

K 19/MTS01/021

MTS-MBS

CHM 102 Assignment.

1. Alcohols are very important organic compounds.
Discuss
2. Discuss their ~~two major~~ classification of Alcohols

Give two examples of each class

a) Monohydric alcohols.

This is an alcohol with only one alcohol functional group. Monohydric alcohols are sometimes called alkyl alcohols due to the presence of the alkyl group present in them. ~~They~~ Example is Ethanol (C_2H_5OH).

b) Polyhydric alcohols.

These are alcohols with more than 1 hydroxyl ($-OH$) groups in them. A compound alcohol having two hydroxyl ~~group~~ groups is a dihydric alcohol, when it has three it is a trihydric alcohol eg Ethane-1,2 diol ($C_2H_4(OH)_2$).

They can also be classified into:

- a Primary alcohol: is an alcohol which has the hydroxy "OH" group connected to a primary single R group.
- b Secondary alcohol: This alcohol has its hydroxyl group attached to two alkyl (R) groups.
- c Tertiary alcohol: These are those which have their hydroxy group attached to 3-alkyl (R) groups.

2 Discuss the solubility of alcohols in water, organic solvents.

The solubility of alcohol in water is owing to its hydroxyl group. It is responsible for the intermolecular hydrogen bonding

Thus hydrogen bonds are formed between water and alcohol molecules. However the alkyl group is hydrophobic in nature hence, solubility of alcohol decreased with increase in size of alkyl group.

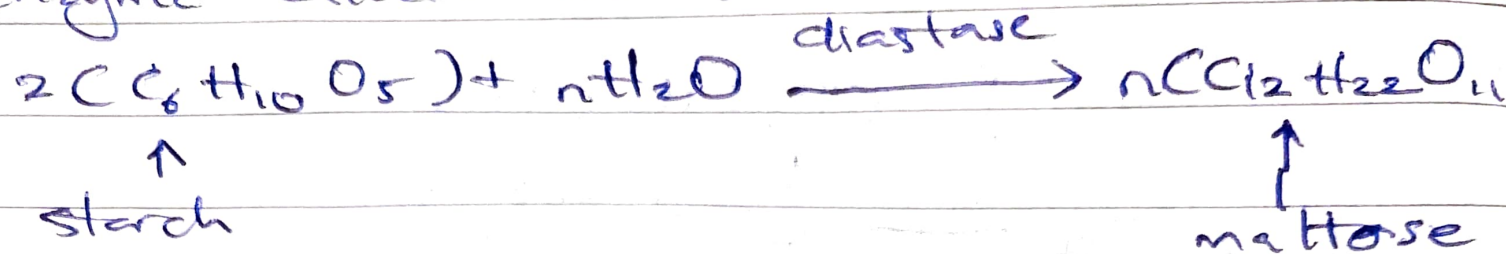
In organic solvents, the non polar alkyl group attached to alcohols enables it to interact with the non polar molecules of organic solvents.

3. Show the steps in the industrial manufacturing of ethanol.

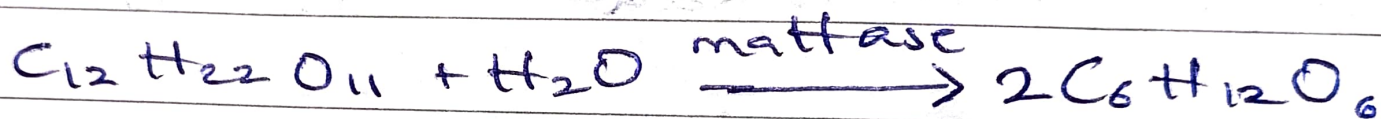
Equations of reactions are mandatory.

Starches utilized in the preparation of ethanol industrially. Starches extracted from ~~starch~~ starch filled foods like potato,

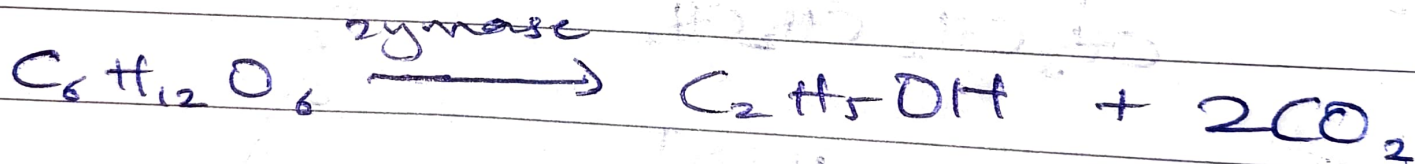
Starch is hydrolysed to maltose by an enzyme called maltase, diastase.



