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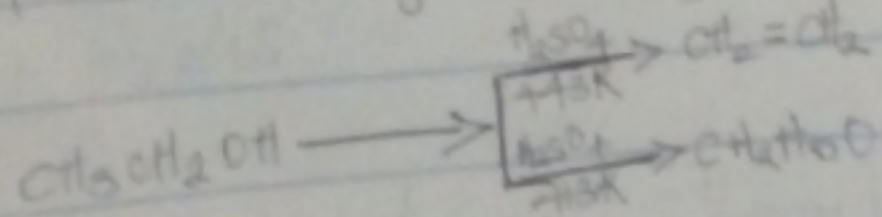
R/mtk/04/202
CHM 102 (THEORY)

Assignment

1) Draw the IUPAC names of the following Organic Compounds
CH_3OCH_3 - Dimethyl Ether
$CH_3CH_2OCH_2CH_3$ - Ethoxyethane
$CCH_3CH_2CH_2CH_2)_2O$ - Butoxymethane
$CH_3CH_2OCH_3$ - Ethoxypropane

2) Discuss the properties of ethers
a) Density: Most of the simple ethers are less dense than water, although the density increases with increasing relative molecular mass.
b) Reactivity: Ethers are inert moderate temperature.
c) Physical state: Ethers are less soluble in water than are the corresponding alcohols
d) Boiling point: - Low molecular mass ethers have a lower boiling point than the corresponding alcohols but those ethers containing alkyl radicals longer than 4 carbon atoms, the reverse is true
e) solubility: Ethers are less soluble in water than are the corresponding alcohols

3) Discuss critically two methods of preparing ethers and show equations of reaction
i) Preparation of Ethers by Dehydration of alcohols - in the presence of pure acids (sulphuric acids), alcohols undergo dehydration to produce ethers and ethers under different conditions. For example, at 413K yields ethers while at 433K yields alkenes. Hence at 413K is an ideal method of preparation through primary alcohols.



ii) Preparation of ethers by Williamson Synthesis: Williamson synthesis is an important method in the preparation of symmetrical and asymmetrical ethers in laboratories. In this method an alkyl halide reacts with sodium alkoxide which leads to the formation of ether. The reaction generally follows the SN^2 mechanism. Primary alcohol. $R-X + R-O^-Na^+ \longrightarrow R-O-R' + NaX$
Sodium alkoxides are strong bases and they can react with alkyl halides having elevated

- Uses of ethylene Oxides.
- Ethylene Oxide is used as a gaseous sterilising agent
- It is used as a fumigant and as pesticides.
- Ethylene Oxide is used as an intermediate in the hydrolytic manufacture of ethylene glycol.