

Name - Ajodi Nimo Esse

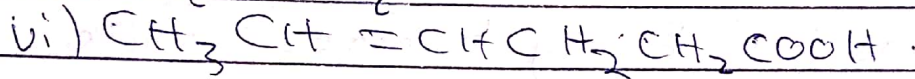
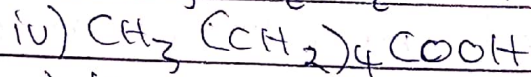
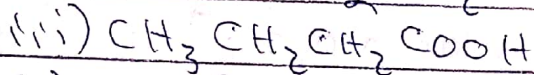
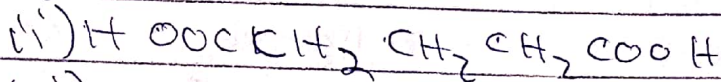
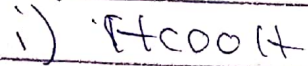
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Department - Nursing

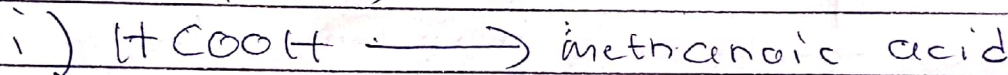
course code - Chem 102

Assignment

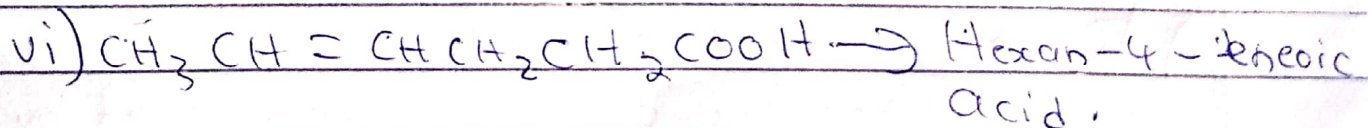
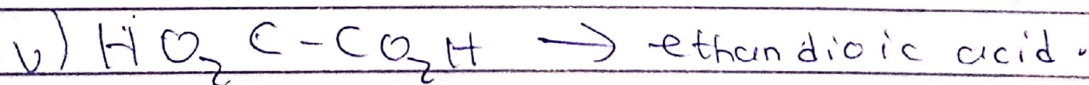
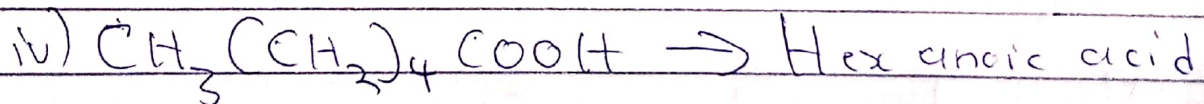
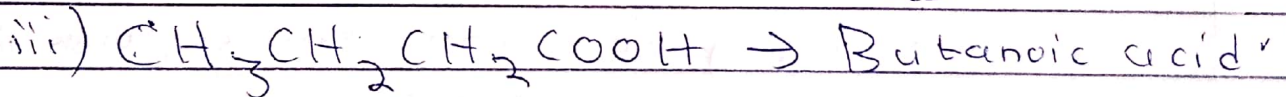
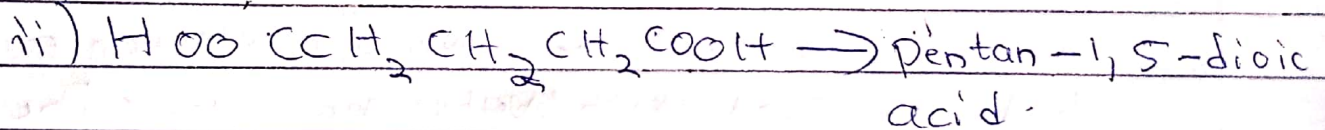
Q) Give the IUPAC names of the following compounds.



