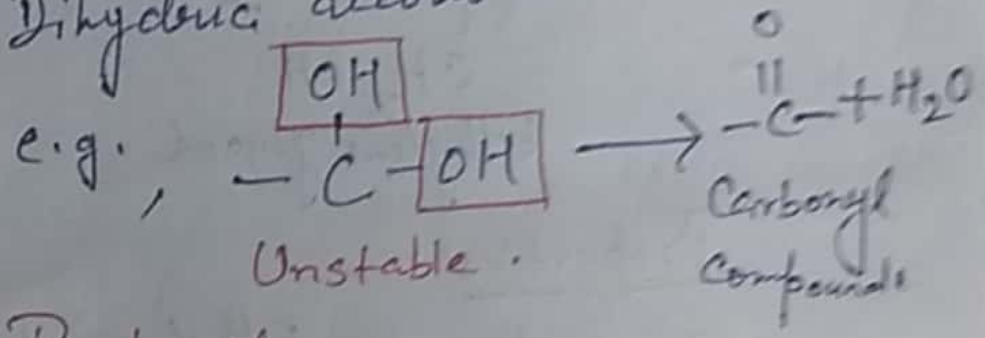


B. Sc. Part I (Hons) 2
Organic Chemistry,
— Dr. Manjulkumari

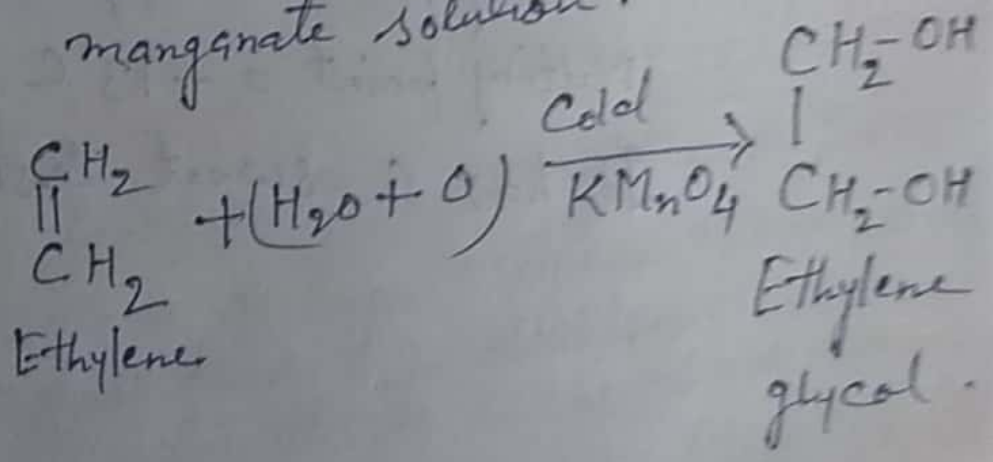
Dihydric Alcohols.

or,
(Diols.) : compounds which contain two -OH groups on different carbons are called Dihydric alcohols.

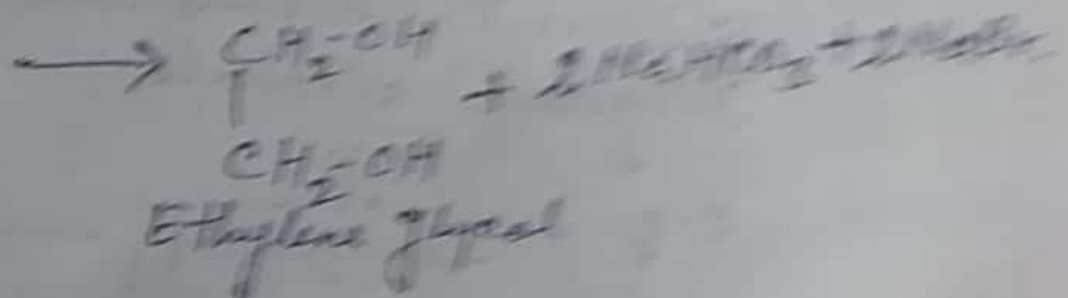
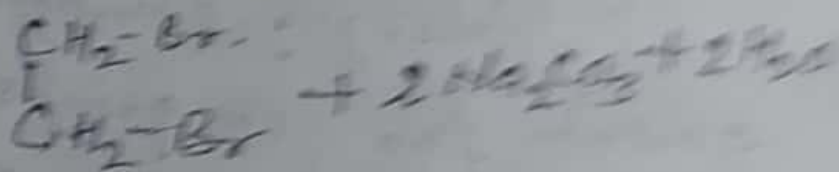


Preparation :

(i) By oxidation of ethylene with cold dilute potassium permanganate solution.



