Class - B.Sc. Part I (Subsidiary)
Subject - chemistry
Paper - gr. c. Subsidiary
Topic - Properties of Glycerol
Name - Dr. Rashmi Sinha
Deptt. of chemistry
H.D. Jain college, Ara

Glycerol

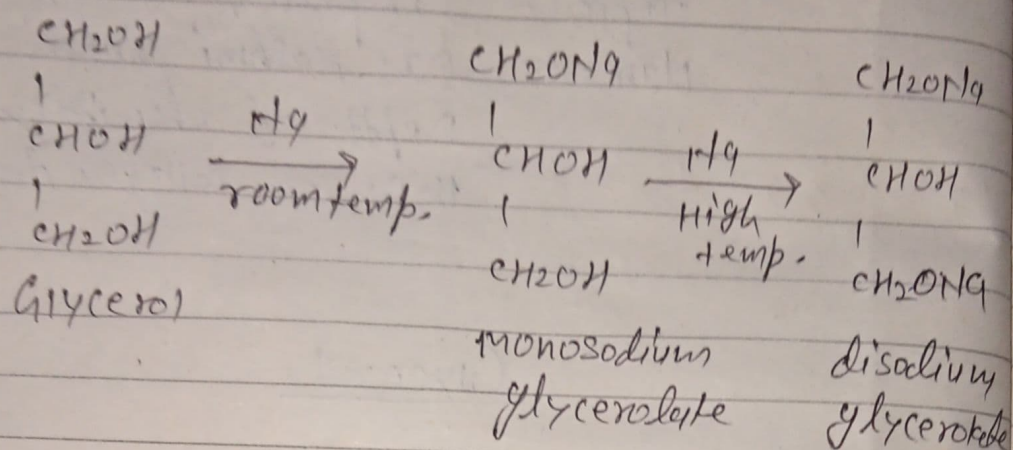
chemical properties :- Glycerol molecule contains two primary alcoholic gr. and one secondary alcoholic gr. Thus it shows characteristics of both primary and secondary alcohols. The carbon atoms in glycerol are indicated by α, β and γ

α CH_2OH 1° alcoholic gr.
|
β $CHOH$ 2° alcoholic gr.
|
γ CH_2OH 1° alcoholic gr.

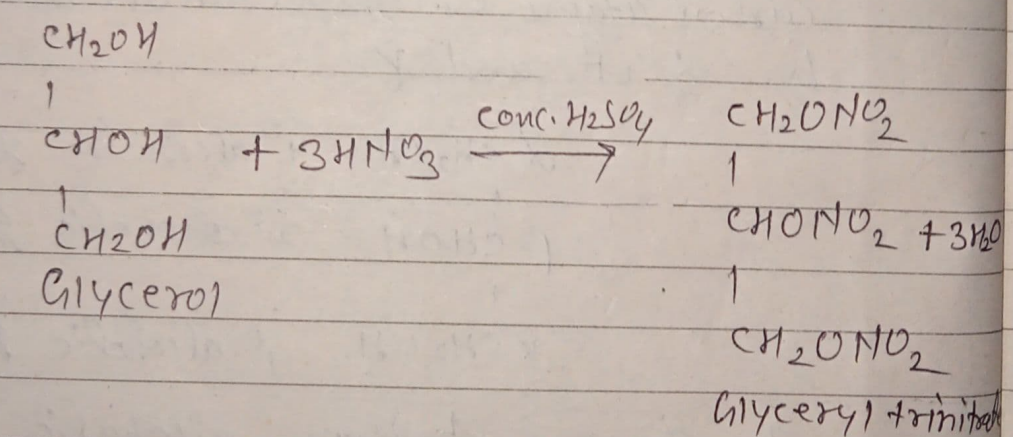
In general, primary alcoholic groups are more reactive than secondary alcoholic group.

1. **Reaction with Sodium :-** When glycerol is treated with Na at room temp. only primary alcoholic groups

are attacked one by one to give mono-Sodium glycerolate and disodium glycerolate at high temperature.

