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**DEPARTMENT: HUMAN NUTRITION AND DIETETICS**

**MATRIC NUMBER: 19/MHS04/001**

**COURSE: CHEM 102**

**ASSIGNMENT.**

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

CH3OCH3, CH3CH2OCH2CH3, CH3CH2, (CH3CH2CH2CH2)2O, CH3CH2CH2OCH2CH3.

Answer.

1. Methoxymethane

b.Ethoxyethane

c. Ethyl

e.Alkoxyalkane

1. Discuss the properties of ethers.

Answer.

These include the following:

1. Density: most of the basic ethers are less dense than water ,though the density increases with increasing relative molecular mass and some of the aromatic ethers are dense than water.
2. Reactivity : ethers are inert at moderate temperature. Their inertness at moderate temperature leads to their wide use as a reacting media.
3. Physical state: at room temperature,they are colourless, neutral, liquids with pleasant odours. The lower aliphatic ethers are highly inflammable gases or volatile liquids.
4. Discuss explicitly two methods of preparing ethers and show the equations of reaction.

Answer.

1. 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 140c. if excess alcohol is not used, the temperature is as high as 170-180c ,further dehydration to yield alkene occurs.

 2ROH---🡨---conc H2SO4/140c-------🡪R-O-R +H2O

1. Controlled catalytic hydration of olefins:

This is an exothermic reaction.it runs preferably at low temperatures and high pressures. This reaction is catalyzed by acids like hydration of acetylene, which is accelerated by iron,copper,mercury and palladium sulphates.

 2CH3CH=CH2 + H2O (CH3)2CH-O-CH(CH3)2

1. State 3 uses of ethylene oxide

Answer.

a.It is used as a gaseous sterilizing agent

b. it is used to make anti freeze, adhesives, detergents, e.t.c

c. it is used in the production of ethylene glycol.