Eshiet Mfonobong udo
19/mhs01/161

1 Give the IUPAC names of the following Compounds

(a) CH_3OCH_3 - Dimethyl ether (Methoxymethane)

$CH_3CH_2OCH_2CH_3$ - Ethoxyethane

$(CH_3CH_2CH_2CH_2)_2O$ - Butoxymethane

$CH_3CH_2OCH_3$ - Methoxyethane

$CH_3CH_2CH_2OCH_2CH_3$ - Ethoxypropane

2 Discuss the properties of Ethers.

i) Physical state: At room temperature, ethers are Cle... neutral liquid with pleasant odour. The lower ... ic ethers are highly flammable gases or volatil...

ii) Solubility: Ethers are less soluble in water th... The corresponding alcohols. Lower molecular we... ethers such as methoxymethane and methoxyethan... are fairly soluble in water since the molecule ... able to form hydrogen bonds with the water mole... but as the hydrocarbon content of the molecule ... increases there is a rapid decline in solubility. ... They are miscible with most organic solvent...

iii) Density: Most of the simple ethers are less dense ... water, although the density increase with increas...

relative molecular Mass and some of the aromatic ethers are in fact denser than water.

iv) Reactivity: Ethers are inert at moderate temperature. Their inertness at moderate temperature levels to their wide use as reaction media.

3 Discuss explicitly two methods of preparing ether and show equation of reaction.

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. If excess alcohol is not used, the temperature is as high as 170 - 150°C, further dehydration to yield alkene occurs.

$$2ROH \xrightarrow{\text{Conc } H_2SO_4/140^\circ C} R-O-R + H_2O$$

Example:

$$2CH_3CH_2OH \xrightarrow{\text{Conc } H_2SO_4/140^\circ C} CH_3CH_2-O-CH_2CH_3 + H_2O$$

2 Controlled catalytic hydration of alkene

$$2CH_2CH=CH_2 + H_2O \longrightarrow (CH_3)_2CH-O-CH(CH_3)_2$$

2-isopropoxypropane

4 state four use of ethyleneoxide

i) It is used as an intermediate in hydrochlorination hydrolytic manufacturing of ethylene glycol

ii) It is used in preparation of nonionic emulsifying agents, plastic, plasticizers etc

iii) Ethylene oxide is used as a gaseous sterilizing agent