

Name ÷ ARAD HELEN CECILIA DATE _____
Matric no ÷ 191MHS021007

Dept. ÷ NURSING

Course ÷ CHM 102

Assignment ÷ ON CARBOXYLIC ACID

1) IUPAC Names

i) HCOOH — Methanoic acid

ii) $\text{HCOOCCH}_2\text{CH}_2\text{COOH}$ — Pentan-1,4-dioic acid

iii) $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$ — Butanoic acid

2) Physical appearances

All simple aliphatic carboxylic acids up to C_{10} are liquids at room temperature, most other carboxylic acids are solid at room temperature.

iii) Boiling Point

It increases with increasing relative molecular mass.

iv) Solubility

Lower molecular mass carboxylic

Name ÷ AGBO HELEN CECILIA ^{DATE}
Matric no ÷ 19/MH502/007

Dept. ÷ NURSING

COURSE ÷ CHM 102

ASSIGNMENT ON CARBOXYLIC ACID

① IUPAC Names

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

② Physical appearances

All simple aliphatic carboxylic acids up to C_{10} are liquids at room temperature. Most other carboxylic acids are solid at room temperature.

iii) Boiling Point

It increases with increasing relative molecular mass.

iiii) 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.

③ Industrial Preparations

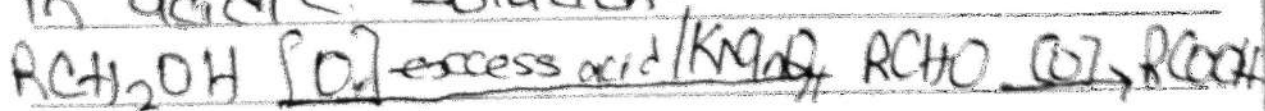
i) From Carbon (IV) Oxide

ii) From Petroleum

④ Synthetic Preparation

i) Oxidation of Primary alcohols

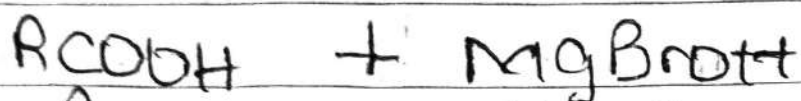
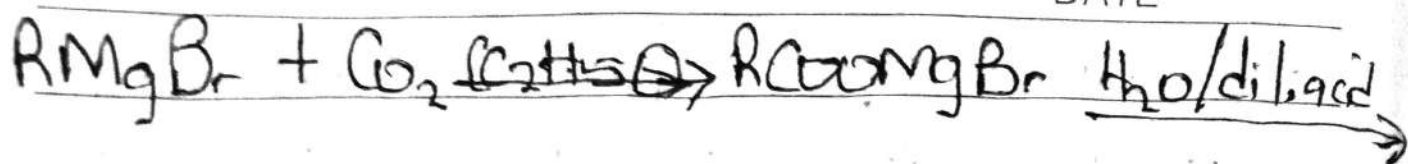
and aldehydes can be used to prepare carboxylic acids using the usual oxidizing agent $[K_2Cr_2O_7]$ in acidic solution.



ii) Carbonation of Grignard reagent

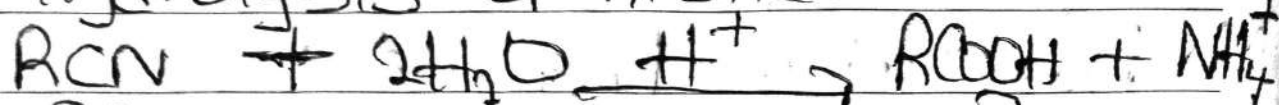
Aliphatic carboxylic acids are obtained by bubbling Carbon (IV) oxide into the Grignard reagent and then hydrolyzed with dilute acid.

