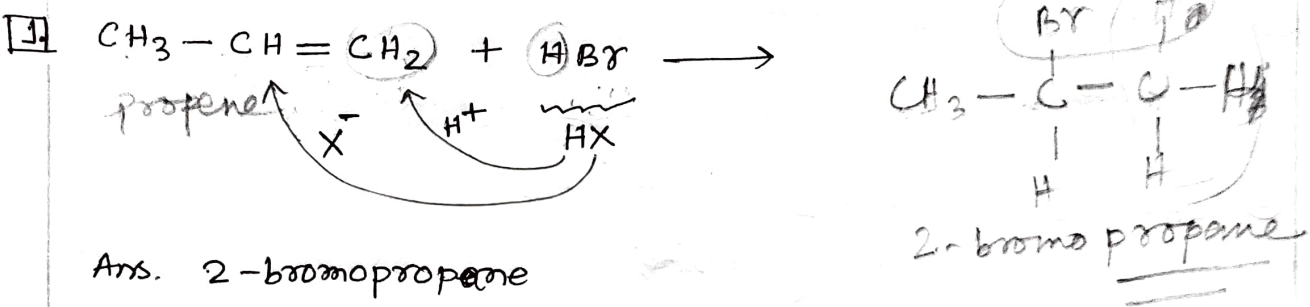


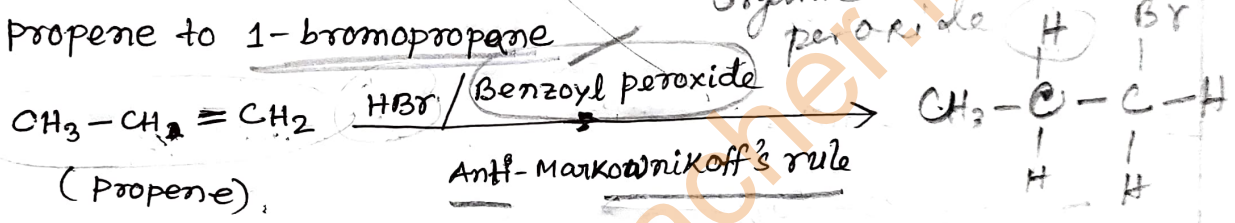
# Worksheet : 01

① Identify the compounds, products or reagents :



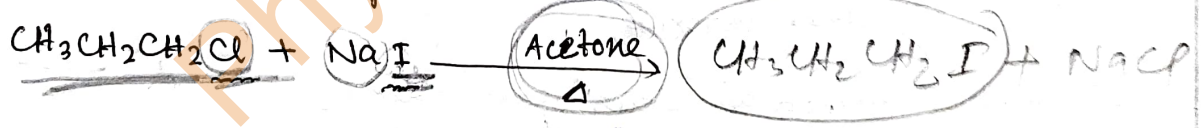
**Note** : unsymmetrical alkenes undergo addition reactions to yield haloalkanes, when treated with halogen acids. Halogen acid takes place in accordance to "Markownikoff's rule".