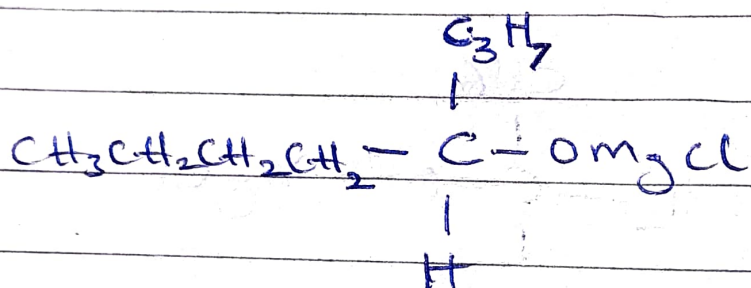
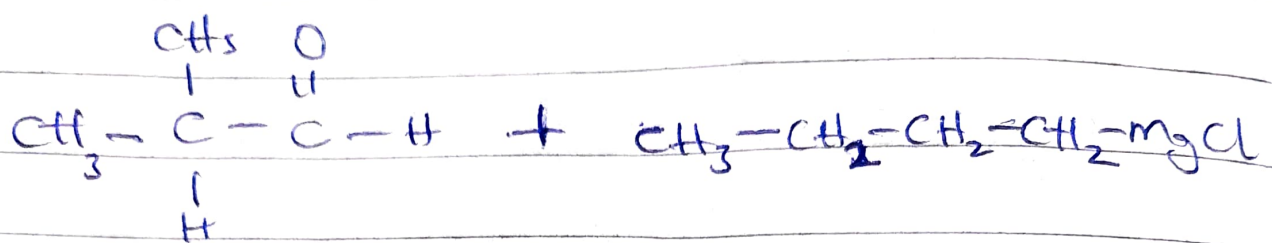
The maltose is converted to glucose by maltase.



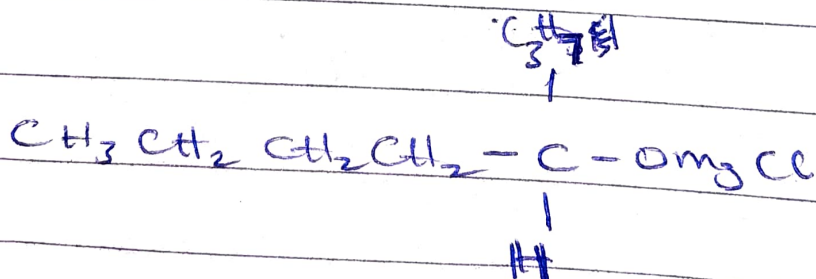
The glucose is converted to ethanol by zymase.

