

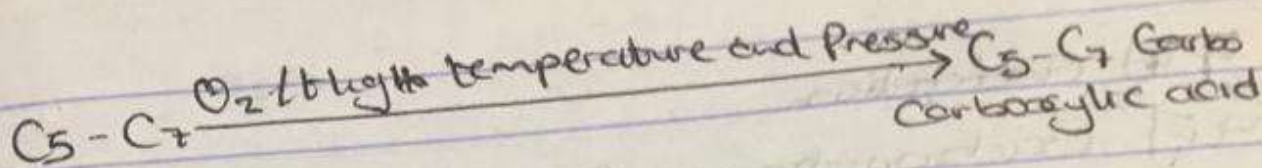
2(ii) Boiling Point: This increases with increasing relative molecular mass. Aromatic carboxylic acids are crystalline solids and have higher melting points than their aliphatic counterparts of comparable relative molecular mass.

2(iii) Solubility: lower molecular mass carboxylic acid with up to four carbon atoms in their molecules are soluble in water. This is largely due to their ability to form hydrogen bonds with water molecules. All carboxylic acids are soluble in organic solvents.

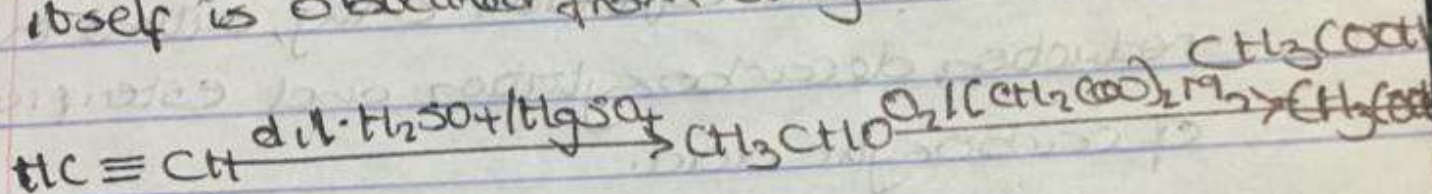
3) Write two industrial preparations of carboxylic acids.

i) From Petrochem: Liquid phase air oxidation of C₅-C₇ alkanes, obtainable from petroleum at high temperature and pressure will give C₅-C₇ carboxylic acids with methanoic, propanoic and butanedioic acids as by products.

ATO - OMOIADG BLOSSING OUMARIMUKYO
 19/11/2006

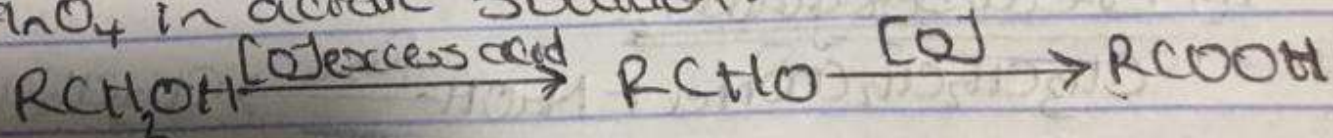


3(ii) From ethanal :- Ethanoic acid is obtained commercially by the liquid phase air-oxidation of 5% solution of ethanal to ethanoic acid using manganite (ii) ethanoate catalyst. Ethanal itself is obtained from ethylene.



4 With equations and brief explanation discuss the synthetic preparation of carboxylic acid.

i) Oxidation of primary alcohols and aldehydes :- This method can be used to prepare carboxylic acids using the oxidizing agent $K_2Cr_2O_7$ or $KMnO_4$ in acidic solution.



Name: ATO-OMOTADE BLESSING OLUWAFUNMILATO
Subject: MEDICAL LABORATORY SCIENCE (MRS)
Lab No: 19/MIL506/006
CHEM 102 CARBOXYLIC ACIDS

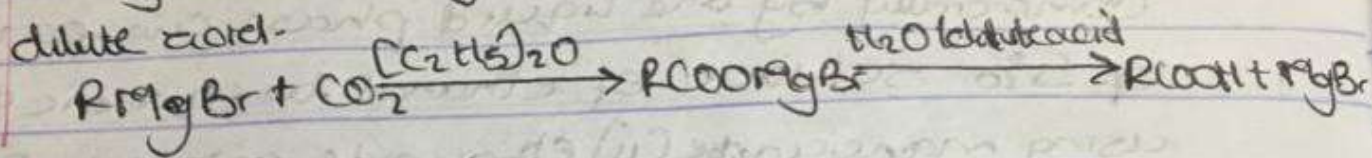
1. Give the IUPAC names of the following compounds,
 - a HCOOH → Methanoic acid
 - b $\text{HOOCCH}_2\text{CH}_2\text{CH}_2\text{COOH}$ → Pentan-1,5-dioic acid
 - c $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$ → Butanoic acid
 - d $\text{HO}_2\text{C}-\text{CO}_2\text{H}$ → Ethanedioic acid
 - e $\text{CH}_3(\text{CH}_2)_4\text{COOH}$ → Hexanoic acid
 - f $\text{CH}_3\text{CH}=\text{CHCH}_2\text{CH}_2\text{COOH}$ → Hex-4-enoic acid

2. Discuss briefly the physical properties of carboxylic acids under the following headings:
Physical appearance, Boiling point and solubility

i) Physical appearance: All simple aliphatic carboxylic acid up to 10 are liquids at room temperature. Most other carboxylic acids are solid at room temperature. Although anhydrous carboxylic acid [acetic acid] also known as glacial acid freezes to an ice-like solid below the room temperature.

