OBI NNAMDI ... NAME
17/MHS09/005
100 LEVEL DENTISTRY
CHEMISTRY 102 ASSIGNMENT.

1. The IUPAC names of
- CH_3OCH_3 → Methoxymethane
- $CH_3CH_2OCH_2CH_3$ → ~~Eth~~ Ethoxyethane
- $(CH_3CH_2CH_2CH_2)_2O$ → Butoxymethane
- $CH_3CH_2OCH_3$ → methoxyethane
- $CH_3CH_2CH_2OCH_2CH_3$ → Ethoxypropane

2. The properties of ethers are;

(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 methoxymethane and methoxyethane are ~~fairly~~ fairly are fairly soluble in water since the molecule 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 dense than the 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 the 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 hydrogen for association through hydrogen bonds.

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

(6) Two methods of preparing ethers with equations of reaction are;

(i) Controlled catalytic hydration of olefins

$$2CH_3CH=CH_2 + H_2O \longrightarrow (CH_3)_2CH-O-CH(CH_3)_2$$

2-isopropoxypropane

(ii) From Haloalkanes and dry silver oxide

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

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

Propoxypropane

4 Three uses of ~~ethylene~~ ethylene oxides are;

(i) It is used as a gaseous sterilizing agent

(ii) It's used as an intermediate in the hydrolytic manufacture of ethylene glycol.

(iii) It is used to make antifreeze, adhesives, etc.

(a)