

ABEDAYO-OJO PRINCEKKA OLAMIDE

191MHS011023

MEDICINE AND SURGERY

CHEM 102: ETHERS (ASSIGNMENT)

- 1a. $\text{CH}_3\text{OCH}_3 \rightarrow$ Dimethyl ether
- b. $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3 \rightarrow$ Ethoxyethane
- c. $\text{CCH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{O} \rightarrow$ Butoxy methane
- d. $\text{CH}_3\text{CH}_2\text{OCH}_3 \rightarrow$ Ethoxy methane
- e. $\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_3 \rightarrow$ Ethoxy propane.

2. PROPERTIES OF ETHERS:

- \Rightarrow 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.
- \Rightarrow An ether molecule has a net dipole moment due to the polarity of C-O bonds.
- \Rightarrow Ether molecules are miscible in water. This is attributed to the fact that in the alcohol, the oxygen atom of ether can also form hydrogen bonds with a water molecule.
- \Rightarrow Halogenation: Aromatic ethers undergo halogenation, for example, bromination, upon the addition of a halogen in the presence or absence of a catalyst.

3. PREPARATION OF ETHERS:

- \Rightarrow BY DEHYDRATION OF ALCOHOLS: In the presence of protic acids (sulphuric acid), alcohols undergo dehydration to produce alkenes and ethers under different conditions. For example: In the presence of sulphuric acid, dehydration of ethanol at 443K yields ethene. On the other hand, it yields ethoxyethane at 413K . This is an ideal method of preparation for primary alcohols.
- \Rightarrow BY WILLIAMSON SYNTHESIS: is an important method for the preparation of symmetrical and asymmetrical ethers in laboratories. In this method, we carry out a reaction of an alkyl halide with sodium alkoxide which

leads to the formation of ether. The reaction generally follows S_N2 mechanism for primary alcohol.

4. USES OF ETHYLENE OXIDE:

⇒ It is used as a gaseous sterilizing agent.

⇒ It is used as an intermediate in the hydrolytic manufacture of ethylene glycol.

⇒ It is used in preparation of nonionic emulsifying agent, plasters, plasticizers and several synthetic vesicles.