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MATRIC NO; 19/MHS01/079

COURSE; CHEMISTRY 102

DEPT; MBBS; 100L

1 i] CH_3OCH_3 - methoxymethane
ii] $CH_3CH_2OCH_2CH_3$ - ethoxyethane
iii] $(CH_3CH_2CH_2CH_2)_2O$ - buboxymethane
iv] $CH_3CH_2OCH_3$ - methoxyethane
v] $CH_3CH_2CH_2OCH_2CH_3$ - ethoxypropane

2 i) Physical state; At room temperature, ethers are colourless, neutral liquids with pleasant odours
ii) Solubility; Ethers are less soluble in water than are the corresponding alcohols.
iii) Density; Most simple ethers are less dense than water, although the density increases with increasing relative molecular mass.
iv) Boiling point; Low molecular mass ethers have a lower boiling point than the corresponding alcohols.
v) Reactivity; Ethers are inert at moderate temperature

3 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°C. This process is known as 'continuous etherification'

i.e. $2ROH \xleftarrow{conc.H_2SO_4/140^\circ C} R-O-R + H_2O$

e.g. $2CH_3CH_2OH \xleftarrow{conc\ H_2SO_4/140^\circ C} CH_3CH_2-O-CH_2CH_3 + H_2O$

ii. To prepare ethers from halo alkanes, this includes Williamson's synthesis and heating halo alkanes with dry silver (I) oxide. Williamson's synthesis is an organic reaction, forming an ether from an organohalide and a deprotonated alcohol (alkoxide). It typically involves the reaction of an alkoxide ion with a primary alkyl halide. via an

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

e.g. $2CH_3CH_2CH_2Cl + Ag_2O \xrightarrow{warm} CH_3CH_2CH_2OCH_2CH_2CH_3 + 2AgCl$
propoxypropane

4; Ethylene oxide is used as an intermediate in the production of several industrial chemicals, the most notable of which is ethylene glycol.

ii It is used as a fumigant in certain agricultural products

iii It is used as a sterilant for medical equipment and supplies.