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Chemistry Assignment Answer

1) Give the IUPAC names of the following compounds
sol \rightarrow

- i) CH_3OCH_3 - Methoxymethane
- ii) $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$ - Ethoxyethane
- iii) $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{O}$ - Butoxyethane
- iv) $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$ - Methoxyethane
- v) $\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_2\text{CH}_3$ - Ethoxyhexane

2. Discuss the properties of ethers.

Answer \rightarrow The properties of ethers are,

i) Physical States: At room temperature, ethers are colourless, neutral liquids with pleasant odors. The lower aliphatic ethers are highly flammable gases or volatile liquids.

ii) Solubility: Ethers are less soluble in water than the corresponding alcohols. Lower molecular weight ethers such as methoxymethane and methoxyethane 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.

iii) 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.

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

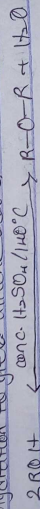
v) Boiling point: Low molecular mass ethers have a lower boiling point than the corresponding alcohols but those ethers containing alkyl radicals longer than four carbon atoms, the reverse is true.

3. Discuss especially two methods of preparing ethers and show another reactions.

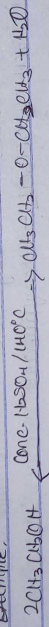
⇒

i) Partial dehydration of alcohols.
Simple ethers are manufactured from alcohols by ethylic dehydration. The alcohol in excess and concentrated sulphuric acid is heated at a carefully maintained temperature of 140°C .

This process is known as continuous ethylation. If excess alcohol is now used, the temperature is as high as $170-180^{\circ}\text{C}$. Further dehydration to yield alkene occurs.

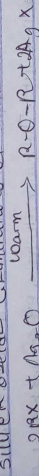


Example,

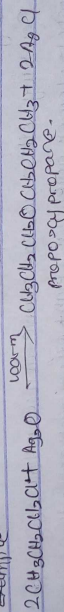


ii) ~~Prepared~~ from haloalkanes and dry silver chloride

Ethers can be prepared by heating haloalkanes with dry silver chloride (Williamson's ethylation synthesis)



Example



iii) State three uses of ethylene oxide. Answer ⇒

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

ii) Ethylene oxide is used in the preparation of nonionic emulsifying agents, plastics, plasticizers and several synthetic textile

iii) Ethylene oxide is used as a gaseous sterilizing agent.