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ASSIGNMENT

Give the IUPAC names of the following organic compounds.

i) CH_3OCH_3
 \Rightarrow Methoxymethane

ii) $\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_3$
 \Rightarrow ethoxypropane

iii) $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$
 \Rightarrow ethoxyethane

iv) $(\text{C}_4\text{H}_9)_2\text{O}$
 \Rightarrow Butoxymethane

v) $\text{CH}_3\text{CH}_2\text{OCH}_3$
 \Rightarrow ethoxymethane

2) Discuss the properties of ethers.

Physical states

At room temperature, ethers are colourless, neutral liquids with pleasant odours. The lower aliphatic ethers are volatile liquids or flammable gases.

⑩ Solubility

Ethers are less soluble in water than in alcohols. Lower molecular weight ethers like methoxy-methane are fairly soluble in water since they're able to form hydrogen bond with the water but as the hydrocarbon content of the molecule increases, there is rapid decline in solubility. They are miscible with most organic solvents.

⑪ Density

Most ethers are less dense than water. However, density increases with increasing relative molecular mass and thus some ethers are denser than water.

⑫ Boiling Point

Ethers with low molecular mass have low boiling points than corresponding alcohols. but ethers with alkyl radicals higher than four carbon atoms the reverse is true.

⑬ REACTIVITY

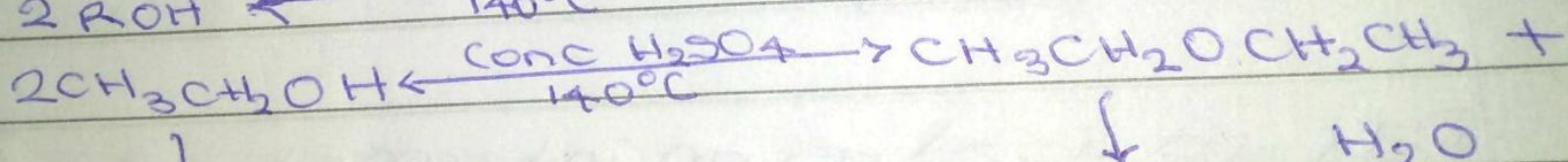
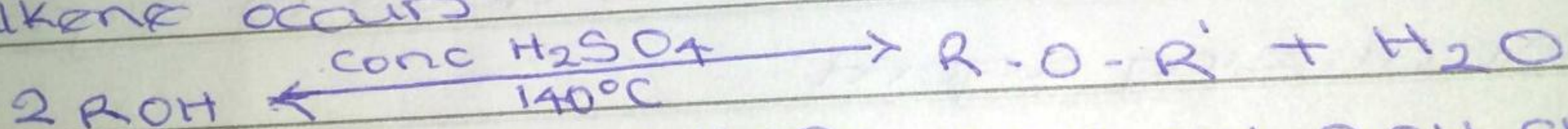
Ethers are inert at moderate temperature. Thus their inertness at moderate temperature

leads to their wide use as reaction media.

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 in excess and concentrated H_2SO_4 (tetraoxo sulphate vi) acid is heated at a carefully maintained temperature of $140^\circ C$. This process is known as continuous etherification. If excess alcohol is not used, the temperature is as high as $170 - 180^\circ C$, further dehydration to yield alkene occurs.

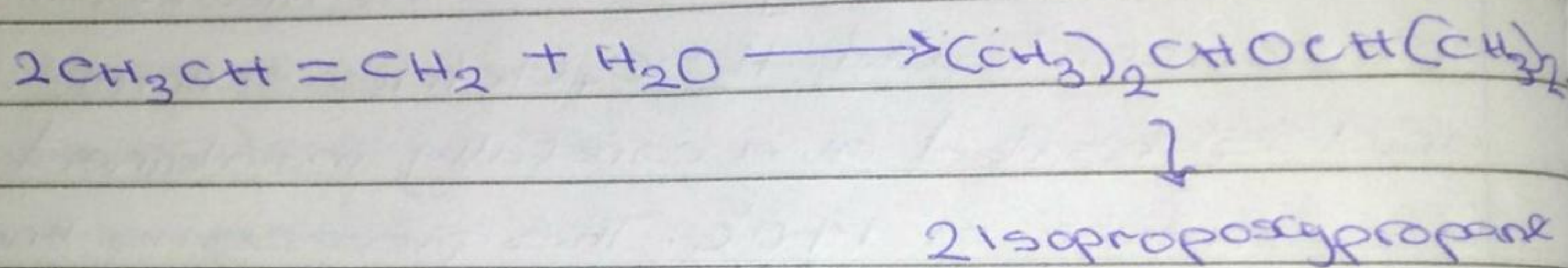


↓
Excess Ethanol

↓
Ethoxyethane

ii) controlled catalytic hydration of olefins.

This is a process for production of dialkyl ether by hydration and etherification of olefinic feedstock containing at least one lower alkene by contacting the olefinic feedstock and water in a catalytic reaction zone with porous solid metasilicate acidic catalyst under olefin hydration and etherification conditions.



Q) State three uses of ethylene oxide

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

ii) It is used as an intermediate in the hydrolytic manufacture of ethylene glycols.

iii) It is also used in the preparation of nonionic emulsifying agents, plastics, plasticizers and several synthetic textiles.