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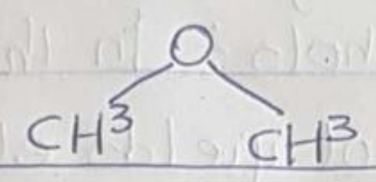
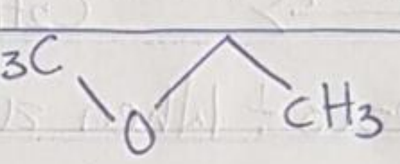
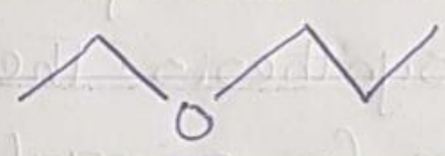
MAT.NO. 19/MHS02/035

COURSE CHM 102

1.) Give the IUPAC names of the following Organic Compound

Organic Compound	structure	IUPAC names
i) CH_3OCH_3		Dimethyl ether
ii) $CH_3CH_2OCH_2CH_3$		Diethyl ether
iii) $(CH_3CH_2CH_2CH_2)_2O$		Butoxymethane
iv) $CH_3CH_2OCH_3$		ethyl methyl ether
v) $CH_3CH_2CH_2OCH_2CH_3$		Ethyl propyl ether

2.) Discuss the properties of ethers

~~Properties of ethers~~. Physical properties of ethers.

=> An ether molecule has a net dipole moment.

=> The boiling point of ethers is comparable to the alkanes.

=> The miscibility of ethers with resembles those of alcohols.

=> Ether molecules are miscible in water.

Chemical properties of ethers

=> Cleavages of C-O bond :- Ethers are generally very unattractive in nature.

=> Electrophilic substitution :- The alkoxyl group in ether activates the aromatic ring at Ortho & para positions of electrophilic substitution.

=> Halogeration reaction of ethers :- Aromatic ethers Undergo halogeration, for example, bromination, when we add a halogen in the presence or absence of a catalyst.

=> Friedel craft's reaction of ethers :- Aromatic ethers Undergo Friedel craft's reaction.

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

Methods of preparing ethers

=> Dehydration of alcohols :- In the presence of sulphuric acid, dehydration of ethanol yields ethoxyethane at 413K. This is an ideal method of preparation through primary alcohols. Preparation of ethers by dehydration of an alcohol is a nucleophilic substitution reaction.

$$2\,C_2h_5OH \xrightarrow{H_2SO_4,\ 413K} C_2H_5OC_2H_5$$

=> Williamson's synthesis :- When an alkyl halide reacts with sodium alkoxide, ether is formed. This reaction is known as Williamson's synthesis. The reaction generally follows the S_N2 mechanism for primary alcohols.

$$R-x + R'-\ddot{\underset{\cdot\cdot}{O}}^{-}\ Na^+ \longrightarrow R-\ddot{\underset{\cdot\cdot}{O}}-R' + NaX$$

4) State three uses of ethylene oxide

Uses of ethylene oxide.

=> Ethylene oxide is used to make antifreeze

=> It can be used sterilization agents for medical equipment.

=> It can be used to make adhesives.