**OMORODION OSAROGIE YOMA**

**COMPUTER ENGINEERING 19/ENG02/051**

**CHM 102 ASSIGNMENT**

1) MAJOR CLASSIFICATIONS OF ALKANOL

Alkanols are classified based on the number of hydrogen atoms attached to the carbon atom containing hydroxyl group. If the numbers of hydrogen atoms attached to the carbon atoms bearing the hydroxyl group are 2 or 3, it is called **PRIMARY ALKANOL.** If it is one hydrogen atom, it is called **SECONDARY ALKANOL** and if no hydrogen atom is attached, it is called **TERTIARY ALKANOL.**

Example: Methanol\_CH2OH, Butan-2-ol\_CH3CH2CH (OH) CH3

Alkanols can also be classified based on the number of hydroxyl groups they possess. Monohydric alcohols have one hydroxyl group present in the alcohol structures. Dihydric alcohols, also called glycols have 2 hydroxyl groups present in the alcohol structure while the Trihydric alcohols have 3 present in the structure of the alcohol.

3) INDUSTRIAL PREPARTION OF ETHANOL

Carbohydrates such as starch are a major group of natural compounds that can be made to yield ethanol.

The starchy material is crushed and pressure cooked to release starch granules. Then malt (a partially germinated barley) is added and the temperature maintained at 55-60­oC for one hour. The enzyme *diastase* which is contained in malt hydrolyzes, starch into a sugar called maltose.

2(C6H10O5)­n(s) + nH2O(I) Maltose nC12H22O11(aq)

The liquid is cooled to about 20oC and yeast added. The enzyme, maltase (contained in yeast) hydrolyzes maltose to glucose

C12H22O­11 (aq) + H2O (I) maltase 2C6H12O6 (aq)

Finally, the enzyme Zymase (also contained in yeast) decomposed glucose into ethanol and carbon (IV) oxide.

C6H12O6 (aq) Zymase 2CH3CH2OH2 (aq) + 2CO2 (g) + Energy

2) GRIGNARD SYNTHESIS OF ALKANOLS

CH3CH2CH2CH2C-OCH3CH2CH3 + CH3CH2CH2MgBr

 CH2CH3

 CH3CH2CH2C – OMgBr

 CH3CH2CH3

 CH2CH2

 CH3CH2CH2CH2C-OH + Mg (OH) Br

 CH3CH2CH3

 3-Butylehtane-3-ol

4) PRODUCT OBTAINED IN THE REDUCTION OF ALKANONE AND ALKANAL

Aldehydes and Ketones are reduced to primary and secondary alcohols respectively.

Reduction of an aldehyde: You get exactly the same organic product whether you use lithiumtetrahydridoaluminate or sodium tetrahydridoborate. For example, with ethanal you get ethanol:

 O O**H**

CH3-C + 2**[H]** CH3-C-**H** (CH3CH2OH)

 H H

Reduction of a ketone: Again the product is the same whichever of the two reducing agents you use. For example, with propanone you get propan-2-ol:

CH3  O**H**

C=O + 2**[H]** CH3-C-**H** (CH3CHCH3)

CH3  CH3  OH