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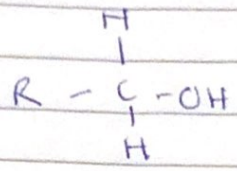
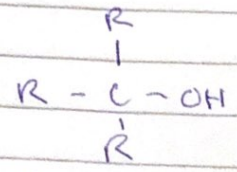
Dept: Computer Engineering
Course: Chemistry 102
Matric No: 19/ENG02/001

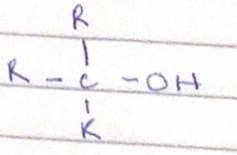
1. A primary (1°) alcohol is one in which the carbon atom (in red) with the OH group is attached to one other carbon atom (in blue). It's general formula is RCH_2OH.



- A secondary (2°) alcohol is one in which the carbon atom (in red) with the OH group is attached to two other carbon atoms (in blue). It's general formula is R_2CHOH.



- A tertiary (3°) alcohol is one in which the carbon atom (in red) with the OH group is attached to three other carbon atoms (in blue). It's general formula is R_3COH.



2. Alcohols are soluble in water. This is due to hydroxyl group in the alcohol which is able to form hydrogen bonds with water molecules. Alcohols with a smaller hydrocarbon chain are very soluble. As the length of the

hydrocarbon chain are very soluble. As the length of the hydrocarbon chain increases, the solubility in water decreases.

3, The first step is to break complex complex carbohydrates into simpler ones

- Yeast is then added and the mixture is kept warm for perhaps several days until the fermentation is complete. Oxidation is prevented to produce ethanoic acid. Enzymes in the yeast convert carbohydrates into simpler ~~can~~ forms then convert them to ethanol and carbon dioxide

$$C_{12}H_{22}O_{11} + H_2O \longrightarrow 2C_6H_{12}O_6$$

$$C_6H_{12}O_6 \longrightarrow 2CH_3CH_2OH + 2CO_2$$

- Yeast is then killed by ethanol concentrations in excess of about 15% and limits the purity of the ethanol that can be produced. The ethanol is then separated from the mixture by fractional distillation to give 96% pure ethanol.

4 $CH_3CH(CH_3)CHO + CH_3(CH_2)_3MgII$

↓

$CH_3CH(CH_3)-C(H)-MgCl$

$(CH_2)_2CH_3$

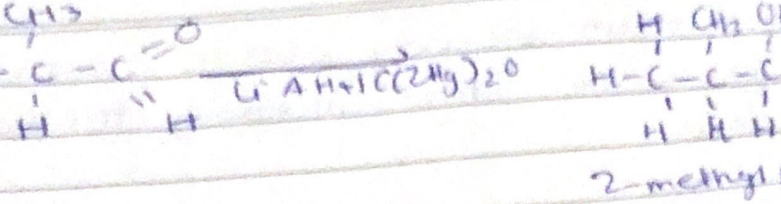
hydrolysis H^+ Cl^-

H

$CH_3CH(CH_3)-C-OH + Mg(OH)Cl$

$(CH_2)_2CH_3$

(2-methyl hexan-3-ol)

7 

2-methyl propanal

8 $CH_3CH_2CH_2OH \longrightarrow CH_3CH(OH)CH_3$

propan-2-ol

Dehydrate propanol by using conc. H_2SO_4

$CH_3CH_2CH_2OH + H_2SO_4 \longrightarrow CH_3CH_2CH_2OSO_3H$

$CH_3CH_2CH_2OSO_3H \xrightarrow{-H_2SO_4} CH_3CH=CH_2$

$CH_3CH=CH_2 \xrightarrow{H} CH_3CH(OH)CH_3$