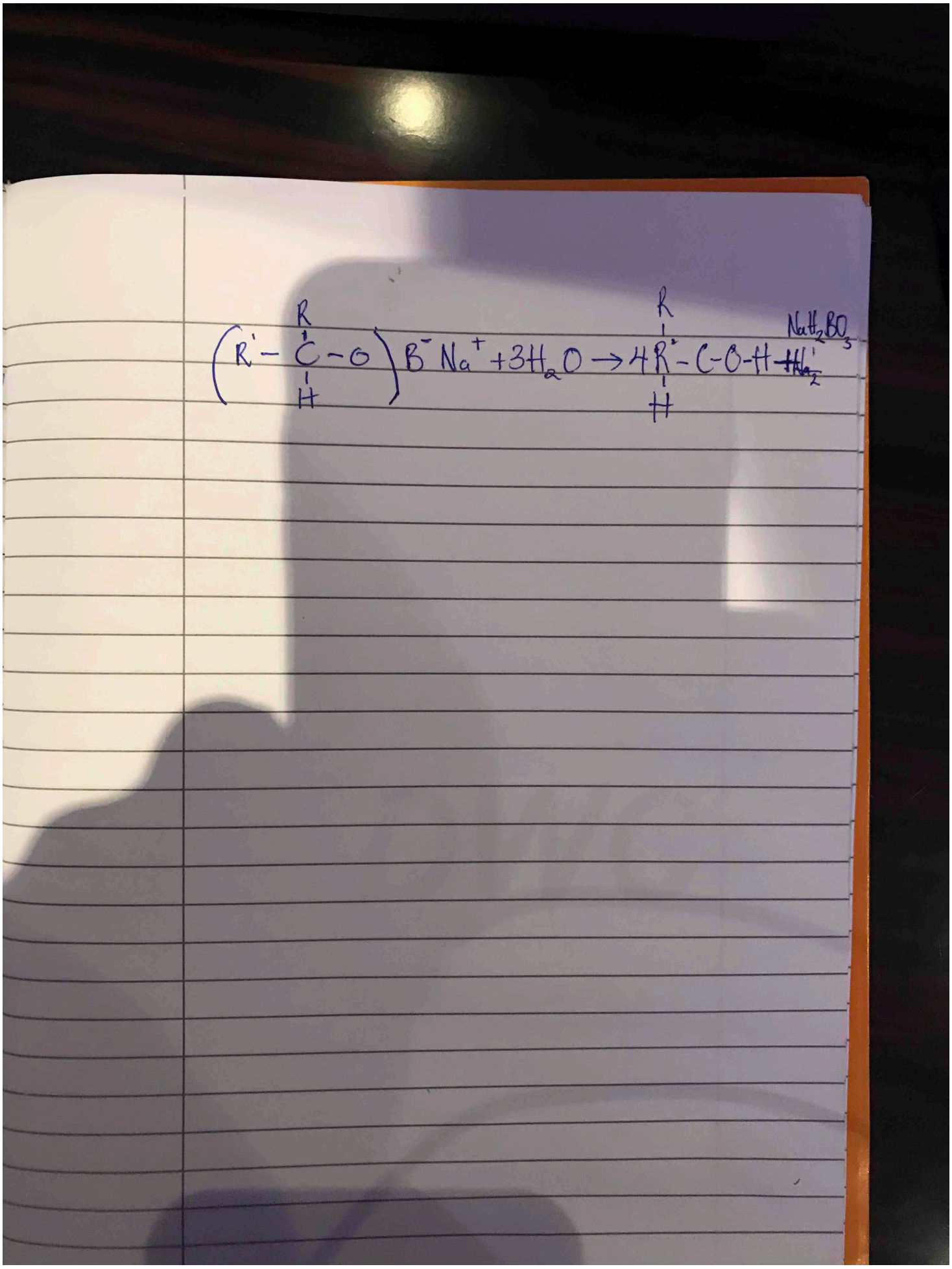


3) Aqeous solutions of ethanol can be produced when sugar solutions are fermented using yeast when yeast is added it feeds on sugar in the absence of oxygen to form a solution of ethanol and carbon dioxide.

The equation for the reaction is

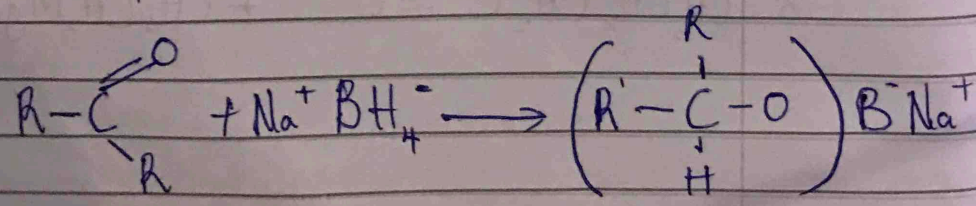
glucose $\xrightarrow{\text{yeast}}$ ethanol + carbon dioxide

Or

$$C_6H_{12}O_6 \xrightarrow{\text{yeast}} 2C_2H_5OH + 2CO_2$$

The temperature range should be between the 25°c and 50°c enzymes are in which the enzymes are affected. An increase in temperature increased the rate of the reaction

4) Sodium tetrahydridaborate ($NaBH_4$) is added to a solution of the aldehyde or ketone in an alcohol e.g methanol. It is then under reflux or left for some time under room temperature. At the end of all this, a complex similar to similar the previous one is formed



At the second stage is added and the mixture is boiled to release the alcohol from the complex

Ude Bulichukwu O.
Mechatronics Eng.
19/ENG05/062

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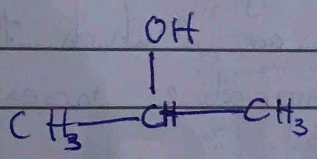
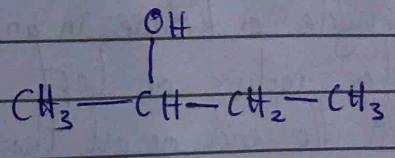
1a) Primary alkanols - In primary alkanols, the carbon atom is attached to the hydroxyl group. Eg:
i: Ethanol [$CH_3CH_2OH$]
ii: Propanol [$CH_3CH_2CH_2OH$]

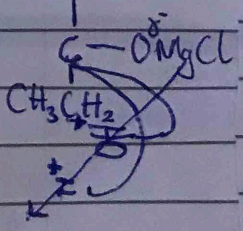
b) Secondary alkanol - In secondary alkanols, the hydroxyl group is attached to a saturated ~~hydrocarbon~~ carbon atom which has 2 or more carbon atoms attached to it. Eg:-
i: Propan-2-ol



ii: Butan-2-ol



2 $CH_3CH_2CH_2\overset{\delta+}{C}=O^{\delta-} + CH_3CH_2MgCl \longrightarrow$



$CH_3CH_2CH_2$
$CH_3CH_2CH_2CH_2-\overset{|}{C}-OH + Mg(OH)Cl$
$CH_3CH_2$

4-Ethyl Octan-4-ol