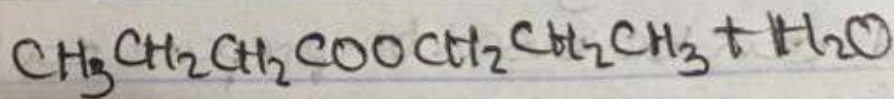
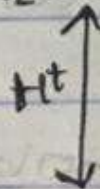
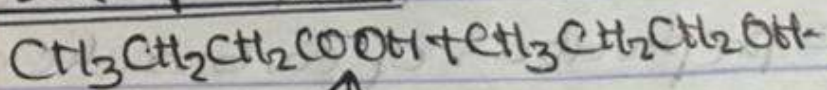
4 ii) ~~oxidation~~

iii) Carbonation of Grignard reagent: Aliphatic carboxylic acids are obtained by carbon dioxide into the Grignard reagent and then hydrolyzed with dilute acid.

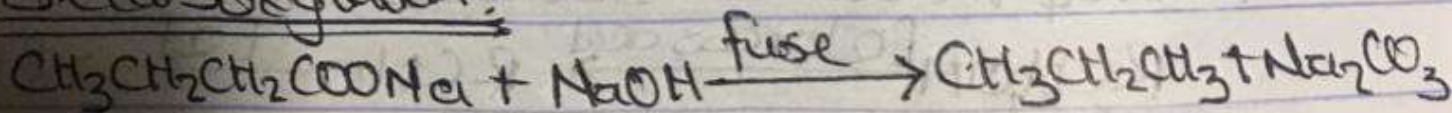


5 With chemical equation only, outline the reduction, decarboxylation, and esterification of carboxylic acid.

i) Esterification



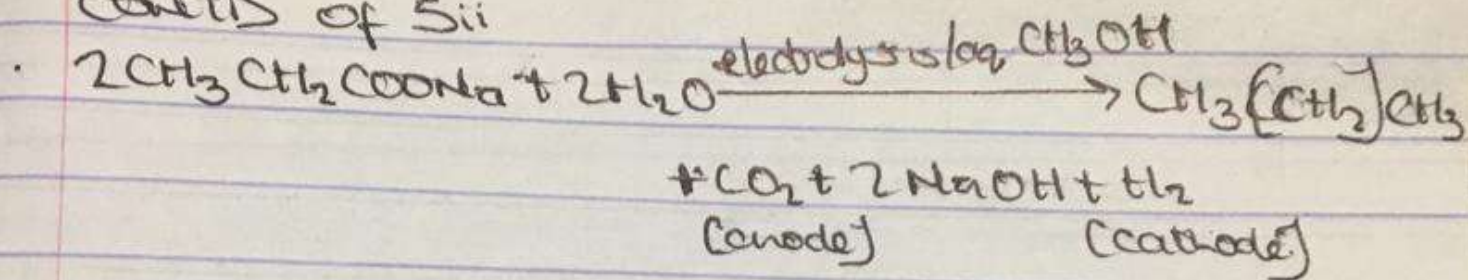
ii) Decarboxylation!



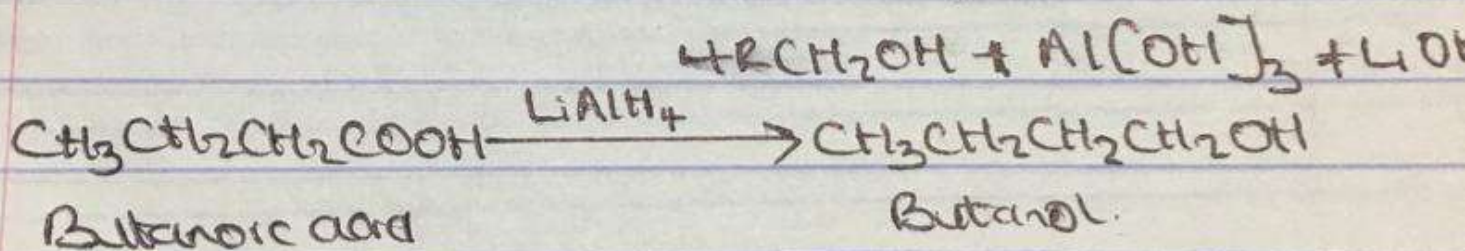
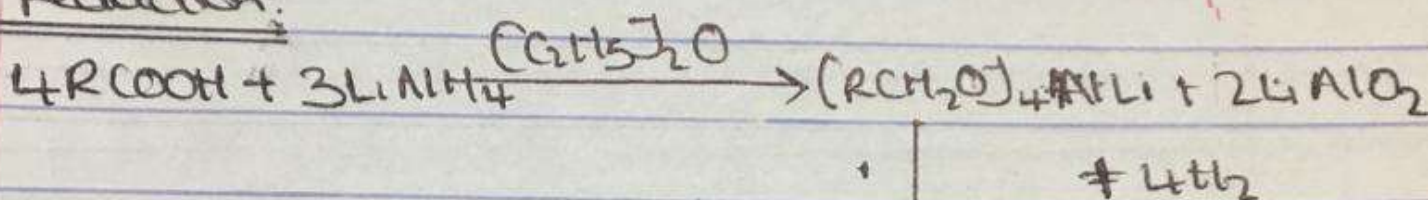
Kolbe synthesis

AYO-OMOTASE BLESSING OLUWAFINKUNLEO
 19111615061006

CONT'D of Sii



iii) Reduction:



5.