

Question 2) a) Physical state: At room temperature, ethers are colourless, neutral liquids with pleasant odours. The low aliphatic are highly flammable gases or volatile liquids.

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

c) Density: Most of the simple ethers are ~~more~~^{less} denser than water, although the density increases with increasing relative molecular mass and some of the aromatic ethers are in fact denser than water.

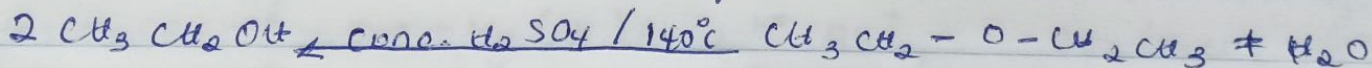
d) Boiling points: Low molecular mass ethers have a lower boiling point than the corresponding alcohols but those ethers containing alkyl radicals larger than four carbon atoms, the reverse is true.

e) Reactivity: Ethers are inert at moderate temperatures.

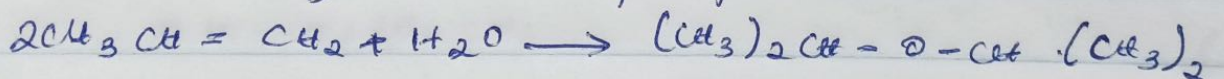
3) a) Partial dehydration of alcohols.

Simple ethers 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 .



b) Controlled catalytic hydration of olefins.



2-Isopropoxypropane.

4) a) Ethylene oxide is used as an intermediate in the hydrolytic manufacture of ethylene glycol.

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

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