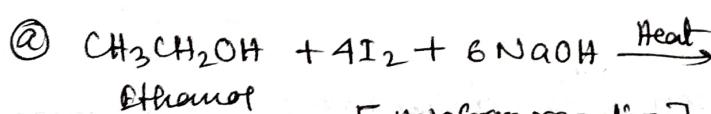
(3KOH)



(Salicylaldehyde)

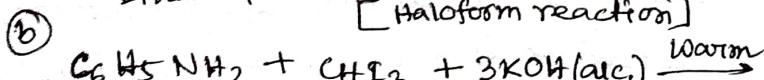
This reaction is called

25



Ethanol

[Haloform reaction]



(Aniline)(1° amine) Iodoform, [Carbylamine reaction]

