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MBBS

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GENERAL CHEMISTRY II ASSIGNMENT (ETHER)

1. Give the IUPAC names of the following organic compounds.
2. CH₃OCH₃ = methoxymethane
3. CH₃CH₂OCH₂CH₃ = ethoxymethane
4. (CH₃CH₂CH₂CH₃)₂O = butoxymethane
5. CH₃CH₂OCH₃ = methoxyethane
6. CH₃CH₂CH₂OCH₂CH₃ = ethoxypropne
7. Discuss the properties of ethers

Ethers are inert at moderate temperature the inertness temperature leads to their wide use as a reaction media. Simple ethers are not found commonly in nature but the ether linkage is present in such natural products e.g sugar, glucose etc

At room temperature, ethers are colorless, neutral liquids with pleasant odour. The lower aliphatic ethers are highly flammable gaseous volatile liquids.

Most of the simple ethers are less dense than water, although the density increases with increasing relative molecular mass and some if the aromatic are in fact denser than water.

1. Discuss explicitly two methods of preparing ethers and show the equation of reaction.
2. Preparation of ethers by dehydration of Alcohols: In the presence of sulphoric acid alcohols undergo catalytic dehydration to produce alkenes and ethers under different conditions. The process of continuous etherification occurs here.

2ROH 🡨🡪 R-O-R +H₂O

Conc.H₂SO₄/14°

E.g.: 2CH₃CH₂OH 🡨🡪 CH₃CH₂-O-CH₂CH₃+H₂O

1. Preparation of ethers by Williamson Synthesis: Williamson Synthesis is an important method for the preparation of symmetrical and asymmetrical ethers in laboratories. Here, alkyl halides (primary and secondary react with sodium alkoxide (RONa) or potassium alkoxide(R’OK) to produce ethers. R-X + R’Ona 🡪 ROR’. Tertiary alkyl halides are not used in williamson synthesis because tertiary alkyl halides prefer to undergo elimination instead of substitution. Hence, if we are to prepare T-butylmethyether we will use (CH₃)₂ONa and CH₃Br; and not (CH₃)₃Br and CH₃OH.
2. State three uses of ethylene oxide
3. Ethylene oxide is used as an intermediate in the hydrolytic manufacture of ethylene glycol
4. Ethylene oxide is used in the preparation of nonionic emulsifying agents, plastic, plasticizers and several synthetic textiles.
5. Ethylene oxide is used as a gaseous sterilizing agent.