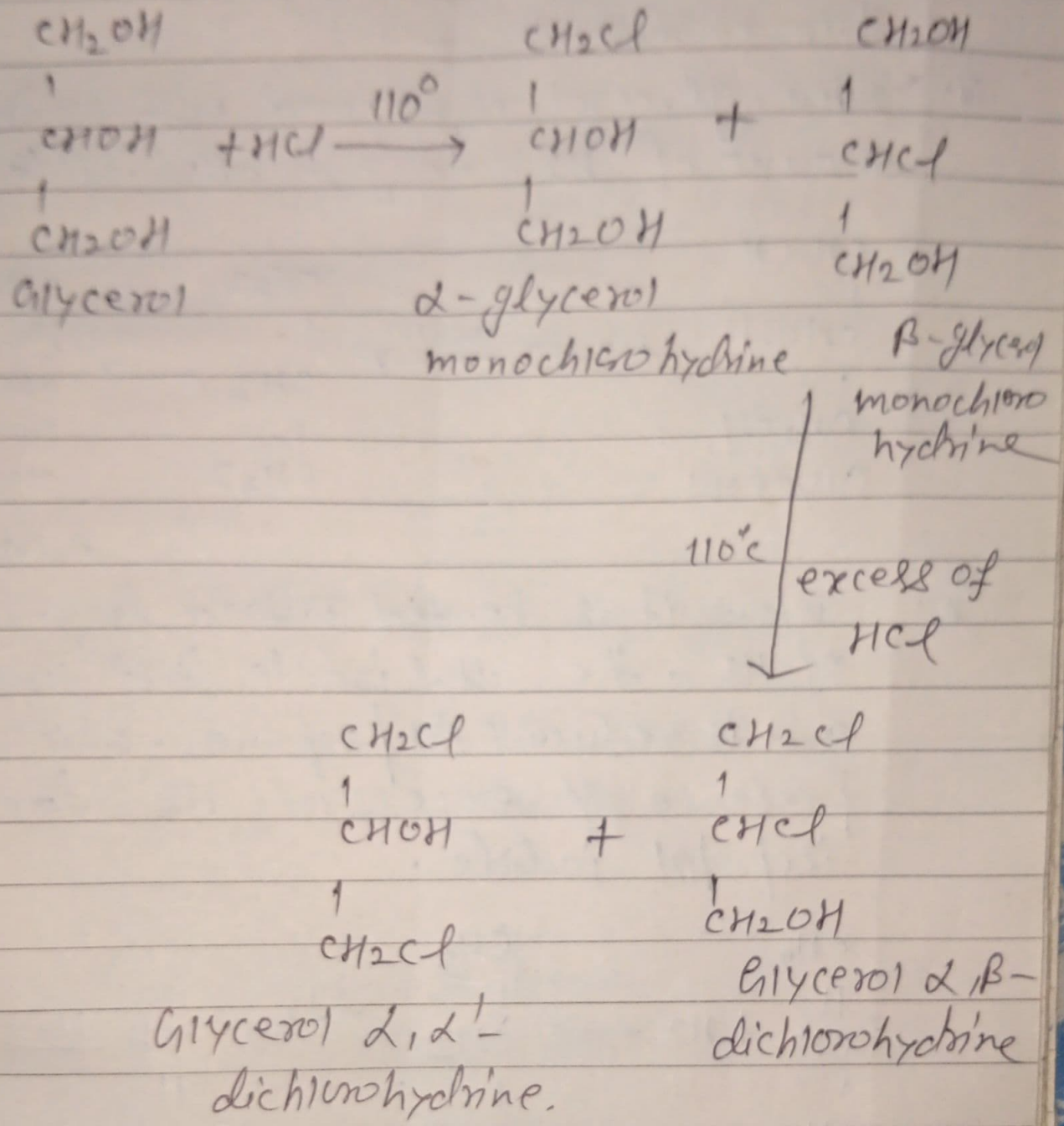


(ii) <u>Reaction with HNO_3</u>:- Glycerol reacts with Nitric acid in presence of conc. H_2SO_4 at 25°c to give glyceryl trinitrate also known as nitroglycerine



(iii) <u>Reaction with HCl</u>:- When HCl is passed through glycerol at 110°c both α or β - glycerol monochlorohydrines are formed. If the HCl gas is passed for sufficient time, glycerol α,α'- dichlorohydrine and glycerol α,β-

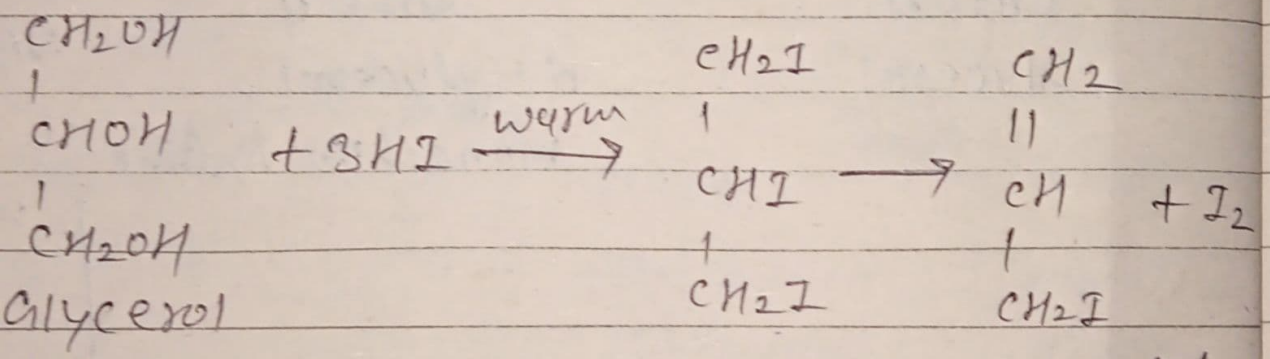
dichlorohydrine are formed.



Note 1 - Similar reaction with HBr

(iv) <u>Reaction with HI</u> :- Glycerol reacts with HI in following two conditions :—

a. When glycerol is warmed with a small amount of HI to give allyl iodide.



b. When it is heated with a large amount of HI, the allyl iodide first formed and is reduced to propene, which is in presence of excess of HI forming isopropyl iodide.