

CHEMISTRY STUDY MATERIALS FOR CLASS 12

(NCERT Based Notes of Chapter - 11)

GANESH KUMAR

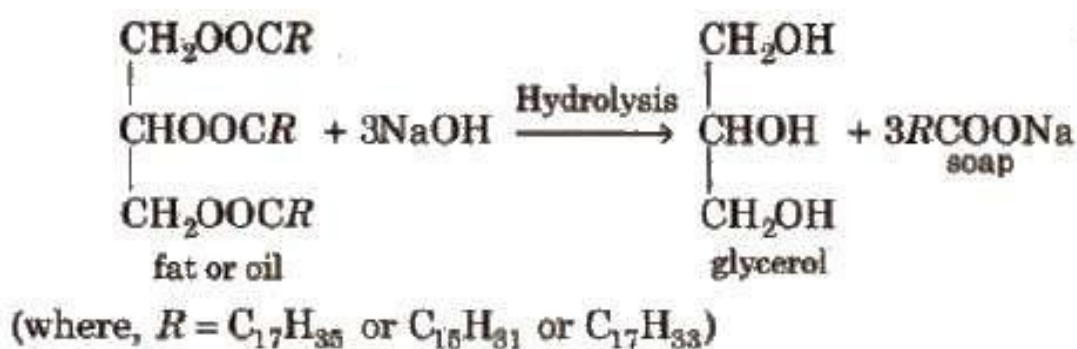
DATE:- 07/10/2020

Alcohols, Phenols and Ethers

Trihydric Alcohols: Glycerol or glycerine, $\text{CH}_2\text{OH} - \text{CH}(\text{OH}) - \text{CH}_2\text{OH}$ is the first member of this group. Its IUPAC name is propane-1,2,3-triol.

Method of Preparation

It is obtained as a byproduct in Saponification reaction.

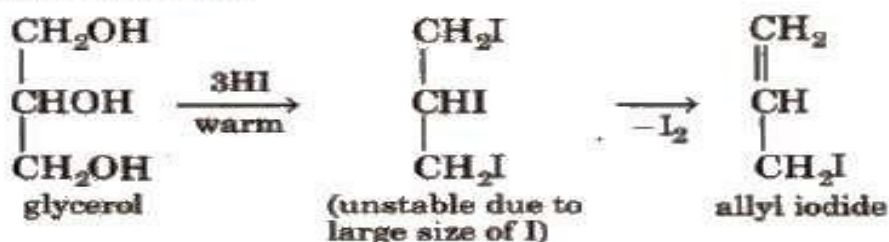


Physical Properties

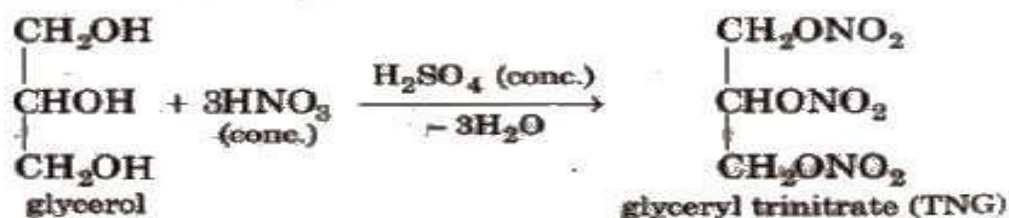
1. It is a colourless, odourless, viscous and hygroscopic liquid.
2. It is sweet in taste and steam volatile.
3. It is soluble in water but insoluble in ether.
4. Due to excessive H-bonding, it is highly viscous and has high boiling point.

Chemical Properties: It gives all the general reactions given by -OR group but 2° OR is less reactive as compared to 1° . **Some of its specific are :**