Answers



ii)



2. Discuss briefly the physical properties of carboxylic acids under the following headings

i) Physical appearance

ii) Boiling point

iii) Solubility

Answers

i) ~~Boiling point~~ Physical appearance

All simple carboxylic acids that are up to 10 carbon atoms are liquids in room temperature, while the others ~~are with~~ ~~at least~~ or more carbon atoms are solid at room temperature.

ii) Boiling point

Boiling point in carboxylic acids increase with increase in relative molecular mass. The branched isomers tend to boil at lower temperature hence are more volatile than their straight chain and less highly branched alcohols.

iii) Solubility

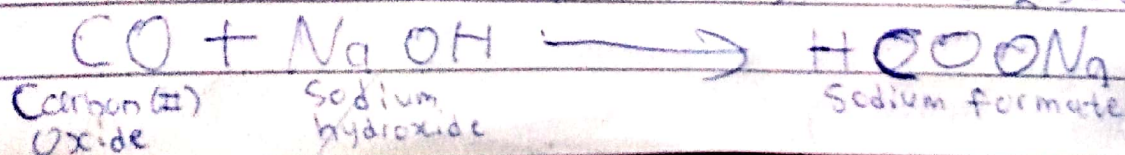
Carboxylic acids with low molecular masses up to three carbon atoms are soluble in water because these lower alcohols can form hydrogen bond with water molecules. The water solubility of alcohols decreases with increasing relative molecular mass.

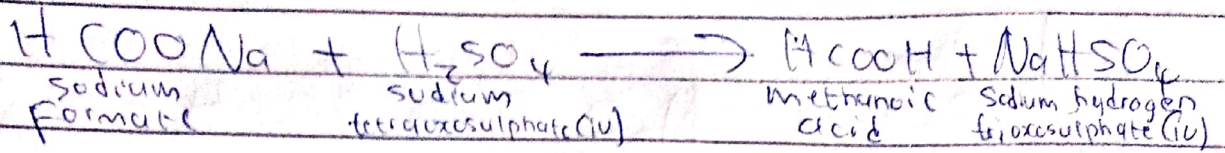
3. Write two industrial preparations of carboxylic acids.

Answers

i) From carbon (II) oxide

Carboxylic acid is manufactured by adding carbon (III) oxide under hot pressure to hot aqueous solution of sodium hydroxide. The free carboxylic acid is liberated by careful reaction with tetra oxo sulphate (VI) acid (H_2SO_4).

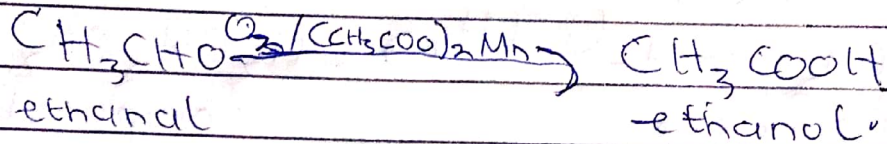
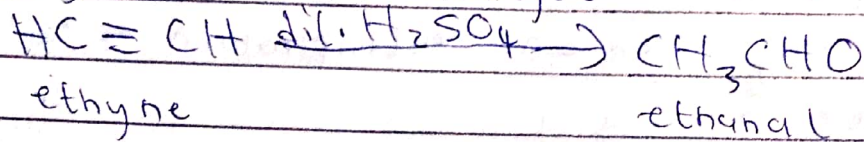




ii) From ethanal

Carboxylic acid is also prepared by the oxidation of ethyne with dil. H_2SO_4 to give ethanal, which is then oxidized with manganite

(II) ethanoate catalyst

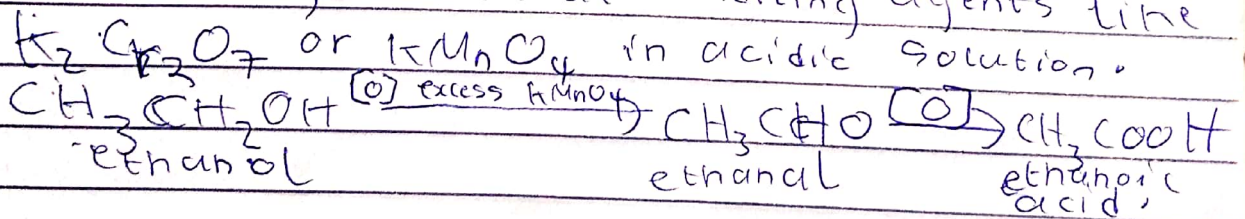


Q. With equations and brief explanation discuss the synthetic preparation of carboxylic acid.

Answers.

