NAME ONI[illegible]
COURSE : CHEM 102
Level : 100
matric/no : 19/MHS01/347

Assignment

1. Give the IUPAC names of the following organic compounds.

a. CH_3OCH_3 ⇒ Methoxy methane.

b. $CH_3CH_2OCH_2CH_3$ ⇒ Ethoxy ethane

c. $(CH_3CH_2CH_2CH_2)_2O$ ⇒ Butoxymethane

d. $CH_3CH_2OCH_3$ ⇒ methoxy ethane

e. $CH_3CH_2CH_2OCH_2CH_3$ ⇒ Ethoxy Propane

2. Discuss the Properties of ethers.

a. Density : Most simple ethers are less dense than water while some of the aromatic ethers are denser than water.

b. Solubility : Ethers are less soluble in water than are in their corresponding alcohol lower molecular weight ethers such as methoxymethane and methoxy ethane 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

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medium by the donation of a lone pair of electron ~~Hate~~ i.e, it functions as a Lewis base. Heat decomposes ethers especially in the presence of alumnia catalysts to form olefins and water as principal products.

$CH_3CH_2-O-CH_3 \xrightarrow{Al_2O_3/heat} CH_3CH=CH_2 + H_2O$

Ethers undergo carbon-oxygen fission on heating with strong acids such as hydrobromic, nitric acids etc.

$CH_3CH_2OCH_2CH_3 \xrightarrow{HI/reflux} CH_3CH_2I + CH_3CH_2OH$

$CH_3CH_2OCH_2CH_2CH_3 \xrightarrow{2HI/reflux} CH_3CH_2I + CH_3CH_2CH_2I + H_2O$

$CH_3CH_2OCH_2CH_2CH_3 + O_2 \xrightarrow{hr} CH_3CH_2-O-CH(OOH)CH_2CH_3$

b) Simple Ethers are manufactured from alcohols by catalytic dehydration. The alcohol in excess and ~~Conc.~~ H_2SO_4 is heated at a

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decline in solubility. They are miscible with most organic solvent.

c) 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.

d) Reactivity: Ethers are inert at moderate temperature

e) At room temperature, ethers are colourless, neutral liquids with pleasant odours.

9. Discuss the Properties of ethers explicitly two methods of Preparing ethers and show equations of reaction

a) Chemical Reaction

Ethers are relatively inert with regards to chemical reaction and in this regard, they resemble the corresponding alkane which carry no functional group. However, the oxygen atom is sufficiently basic to undergo Protonation in an acid

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