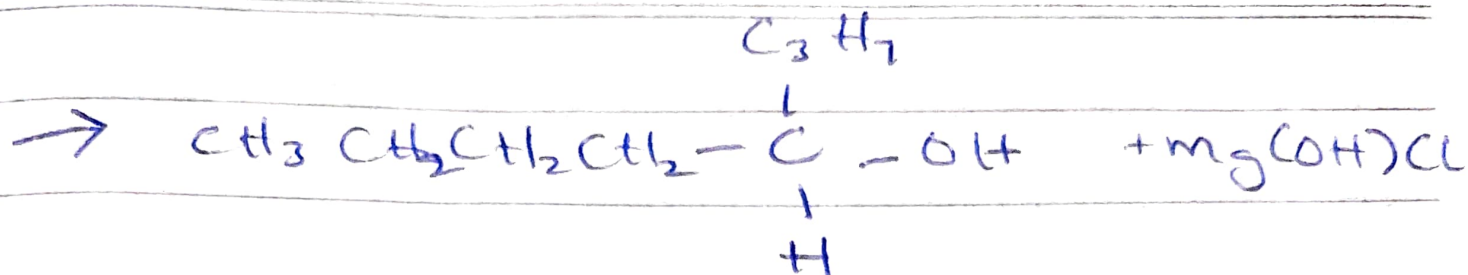


Q Show that the reaction between
2-methyl propanal with
butyl magnesium chloride



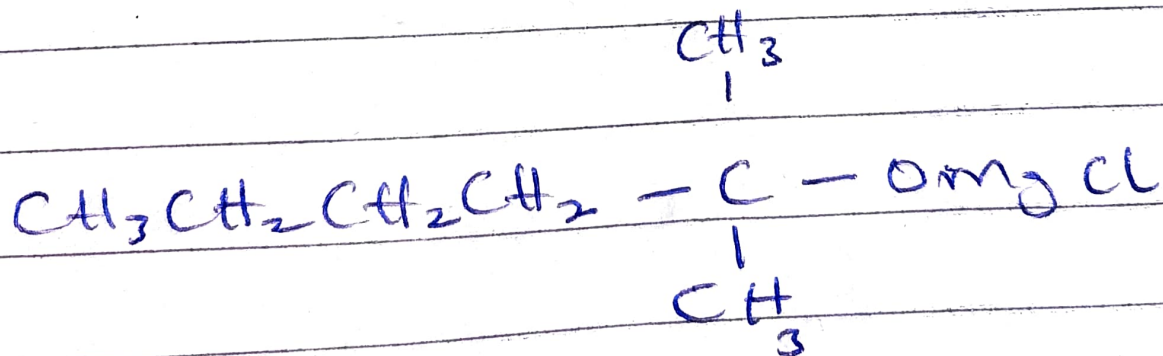
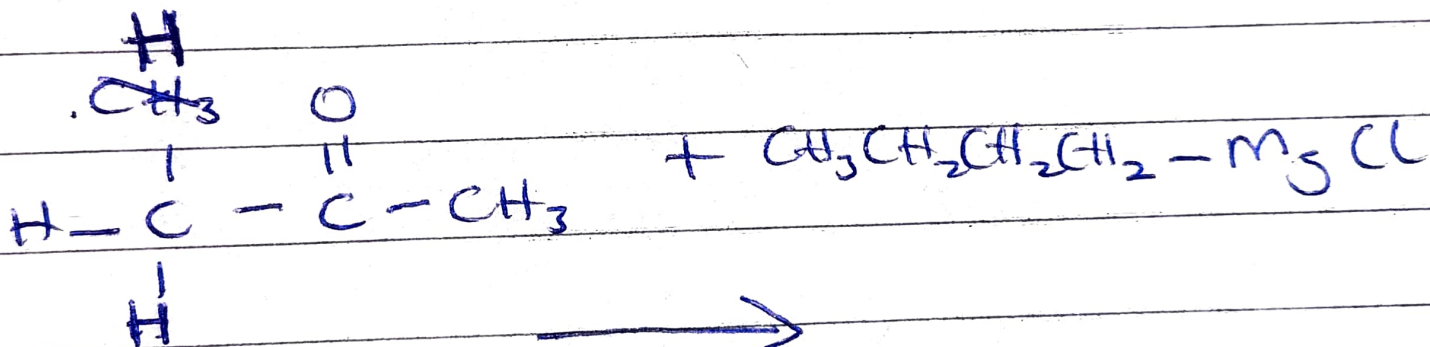
Dilute acid is added to this to
hydrolyze it.

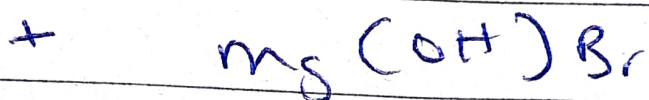
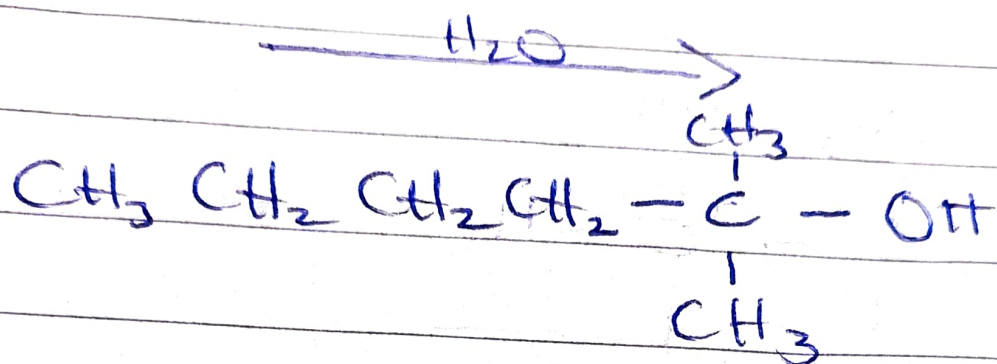
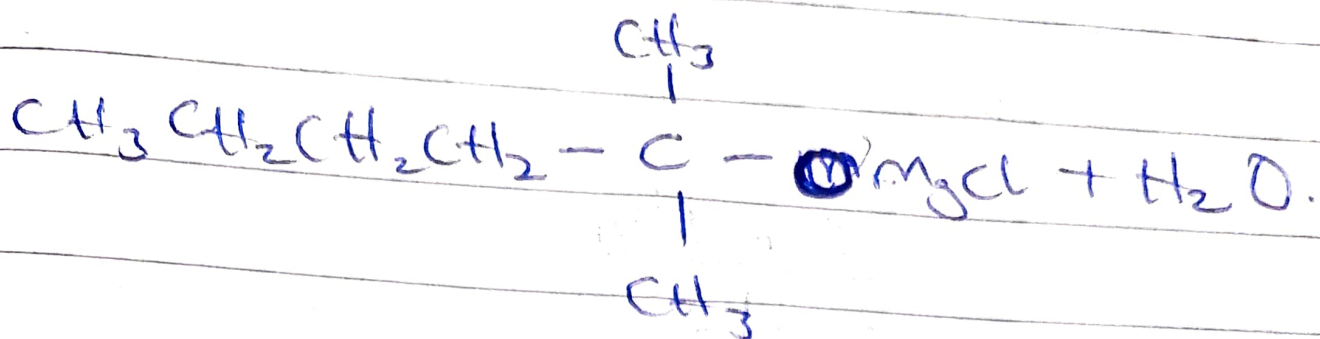