DATE



R maybe 1°, 2°, 3° aliphatic alkyl

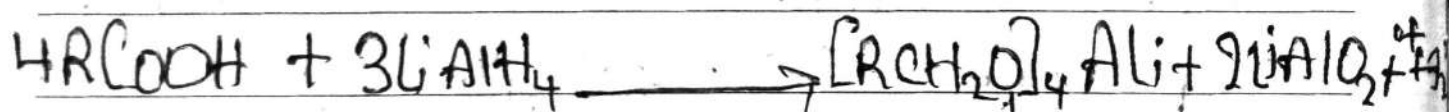
III Hydrolysis of nitriles



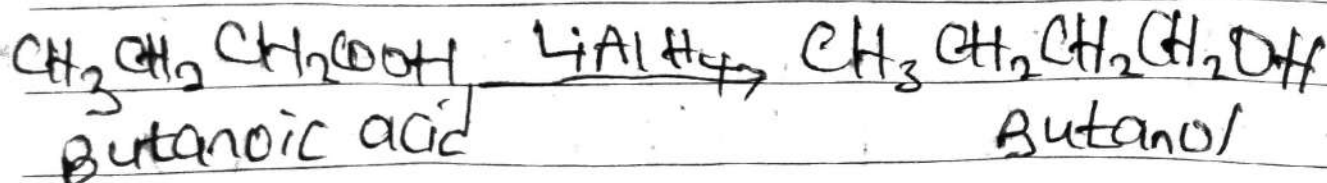
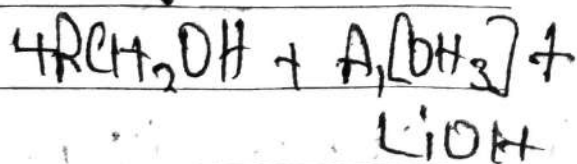
[R = alkyl or aryl radical]

⑤ Chemical reactions

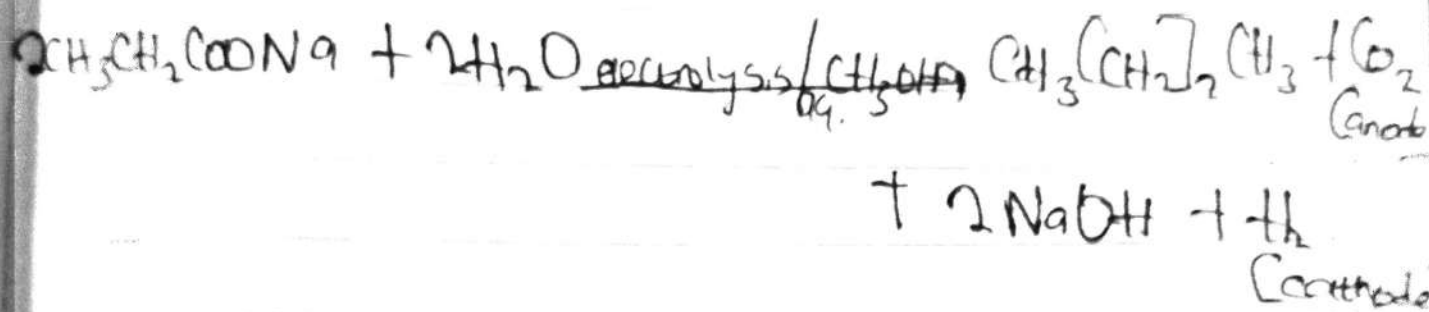
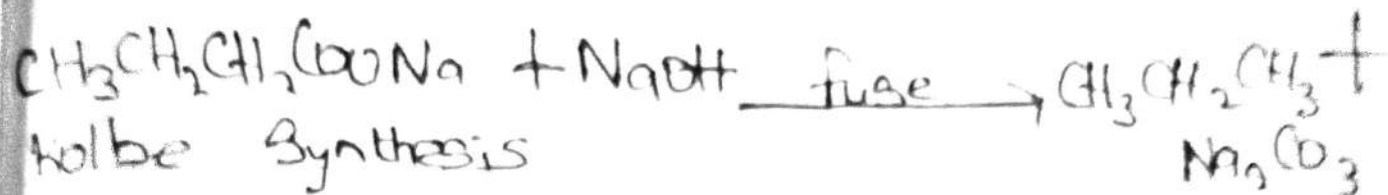
ii) Reduction to primary alcohol



↓ 4H₂O



(iii) Decarboxylation



(iiii) Esterification

