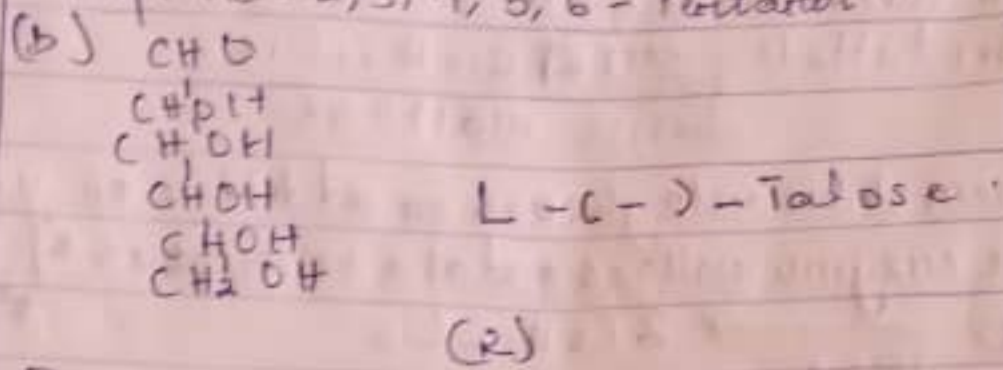
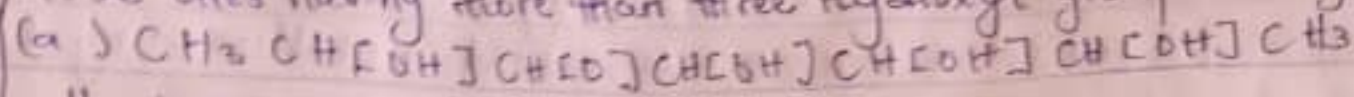
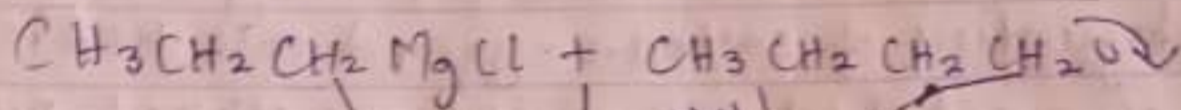
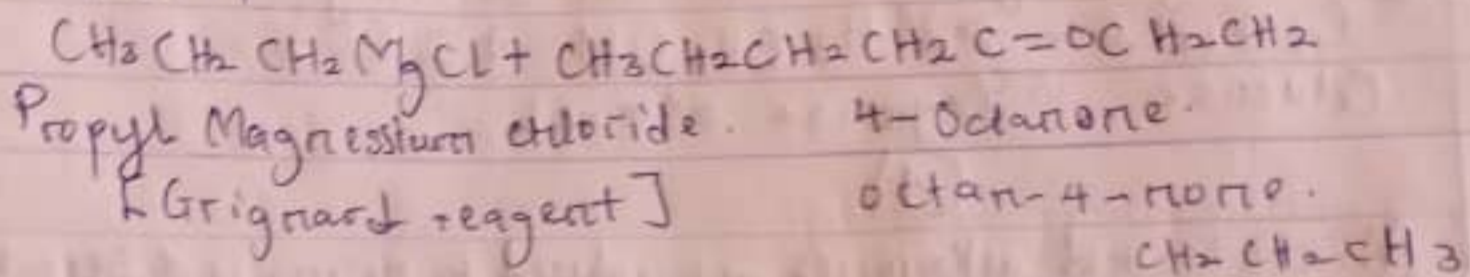


