

D Question one

 CH_3OCH_3 - Methoxymethane $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$ - Ethoxyethane $(\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2)_2\text{O}$ - Butoxybutane $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$ - methoxyethane $\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_3$ - Ethoxy propane

Question Two

Properties of Ethers

a) Density: Density increases with increasing relative molecular mass and some of the aromatic ethers are in fact denser than water.

b) Reactivity: Ethers are inert at moderate temperature. Their inertness at moderate temperature leads to their wide use as a reaction medium.

c) Physical states: ethers at room temperature are colourless, neutral liquids with pleasant odours. The lower aliphatic ethers are highly volatile liquids or flammable gases.

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d) Solubility: There is a rapid decline in solubility as the hydrocarbon content of the molecule increase but hydrocarbon with lower ^{molecular} weight such as methoxyethane and methoxymethane are fairly soluble in water.

e) Boiling point: Ethers with low molecular mass have lower boiling point than corresponding alcohol but those ether containing alkyl radicals larger than four carbon atoms, the reverse is the case. The boiling point of ethers tend to approximate those of hydrocarbons of same relative molecular mass from which it can be concluded that molecules are not associated in the liquid phase as there are no suitably available hydrogen for association through hydrogen bond.

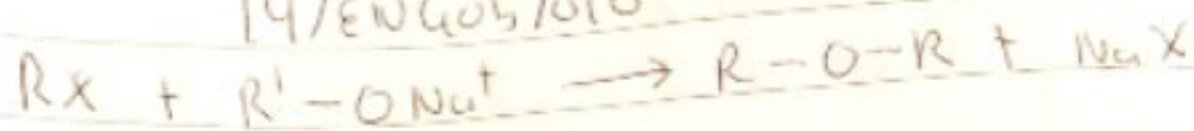
Question Three.

Methods of preparing ethers

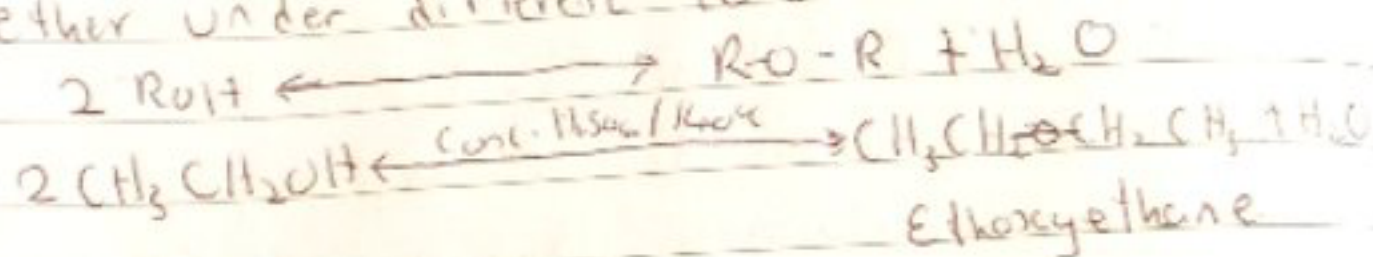
a) Preparations by ~~Mc~~Williamson Synthesis

In this method, an ~~active~~ alkyl halide is reacted with sodium alkoxide which leads to the formation of ether. The reaction generally follows the $SN2$ mechanism for primary alcohol.

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- b) Dehydration of Alcohols
In the presence of ^{Sulphuric} ~~proteic~~ acids, alcohols undergo dehydration to produce alkenes and ether under different conditions.



Question four

uses of ethylene oxide

- a) Ethylene oxide is used as an intermediate in the hydrolytic manufacture of ethylene glycol
- b) It is used as a gaseous sterilizing agent
- c) It is used as a fumigant in certain agricultural products