

Name: Adagbala Ayobami Abiyi

Matric number: 191M116111007

Course Code: Chem 102

Assignment

Ethers.

1) Give the IUPAC names of the following organic compounds

- CH_3OCH_3 - Methoxymethane (Dimethyl ether)
- $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$ - Ethoxyethane (Diethyl ether)
- $(\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2)_2\text{O}$ - Dibutoxymethane
- $\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_3$ - Ethoxypropane (Ethyl propyl ether)

2. Discuss the properties of ethers.

- i) Physical States: At room temperature, ethers are colourless, neutral liquids with pleasant odours. The low aliphatic ethers are highly flammable.
- ii) Solubility: Ethers are less soluble in water. Lower molecular weight like methoxymethane and methoxyethane are fairly soluble in water because of ability to form hydrogen bonds.
- iii) Density: 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 water.
- iv) Boiling point: Lower molecular mass ethers have low boiling points but reverse is true for those containing alkyl radicals.
- v) Reactivity: Ethers are inert at moderate temperature their inertness leads to their wide use as reaction media.

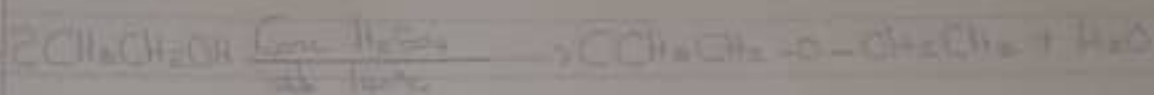
3. Discuss explicitly two methods of preparing ethers and show equations of reaction.

• Partial Dehydration of alcohol

Simple ethers are manufactured from alcohols by catalytic dehydration. The alcohol in excess and dehydrated H_2SO_4 is heated at a carefully maintained temperature of 140°C . This process is known as continuous esterification. If excess alcohol is not used, the temperature is as high as 70°C to 180°C , further dehydration yields Alkene.



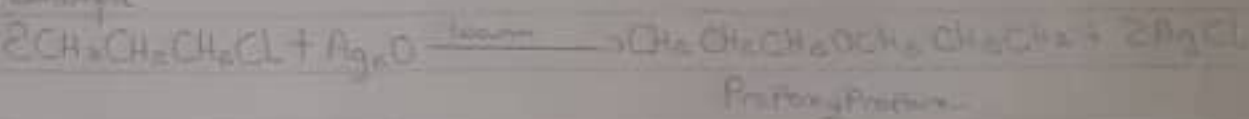
Example:



It forms hydrohalides and dry ether (O) oxide.



Example:



This involves heating hydrohalides with dry ether oxide.

- A) State three uses of ethylene oxide.
- a) Ethylene oxide is used as a gaseous sterilizing agent.
- b) Ethylene oxide is used as an intermediate in the hydrolytic manufacture of ethylene glycol.
- c) Ethylene oxide is used in the preparation of various emulsifying agents, plasticisers, etc. and several synthetic textiles.