

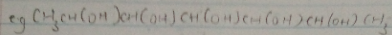
Chemistry 102 Assignment 15/15/20
 Name: Victor Obi Chigozie Noble
 Department: Medicine & Surgery
 Matric no: 19/MH001/432
 Level: 100

1 Discuss briefly classification of alcohols and give examples

Solution

Alcohols are classified on two bases.

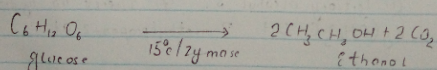
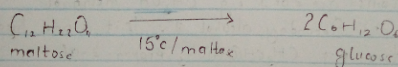
- ⊕ Based on number of hydrogen atom attached to the carbon atom containing -OH functional group.
- (i) Primary alcohol 1°: If the number of hydrogen atoms are 2 or 3 e.g. CH₃OH methanol
 - (ii) Secondary alcohol 2°: If it is one hydrogen atom e.g. CH₃CH(OH)CH₃ propan-2-ol
 - (iii) Tertiary alcohol 3°: If there is no hydrogen atom e.g. (CH₃)₃C-OH 2-methylpropan-2-ol
- ⊖ Based on number of hydroxyl group they possess.
- (i) Monohydric alcohol: One hydroxyl group e.g. CH₃OH
 - (ii) Dihydric alcohol: Two hydroxyl groups e.g. HOCH₂CH₂OH
 - (iii) Trihydric alcohol: Three hydroxyl groups e.g. HOC(CH₂)₂CH₂OH
 - (iv) Polyhydric alcohol: More than three hydroxyl groups



- 2 Solubility: Lower alcohols with 2 or 3 carbon atoms in their molecules are soluble ^{in water} because they form hydrogen bond with it. Solubility of alcohol decreases in water decreases with increasing relative molecular mass. All monohydric alcohols are soluble in organic solvents.

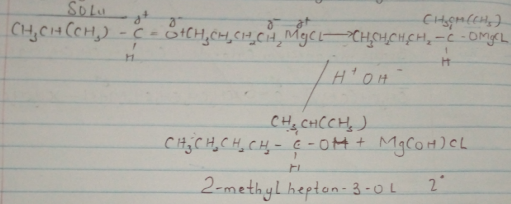
3 Industrial Manufacture of ethanol

$$2(C_6H_{12}O_6)_n + nH_2O \xrightarrow[60^\circ/\text{diastase}]{\quad} nC_2H_5OH$$
 Carbohydrate maltose

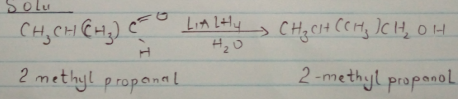


#6 Reduction reaction of 2-methylpropanone

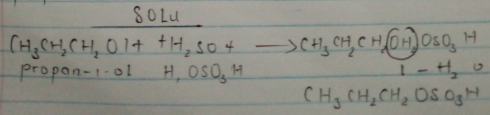
6 Show the reaction between 2-methyl propanal and Butylmagnesium Chloride: Hint Grignard Synthesis



7 Show the reduction reaction of 2-methyl propanal



8 Propose a scheme for conversion of propan-1-ol to propan-2-ol



Hydrolysis with H₂SO₄