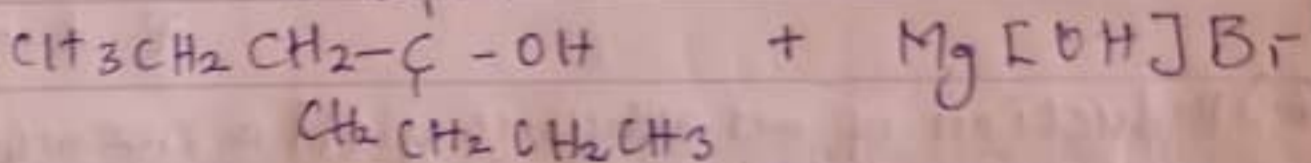
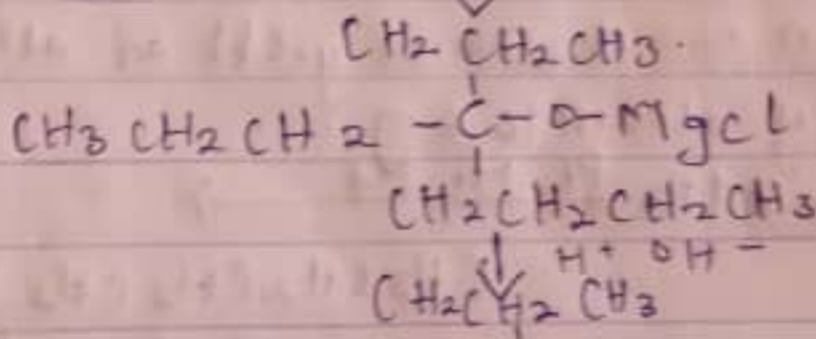
(iv) Polyhydric alkanols: Polyhydric alkanols or polyols are those ones having more than three hydroxyl group. e.g.



In the grignard synthesis of alkanols, react grignard reagent with $CH_3CH_2CH_2CH_2C=OCH_2CH_2CH_3$ show the reaction step.



diethyl ether



4-Propyl Octan-4-ol

Magnesium hydroxyl Bromide.

(3)

Carbohydrates such as starch are major group of natural compound that can be made to yield ethanol by the biological process of fermentation. The biological catalysts enzymes found in yeast break down the carbohydrate into ethanol

CHM 102 ASSIGNMENT

NAME: ~~TOBY PRINCE~~ OZomena Somo

DEPT: ~~BIOMEDICAL ENGINEERING~~

MATRIC NO: 19/ENG08/008

ANSWERS

(1)

Classification of Alkanols:

1) Classification based on the number of alkyl group or hydrogen atom.

Note: Alkanol has the general molecular formula $R-OH$ where "R" is the alkyl group. e.g

Methyl - CH_3 -

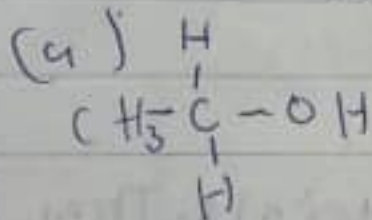
Ethyl - CH_3CH_2 -

Propyl - $CH_3CH_2CH_2$ - e.t.c.

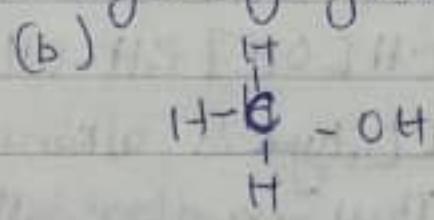
while "OH" is the hydroxyl group which is the main functional group of alkanols.

Alkanols can be classified as follows:

(i) Primary alkanol: Primary alkanols have only one alkyl group or three or two hydrogen atom attached to the atom that carries hydroxyl group - e.g

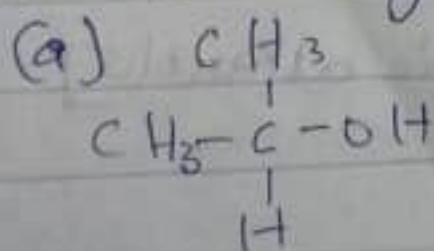


Ethanol [1°]



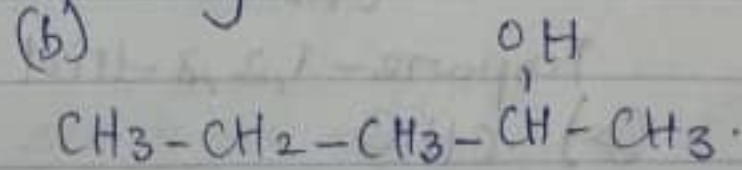
Methanol [1°].

