

NAME: IKOBHO DEBORAH ELUM.

DATE: 18/04/2020

COURSE: CHEM 102

DEPARTMENT: MBAS

MATRIC NO: 19/MB01/204

- ①
- a)  $\text{HCOOH} \rightarrow$  Methanoic acid
  - b)  $\text{HOOC(CH}_2\text{CH}_2\text{CH}_2\text{COOH)} \rightarrow$  Pentan-1,5-dioic acid
  - c)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH} \rightarrow$  Butanoic acid
  - d)  $\text{HO}_2\text{C}-\text{CO}_2\text{H} \rightarrow$  Ethanedioic acid
  - e)  $\text{CH}_3(\text{CH}_2)_4\text{COOH} \rightarrow$  Hexanoic acid
  - f)  $\text{CH}_3\text{CH}=\text{CHCH}_2\text{CH}_2\text{COOH} \rightarrow$  Hex-4-enoic acid

2) Physical appearance: All simple aliphatic carboxylic acids up to  $\text{C}_{10}$  are liquids at room temperature. Most other carboxylic acids are solid at room temperature although anhydrous carboxylic acid. (ascorbic acid) also known as ascorbic or ethanoic acid.

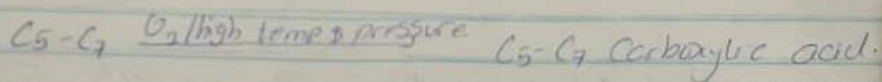
b) Boiling point: This increases with increasing relative molecular mass. Aromatic carbon oxylic acids are crystalline solids and have higher melting points than their aliphatic counterparts of comparable relative molecular mass.

c) Solubility: Lower molecular mass carboxylic acids 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.

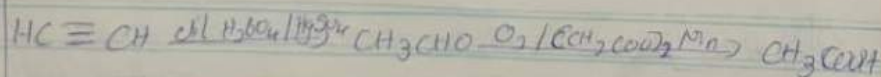
The water solubility of the acids decreases as the relative molecular mass increases because

the structure becomes relatively more hydrocarbon in nature and hence content

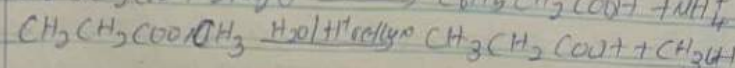
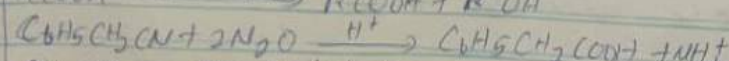
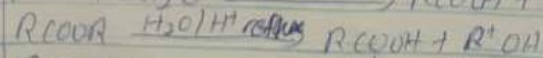
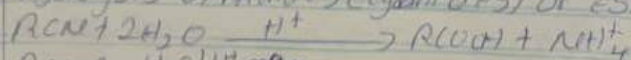
3a) From petroleum liquid phase air oxidation of  $C_3-C_7$  alkanes, obtainable from petroleum at high temperature and pressure will give  $C_3-C_7$  Carboxylic acids with methanoic, propanoic and butanoic acids as by-products.



b) From ethereal ethanoic acid is obtained commercially by the liquid phase air-oxidation of 5% solution of ethereal to ethanoic acid using manganite ( $MnO$ ) ethanoate catalyst. Ethereal itself is obtained from ethylene.

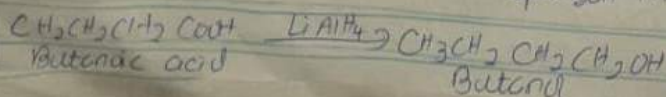
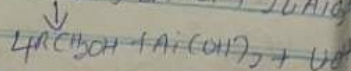
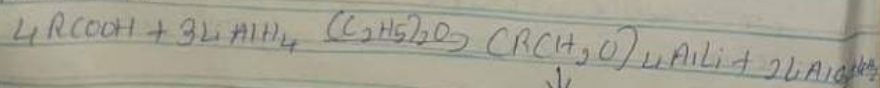


4) Hydrolysis of nitriles (cyanides) or esters

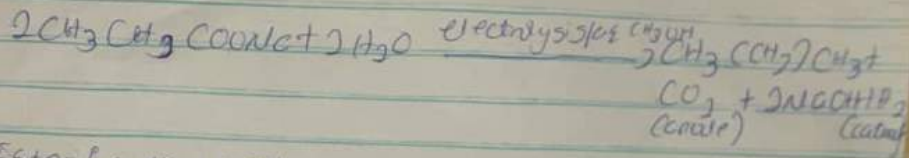
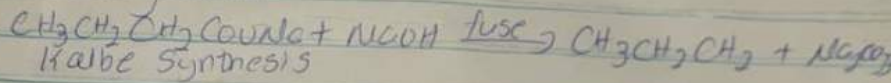


R-alkyl  
or aryl  
radical

5) Reduction



b) Decarboxylation



c) Esterification:  $\text{CH}^+$

