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19/MH01/052 MBBS/MH2

Assignment on Ethers

1) Give the IUPAC Names of the following Organic Compounds

- Answer
- a) CH_3OCH_3 - Methoxy methane
 - b) $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$ - Ethoxy ethane
 - c) $\text{C}_6\text{H}_5\text{CH}_2\text{CH}_2\text{CH}_2\text{OCH}_3$ - Butoxy methane
 - d) $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$ - Methoxy ethane
 - e) $\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_2\text{CH}_3$ - Ethoxy propane

2) Discuss the Properties of Ethers

a) Physical states: At room temperature, ethers are colourless, odourless, neutral liquids with pleasant odours. NB the lower aliphatic ethers are highly flammable gases or volatile liquids.

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

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

d) Reactivity: Ethers are inert at moderate temperatures, their inertness at moderate temperatures leads to their wide use as reaction media.

e) Solubility: Ethers are less soluble in water than the corresponding alcohols. Lower molecular weight ethers such as methoxy methane and methoxy ethane are fairly soluble in water since the molecules are able to form hydrogen bonds with the water molecules but as the hydrocarbon content of the molecules increases, there is a rapid decline in solubility. They are miscible with most organic solvents.

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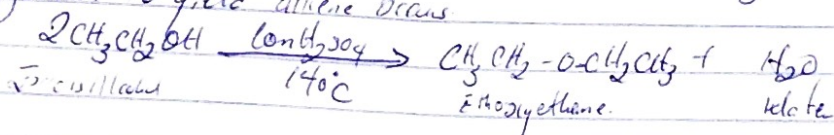
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Assignment

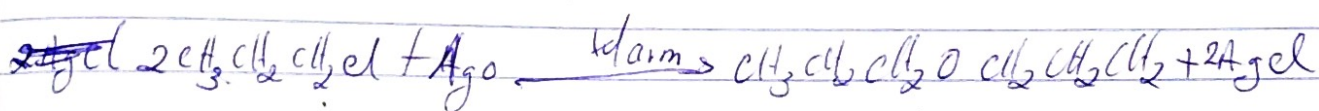
On Ethers.

③ Discuss Explicitly two methods of preparing ethers and show equation of reaction

①. Partial dehydration of alcohols: Simple ethers are manufactured from alcohols by catalytic dehydration of the alcohol in excess and conc. H_2SO_4 acid is heated at a carefully maintained temperature of $140^\circ C$. This process is known as continuous etherification. NB if excess alcohol is not used, the temperature is as high as $170-180^\circ C$, for the dehydration to yield alkene oxides.



④



4 state three uses of ethylene oxide

① Ethylene oxide is used as an intermediate in the hydrolytic manufacture of ethylene glycol

② Ethylene oxide is used in the preparation of non-ionic emulsifying agents, plastics, plasticizers and several synthetic fibres.

③ Ethylene oxide is used as a gaseous sterilizing agent.