(ii) Secondary alkanol: Secondary alkanols have two alkyl groups or one hydrogen atom attached to the carbon that carries the hydroxyl group. e.g



Propan-2-ol [2°]

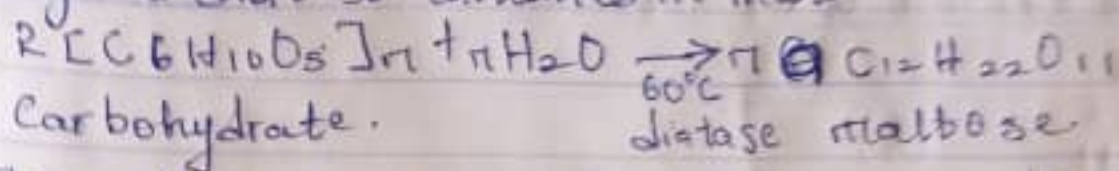
2-Propanol [2°]



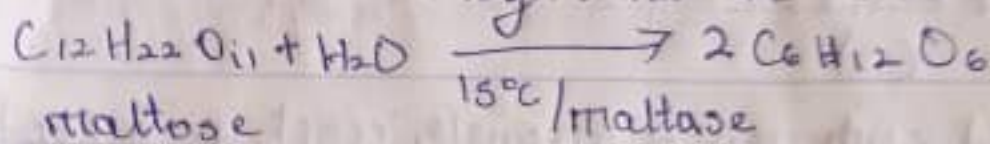
2-Butanol [2°].

Butan-2-ol [2°].

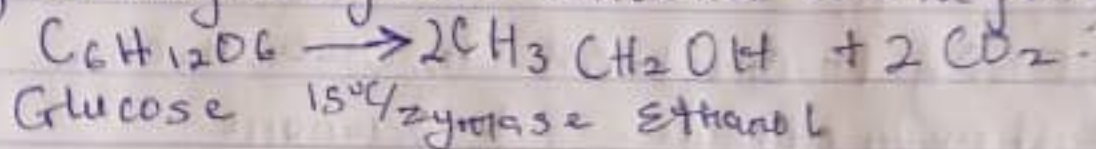
to yield 95%. The starch containing materials include ~~maltose~~ potatoes, cereals, rice and on warming with malt to 60°C for a specific period of time are converted in maltose by the enzyme diastase contained in malt.



The maltose is broken down into glucose on addition of yeast which contains the enzyme maltase and at a temperature of 15°C



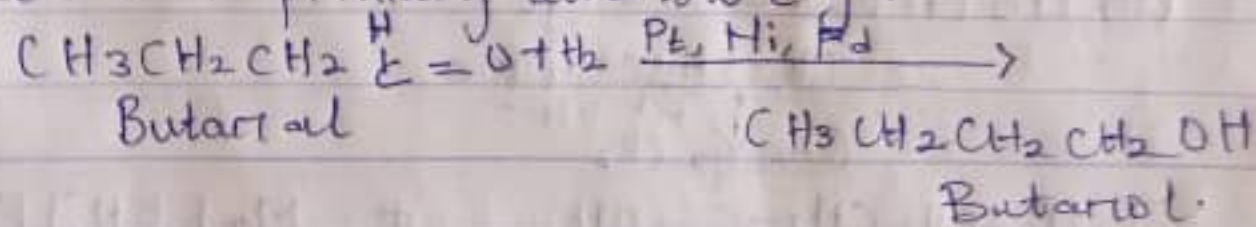
The glucose at constant temp of 15°C is then converted into alcohol by the enzyme zymase contained also in yeast.



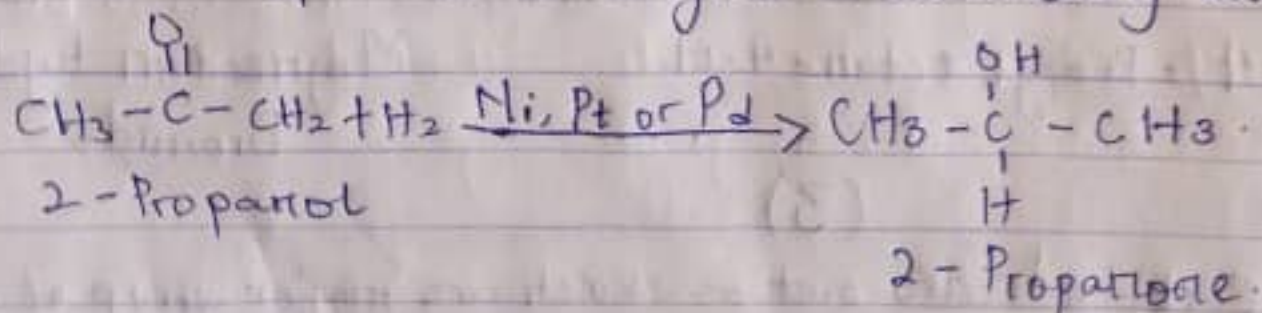
(4)