(i) Reaction with HI



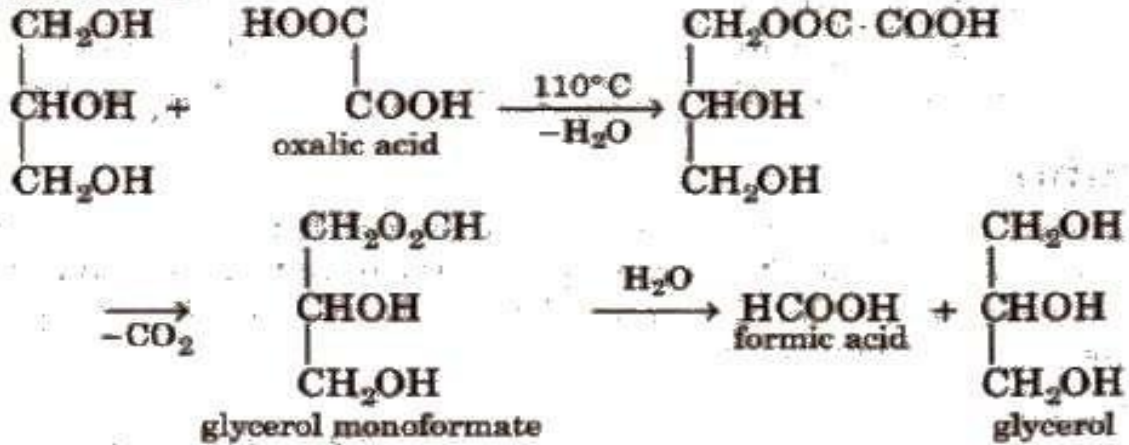
(ii) Reaction with HNO_3



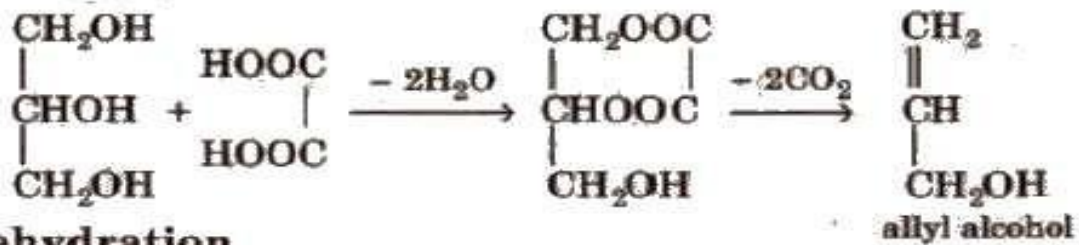
Glyceryl trinitrate or tri nitroglycerine, when adsorbed on Kieselguhr is known as dynamite. Mixture of TNG and cellulose trinitrate is called blasting gelatin.

(iii) **Reaction with oxalic acid**

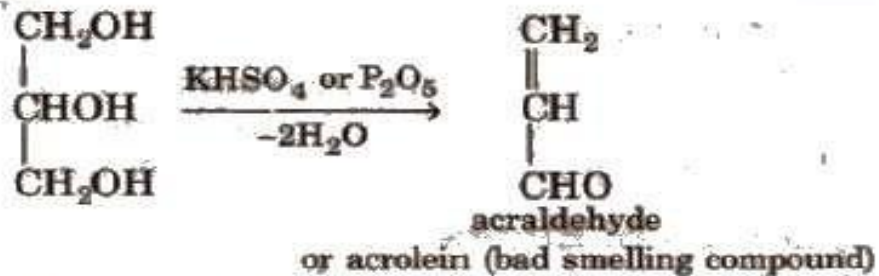
(a) **At 110°C**



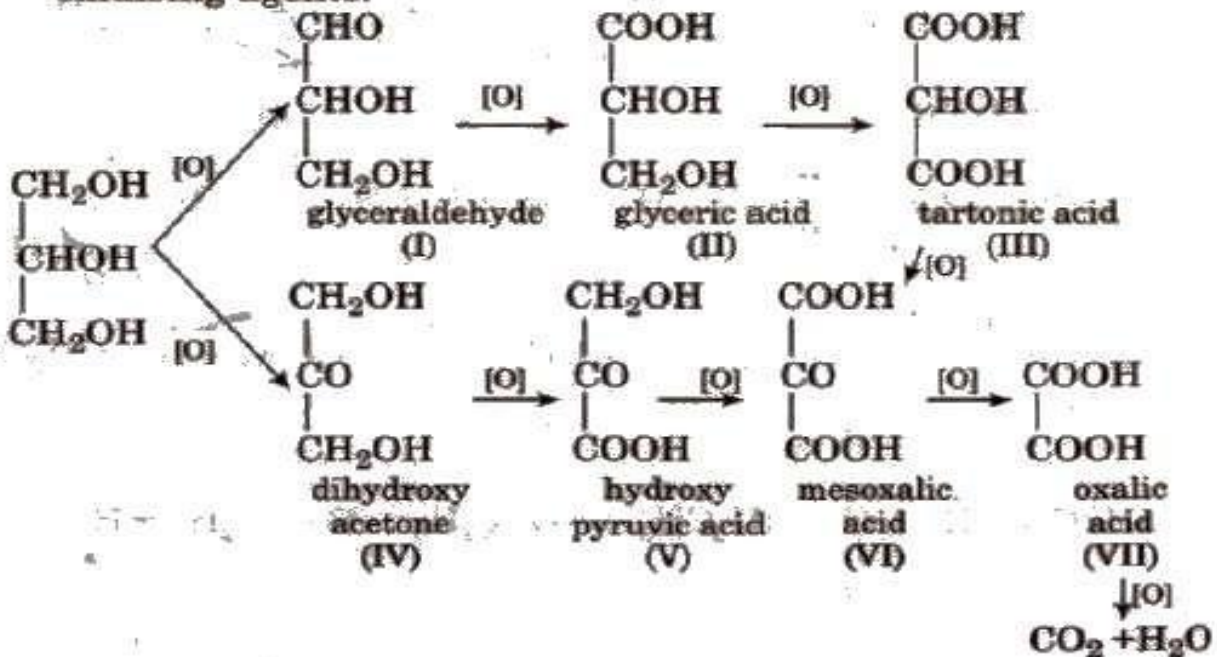
(b) **At 260°C**



(iv) **Dehydration**



(v) **Oxidation** Different products are obtained by different oxidising agents.



Cone HNO_3 gives II; dil HNO_3 gives II and III; $\text{Bi}(\text{NO}_3)_3$ or NaNO_3 gives VI;
Fenton's reagent or NaOBr or Br_2 water in Na_2CO_3 gives a mixture of I and IV.
Solid KMnO_4 oxidizes glycerol to VII and CO_2 and H_2O .
With HIO_4 (periodic acid). glycerol gives HCOOH and HCHO .
