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COLLEGE: MEDICINE AND HEALTH SCIENCES

DEPARTMENT: MEDICINE AND SURGERY

MATRIC NUMBER: 19/MHS01/186

COURSE CODE: CHM 102

ASSIGNMENT

1a). This is based on the number of hydrogen atoms attached to the carbon atom containing the hydroxyl group e.g. methanol

b). This is based on the number of hydroxyl they possess e.g. propanol.

2). Lower alcohols with up to three carbon atoms in their molecules are soluble in water because lower alcohols can form hydrogen bond with water molecules. The solubility of simple alcohols and polyhydric alcohols is largely due to their ability to form hydrogen bonds with water molecules. All monohydric alcohols are soluble in organic solvents.

3). Carbohydrates are a major group of natural compounds that can be made to yield ethanol by the biological process of fermentation. The biological catalyst, enzymes found in yeast break down the carbohydrate molecules into ethanol to give a yield of 95%. The starch containing materials 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.

2(C₆H₁₀O₅)n + nH₂O nC₁₂H₂₂O₁₁

carbohydrate 60˚C/diastase maltose

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

C₁₂H₂₂O₁₁ + H₂O 2C₆H₁₂O₆

maltose 15˚C/maltase glucose

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

C₆H₁₂O₆ 2CH₃CH₂OH + 2CO₂

glucose 15˚C/zymase ethanol

H 4). CH₃CH₂CH₂CH₂MgCl + CH₃CH(CH₃)CHO → CH₃CH(CH₃)―C―OMgCl

CH₂CH₂CH₂CH₃

OH

H

CH₃CH(CH₃)―C―OH + Mg(OH)Cl

CH₂CH₂CH₂CH₃

7).CH₃CH(CH₃)CHO CH₃CH(CH₃)CH₂OH

LiAlH₄/(C₂H₅)₂O

8).CH₃CH₂CH₂OH +H₂SO₄ CH₃CH₂CH₂OH₂OSO₃H

Propanol-1-ol

CH₃CH₂CH₂OSO₃H

CH₃CH=CH₂ + H₂SO₄

+H₂O

CH₃CHCH₃

OH

Propan-2-ol