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College / Dept: MHS / MBS

Course Code: CHM 102

Assignment

1. Discuss the two major classification of alcohols. Give two examples each for each class.

Answer

a) Based on the number of hydrogen atoms attached to the carbon atom containing the hydroxyl group: If the numbers of hydrogen atoms attached to the carbon atom containing the hydroxyl group are 3 or 2, it is called a primary alcohol (1°). If it is 1 hydrogen atom, it is called secondary alcohol (2°) and if no hydrogen atom is attached it is called a tertiary alcohol (3°).

Examples

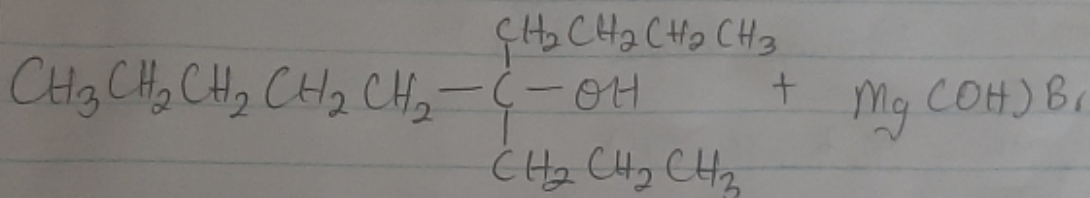
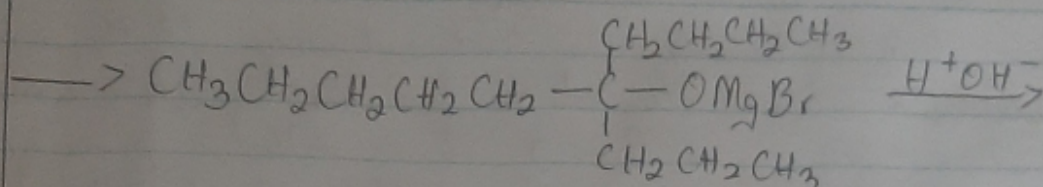
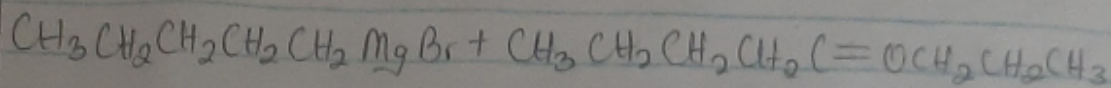
- i) CH_3OH - Methanol (1°)
- ii) $\text{CH}_3\text{CH}(\text{OH})\text{CH}_3$ - Propan-2-ol (2°)

b) Based on the number of hydroxyl groups they possess: If there is one hydroxyl group present in the alcohol structure it is a monohydric alcohol. If there are two it is called a dihydric alcohol or glycol. If there are three it is called a trihydric alcohol or triol. If there are more than ~~the~~ three it is called a polyhydric alcohol or polyol.

Examples

- i) $\text{OHCH}_2\text{CH}(\text{OH})\text{CH}_2\text{OH}$ - Propane-1,2,3-triol (Trihydric)
- ii) $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$ - Propanol (Monohydric)

- 2 In the Grignard synthesis of alcohols, react a named Grignard reagent with $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{C}=\text{OCH}_2\text{CH}_2\text{CH}_3$. Show the reaction steps
30th.

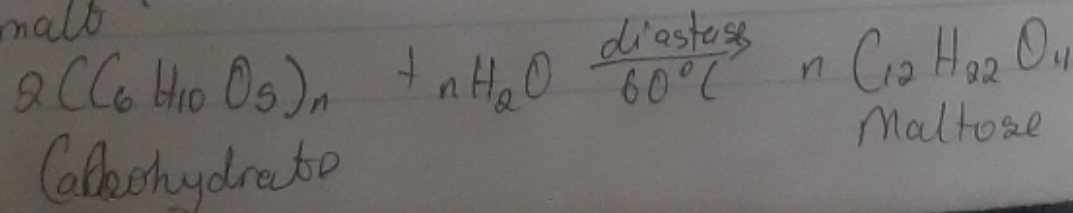


- 3 Discuss the industrial manufacture of ethanol showing all reaction equations and necessary enzymes and temperature of reaction.

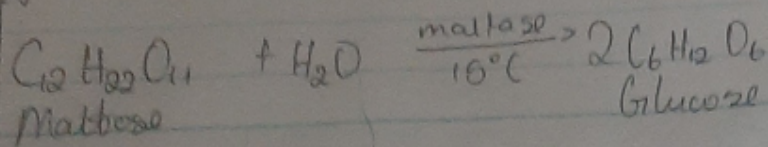
Answer

Starch containing foods can be made to yield ethanol through a biological process called fermentation.

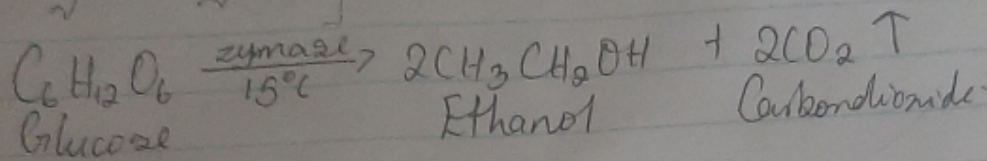
- a The starch containing material is warmed with malt to 60°C for a period of time this converts it into maltose by the enzyme diastase contained in the malt.



b The maltose is broken down into glucose when yeast is added which contains enzyme maltase at 15°C



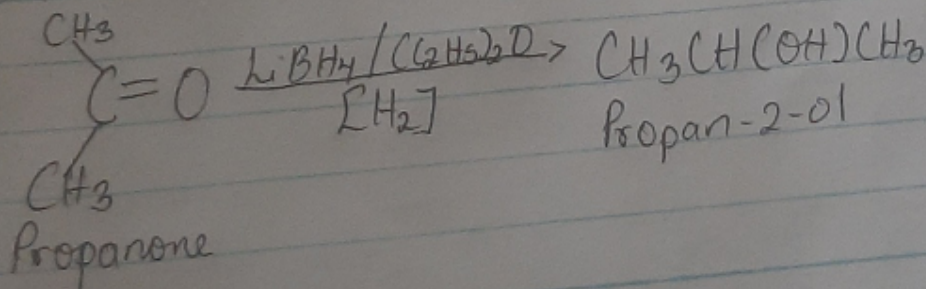
c The glucose at 15°C is converted into alcohol by enzyme zymase contained in yeast.



4. Determine the product obtained in the reduction of alkanone and alkanal. Use a specific example for each and show the equation of reaction.

Answer

Alkanone



Alkanal

