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**COURSE CODE: CHM102**

**DEPARTMENT : MEDICINE AND SURGERY**

**MATRIC NO: 19/MHS01/366**

**ASSIGNMENT**

1)Give the IUPAC names of the following organic compounds

a) CH3OCH3 : methoxymethane

b) CH3CH2OCH2CH3 : ethoxyethane

c) (CH3CH2CH2CH2)2O :butoxybutane

d) CH3CH2OCH3 :methoxyethane

e) CH3CH2CH2OCH2CH3 :ethoxypropane

2) Discuss the properties of ethers

The properties of ethers can be discussed under five sub – headings namely: physical states , solubility , density , boiling point , reactivity, abundance

PHYSICAL STATES

At room temperature, others are pleasant smelling , neutral , colourless liquids. The lower aliphatic ethers are highly flammable gases or volatile liqiuds

SOLUBILITY

Ethers are less soluble in water than their corresponding alkanols. As a result of their ability to form hydrogen bonds, lower molecular weight ethers such as methoxymethane are fairly soluble in water. However ,as the hydrocarbon content of the molecules increases, the solubility decreases. Ethers are miscible with most organic solvents.

DENSITY

Most simple ethers are less dense than water. While some of the aromatic ethers are in fact denser than water. The density of ethers increases with increasing relative molecular mass

BOILING POINT

Low molecular mass ethers have a lower boiling point than their corresponding alcohols but those ethers containing alkyl radicals larger than four carbon atoms, have a higher boiling point than their corresponding alcohols. The boiling point of ethers tend to be an approximate of hydrocarbons of same relative molecular mass.

REACTIVITY

Ethers are inert at moderate temperature. As a result, ethers are usually employed as reaction media in various reaction to prevent contamination of the product or reactant.

ABUNDANCE

Simple ethers are not found commonly in nature but the ether linkage is present in such natural products as sugars, starches and cellulose

3)Discuss explicitly two methods of preparing ethers and show the equations of reaction

* PARTIAL DEHYDRATION OF ALCOHOLS: Simple ethers are manufactured from alcohols through catalytic (controlled) dehydration of the alcohol. Excess alcohol and concentrated tetraoxosulphate (vi) acid at a temperature of 140°C. If the alcohol is not in excess a temperature as high as 170°C-180°C is used and further dehydration occurs to yield an alkene. This process is called **ETHERIFICATION**.

Conc. H2SO4

2CH3OH —> (CH3)2O + H20

140°C

* FROM HALOALKANES AND DRY SILVER (I) OXIDE: Ethers can be prepared from haloalkanes. Haloalkane is warmed with dry silver to yield corresponding ether

warm

2CH3CH2Cl + Ag2O –> (CH3CH2)2O + 2AgCl

4) State three uses of ethylene oxide

* It is used as a sterilizing agent (gaseous)
* It is used as an intermediate in the hydrolytic manufacture of ethylene glycol
* Ethylene oxide is used in the preparation of non ionic emulsifying agents, plastics, plasticizers and several synthetic textiles.