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1 Give the IUPAC name of the following compounds;

ANSWERS

A.

B.

C.

D.

E.

2 Discuss the properties of ether.

ANSWERS

At room temperature, ethers are colourless, neutral liquids with pleasant odours.

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 denser than water.

An ether molecule has a net dipole moment due to the polarity of C-O bonds.

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 the miscibility of ethers with water resembles those of alcohols.

Ether molecules are miscible in water. This attributed to the fact that like alcohol, the oxygen atom of ether can also from hydrogen bonds with a water molecule.

1. Discuss explicitly two method of preparing ethers and show equations of reaction.

ANSWERS

1. Partial dehydration of alcohols

In the presence of sulphuric acid, alcohol undergoes dehydration to produce alkenes and ethers under different conditions examples: at a temperature of alkene is formed while at a temperature of 140,ether is formed . This process is known as continuous etherification.

 Ethanol Ethoxy ethane

1. Willamson synthesis

The most versatile method of preparing ethers is the willamson ether synthesis, named for english chemist Alexander Willamson. It uses an alkoxide ion to attack an akyl halide substituting the alkoxy (-O—R) group for the halide. The alkyl halide must be unhindered (usually primary), or elimination will complete with desired substitution.

 Methanol Methoxy ethane

4 State three uses of ethylene oxide

ANSWER

1. Used as an intermediate in the production of several industrial chemical used to manufacture products such as fabrics for clothes, upholstery, carpet and pillows.
2. Used in the sterilization of medical equipment.
3. Used to produce ethylene glycols for engine antifreeze that keeps automobile performing.