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DEPT: MBBS

COLLEGE: MHS

Title: Assignment on Ether

COURSE CODE: CHM 102

### Assignment

1.

- (a)  $\text{CH}_3\text{OCH}_3$  — Methoxymethane
- (b)  $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$  — Ethoxyethane
- (c)  $(\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2)_2\text{O}$  — Butoxymethane
- (d)  $\text{CH}_3\text{CH}_2\text{OCH}_3$  — Methoxyethane
- (e)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_3$  — Ethoxypropane

### 2. Properties of Ethers

- (i) Physical States: 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 the corresponding alcohols. Lower molecular-weight ethers such as methoxyethane and methoxymethane 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.

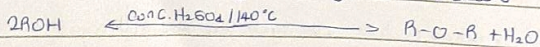
(iii) Density: Most of the simple ethers are less dense than water, although the density increases with increasing relative molecular mass and some of the aromatic ethers are in fact denser than water.

(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.

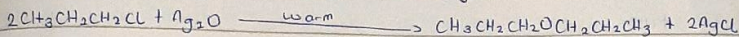
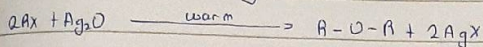
(v) Reactivity: Ethers are inert at moderate temperature. Their inertness at moderate temperatures lead to their wide use as reaction media. Simple ethers are not found commonly in nature but the ether linkage is present in such natural products as sugars, starches and cellulose.

3. Two methods of preparing ethers includes;

(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  $140^{\circ}\text{C}$ , 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.



b. From Halobutanes and dry silver oxide



Propoxypropane.

#### 4. Uses Of Ethylene oxide

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

(ii) It is used in the preparation of nonionic emulsifying agents, plastics, plasticizers and

Several synthetic textiles

(iii) Ethylene oxide is used as a gaseous sterilizing agent.