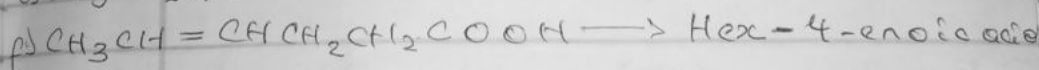
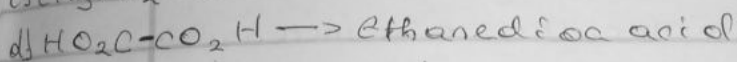
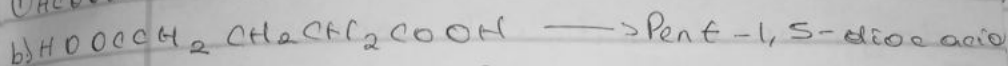
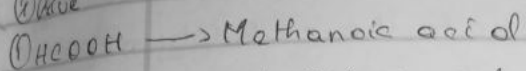


①

NAME: Leslie David Chigi Naomi
Matric no: 19/MHS01/236
Course Title: General Chemistry II
Course code: CHM 102

ASSIGNMENT

① Name



② i) Physical appearance:

Simple aliphatic carboxylic acids up to C_{10} are liquid at room temperature. Others are solid at room temperature although glacial ethanoic acid freezes to an ice like solid below the room temperature.

ii) Boiling point:

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

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aliphatic counterparts of relative molecular mass

iii) Solubility

Lower molecular mass carboxylic acid with up to four carbon atoms in their molecules are soluble in water and this is due to their ability to form hydrogen bonds with water molecules.

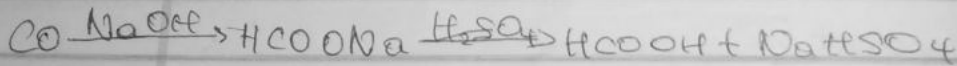
The water solubility of the acids decreases as the relative molecular mass increases.

③ From Carbon (II) oxide

Methanoic acid is manufactured by adding carbon (II) oxide under pressure to hot aqueous solution of sodium hydroxide.

The free carboxylic acid is liberated by careful reaction with tetraoxosulphate (vi) acid (H_2SO_4)

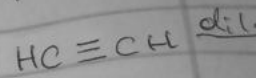
CO



ii) From Ethanol

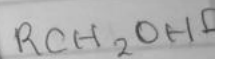
Ethanoic acid is obtained commercially by the

liquid phase
ethanal to ethanoate
from ethylene



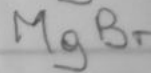
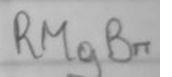
④ Oxidation

Oxidation
be used to
usual ox



ii) Carbo

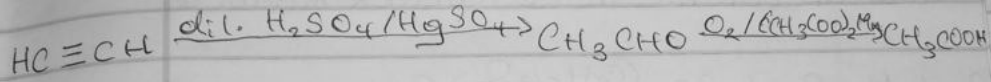
Aliphatic
bubbling
reagent



(3)

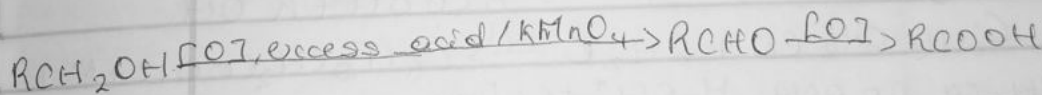
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liquid phase air-oxidation of 5% solution of ethanal to ethanoic acid using manganite (II) ethanoate catalyst. Ethanal itself is obtained from ethylene.



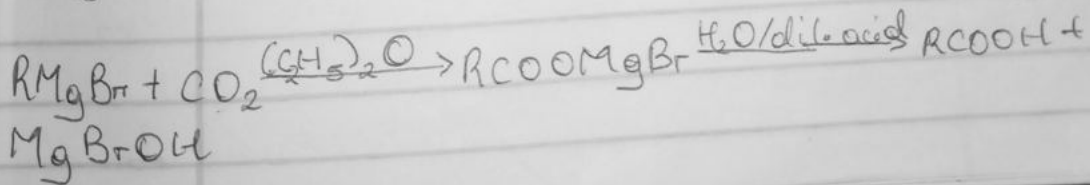
④ Oxidation of primary alcohols and aldehyde:

Oxidation of primary alcohols and aldehyde can be used to prepare carboxylic acid using the usual oxidizing agents (i.e. $KMnO_4$) in acidic soln



ii) Carbonation of Grignard reagent:

Aliphatic carboxylic acids are obtained by bubbling carbon (IV) oxide into the Grignard reagent and then hydrolyzed the dilute acid

