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COURSE: CHEMISTRY( CHM102)

 Assignment

1. a. Classification of alcohols based on the number of alkyl groups attached to the carbon which bears the hydroxyl group. 2 examples are
2. primary alkanols like methanol
3. secondary alkanols

 b. classification based on the number of hydroxyl group they possess. Examples are

 i. Monohydric alkanols eg propanol

 ii. Dihydric alkanols eg. Ethan-1,2-diol

1. reaction of a named Grignard reagent with CH3CH2CH2CH2C=OCH2CH2CH3 with the reaction steps

Grignard reagent – ethylmagnesiumchloride (CH3CH2MgCl)

 CH3CH2 CH3CH2MgCl + CH3CH2CH2CH2C= OCH2CH2CH3 CH3CH2CH2CH2 C OMgCl

 CH2CH2CH3

 H+/OH-

 CH3CH2

 CH3CH2CH2CH2 C OH + Mg(OH)Cl

 CH2CH2CH3

 4ethylOctan-4-ol

1. One industrial preparation of ethanol by fermentation of starch

Carbohydrates are major group of natural compound that can be made to yield ethanol by the biological process of fermentation. The biological catalysts enzymes found in yeast break down the carbohydrate molecules into ethanol to give a 95% yield .fist it is hydrolyzed then fermented as below:

Starch is hydrolyzed to maltose by an enzyme called diastase

2(C6H10O5) + nH2O $→$ n (C12H22O11)

Starch 60$℃$ Maltose

Finally, yeast is added to maltose

C12H22O11 + H2O $→$ 2C6H12O6

Maltose 15$℃$ glucose

C6H12O6 $→$ C2H5OH + 2CO2

Glucose 15$℃$ ethanol

1. Product of reduction of alkanone is secondary alcohol by using LiAlH4 in ethoxyethane

 Example is propanone to propan-2-ol

CH3(C=O)CH3 + 2[H] $→$ CH3CH(OH)CH3

Ketone sec. alcohol

 Products of reduction of aldehydes are primary alcohols

 Example is Ethanal to Ethan-1-ol

CH3CHO + 2[H] $→$ CH3CH2OH

Aldehyde pri. alcohol