CHEMISTRY 102 ASSIGNMENT

NAME: OZIGI AMIRA ONIZE

COLLEGE:MHS

DEPARTMENT: MBBS

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1A .CH3OCH3 --------- Methoxymethane

B. CH3CH2OCH2CH3 \_\_\_\_\_ Ethoxyethane

C. [CH3CH2CH2CH2]2O\_\_\_\_\_\_\_ Butoxymethane

D. CH3CH2OCH3 \_\_\_\_\_\_\_\_\_ Methoxyethane

E.CH3CH2CH2OCH2CH3\_\_\_\_\_\_\_ Ethoxypropane

1. PROPERTIES OF ETHERS.

PHYSICAL STATE; At room temperature ethers are colorless liquids with pleasant smell. The lower aliphatic ethers are highly flammable gases or volatile liquids.

SOLUBILITY; Ethers are less soluble in water than their corresponding alcohols. Lower molecular weight ethers are fairly soluble in water since the molecules are able to form hydrogen bond with water but there is a rapid decline in the in the solubility with increase in hydrocarbon content. They are soluble in most organic compounds.

DENSITY; Most simple ethers are less dense than water although density increases with increasing relative molecular mass. Some aromatic ethers are more dense than water.

BOILING POINT; Low molecular mass ether have a lower boiling point than corresponding alcohols but for ethers containing alkyl radicals larger than four carbon atoms the reverse is the case.

REACTIVITY; Ethers are inert at moderate temperature. Their inertness at moderate temperature leads to their wide use as reaction media.

 3. PREPARATION OF ETHERS

1. Partial dehydration of alcohol: Simple ethers are manufactured from alcohols by catalytic dehydration. The alcohol is excess and concentrated tetraoxosulphate[vi] acid is heated at a carefully maintained temperature of 1400C . This process is known as CONTINUOUS ETHERIFICATION. If excess alcohol is not used, the temperature is as high as 170-1800C, further dehydration to yield alkene occurs.

 2ROH conc H2SO4  R-O-R + H2O

 1400C

2CH3CH2OH conc H2SO4  CH3CH2-O-CH2CH3 + H2O

 1400C

1. Controlled catalytic hydration of olefins.

2CH3CH=CH2 +H2O \_\_\_\_\_ [CH3]2CH-O-CH[CH3]2

4. THREE USES OF ETHYLENE OXIDE

1. Ethylene oxide is used as an intermediate in the hydrolytic manufacture of ethylene glycol.
2. Ethylene oxide is used in the preparation of nonionic emulsifying agents, plastics, plasticizers and several synthetic textile.
3. Ethylene oxide is used as gaseous sterilizing agent.