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DEPARTMENT: Nursing.

COLLEGE: Medicine and Health Sciences.

1) Discuss two major classifications of Alkanols. Give two examples each for each classes.

A) PRIMARY ALKANOL(1ͦ)

This carbon contains only one OH group, one alkyl group and two hydrogen atoms. Examples of the primary alkanol incudes:

CH3CH2-OH

ETHANOL

CH3-CH2-CH2-OH

Propan 1-ol

B) SECONDARY ALKANOL (2 ͦ)

This the carbon which carries one OH , two alkyl group and one hydrogen atom. The alkyl group might differ or be the same. Examples of secondary alkanols inludes:

CH3CHOHCH3

Propane-2-ol

CH3CHOHCH2CH3

Butan-2-ol

2) In the Grignard synthesis of alkanols, react a named Grignard reagent with CH3CH2CH2CH2C=OCH2CH2CH2CH3

CH3MgBr + CH3CH2CH2CH2C=OCH2CH2CH3

CH3

Mg(Br)Cl + CH3CH2CH2CH2- C – CH2CH

 OH

3) Discuss the industrial manufacture of ethanol showing all reaction equations and necessary enzymes and temperature of reaction.

Industrial manufacture of ethanol

Carbohydrate is converted into maltose at a temperature of 60 ͦc and by the enzyme diastase

2(C6H10O5) + nH2O 60 ͦdiastase nC12H22O11

Then maltose is broken down into glucose with the addition of yeast which contains the enzyme maltase

At 15 ͦ

C12H22O11 + H2O 15 ͦmaltase C6H12O6

Finally glucose at constant temperature 15ͦc is converted into alcohol with enzyme zymase contained

Also in yeast

C6H12O6  15 ͦ zymase 2CH3OH + CO2

4) Determine the product obtained in the reduction of alkanone and alkanal. Use a specific example for

Each and show the equation of reaction .

Reduction of alkanal leads to primary alkanol.

CH3CHO + 2[H] CH3CH2OH

Ethanal Ethanol

Reduction of alkanone leads to secondary alkanol.

CH3CH3C=O + 2[H] CH3CHCH3

Propanone OH

 Propan-2-ol