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**DEPARTMENT:** Pre-medicine and Surgery (MBBS)

**COLLEGE:** Medicine and Health Sciences (MHS)

**LEVEL:** 100

**Assignment**

1. Give the IUPAC names of the following organic compounds

(a)CH3OCH3 Methoxymethane

(b)CH3CH2OCH2CH3 Ethoxyethane

(c)(CH3CH2CH2CH2)2O Butoxybutane

(d)CH3CH2OCH3 Methoxyethane

(e)CH3CH2CH2OCH2CH3 Ethoxypropane

1. Discuss the properties of ethers.
2. At room temperature, ethers are colourless, neutral liquids with pleasant odours.
3. The lower aliphatic ethers are highly flammable gases or volatile liquids.
4. Ethers are less soluble in water than their corresponding alcohols. The lower the molecular weight the higher the ability to form hydrogen bond with water, hence soluble in water.
5. Their density increases with increasing relative molecular mass and some aromatic ethers are denser than water.
6. The lower the molecular mass of ethers, the lower the boiling point than the corresponding alcohols but ethers containing the alkyl radicals larger than four carbon atom, the reverse is true.
7. Ethers are inert at moderate temperature.
8. Discuss explicitly two methods of preparing ethers and show equations of reactions.
	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 140°C. This process is known as continuous etherification. If excess alcohol is not used, the temperature is as high as 170-180°C, further dehydration to yield alkene occurs

2ROH conc. H2SO4 /140°C R-O-R + H2O

Examples;

2CH3CH2OH conc. H2SO4 /140°C CH3CH2-O-CH2CH3 + H2O

* 1. Controlled catalytic hydration of olefins

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

 2-isopropoxypropane

1. Uses of Ethylene oxide
	1. Ethylene oxide is used as an intermediate in the hydrolytic manufacture of ethylene glycol.
	2. It is used as a fumigant in certain agricultural products and as a sterilant for medical equipment and supplies.