2. How will you convert the following :

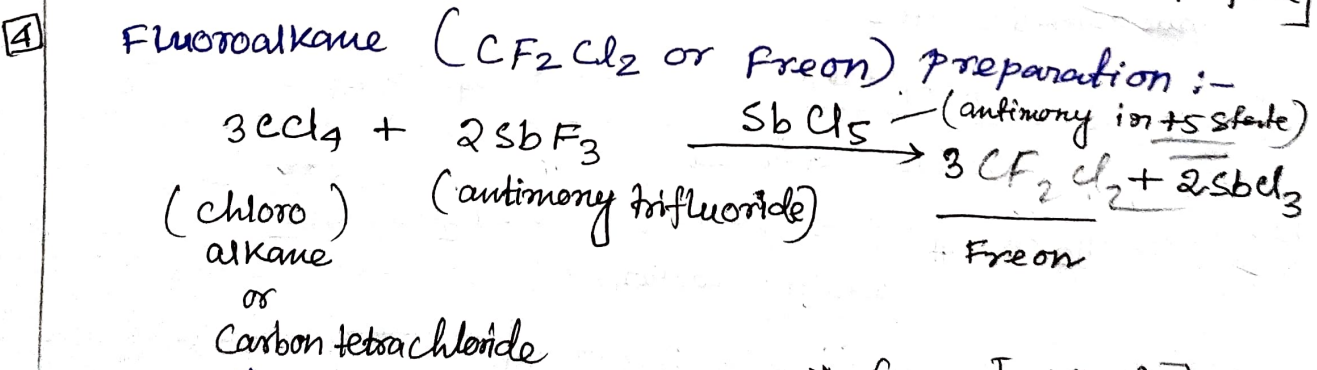


**Note** : In the presence of organic peroxides, the addition of HBr to unsymmetrical alkenes takes place contrary to Markownikoff's rule. This is known as "peroxide effect" or "Kharasch effect". This effect is applicable only to the addition of HBr and not to the addition of HCl or HI.

3. Write the major organic product :

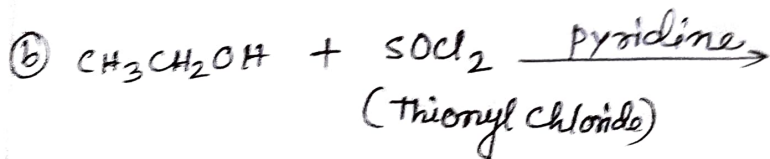
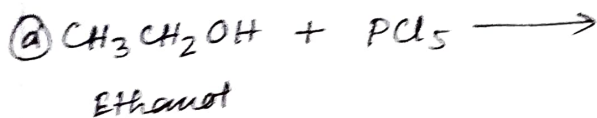


**Note** : Halide exchange method / "Finkelstein reaction". When chloroalkane or bromoalkane is heated with acetone or methanol, iodoalkane is obtained. [In this reaction iodo-propane]



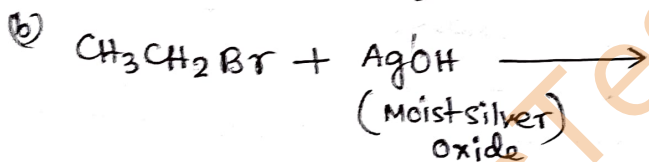
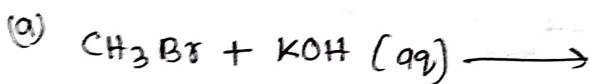
**Note** "Swarts reaction". \* Freon [ $\text{CF}_2\text{Cl}_2$ ]

5] complete the equation:

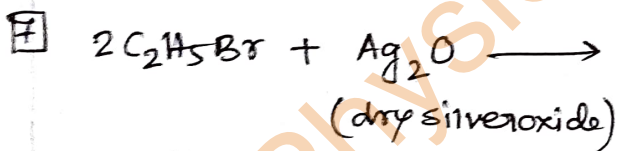


**Note** The use of  $\text{SOCl}_2$  for the preparation of chloroalkane is preferred over the use of  $\text{HCl}$  or  $\text{PCl}_5$  because the other products of the reaction (i.e.  $\text{SO}_2$  and  $\text{HCl}$ ) being gaseous escape out leaving behind the chloroalkane in almost pure form.

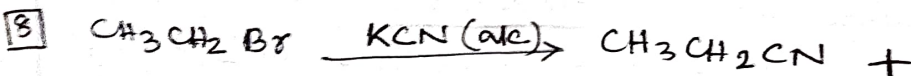
6] complete the reaction:



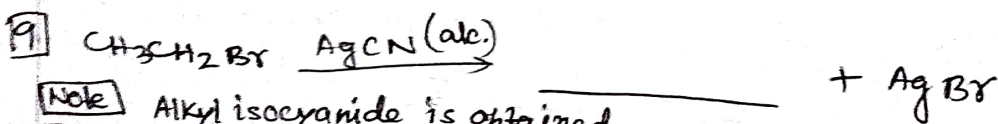
**Note** Halogen is substituted by the nucleophile  $\text{OH}^-$ .



