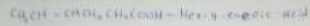
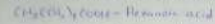
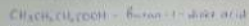
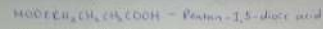


IBANDA UTIBABAI GOWIN

M/MSU/194

Chem 102

1. IUPAC - Methanoic acid



2. PHYSICAL APPEARANCE

All simple aliphatic carboxylic acids up to C_6 are liquids at room temperature. Most other carboxylic acids are solid at room temperature although anhydrous carboxylic acid (oleic acid) also known as glyceric stearic acid, behaves as an ice-like solid below the room temperature.

3. BOILING POINT

Boiling point increases with increasing relative molecular mass. Aromatic carboxylic acids are crystalline solids and have higher boiling points than their aliphatic counterpart.

4. 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 acid decreases as the relative molecular mass increases because the structure becomes relatively more hydrocarbon in nature and hence covalent.

3) From ethanol

Ethanoic acid is obtained commercially by the liquid phase oxidation of 5% solution of ethanol to ethanoic acid using potassium dichromate as a catalyst.



From Carbon Dioxide

Methanoic acid is manufactured by adding carbon dioxide under pressure to hot aqueous solution of sodium hydroxide. The free carboxylic acid is liberated by careful reaction with benzene triethylamine.



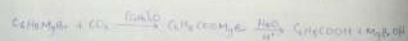
4) Oxidation of primary alcohols and aldehydes

It can be used to prepare carboxylic acids using the usual oxidizing agents ($\text{K}_2\text{Cr}_2\text{O}_7$, KMnO_4) in acidic solution.

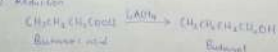


Formation of Geminal diesters

Aliphatic carboxylic acids are obtained by building carbon dioxide into the geminal diester and then hydrolyzed with dilute acid.



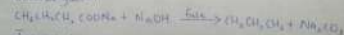
5) Reduction



Butanoic acid

Butanol

Decarboxylation



Trimerization

