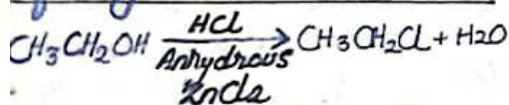


# Methods of Preparation:

## From Alcohols:

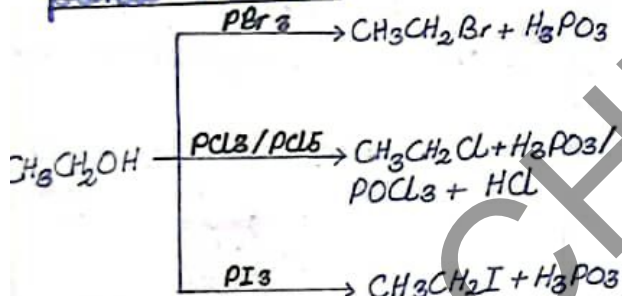
When treated with HCl in the presence of anhydrous zinc chloride:



When treated with thionyl chloride in the presence of pyridine:



When treated with phosphorous trihalides or phosphorous pentahalides:



## From Alkanes:

When treated with Cl/Br in presence of diffused UV light:



## From alkenes:

- 1) Halogenation
  - 2) Hydrohalogenation
- (As mentioned in alkenes)

## Primary Alkyl Halides:

- Halogen atom is attached with 1° C.  
- one alkyl group  
example:  $\text{CH}_3 - \text{Cl}$  (Methyl chloride)

## Secondary Alkyl Halides:

- Halogen atom is attached with 2° C.  
- 2 alkyl groups  
example:  $\text{CH}_3 - \text{CH}(\text{Cl}) - \text{CH}_3$  (2-chloropropane)

## Tertiary Alkyl Halides:

- Halogen atom is attached with 3° C.  
- 3 alkyl groups  
example:  $\text{CH}_3 - \text{C}(\text{Cl})_2 - \text{CH}_3$  (2,2-dichloropropane)

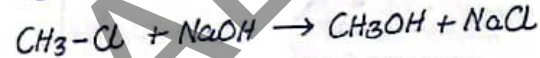
# Reactions of Alkyl Halides:

Nucleophilic Substitution Reactions

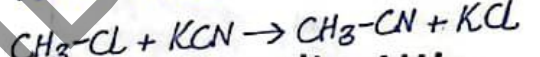
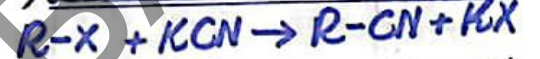
Elimination Reactions

## Halogenoalkanes

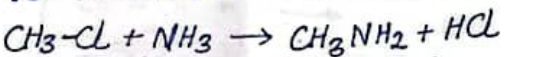
1) Reaction with NaOH(aq):



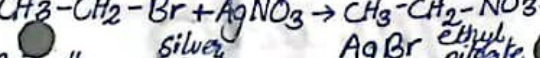
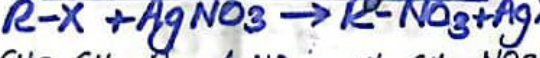
2) Reaction with KCN(aq):



3) Reaction with NH<sub>3</sub>:



4) Reaction with AgNO<sub>3</sub>:

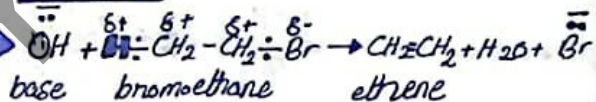


Bromoethane Silver nitrate Ethyl nitrate

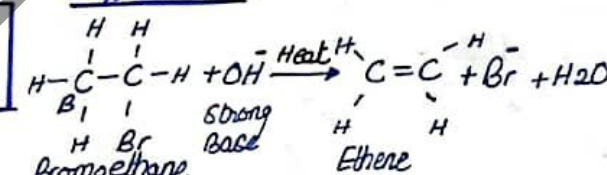
Compiled by : Lubena Kazim

Teacher : Ma'am Ayesha

Reaction:



Explanation:



• B H-atom is slightly acidic due to inductive effect.

• Strong bases like NaOH cause elimination reaction.

## Physical Properties:

- high melting points as compared to alkanes.
- high boiling points
- consist of sp<sup>3</sup> hybridized C-atom.
- C is bonded to halogen (X) via σ bond.
- C-X (carbon halogen bonds) are typically quite polar due to electronegativity difference of C and H.