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**MATRIC NO: 18/MHS07/037**

**DEPT: PHARMACY**

**COLLEGE: MHS**

**CHEMISTRY 102 ASSIGNMENT**

1. Discuss the two major classification of alkanols. Give two examples each for the each class.
2. Classification based on the number of hydrogen atoms attached to the carbon atom containing the hydroxyl group.

If the number of the hydrogen atoms attached to the carbon bearing the hydroxyl group 2 or 3, it is called a primary alcohol (1⁰). It is called a secondary alcohol when one hydrogen is attached to the carbon bearing the hydroxyl group 2. It is called tertiary alcohol (3⁰)

CH₃CH₂0H Ethanol

(CH₃)₃C–OH –2methyl–propan-2-ol (3⁰)

1. Classification 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 2 hydroxyl groups present in the alcohol structure. Trihydric alcohol 3 hydroxyl groups are present in the alcohol structure. Polyhydric alcohol has more than 3 hydroxyl groups present in the alcohol structure.

 CH₃CH₂CH₂OH (propanol) monohydric

 CH₂OH CH₂OH (ethan-1,2-diol) dihydric

1. CH₃CH₂CH₂MgCl + CH₃CH₂CH₂CH₂C=OCH₂CH₂CH₃

 CH₃CH₂CH₂CH₃ CH₃CH₂CH₂CH₂

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CH₃CH₂CH₂C –OMgCl ––––––––> CH₃CH₂CH₂–C – OH + Mg(OH)Cl

 | |

 CH₂CH₂CH₃ CH₂CH₂CH₃

 4propyl-4-ol

 3. Industrial manufacture of ethanol

 Carbohydrate is converted into maltose at a temperature of 60⁰ and by the enzyme diastase

2( C₆H₁₀O₅) + nH₂O ––––––> nC₂H₂₂O₁₁

 60⁰/ diastase maltase

Maltase is broken down into glucose in addition of yeast which contains the maltase at 15⁰C

C₁₂H₂₂O₁₁ + H₂0 ––––––> C₆H₁₂O₆

 15⁰C/maltase Glucose

Glucose at constant temperature 15⁰C is converted into alcohol with enzyme zymase contained also in yeast

C₆H₂₂O₁₁ –––––> 2CH₃CH₂OH + CO₂

 15⁰C/zymase ethanol carbondioxide

1. Reduction of alkanone – secondary alcohol

Reduction of alkanal – primary alcohol

 Reduction of alkanal

 LiAlh

CH₃CH₂CHO ––––– CH₃CH₂CH₂OH

 propanal H₂O propanol

 reduction of alkanone

 LiAlHs

CH₃COCH₃ –––––> (CH₃)₂CHOH

 ethanone H₂O propan-2-ol