Alkanols and alkanones are reduced to primary & secondary alkanol by hydrogenation of carbon-oxygen double bond in the presence of a catalyst such as platinum, Nickel, Palladium catalyst or with sodium tetrahydride (III) (NaBH₄)

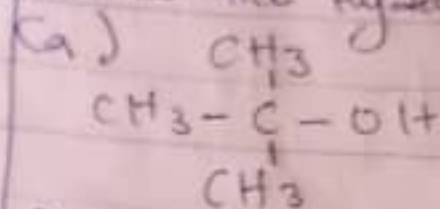
Examples: Reduction of an alkanol yield an alkanol are reduced to primary alkanols e.g.



(2) Reduction of an alkanone yield a secondary alkanol

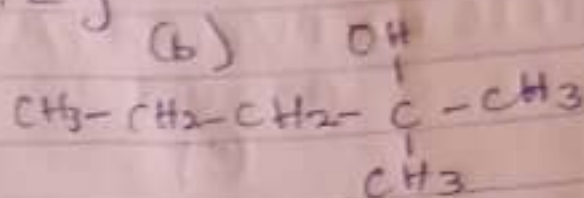


(iii) Tertiary alkanol: Tertiary alkanols have three alkyl groups and no hydrogen atom attached to the carbon atom that carries the hydroxyl group. e.g.



2-Methyl propan-2-ol [3°]

2-Methyl-2-propanol [3°]



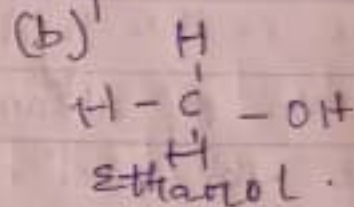
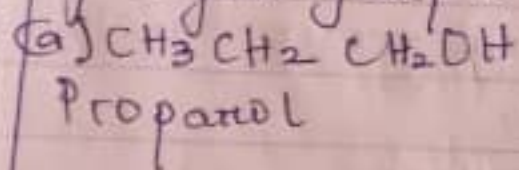
2-Methyl Butan-2-ol

2-Methyl-2-Butanol

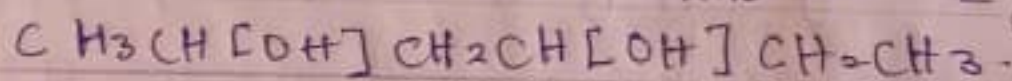
(2) Classification based on the number of hydroxyl groups they possess.

It can be classified as follows:

(i) Monohydric alkanols: Monohydric alkanols have only one hydroxyl group [-OH] present in the alkanol structure. e.g.

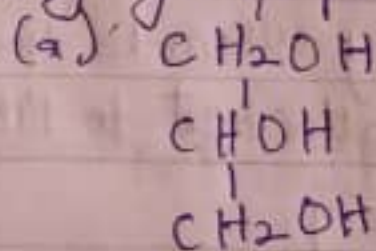


(ii) Dihydric alkanols: Dihydric alkanols are also called glycols having two hydroxyl groups present in the alkanol structure. e.g.

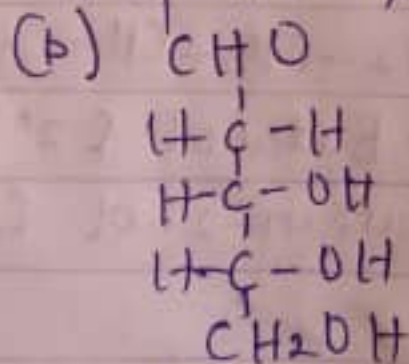


Hexane-2,4-diol [Dihydric alkanols]

(iii) Trihydric alkanol: They are also called triols. They have three hydroxyl groups present in the alkanol structure e.g.



Propane-1,2,3-triol [Trihydric alkanols]



D-glyceral aldehyde