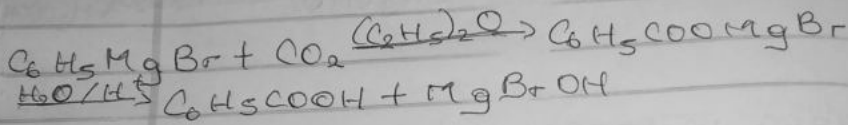


(4)

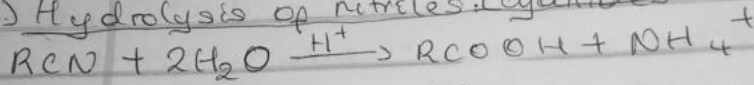
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R may be 1°, 2°, 3° aliphatic alkyl or aryl radical

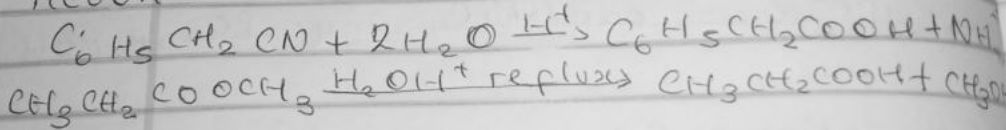
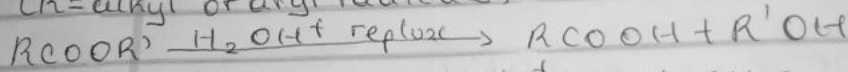
In the preparation of benzoic acid, the reagent is added to solid (IV) oxide (dry ice) which also serves as coolant to the reaction mixture



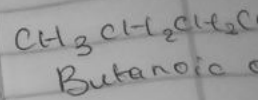
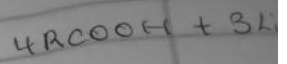
iii) Hydrolysis of nitriles (cyanides) or esters



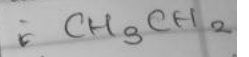
(R = alkyl or aryl radicals)



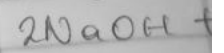
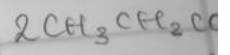
(5) Reduction to primary alcohol



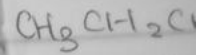
ii) Decarboxylation



Kolbe synthesis

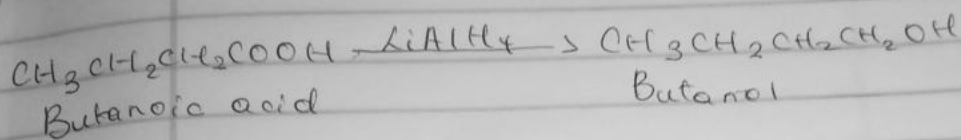
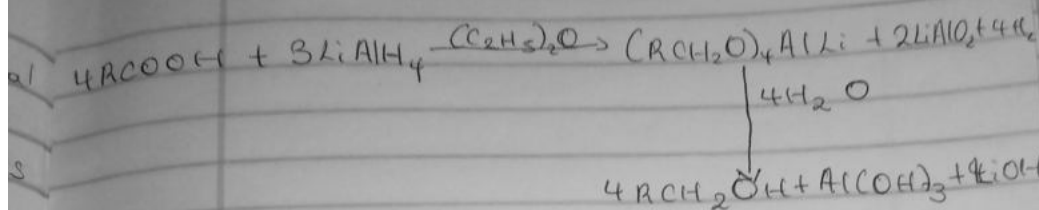


iii) Esterification

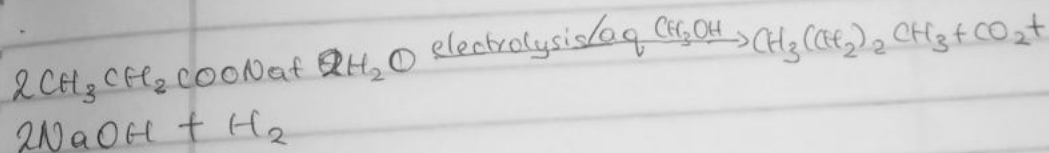
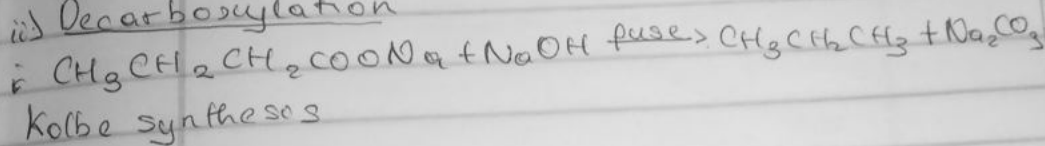


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ii) Decarboxylation



iii) Esterification

