

ADERINDLA DEBORAH ADEMIDUN

19/MHS111010

PHARMACY

[Answers only]

1. The major classification of Alcohol is based on:

a. The Number of hydrogen atoms attached to the carbon atom containing the hydroxyl group;

- It is a primary alcohol (1°), If the numbers of hydrogen atoms attached to the carbon atom bearing the hydroxyl group are three or two. Examples are Methanol - CH_3OH , Ethanol - $\text{CH}_3\text{CH}_2\text{OH}$
- It is a secondary alcohol (2°), If the number of hydrogen atoms attached to the carbon atom bearing the hydroxyl group is one. Example is: propanol ($\text{CH}_3\text{CH}(\text{OH})\text{CH}_3$)
- It is a tertiary alcohol (3°) if no hydrogen atom is attached to the carbon atom bearing the hydroxyl group e.g. 2-methylpropan-2-ol.

b. It is based on the Number of hydroxyl groups they possess, examples include;

→ Monohydric alcohols; They have one hydroxyl group present in the alcohol structure e.g.

Propanol ($\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$).

→ Dihydric alcohols; (Glycols) - They have two hydroxyl groups present in the alcohol structure, e.g.

Ethane-1,2-diol ($\text{HOCH}_2\text{CH}_2\text{OH}$) and Hexane-2,4-diol ($\text{C}_6\text{H}_{13}\text{O}_2$).

→ Trihydric alcohols: They have three hydroxyl groups in their structure. e.g. Propane-1,2,3-triol

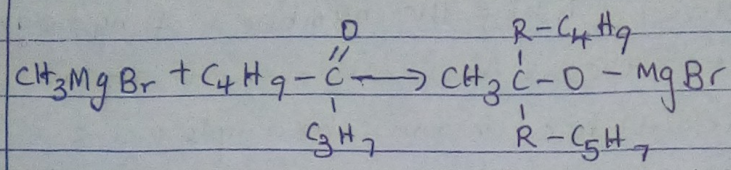
$[\text{C}_3\text{H}_7\text{O}_3]$ and polyhydric alcohol

→ polyhydric alcohols have more than three

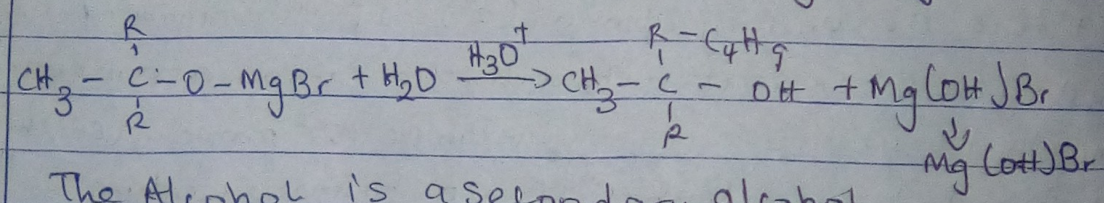
hydroxyl groups. e.g. Heptane-2,3,4,5,6-
 $[CH_3CH(OH)CH(OH)CH(OH)CH(OH)CH(OH)CH_3]$.

2. Grignard Reagent (RMgX).

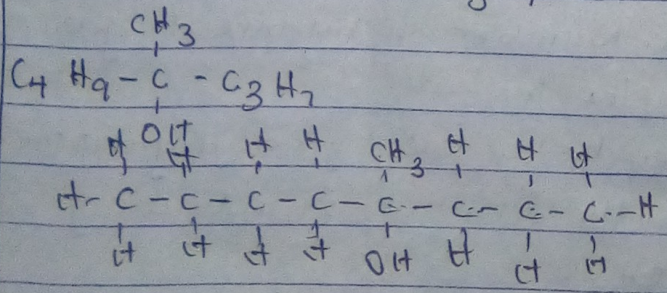
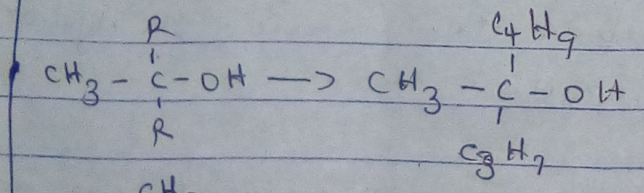
Named Grignard reagent: CH_3MgBr
 Reacting CH_3MgBr with Octan-4-one



Dilute acid is added to it to hydrolyse



The Alcohol is a secondary alcohol

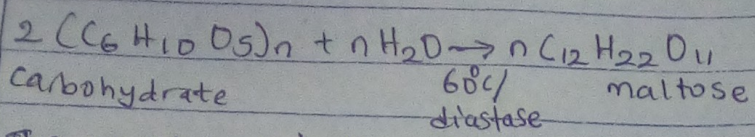


4-Methyloctan-4-ol

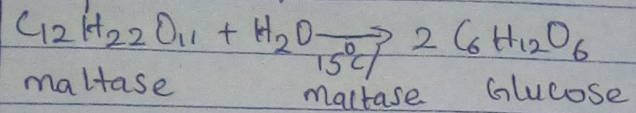
It is a secondary alcohol because it has one

3. Carbohydrates such as starch are major group of natural compounds that can be made to yield ethanol by the biological process of FERMENTATION. Starch containing materials e.g. molasses, cereals, rice and on warming with malt to 60°C for a specific period of time are converted

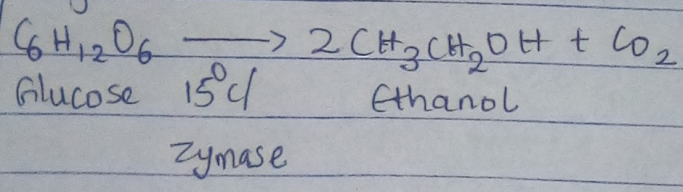
Into maltose by the enzyme diastase contained in the malt.



The maltose is then broken into glucose on addition of yeast which contains the enzyme maltase and at a temperature of 15°C



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



Alkanone are reduced to secondary alcohols while Alkanals are reduced to primary alcohols by reaction with hydrogen in the presence of platinum or nickel catalyst or with aluminium isopropoxide or complex metal hydride, such as lithium tetrahydridoaluminate III [LiAlH₄] or sodium tetrahydridoborate III [NaBH₄], e.g.

