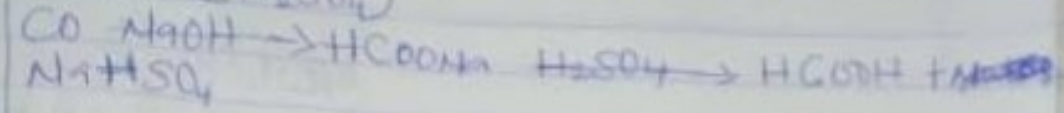
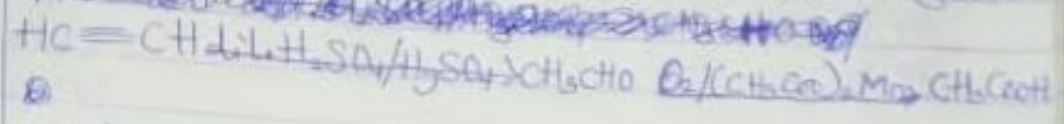


solution of sodium hydroxide. The free carboxylic acid is liberated by careful reaction with dilute sulphuric acid ( $H_2SO_4$ )



From alcohol

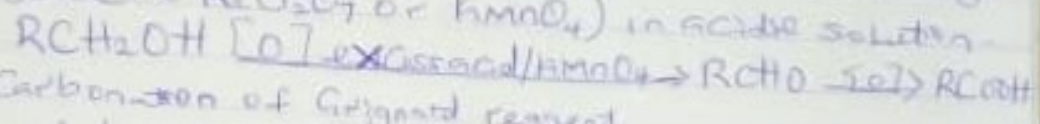
Fulmaric acid is obtained commonly by the usual phase or oxidation of alk solution of alcohol to ethanoic acid using ~~potassium~~ manganese(II) ethanoate catalyst. Fulmaric acid itself is obtained from ethylene



4) a

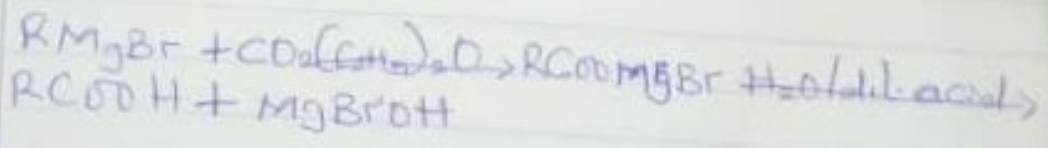
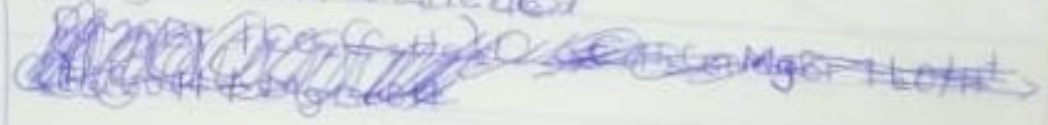
4) Oxidation of primary alcohols and aldehydes

Oxidation of primary alcohols and aldehydes can be used to prepare carboxylic acid using the usual oxidizing agent (i.e.  $K_2Cr_2O_7$  or  $KMnO_4$ ) in acidic solution.



b) Carbonation of Grignard reagent

Aliphatic carboxylic acid are obtained by bubbling carbon(IV) oxide into the Grignard reagent and then hydrolyzed with dilute acid



B Reduction of carboxylic acid



Name: Akash K. Ghemwal, Assistant

Department: Microbiology

Matric. No.: 19SC051002

Course Code: Chem 102

Chem 102 - Assignment

- 1)  $HCOOH$  - methanoic acid  
 $HOOCH_2CH_2CH_2COOH$  - Propanoic acid  
 $CH_3CH_2CH_2COOH$  - Butanoic acid  
 $H_2C=COH$  - Ethanoic acid  
 $CH_3(CH_2)_4COOH$  - Hexanoic acid  
 $CH_3CH=CHCH_2CH_2COOH$  - Hex-4-enoic acid

2) Physical appearance - All simple aliphatic carboxylic acid up to C<sub>10</sub> are liquids at room temperature, more other carboxylic acid are solid at room temperature although aliphatic carboxylic acid (glucic acid) also known as glucal aliphatic acid freezes to an ice-like solid below the room temperature.

Boiling point

Boiling point increases with increasing relative molecular mass. Normal carboxylic acid are liquid solid and have higher boiling point than the aliphatic carboxylic acid relative molecular mass.

Solubility

Lower molecular mass carboxylic acid are up to four carbon atoms in their molecules are soluble in water. This is largely due to their ability to form hydrogen bond with water molecules.

3) From Carbon(II) oxide

Methanoic acid (formic acid) is manufactured by adding Carbon(II) oxide under pressure to hot aqueous