

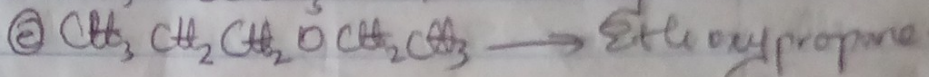
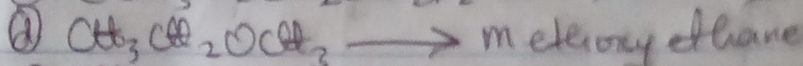
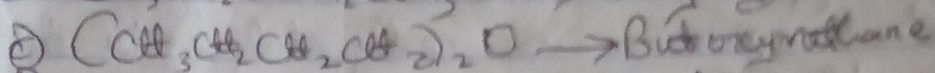
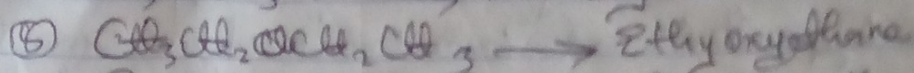
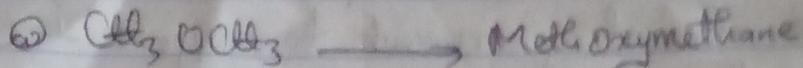
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Course: CHM 102

matric no: 19124501/174

Level: 100

1) Give the IUPAC names of the following Organic Compounds



2) Discuss the properties of ethers

a) Density: Most simple ethers are less dense than water while some of the aromatic ethers are denser than water.

b) Reactivity: Ethers are inert at moderate temperature

c) Boiling point: Low molecular mass ethers have a lower boiling point than the corresponding alcohols but these ethers containing alkyl radicals larger than for carbon atoms, the reverse is true

d) Solubility: Ethers are less soluble in water than in their corresponding alcohol, 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 molecule but as the hydrogen hydrocarbon content of the molecules increases, there is a decline in solubility. They are miscible with most organic solvent

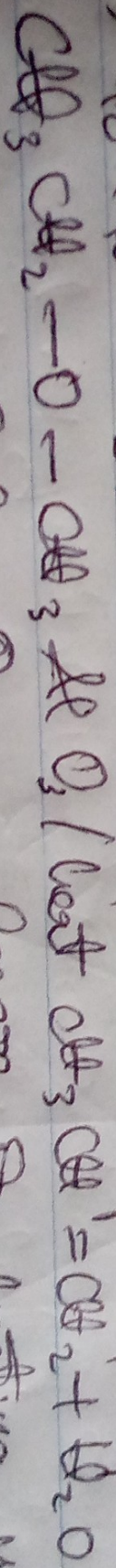
e) At room temperature: ethers are colorless neutral liquids with pleasant odours.

3) Discuss explicitly two methods of preparing ethers and show a reaction of reaction.

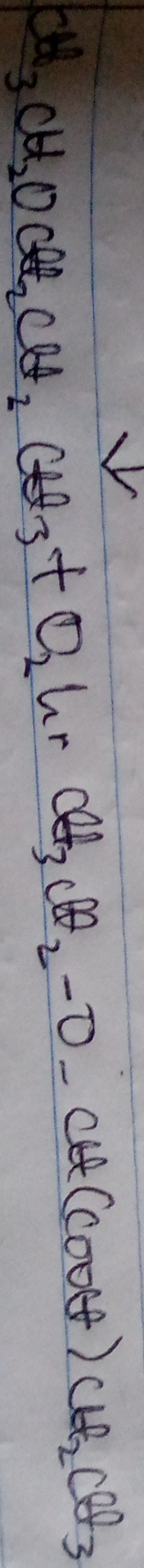
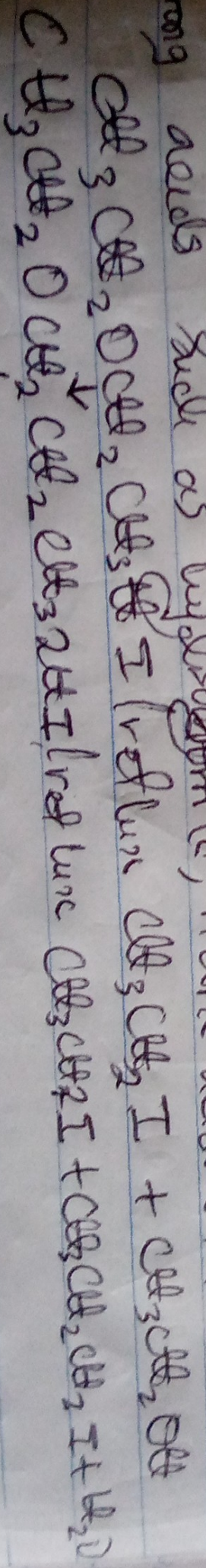
a) Chemical Reaction

Ethers are relatively inert with regards to chemical reaction and in this regard, they resemble the corresponding alkane which carry no functional group. However, the oxygen atom is sufficiently basic to undergo protonation in an acid medium by the donation

of a lone pair of electron (i.e., the functions as Lewis base, that decomposes ethers especially in the presence of aluminum catalysts to form olefins and water as principal products.

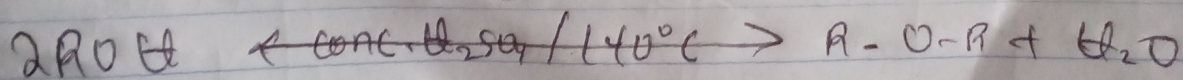


Ethers undergo Carbon-Drygen fission in heating under strong acids such as sulphuric, nitric acids etc.



5) 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 as high as $170-180^{\circ}\text{C}$, further dehydration to yield alkene occurs.



Example

