

Okonkwo dumebi

Chemistry assignment

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MBBS

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① Discuss the major classifications of Alcohols Give two examples each for each classification.

Ans

① Based on the number of hydrogen atoms attached to the carbon atom of the hydroxyl group. If three or two hydrogen atoms, it is called a primary (1°) alcohol.

If one hydrogen atom, it is called a secondary (2°) alcohol and if zero hydrogen atoms, it is called a tertiary (3°) alcohol.



Methanol (1°)



2-methyl 1-propanol

② Based on the number of hydroxyl groups, the presence of one hydroxyl group, it is called a monohydric alcohol. ~~the carbon atom of the hydroxyl group. If there are two~~

If two hydroxyl groups, it is called a dihydric alcohol (glycol).

If three hydroxyl groups, it is called a trihydric alcohol (triol) and

if more than three hydroxyl groups, it is called a polyhydric alcohol (polyol) eg $\text{CH}_2\text{OH}(\text{OH})\text{CH}_2\text{OH}(\text{OH})\text{CH}_2\text{OH}$

Hexane-2,4-diol.

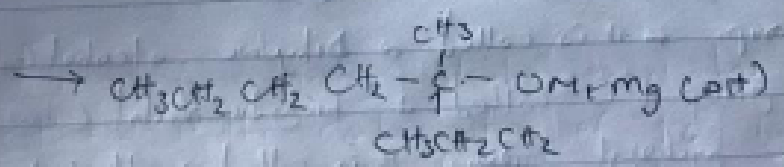
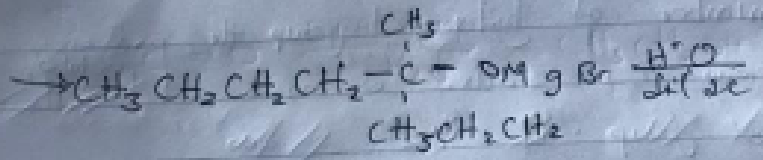
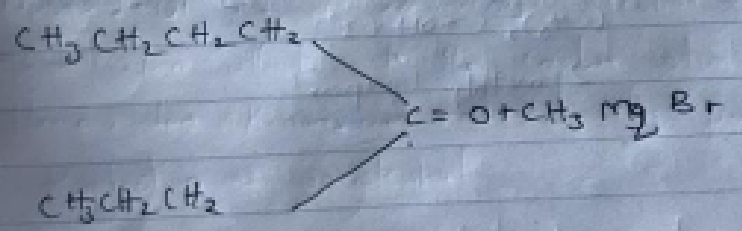
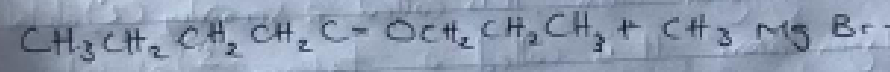
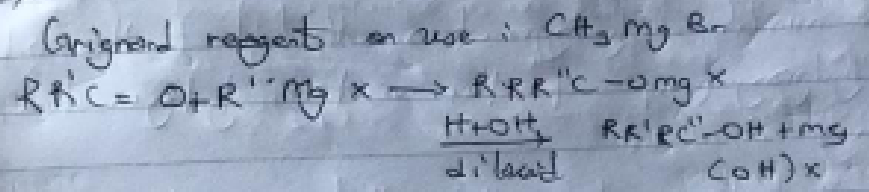
$\text{CH}_2\text{OH}(\text{OH})\text{CH}_2\text{OH}$ Propanol (monohydric alcohol)

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

Ans.



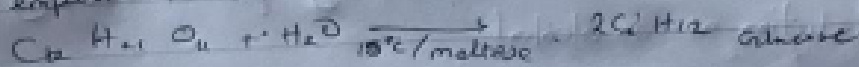
1 methyl octan-4-ol

Q1 Discuss the industrial manufacture of ethanol, showing all reaction equations and necessary enzymes and temperature of reaction.

Ans
 (i) Firstly, carbohydrates such as starch, cereals, etc. are warmed with malt to boil for a specific period of time and converted into maltose by the enzyme diastase contained in malt.



(ii) Secondly, maltose is broken down into glucose on addition of yeast which contains the enzyme maltase and at temperature of $15^\circ C$.



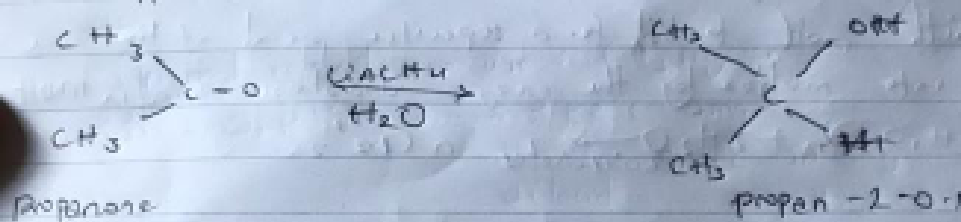
(iii) Lastly, at a constant temperature of $15^\circ C$ glucose is then converted in alcohol by the enzyme zymase contained in yeast.



Glucose $\xrightarrow[15^\circ C]{\text{zymase}}$ ethanol

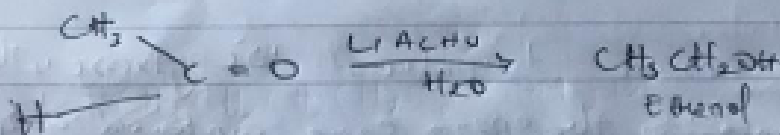
④ Determine the product obtained in the reduction of alkenes and alkynes. Use a specific example for each and show the equation of reaction.

Ans
Reduction of an Alkane



Propan-2-ol is a secondary alcohol as it has only one hydrogen atom attached to the carbon atom of the hydroxyl group. Hence, when alkenes are reduced they produce secondary alcohols.

Reduction of an alkyne



Ethanol is a primary alcohol as it has two hydrogen atoms attached to the carbon atom of the hydroxyl group. Hence, when alkenes are reduced, they produce primary alcohols.