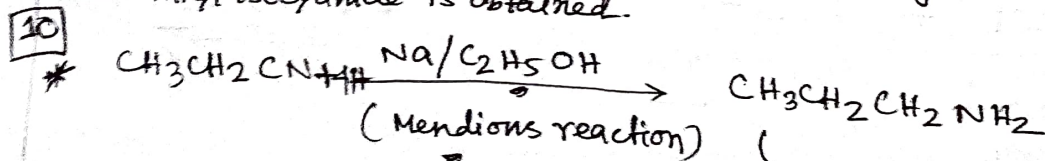
**Note** another method of 'ether' preparation.



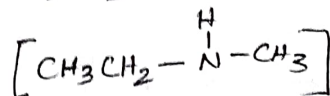
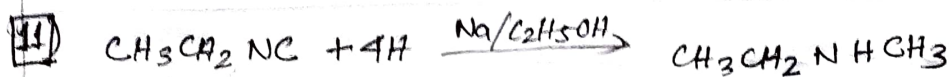
**Note**  $\text{CN}^-$  is an \_\_\_\_\_ ion and has two nucleophilic sites.



**Note** Alkyl isocyanide is obtained.

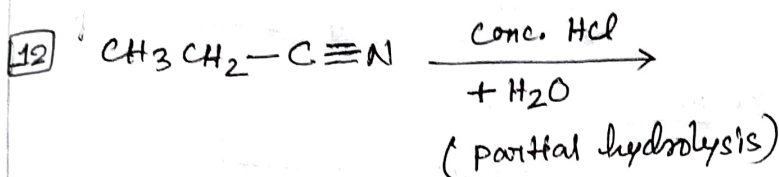


**Note** alkane nitrile/alkyl cyanide can easily be converted into primary amine (1°)

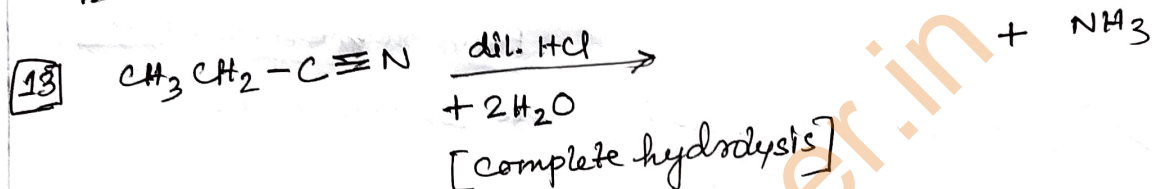


N-methyl ethanamine  
(2° amine)

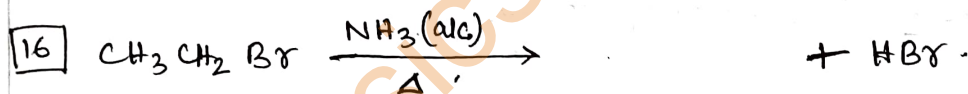
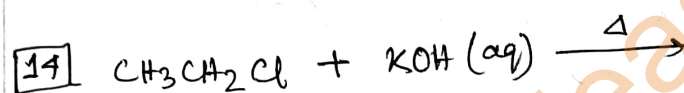
Note:- 2° amine is obtained,  
when alkyl isocyanide being  
reduced.



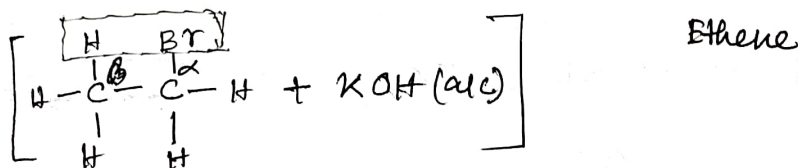
Note Acidamide is obtained.



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.

\*  $\beta$ -hydrogen is removed and the reactions are also  
referred to as  $\beta$ -elimination reactions.