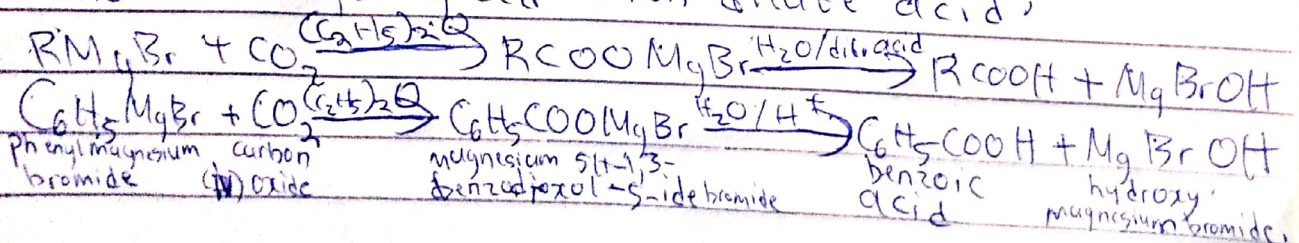
i) Oxidation of primary alcohols and aldehydes

Oxidation of primary alcohols and aldehydes can be used to prepare carboxylic acids using the usual oxidizing agents like $\text{K}_2\text{Cr}_2\text{O}_7$ or KMnO_4 in acidic solution.

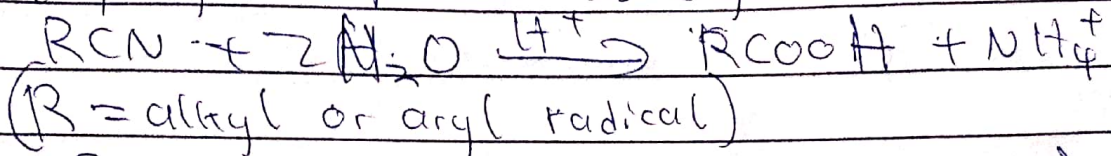


ii) Carbonation of Grignard reagent

Carboxylic acid is also obtained by reacting or bubbling CO_2 with Grignard reagent and then hydrolyzed with dilute acid.

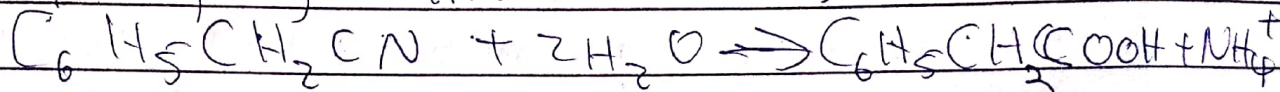


iii) Hydrolysis of Nitriles (cyanides) or esters.



(R = alkyl or aryl radical)

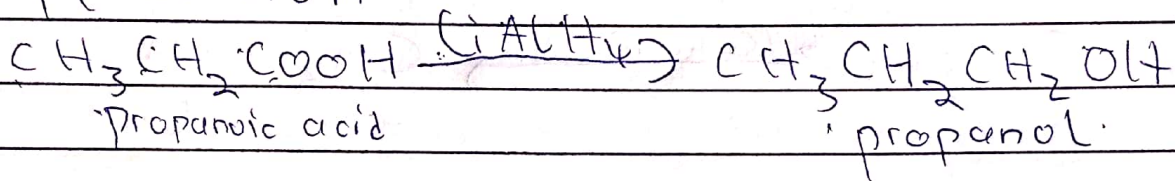
Carboxylic acid is also prepared by hydrolysing nitriles or esters.



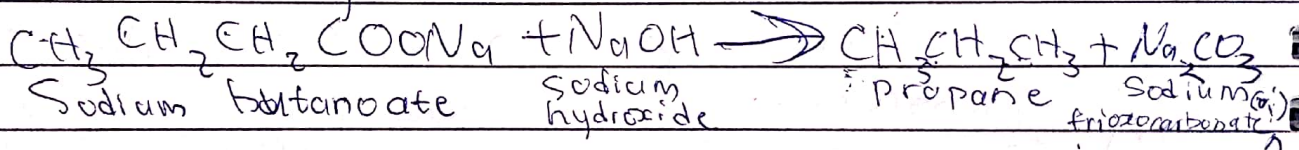
Q. Write chemical equation only, outline the reduction, decarboxylation and re-esterification of carboxylic acid.

Answer

Reduction



Decarboxylation



re-esterification

