NAME: GOODHOPE BARIADORA HELEN
DEPT: MBBS
MATRIC NO: 19/MHS01/179

CHM 102 ASSIGNMENT (DEVICE) 16/04/2020

1a. CH_3OCH_3 – methoxymethane
b. $CH_3CH_2OCH_2CH_3$ – ethoxyethane
c. $(CH_3CH_2CH_2CH_2)_2O$ – butoxymethane
d. $CH_3CH_2OCH_3$ – methoxyethane
e. $CH_3CH_2CH_2OCH_2CH_3$ – ethoxypropane

2. Properties of ethers are as follows:

a. Density: Most simple ethers are less dense than water while some of the aromatic ethers are denser than water. But their density increases with increasing relative molecular mass.

b. Reactivity: Ethers become inert at moderate temperature. Due to their inertness, they are widely used as reaction media.

c. Physical states: Ethers are colourless, neutral liquids which possess pleasant odours at room temperature while the low aliphatic ethers are highly flammable gases or volatile liquids.

d. Boiling point: Low molecular mass ethers have a lower boiling point but the ethers containing alkyl radicals larger than four carbon atoms have a higher boiling point.

e. Solubility: Ethers are less soluble in water than their corresponding alcohols but low molecular mass ethers are fairly soluble in water.

3. Ethers can be prepared as follows:

a. Partial dehydration of alcohols: Ethers are manufactured from alcohol through catalytic dehydration. Excess alcohol and conc. H_2SO_4 acid is heated at a constant temperature of 140°C. This process is known as continous etherification. If alcohol is not excess, there would be increase in temperature which will lead to the production of alkene.

$$2ROH \xrightarrow{\text{conc. } H_2SO_4 \,/\, 140^\circ C} R\text{-}O\text{-}R + H_2O$$

$$2CH_3CH_2OH \xrightarrow{\text{conc. } H_2SO_4 \,/\, 140^\circ C} CH_3CH_2\text{-}O\text{-}CH_2CH_3 + H_2O$$

b. Controlled catalytic hydration of olefine

$$2CH_3CH{=}CH_2 + H_2O \longrightarrow (CH_3)_2CH\text{-}O\text{-}CH(CH_3)_2$$

2 – isopropoxypropane

4. Ethylene oxide can be used for the following purposes:

i. As a gaseous sterilizing agent.

ii. As an intermediate in the hydrolytic manufacture of ethylene glycol.

iii. Preparation of nonionic emulsifying agents, plastics, plasticizers & several synthetic textiles.