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DEPT: MBBS

Chemistry Assignment III

1 Give the IUPAC names of the following organic compounds

a CH_3OCH_3

Answer:

$H_3C - O - CH_3$

Methoxymethane

b $CH_3CH_2OCH_2CH_3$

Answer:

$CH_3H_2C - O - CH_2CH_3$

Ethoxyethane

c $(CH_3CH_2CH_2CH_2)_2O$

Answer:

$CH_3CH_2CH_2H_2C - O - CH_3CH_2CH_2CH_2$

Buthoxymethane

d $CH_3CH_2OCH_3$

Answers

$CH_3H_2C - O - CH_3$

Methoxyethane

e ~~$CH_3CH_2CH_2OCH_2CH_3$~~ $CH_3CH_2OCH_2CH_3$

Answer:

$CH_3H_2C - O - CH_2CH_3$

Ethoxyethane

2 Discuss the properties of ethers

Answers:

1 Physical states: Ethers are colourless, neutral liquids with pleasant odours at room temperature while the lower aliphatic ones are highly flammable gases or volatile liquids.

2 ~~Solubilit~~ Solubility: The lesser the molecular weight of the ether, the soluble it is in water and vice versa.

3 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 in fact denser than water.

4 Boiling Point: ~~Low, the~~ Ethers with low molecular mass have a lower boiling point than the corresponding alcohols but ethers with alkyl radicals larger than four carbon atoms, the reverse is the case.

5 Reactivity: Ethers are inert at room temperature. This leads to them being used as reaction media.

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

Answers:

1 Partial dehydration of alcohols: The alcohol which is in excess and conc. tetraoxosulphate(VI) acid is heated at a carefully maintained temperature of 140°C. This process is also known as continuous etherification.

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

ethoxyethane

2 From Haloalkanes and dry silver (I) oxide : A haloalkane and ~~$AgCl_2$~~ Ag_2O is heated at constant temperature. and a catalyst ~~AgCl is used~~.

$$2CH_3CH_2CH_2Cl + Ag_2O \xrightarrow{\text{Heat}} CH_3CH_2CH_2OCH_2CH_2CH_3 + 2AgCl$$

Propoxypropane

4 State three uses of ethylene oxide

Answers:

a It is used to make antifreeze

b It is used to make sterilization agents for medical equipment

c It is also used to make pesticides.