

2 Properties of Discuss the properties of ethers
a) Solubility: As the hydrogen content of the molecules in ether increases, there is a rapid decline in solubility.

b) Density: The density increases with relative molecular mass. Most of the simple ethers are less dense than water. ~~Propanoic acid~~

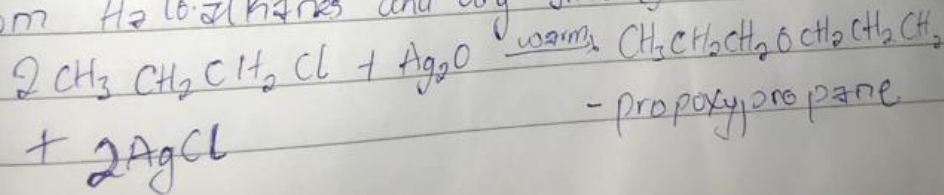
c) Reactivity: ethers are inert at moderate temperature

d) Heat decomposes ethers especially in the presence of alumina catalysts to form olefins and water as principal products

e) ethers undergo self-oxidation in the presence of oxygen to unstable peroxides.

3 Discuss explicitly two methods of preparing ethers and show equations of reaction

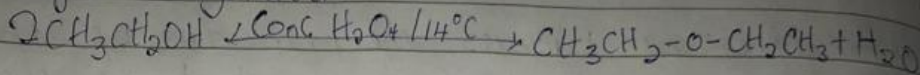
a) from haloalkanes and dry silver (I) oxides



b) Partial dehydration of alcohols.

Simple ethers are manufactured from alcohols by

Catalytic dehydration.



4) Three uses of ethylene oxide

- It is used as an intermediate in the hydrolytic manufacture of ethylene glycol.
- It is used as a gaseous sterilizing agent.
- It is used in the preparation of nonionic emulsifying agents, plastics, plasticizers and several synthetic textiles.