

Name: D. S. Saluja Miracle | Matric No - 191ENG021057

Department: Computer Engineering | Course: CHM102

Assignment

1) The IUPAC names of the following organic compounds are:

i) CH_3OCH_3 is Methoxymethane.

ii) $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$ is Ethoxyethane

iii) $\text{CH}_3(\text{CH}_2\text{CH}_2\text{CH}_2)_3\text{O}$ is Butoxymethane

iv) $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$ is Methoxyethane

v) $\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_3$ is Ethoxypropane

2) Properties of ethers

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

ii) Solubility: Ethers are less soluble in water than are 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) 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

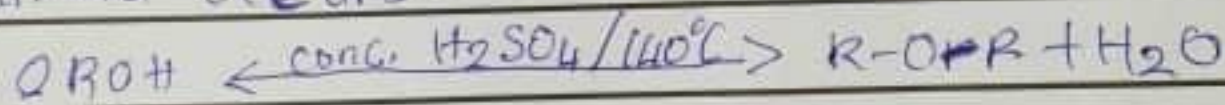
atoms/the reverse is true. The boiling point of ethers tend to approximate those of hydrocarbons of same relative molecular mass from which it can be concluded that the molecules are not associated in the liquid phase as there are no suitably available hydrogens for association through hydrogen bonds.

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

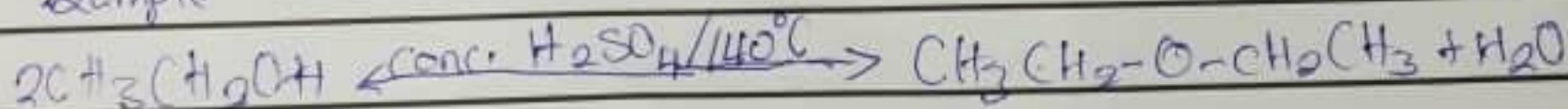
2) Methods of Preparing Ethers.

i) Partial dehydration of alcohols

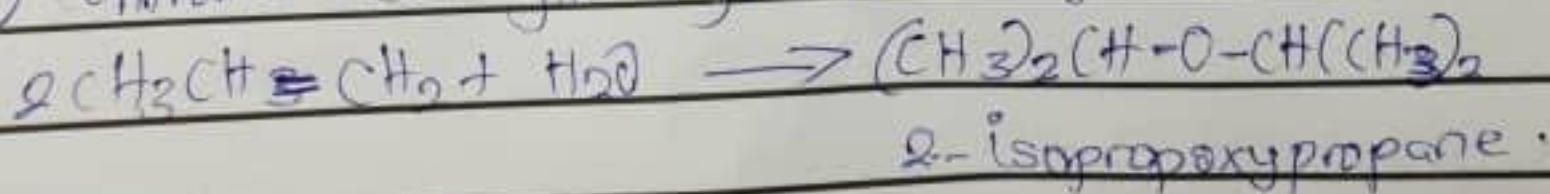
Simple ethers are manufactured from alcohols by catalytic dehydration. The alcohol in excess and concentrated tetraoxosulphate (vi) acid is heated at a carefully maintained temperature of 140°C . This process is known as continuous etherification if excess alcohol is not used, the temperature is a high as $170-180^{\circ}\text{C}$, further dehydration to yield alkenes occurs.



example



ii) Controlled catalytic hydration of olefins



14/06/2021

i) Ethylene oxide is used as an intermediate in the production of several industrial chemical.

ii) It is also used as a fumigant in certain agricultural products and as a sterilant for medical equipment and supplies.

iii) It is used to make antifreeze, adhesives, detergents, polyester, fumigants and pesticides.