

Name: ESE - EIAKPOVI NYOYOGHANE

Matric no: 19/MTS 01/159

Course code: CHM102 (Assignment on Ethers).  
100 Level.

### Naming (Nomenclature).

(i)  $\text{CH}_3\text{OCH}_3 \Rightarrow$  Methoxymethane.

(ii)  $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3 \Rightarrow$  Ethoxyethane.

(iii)  $(\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2)_2\text{O} \Rightarrow$  Butoxybutane.

(iv)  $\text{CH}_3\text{CH}_2\text{OCH}_3 \Rightarrow$  Methoxyethane.

(v)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_3 \Rightarrow$  Ethoxypropane.

### (2) General Properties.

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

(ii) Solubility: Ethers are less soluble in water than the corresponding alcohols. Lower molecular weight ethers such as methoxymethane and methoxyethane are fairly soluble in water. 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.

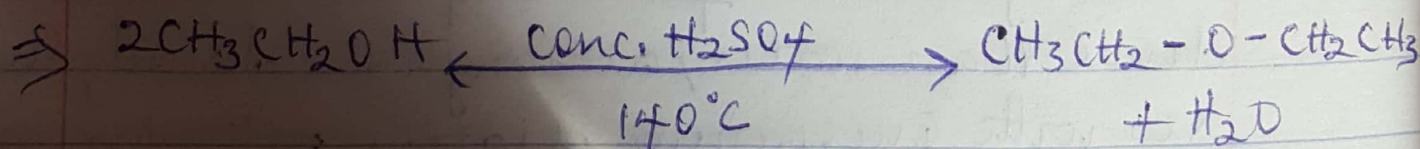
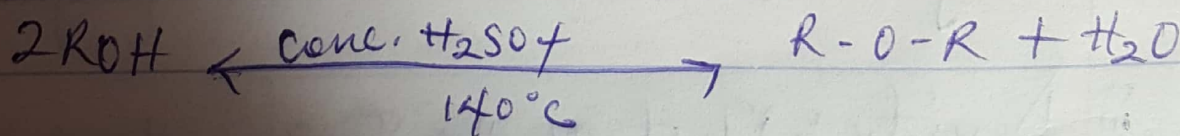
iv) Boiling point: Low molecular mass ethers have a lower boiling point than the corresponding alcohols but those ethers containing alkyl radicals larger than four carbon atoms, the reverse is true.

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

### Preparation of Ethers

3. i) Partial dehydration of alcohols;

Simple ethers are manufactured from alcohols by catalytic dehydration. The alcohol in excess and conc.  $H_2SO_4$  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  $170^\circ C - 180^\circ C$ , further dehydration yields alkene.



Diethyl ether.

From haloalkanes and dry silver (I) oxide. Ethers are formed from the reaction of haloalkanes and dry silver (I) oxide as follows;

$$2RX + Ag_2O \xrightarrow{\text{warm}} R-O-R + 2AgX$$

$$\Rightarrow 2CH_3CH_2CH_2Cl + Ag_2O \xrightarrow{\text{warm}} CH_3CH_2CH_2OCH_2CH_2CH_3 + 2AgCl$$

Propoxypropane.

(A) Uses of Ethylene oxide.

- i. Ethylene oxide is used as a gaseous sterilizing agent.
- ii. Ethylene oxide is used in the hydrolytic manufacture of ethylene glycol.
- iii. Ethylene oxide is used in the preparation of nonionic emulsifying agents, nylon, plastic etc.