**CHM102 ASSIGNMENT ON ETHERS**

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PHARMACY

1. Give the IUPAC names of the following organic compounds
2. CH3OCH3- Methoxymethane
3. CH3CH2OCH2CH3- Ethoxyethane
4. (CH3CH2CH2CH2)2O- Butoxymethane
5. CH3CH2OCH3- Methoxyethane
6. CH3CH2CH2OCH2CH3- Ethoxypropane
7. Discuss the properties of ethers
8. Physical states: at room temperature, ethers are colourless, neutral liquids with pleasant odours. The lower aliphatic ethers are highly flammable gases or volatile liquids.
9. Solubility: ethers are less soluble in water than the corresponding alcohols. Lower molecular weight ethers such as methoxymethane and methoxyethane are fairly soluble in water since the molecule are able to form hydrogen bonds with the water molecules but as the hydrocarbon content of the molecules increases, there’s a rapid decline in solubility. There are miscible with most organic solvent.
10. 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 the water.
11. Boiling point: low molecular mass ethers have a lower boiling point than the corresponding alcohols but those ethers containing alkyl radicals larger than four carbon four carbon atoms, the reverse is true. The boiling point of ethers tend to approximate those of hydrocarbons of some relative molecular mass from which it would be concluded that the molecules are not associated in the liquid phase as there are no suitable available hydrogen for association through hydrogen bonds
12. Discuss explicitly two methods of preparing ethers and show equations of reaction.

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 at 140oC. This process is known as continuous etherification. If excess alcohol is not used, the temperature is as high as 170oC-180oC, further dehydration to yield alkene occur

2ROH<------------conc. H2SO4/140oC-----------> R-O-R + H2O

Examples: 2CH3CH2OH <-------conc. H2SO4/ 140oC---------> CH3CH2-O-CH2CH3 +H2O

2. Controlled catalytic hydration of olefins

2CH3CH=CH2+H2O → (CH3)2 CH-O-CH(CH3)2

 2-isopropoxypropane

1. State three uses of ethylene oxide
2. It is used as am intermediate in the hydrolytic manufacture of ethylene glycol.
3. Ethylene oxide is used in the preparation of non-ionic emulsifying agents, plastics, plasticizers and several synthetic textiles.
4. It is used as gaseous sterilizing agent.