ASSIGNMENT

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DEPARTMENT: Medicine and Surgery

COLLEGE: MHS

**QUESTION 1**

Give the IUPAC names of the following organic compounds

CH3OCH3

CH3CH2OCH2CH3

(CH3CH2CH2CH2)2O

CH3CH2 OCH3

CH3CH2CH2OCH2CH3

**QUESTION 2**

Discuss the properties of ethers

**QUESTION 3**

Discuss explicitly two methods of preparing ethers and show equations of reaction

**QUESTION 4**

State three uses of ethylene oxide

Answers.

1a.)CH3OCH3 : Methoxymethane

b.)CH3CH2OCH2CH3 : Ethoxyethane

c.) (CH3CH2CH2CH2)2O : Pentanamide

d.)CH3CH2 OCH3 : Methoxyethane

e.) CH3CH2CH2OCH2CH3 : Ethoxypropane

2a.) The properties of ether will be considered in two different ways, the physical and chemical properties.

PHYSICAL PROPERTIES:

1. An ether molecule has a net dipole moment due to the polarity of C-O bonds.
2. The boiling point of ethers is comparable to the alkanes but much lower than that of alcohols of comparable molecular mass despite the polarity of the C-O bond.
3. The miscibility of ethers with water resembles those of alcohols.
4. Ether molecules are miscible in water. This is attributed to the fact that like alcohol, the oxygen atom of ether can also form hydrogen bonds with a water molecule.

CHEMICAL PROPERTIES:

1. Doesn't react with bases, active metals, oxidizing agents and reducing agents
2. Strong acids will cleave esters at elevated temperatures
3. When stored in presence of oxygen, esters will form explosive peroxides such as diethyl ether peroxide

3a.) 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 degrees C. This process is known as continuous etherification.

Example: 2CH3CH2OH H2SO4/140CCCH3CH2-O-CH2CH3 + H2O

b.) Controlled catalytic hydration of olefins: an alkene is brokern down to an ether upon the addition of water.

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

4a.) Ethylene oxide is used as an intermediate in the hydrolytic manufacture of ethylene glycol.

b.) Ethylene oxide is used in the preparation of nonionic emulsifying agents, plastics, plasticizers and several synthetic textiles.

c.) Ethylene oxide is used as a gaseous sterilizing agent.