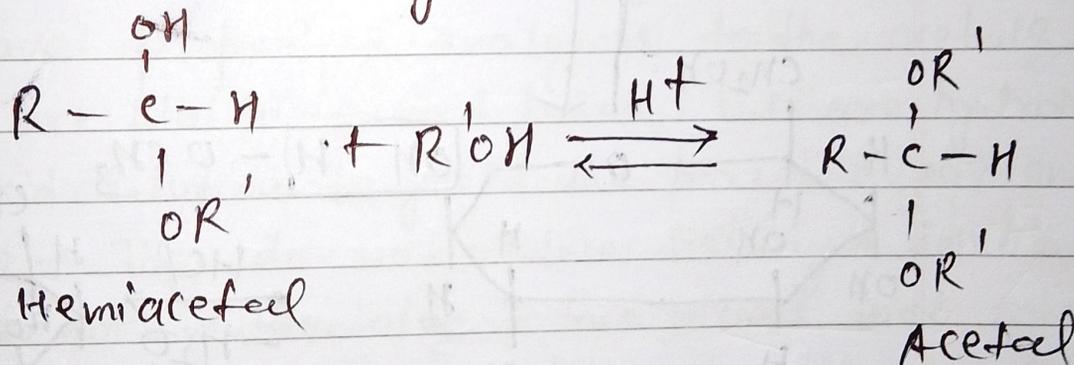


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class - B.Sc Part II (subsidiary)  
 Paper - gr. C (subsidiary)  
 Subject - Chemistry  
 Topic - Glycosides  
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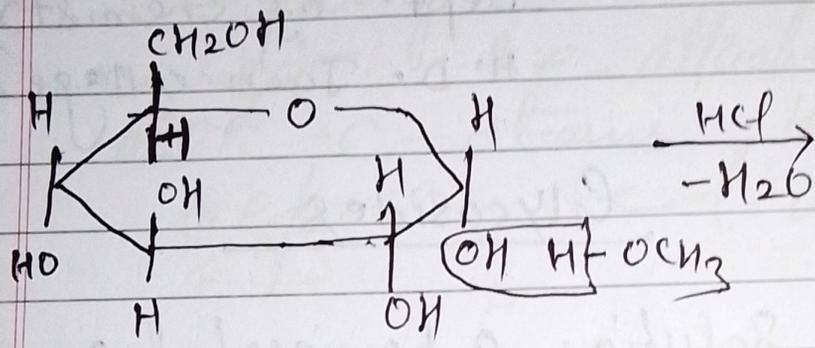
## Glycosides

In acidic solution a hemiacetal can react with an alcohol to give an ~~acetal~~ acetal.

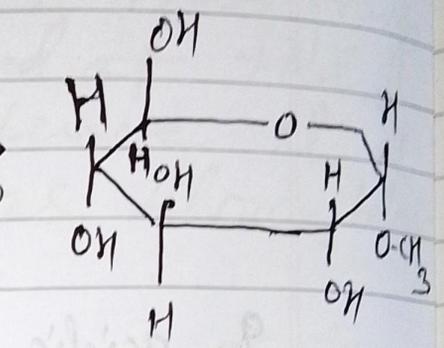


Glucose itself is a hemiacetal. Hence, the hemiacetal hydroxyl gr. (-OH at C<sub>1</sub>) of glucose reacts similarly to produce the corresponding acetal. However, when glucose is treated with methyl alcohol in presence of HCl two isomeric compounds are obtained. This is because when

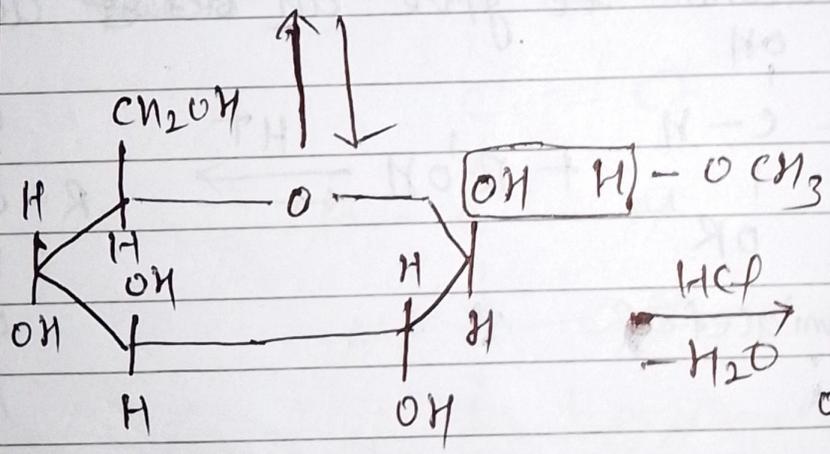
glucose is placed in solution both  $\alpha$  and  $\beta$  forms of glucose are in equilibrium with each other, and each reacts separately to yield a different compound.



$\alpha$ -D-glucose



methyl  $\alpha$ -D-glucoside



methyl  $\beta$ -D-glucoside

In carbohydrate, acetals derived from glucose are called glucosides. The more general term glycoside which is

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used to refer the acetal obtained when any carbohydrates reacts with a compound containing hydroxyl gr.

A specific compound may be ~~not~~ named according to the sugar from which they are derived. e.g. - The acetal from fructose may be called fructoside. The  $C-O-C$  linkage which joins the two components of an acetal is called the glycosidic linkage.

The  $\alpha$ - and  $\beta$ -methyl glucosides are crystalline, water soluble compounds and have properties analogous to the acetals.

They are stable toward bases, but are hydrolysed in acid solution to yield the parent sugar and alcohol. They do not reduce Fehling's solution and do not mutarotite. This means that when either form is placed in water it remains as such and is not converted into an equilibrium mixture of the two isomers, because the mobile hydrogen of the hydroxyl gr. at  $C_1$  has been replaced by the alkyl gr., the equilibrium through the open-chain aldehyde form is no longer possible.