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DEPARTMENT: PHYSIOLOGY

LEVEL: 100L

COURSE CODE: CHEM 102

MATRIC NO: 19/MHS05/001

1. Give the IUPAC names of the following compounds.

CHOCH3- Methoxymethane

CH3CH2OCH2CH3- Ethoxyethane

(CH3CH2CH2CH2)2O-Butoxymethane

CH3CH2OCH3- Methoxymethane

CH3CH2CH2OCH2CH3-Ethoxypropane

1. Discuss the properties of ethers.
2. **PHYSICAL STATES:** at room temperature they are colorless, neutral liquids with pleasant odours. The lower aliphatic ethers are highly flammable gases or volatile liquids.

**B. SOLUBILITY**: Ethers containing up to 3 carbon atoms are soluble in water, due to their hydrogen bond formation with water molecules. The solubility decreases with increase in the number of carbon atoms. The relative increase in the hydrocarbon portion of the molecule decreases the tendency of H-bond formation. Ethers are appreciably soluble in organic solvents like alcohol, benzene

###  **C. Cleavage of C-O bond:** Ethers are generally very unreactive in nature. When an excess of Hydrogen halide is added to the ether, cleavage of C-O bond takes place leading to the formation of alkyl halides.

### The order of reactivity is given as HI>HBr>HCl

 D**. REACTIVITY:** Ethers are inert at moderate temperature which leads to their wide use as reaction media.

1. Discuss two methods of preparing ethers

 **A. CONTROLLED CATALYTIC HRDRATION OF OLEFINS:**

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

 2-isopropoxypropane

1. **PARTIAL DEHYDRATION OF ALCOHOLS:** the alcohol in excess and concentrated tetraoxosulphate(iv) acid is heated at a temperature of 140 degree Celsius.This process is known as continuous etherification. If excess alcohol is not used, the temperature is as high as 170-180c, further dehydration to yield alkenes occur.

2CH3CH2OH CH3CH2-O-CH2CH3 + H2O

 Conc.H2SO4/140C

1. State 3 uses of ethylene oxide
2. It is used as a gaseous sterilizing agent
3. It is used as an intermediate in the hydrolytic manufacture of ethylene glycol
4. Is used in the preparation of nonionic emulsifying agents, plastics and several synthetic textiles.