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COMPUTER ENGINEERING (19/ENG02/054)
(HM 102 (CHEMISTRY))
12/04/2020

1) TWO MAJOR CLASSIFICATIONS OF ALKANOLS

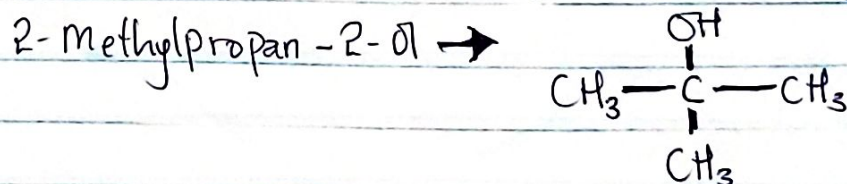
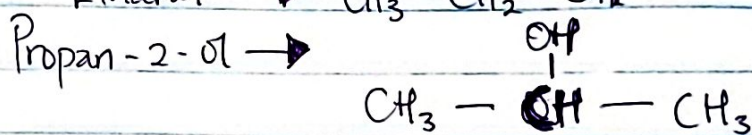
a) Alkanols are classified based on the number of hydrogen atoms attached to the carbon atom containing the hydroxyl group.

* When the carbon atom that carries the $-OH$ group is only attached to one alkyl group, it is known as Primary (1°) alcohol

When the carbon atom that carries the $-OH$ group is joined directly to two alkyl group, it is known as Secondary (2°) alcohol

When the carbon atom holding the $-OH$ group is attached directly to three alkyl groups, it is known as Tertiary (3°) alcohol.

Examples are :- Ethanol $\rightarrow CH_3-CH_2-OH$



b) They are also classified based on the number of hydroxyl groups they possess.

* When there is only one hydroxyl group present in the structure, it is known as Monohydric alcohols.

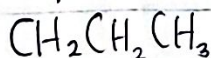
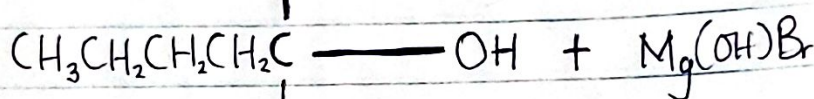
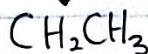
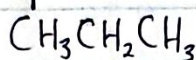
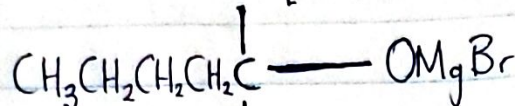
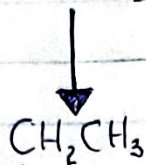
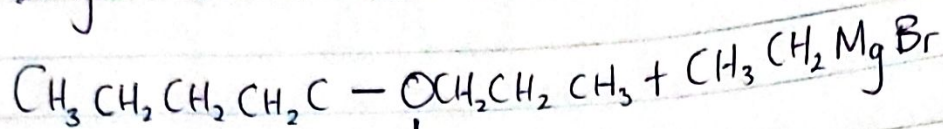
When there are two hydroxyl groups present in the structure, it is known as Dihydric alcohols or Glycols.

When there are three hydroxyl groups present in the structure, it is known as Trihydric alcohols.

Examples are :- Propanol (Monohydric alcohol) $\rightarrow CH_3CH_2CH_2OH$

Ethane-1,2-diol (dihydric) $\rightarrow HOCH_2CH_2OH$

2 GRIGNARD SYNTHESIS OF AN ALKANOYL USING
 $\text{CH}_3\text{CH}_2\text{MgBr}$ AS A GRIGNARD REAGENT

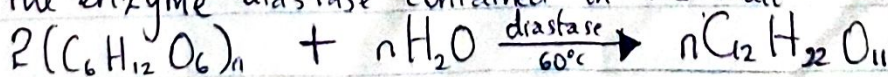


3-Butylhexane-3-ol

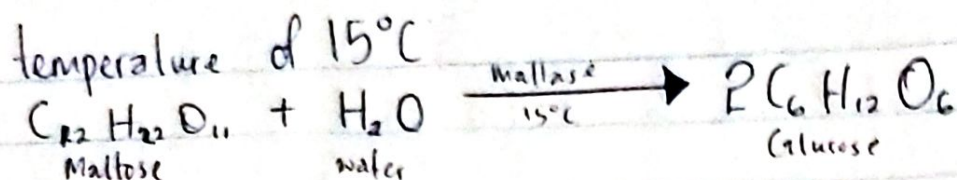
3) INDUSTRIAL PREPARATION OF ETHANOL

Carbohydrates such as starch are major group of natural compounds that can be made to yield ethanol by the biological process of fermentation.

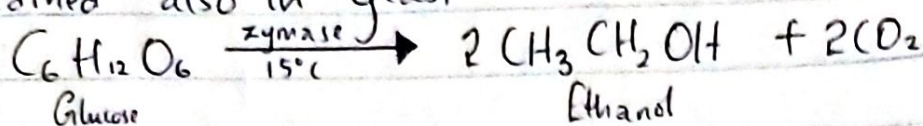
STEP 1: The starch containing materials include molasses, potatoes, cereals, rice and on warming with malt to 60°C for a specific period of time are converted into maltose by the enzyme diastase contained in the malt:



STEP 2: The maltose is broken down into glucose on addition to yeast which contains the enzyme maltase and at the



STEP 3: The glucose at constant temperature of 15°C is then converted into alcohol by the enzyme zymase contained also in yeast.



- 4 PRODUCT OBTAINED IN THE REDUCTION OF ALKANAL AND ALKANONE
 Aldehydes and ketones are reduced to primary and secondary alcohols respectively by reacting with hydrogen in the presence of a platinum or nickel catalyst or with aluminium isopropoxide or with complex metal hydride, such as lithium tetrahydridoaluminate (III) or sodium tetrahydridoborate (III) (NaBH_4)

