

AHARA

CHUKWUEMEKA

19 / MHSO1 / 061

MBBS

CHM 102 ASSIGNMENT

Answers

- 1) a) CH_3OCH_3 - Methoxymethane
- b) $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$ - Ethoxyethane
- c) $(\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2)_2\text{O}$ - Butoxybutane
- d) $\text{CH}_3\text{CH}_2\text{OCH}_3$ - Methoxyethane
- e) $\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_3$ - Ethoxypropane

2) Properties of Ethers:

a) Physical Properties:

An ether molecule has a net dipole moment due to the polarity of C-O bonds.

The boiling point of ethers is comparable to the alkanes but much lower than that of alcohols of comparable molecular mass despite the polarity of the C-O bond.

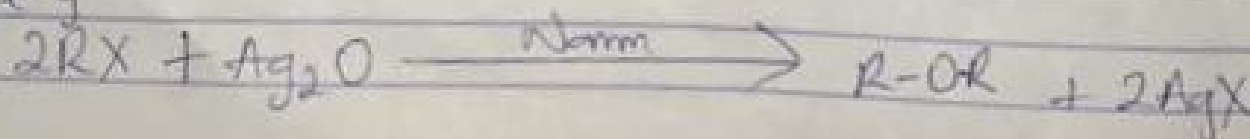
The miscibility of ethers with water resembles those of alcohols. Ether molecules are miscible in water. This is attributed to the fact that like alcohol the oxygen atom of ether can also form hydrogen bonds with a water molecule.

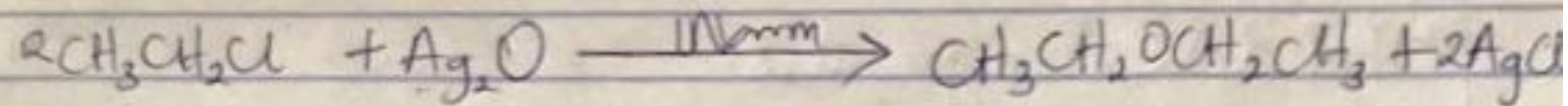
b) Chemical Properties:

Doesn't react with bases, active metals, oxidizing agents and reducing agents; strong acids will cleave ethers at elevated temperatures. When stored in presence of oxygen, ethers will form explosive peroxides such as diethyl ether peroxide.

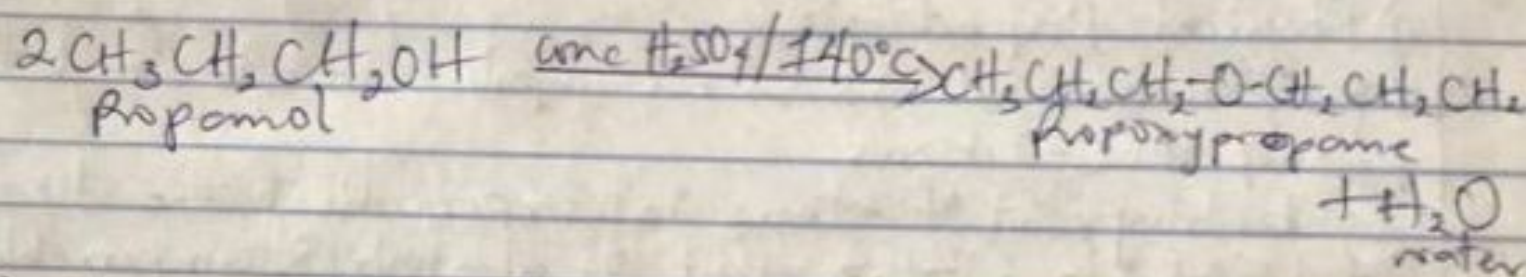
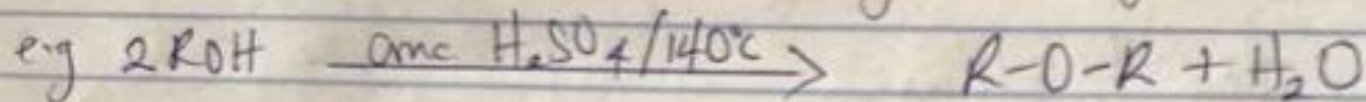
- 3) a) Ethers are prepared from the reaction of haloalkanes and dry silver (I) oxide which are called the products are usually an ether and a silver halide.

e.g.





b) Ether can be prepared by the catalytic dehydration of alcohols; a process called continuous etherification is carried out where the alcohol is excess and conc. H_2SO_4 is heated constantly maintained temperature of 140° but if excess alcohol isn't used the temperature is higher as $170^\circ - 180^\circ\text{C}$, further dehydration yields alkene.



4) a) it is used as a fumigant in certain agricultural products and as a sterilant for medical equipment and supplies.

b) it is used as an intermediate in the production of several industrial chemicals such as ethylene glycol.

c) It is used in the preparation of nonionic emulsifying agents, plastics, plasticizers and several synthetic textiles.