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Collage: M.H.S

DEPARTMENT: NURSING

MATRIC NO: 19/ MHS 02/111

## 1) Classification of Alcohol;

a) **Based on the number of hydrogen atom attached to the carbon atom containing the hydrogen Group:** if the number of hydrogen atom attached to carbon atom bearing the hydroxyl group are 3 or 2, it is called a primary alcohol (1). But if it is one hydrogen atom, it is called secondary alcohol (2) and if no hydrogen atom is attached the carbon atom bearing the hydrogen group; it is called a tertiary alcohol (3).

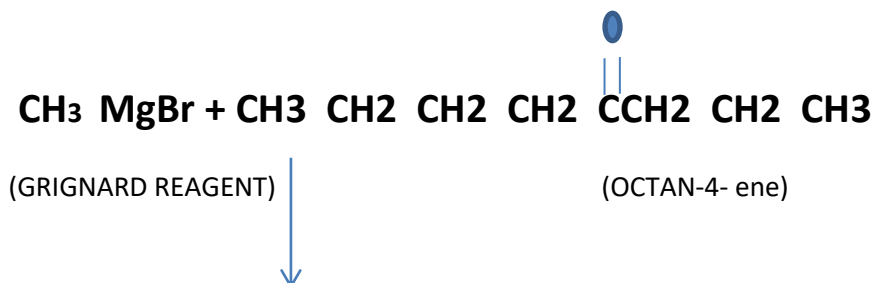
e. g  $\text{CH}_3 \text{CH}_2 \text{OH}$  ethanol (1) 2)  $(\text{CH}_3)_3 \text{C-OH}$  methylpropan-2ol (3)

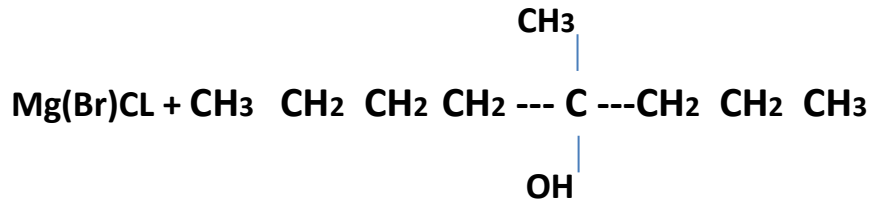
b) **Based on the number of hydroxyl group they possess:** Monohydric alcohol have one hydroxyl group present in the alcohol structure. Dihydric alcohol are also called glycols. They have two hydroxyl group present in the alcohol structure while trihydric alcohol or triols have three hydroxyl group present in the structure of the alcohol. Polyhydric alcohols or polyols have more than three hydroxyl groups.

e.g  $\text{CH}_3 \text{CH}_2 \text{CH}_2 \text{OH}$  propanol (monohydric alcohol)

$\text{OH CH}_2 (\text{OH}) \text{CH}_2 \text{OH}$  PROPANE-1,2,3, TRIOL (TRIOL alcohol)

2)  $\text{CH}_3 \text{CH}_2 \text{CH}_2 \text{CH}_2 \text{C}=\text{OCH}_2 \text{CH}_2 \text{CH}_3$  react a grignard reagent with the reaction:





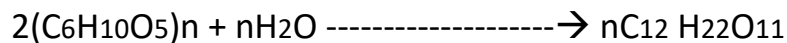
(Tertiary alkanol)

3) The industrial manufacture of ethanol showing all reaction equation and necessary enzymes and temperature of reaction.

**Production of ethanol:** It is the biological process called fermentation. It uses biological catalyst or enzymes

**Step 1:** it is the break down of carbohydrate:

Diastase(malt)



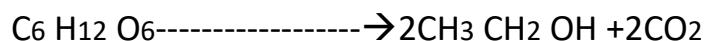
(carbohydrate) • 60 c/Diastase (maltose)

**Step:2** it is the break down of maltose:



(maltose) • 15 C/maltase (glucose)

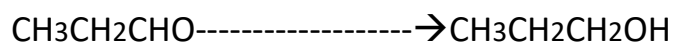
**Step:3** Converting glucose to ethanol:



(Glucose) • 15 C/ zymaze ( Ethanol)

4) Alkanones and alkanals can be reduced using  $\text{LiAlH}_4$  or  $(\text{C}_2\text{H}_5)_2\text{O}$

**ALKANONES:** The reduction process of propanone to propanol.



$\text{LiAlH}_4 / (\text{C}_2\text{H}_5)_2\text{O}$

**ALKANALS**: The reduction process of propanal to propanol.