(ii) By hydrolysis of 1,2 dibromethane with aqueous sodium carbonate solution



Properties :

Physical : — Ethylene glycol is a

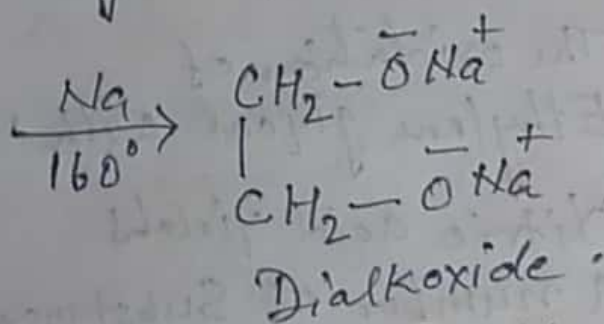
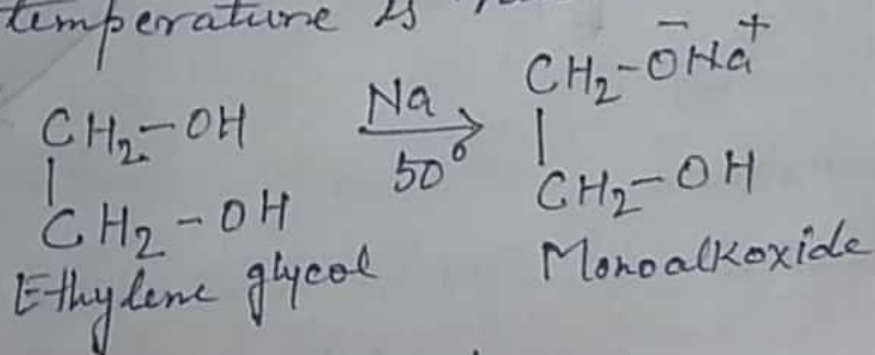
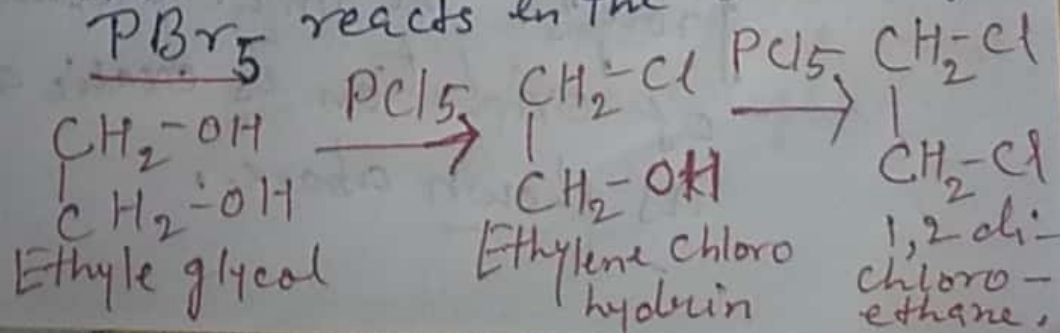
colourless viscous liquid,

Boiling point = 197°C

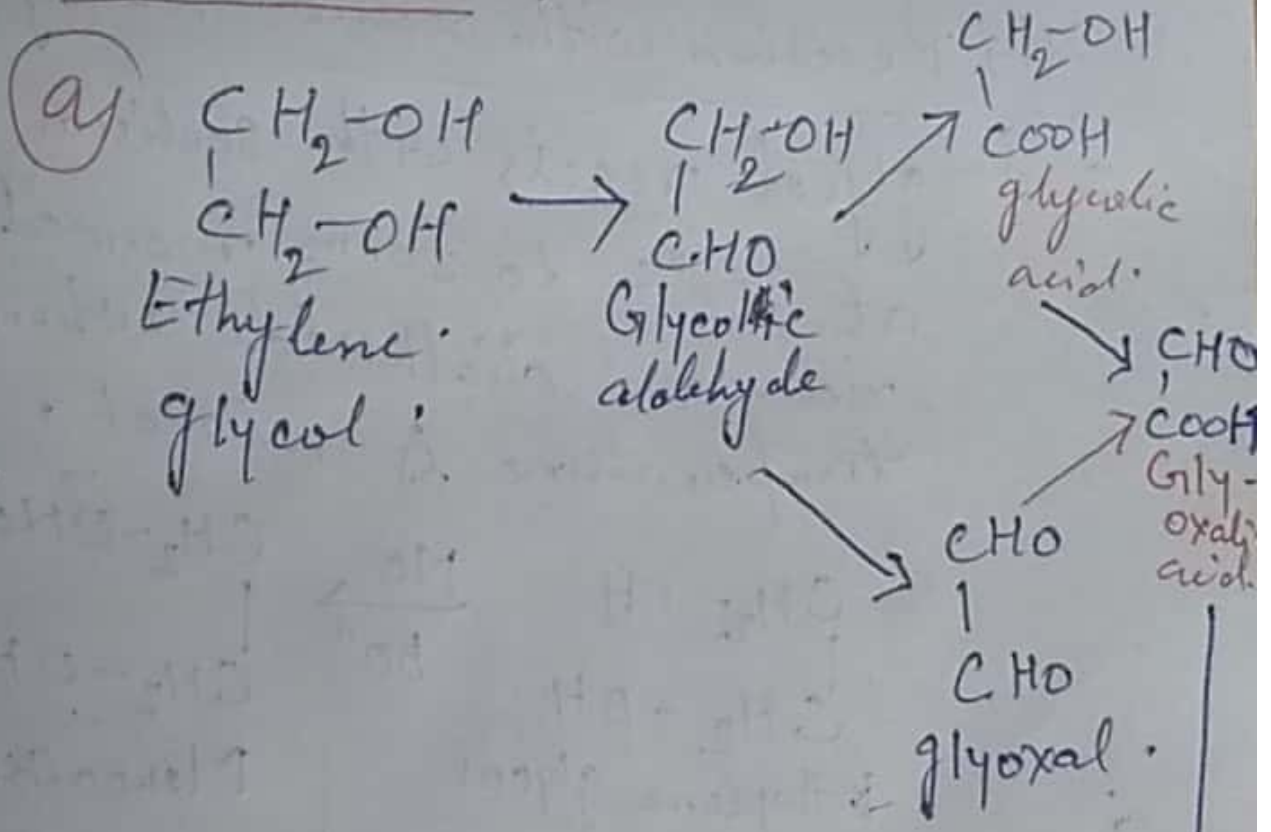
Melting point = -13°C .

