

KOLBE'S ELECTROLYSIS OF CARBOXYLIC ACID SALTS

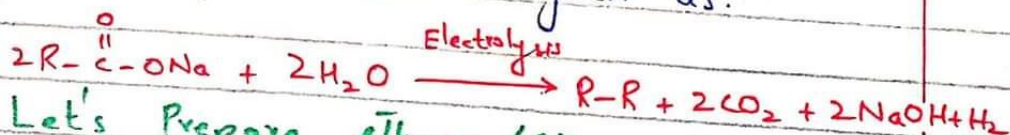
Note: This method is used to prepare all three series "alkanes", "alkenes", "alkynes".

This method is also known as "decarboxylation".

(1) Preparation of ALKANES

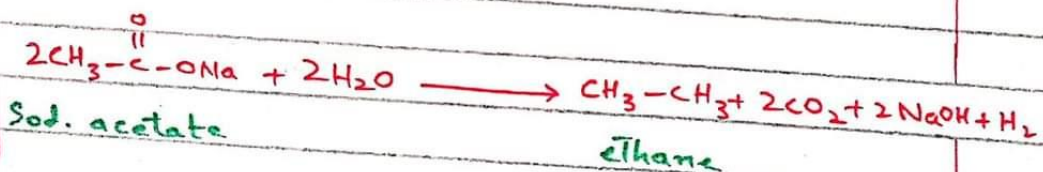
Note: This method is used to prepare alkane with even no. of carbon atom chain. Methane can not be prepared by this method.

In this method Na or K salt of carboxylic acid is electrolysed. Its general equation can be given as.



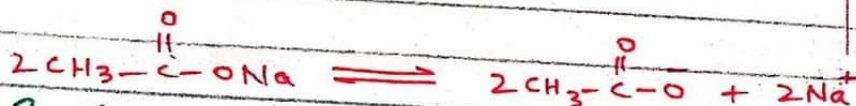
Let's prepare ethane (CH_3-CH_3):

To prepare ethane electrolysed sodium acetate (salt of acetic acid).



Mechanism:-

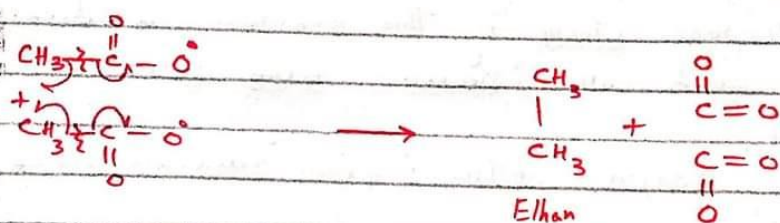
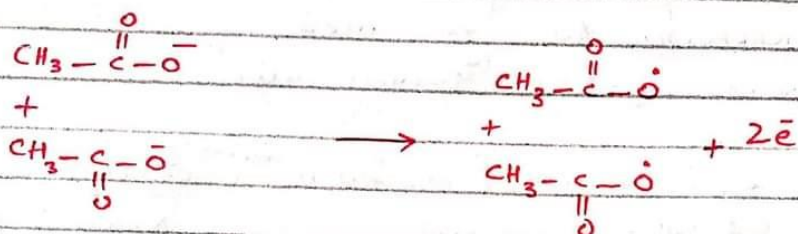
(1) Ionization



(2) Reaction at anode (oxidation)

Acetate ions (anions) move towards positive electrode (anode). At anode

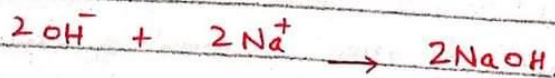
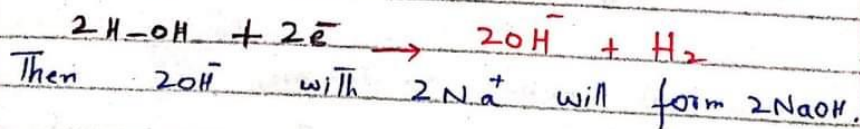
Removal of electrons occurs or oxidation occurs.



Here ethane and two CO_2 molecules are produced.

Reaction at Cathode (Reduction)

Na^+ ions move towards negative electrode (cathode). At cathode gain of electrons occur or reduction occur.



Complete Chemical Equation:

