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MBBS

MHS

19/MHS01/199

Assignment on Ethers -

1 Give the IUPAC names of the following organic compounds:

a $\text{CH}_3\text{OCH}_3 \rightarrow$ Methoxymethane

b $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3 \rightarrow$ Ethoxyethane

c $(\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2)_2\text{O} \rightarrow$ Dioxane

d $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3 \rightarrow$ Methoxyethane

e $\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_3 \rightarrow$ Ethoxypropane

2 Discuss the properties of ethers -

- Physical states: At room temperature, ethers are colourless, neutral liquid with pleasant odour. The lower aliphatic ethers are highly flammable or volatile liquids.

- Solubility: Ethers are less soluble in water than are the corresponding alcohols.

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

- Boiling point: Low molecular mass ethers have a lower boiling than the corresponding alcohols but those ethers containing alkyl radicals larger than four carbon atoms, the reverse is true.

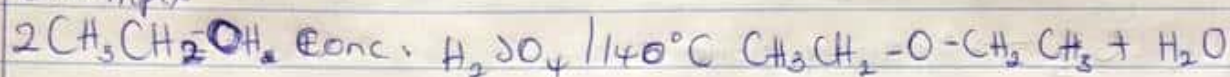
- Reactivity! Ethers are inert at moderate temperature. Their inertness at moderate temperature leads to their wide use as reaction media.

3 Methods of preparing ether

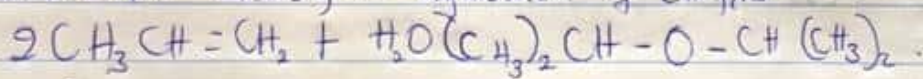
- Partial Dehydration of Alcohols.

Simple ether are manufactured from alcohols by catalytic dehydration. The alcohol in excess and concentrated tetraoxosulphate (vi) acid is heated at a carefully maintained temperature of 140°C . This process is known as continuous esterification. If excess alcohol is not used, the temperature is as high as $170-180^{\circ}\text{C}$, further dehydration to yield alkene occurs.

Example

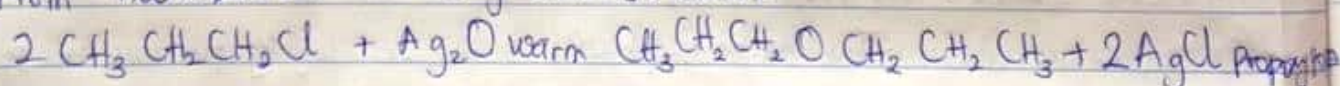


- Controlled Catalytic hydration of olefins.



2 - Isopropoxy propane

From haloalkanes and dry silver(I) oxide



4 State 3 uses of ethylene oxide.

- Ethylene oxide is used as an intermediate in the hydrolytic manufacture of ethylene glycol.
- Ethylene oxide is used in the preparation of non-ionic emulsifying agents, plasticizers and several synthetic textiles.
- Ethylene oxide is used as a gaseous sterilizing agent.