

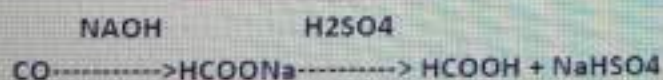
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MATRIC NUMBER: 19/MHS01/351

COLLEGE: MEDICAL AND HEALTH SCIENCE

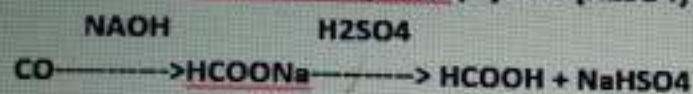
DEPARTMENT: MEDICINE AND SURGERY

1.
 - i. HCOOH ----- Methanoic acid
 - ii. $\text{HOOCCH}_2\text{CH}_2\text{CH}_2\text{COOH}$ ----- Pentan-1,5-dioic acid
 - iii. $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$ ----- Butanoic acid
 - iv. $\text{HO}_2\text{CCO}_2\text{H}$ ----- Ethanedioic
 - v. $\text{CH}_3(\text{CH}_2)_4\text{COOH}$ ----- Hexanoic acid
 - vi. $\text{CH}_3\text{CH}=\text{CHCH}_2\text{CH}_2\text{COOH}$ ----- Hex-4-enoic acid
2.
 - a. physical appearance: All carboxylic acid up to C10 are liquid at room temperature and others are solid at room temperature although acetic acid also known as glacial ethanoic acid freezes to an ice like solid below room temperature.
 - b. Boiling points: the boiling points increases with increasing relative molecular mass Aromatic carboxylic acids have higher melting points than their aliphatic counterparts with comparable relative molecular mass.
 - c. Solubility: lower molecular mass carboxylic with up to 4 carbon atoms are soluble in water largely due to they can form hydrogen bond with the water molecules. The solubility to water decreases with increasing relative molecular mass, because the structure becomes relatively hydrocarbon in nature.
3. *From carbon (II) oxide: Methanoic acids are manufactured by adding carbon (II) oxide under pressure hot aqueous sodium hydroxide. The free carboxylic acid is liberated by careful reaction with tetraoxosulphate (vi) acid (H_2SO_4)

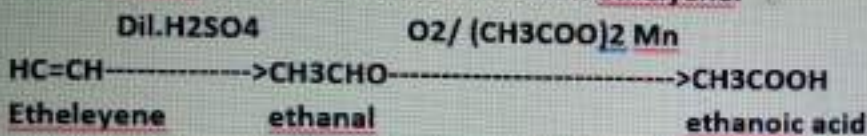


*From ethanal: ethanoic acid can be manufactured in large quantity by the liquid phase air-oxidation of 5% solution of ethanal to ethanoic acid using manganese (II) ethanoate as catalyst

3. *From carbon (II) oxide: Methanoic acids are manufactured by adding carbon (II) oxide under pressure hot aqueous sodium hydroxide. The free carboxylic acid is liberated by careful reaction with tetraoxosulphate (vi) acid (H₂SO₄)

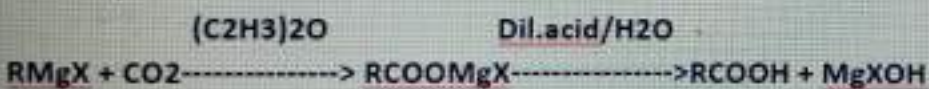


*From ethanal: ethanoic acid can be manufactured in large quantity by the liquid phase air-oxidation of 5% solution of ethanal to ethanoic acid using manganite (II)ethannoate catalyst where ethanal itself is manufactured from ethelyene.

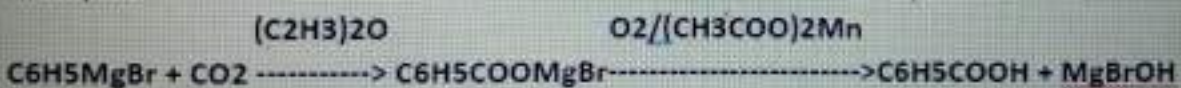


4. -carboxylation of Grignard reagent: Carboxylation means addition of CO₂. Carboxylation simply is the bubbling of CO₂ into a Grignard reagent (RMgX) and then hydrolyze with dilute acid.

Basically:

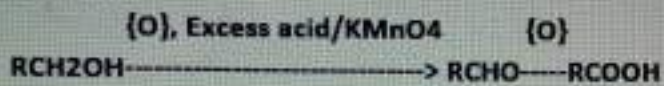


Example:



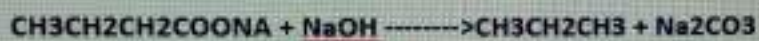
-Oxidation of primary alcohol and aldehydes: this can be used to prepare carboxylic acid using the usual oxidizing agent such as KMnO₄, K₂Cr₂O₇ and so on in acidic solution.

Basically:



5. Decarboxylation of carboxylic acid:

fuse



Reduction of primary alcohol:

LiAlH₄



Butanoic

butanol

Esterification:

H⁺