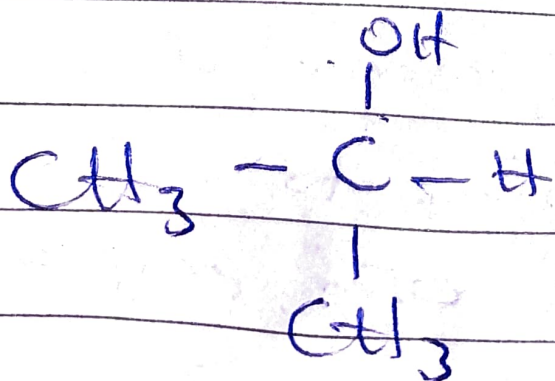
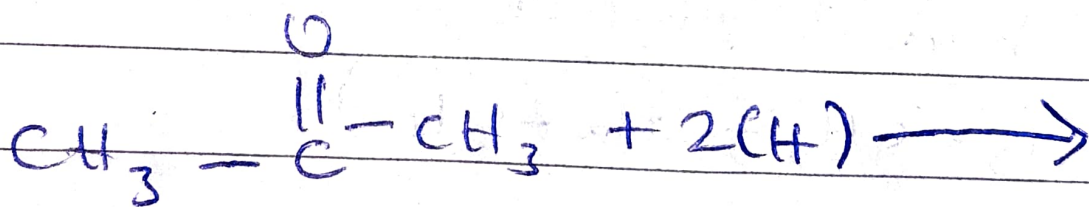
5) Show the reaction between 2-methyl propanone and butylmagnesium chloride

Solution:

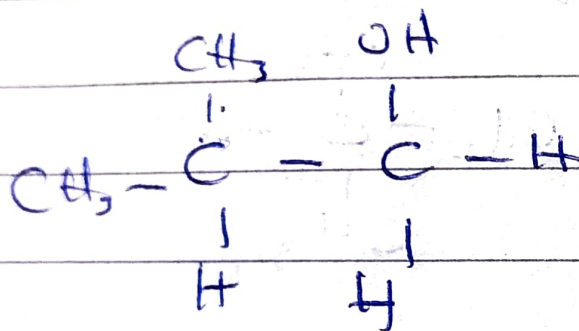
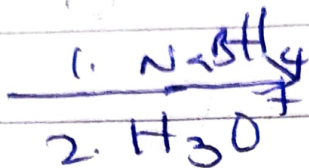
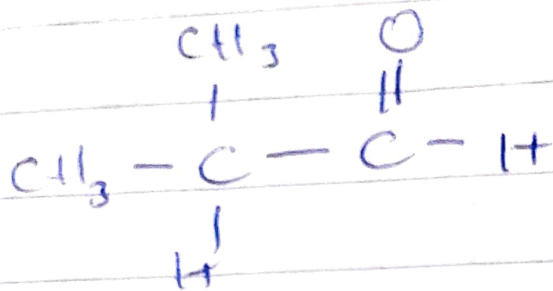




6 Show the reduction reaction of 2-methyl propanone.



7) Show the reduction of 2-methylpropanal

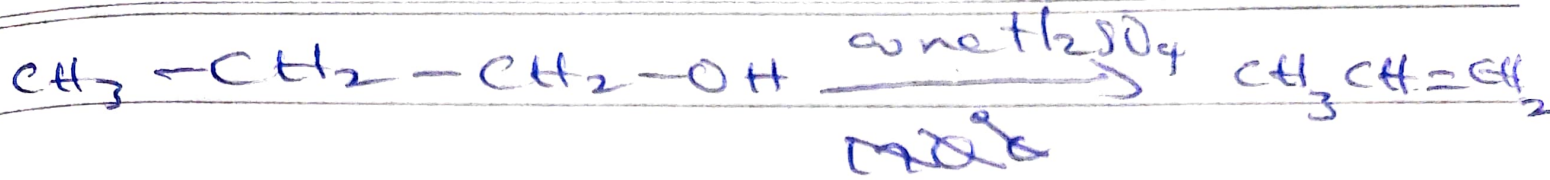


8) Propose a scheme to convert propan-1-ol to propan-2-ol

You have propan-1-ol.



Heat it in the presence of concentrated H_2SO_4 to dehydrate it and form propene



Add water to hydrolyze it.

