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Department: Nursing

Course code: Chem 102.

Assignment on ether

- ① Give the IUPAC name of the following organic ~~chem~~ compounds
- Ⓐ CH_3OCH_3 - Dimethyl ether Ⓑ $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$ - Ethoxyethane
- Ⓒ $(\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2)_2\text{O}$ - Butoxymethane Ⓓ $\text{CH}_3\text{CH}_2\text{OCH}_3$ - methoxyethane.
- Ⓔ $\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_3$ - Ethoxypropane

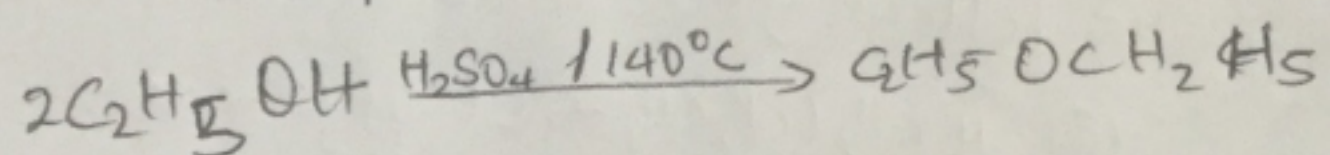
- ② Discuss the properties of ethers

Ans

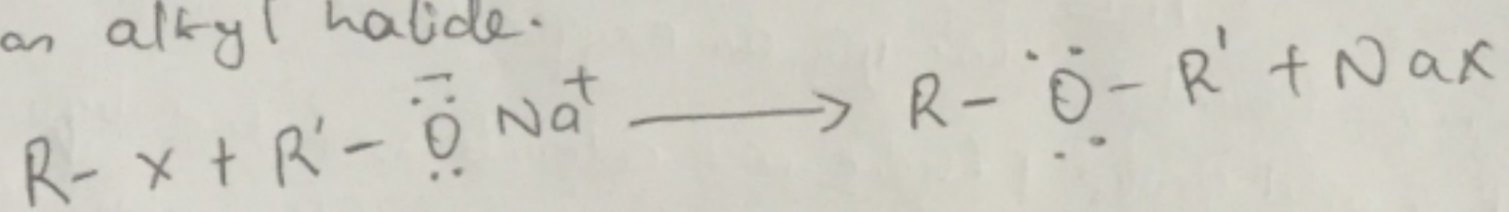
Ether is an organic compound containing an oxygen atom bonded to two same or different alkyl or aryl group. Ethers are colourless, neutral liquids with pleasant odours. The lower aliphatic ethers are highly flammable gases or volatile liquids. The boiling point of ethers is comparable to the alkanes but much lower than that of alcohols of comparable molecular mass despite the polarity of the C-O bond. Ether are less soluble in water than are the corresponding alcohols. It has a net dipole moment due to the polarity of C-O bonds. Ether are less dense than water. They are inert at moderate temperature. Their ~~inertness~~ inertness are moderate temperature lead to their wide use of reaction media.

③ Two methods of preparing ethers

- ① Dehydration of alcohols: In the presence of sulphuric acid, dehydration of ethanol yields ethoxyethane at 413K (140°C). This is an ideal method of preparation through primary alcohols. This preparation is a nucleophilic substitution reaction.



- ② Williamson's synthesis: When an alkyl halide reacts with sodium alkoxide, ether is formed. This reaction generally follows the SN2 mechanism for primary alcohols. SN2 reaction in which an alkoxide ion is a nucleophile that displaces a halide ion from an alkyl halide.



④ Three uses of ethylene oxide

- 1) Ethylene oxide is used as a gaseous sterilizing agent
- 2) It is used in the preparation of nonionic emulsifying agents, plastic, plasticizers and several synthetic textiles
- ③ It is used as an illicit drug to induce sedation and euphoria