

1 Give the IUPAC names of the following organic compounds

CH_3OCH_3 — Methoxymethane

$\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$ — Ethoxyethane

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

$\text{CH}_3\text{CH}_2\text{OCH}_3$ — Methoxyethane

$\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2$ — Ethoxypropane

2 Discuss the properties of ethers

General Properties

- Physical State - Ethers are colourless, neutral liquids with pleasant odour at room temperature.
- Solubility - Ethers are less soluble in water than the corresponding alcohols.
- Density - Most of the simple ethers are less dense than water, although the density increases with increasing relative molecular mass.
- Boiling point - Low 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.
- Reactivity - Ethers are inert at moderate temperature.

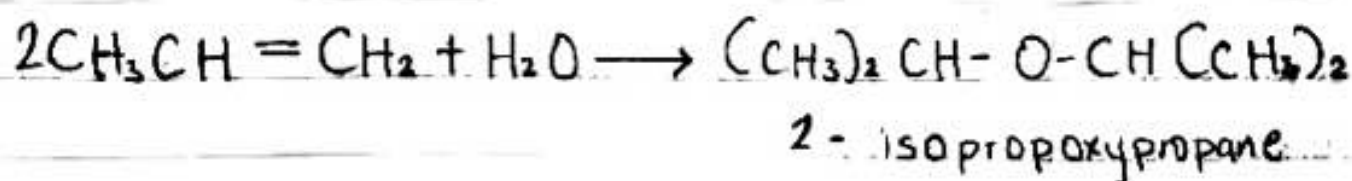
3. Discuss explicitly two methods of preparing ethers and show equations of reactions.

i) Partial dehydration of alcohols

Simple ethers are manufactured from alcohols by catalytic dehydration. The alcohol is excess and conc. H_2SO_4 is heated at a carefully maintained temperature of 140°C , this process is known as continuous esterification.



ii) Controlled catalytic dehydration of olefins



4. State three uses of ethylene oxide

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