class – B.Sc. Part I (Honours)
Subject – chemistry
Paper – IC
Topic – Properties of glycerol
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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 1^0 alcoholic gr.

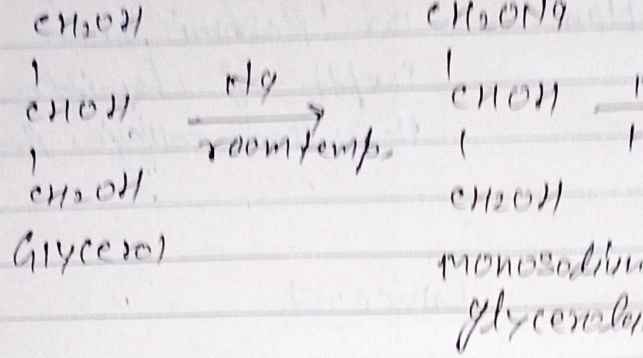
β $CHOH$ 2^0 alcoholic gr.

γ CH_2OH 1^0 alcoholic gr.

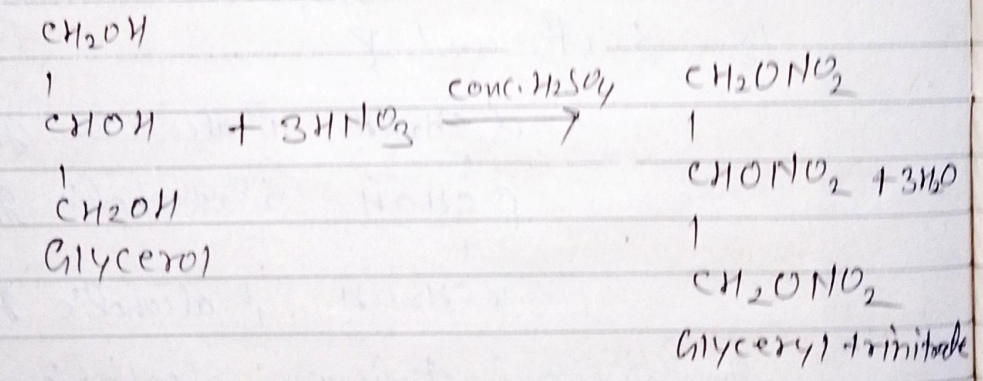
In general, primary alcoholic groups are more reactive than Secondary alcoholic group.

(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.

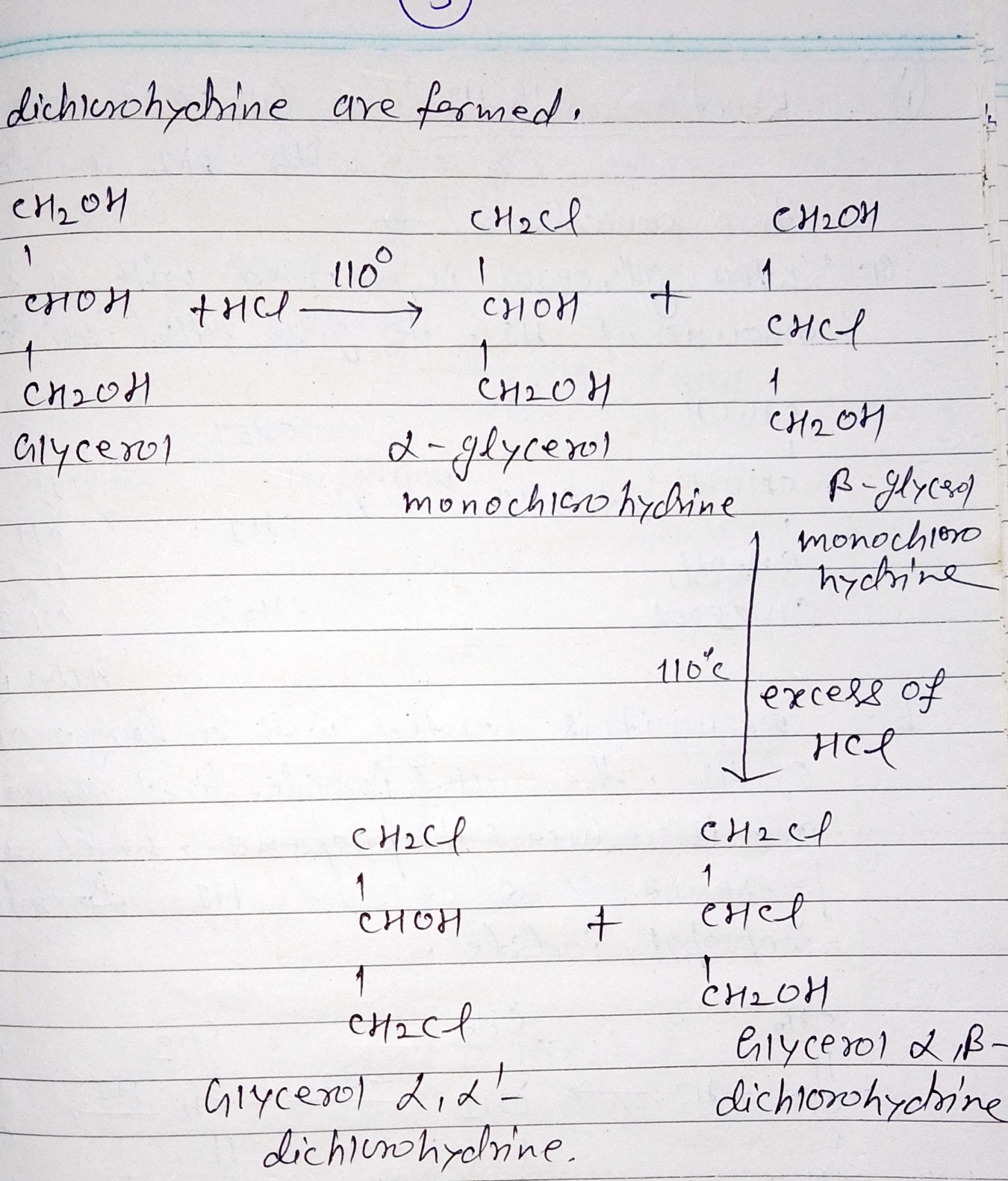


(ii) <u>Reaction with HNO_3</u> :- Glycerol reacts with nitric acid in presence of conc. H_2SO_4 at 25°C to give glyceryl trinitrate also known as nitroglycerine



(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