It has a sweet taste.

3.

Chemical Properties: -(i) Reaction with Sodium: Ethyleneglycol reacts with sodium ~~with~~ at 50°C to form monoalkoxide and dialkoxide when temperature is raised.(ii) Reaction with Phosphorus PentahalidesEthylene glycol reacts with PCl_5 first to form ethylene chlorohydrin and then 1,2 dichloroethane. PBr_5 reacts in the same way.

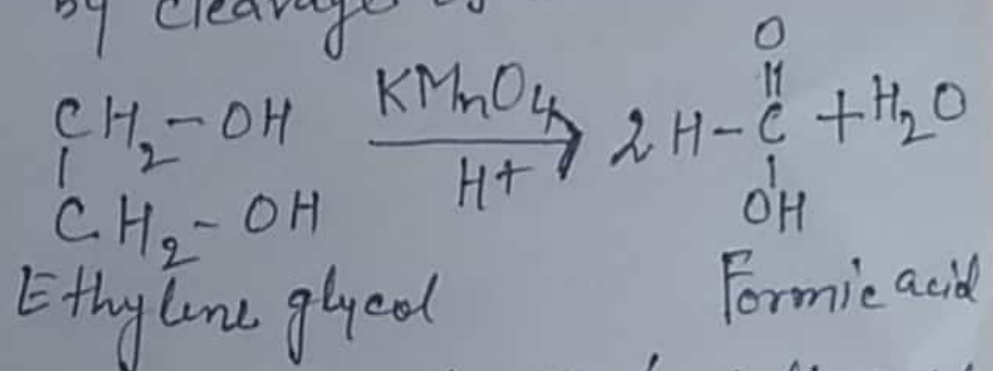
Oxidation ;



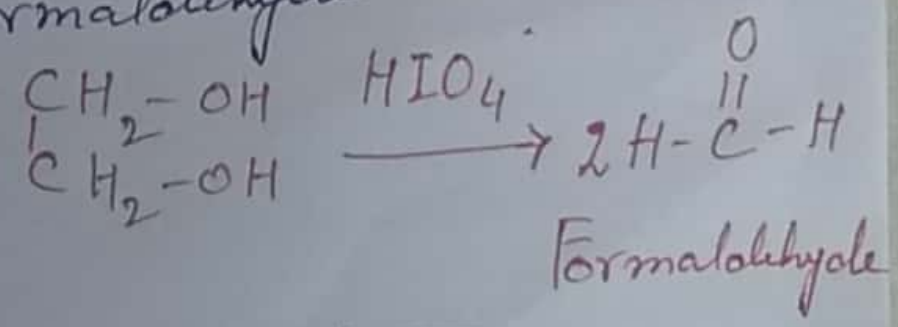
The oxidation of Ethylene glycol with Nitric acid yields a number of substances as one or both the primary -OH groups may be oxidised first to aldehyde and then carboxylic groups. The final product of oxidation is oxalic acid as shown above.

Oxidation. 5.

(b) Oxidation of ethylene glycol with acidic potassium permanganate or potassium dichromate results in the formation of formic acid by cleavage of the C-C bond.



(c) When oxidised with periodic acid or lead tetraacetate, gives formaldehyde.



Uses : It is used as an antifreeze for car radiator.
It is (Ethylene glycol) also used as a de-icing fluid for aeroplane wings.

