

12. Ethers

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Introduction

- Which of the following is a simple ether?
a. $\text{CH}_3\text{OC}_2\text{H}_5$ b. $\text{CH}_3\text{OC}_6\text{H}_5$ c. CH_3OCH_3 d. $\text{C}_2\text{H}_5\text{OC}_2\text{H}_5$
- Diethyl ether is
a. mixed ether c. simple ether b. unsymmetrical ether d. phenetole ether
- The IUPAC name of anisole is
a. Methoxy benzene c. Ethoxy benzene b. Methoxy ethane d. Phenyl ether
- An example of a compound with the functional group (-O-) is
a. Diethyl ether c. Acetaldehyde b. Acetone d. Acetic acid
- The number of isomeric ethers represented by the molecular formula $\text{C}_4\text{H}_{10}\text{O}$ is
a. 1 b. 2 c. 3 d. 4
- The compounds $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$ and $\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_3$ are:
a) Tautomers b) Metamers c) Position isomers d) Functional group isomers

Preparations

- From Halolalkanes (Williamson's etherification process)** (studied in properties of Haloalkanes already)
 - Preparation of Methoxybenzene (Anisole) by Williamson's synthesis**
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- Williamson's synthesis is used to prepare
a. Symmetrical ethers b. Unsymmetrical ethers c. Both of the above d. Aromatic ethers only
 - Which of the following ethers is prepared by Williamson's synthesis method?
a. Diethyl ether only c. Symmetrical ether only
b. Unsymmetrical ether only d. Symmetrical and unsymmetrical ether
 - When Sodium phenoxide reacts with methyl bromide, it gives
a. Cresol b. Toluene c. benzene d. Anisole

Physical Properties

- Ethanol and dimethyl ether form a pair of functional isomers. The boiling point of ethanol is higher than that of dimethyl ether, due to the presence of
b. H- bonding in ethanol c. H- bonding in dimethyl ether
c. CH_3 group in ethanol d. CH_3 group in dimethyl ether
- The ether that is liquid at room temperature is
a. CH_3OCH_3 b. $\text{CH}_3\text{CH}_2\text{OCH}_3$ c. $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$ d. None

Chemical Properties

[A] Reaction due to ethereal oxygen

- Action with cold conc. HCl and H_2SO_4 (formation of oxonium salt)**

- Ethers are
a. Acidic b. basic c. neutral d. alkaline
- Action with Conc. H_2SO_4**

[B] Reaction involving cleavage of C-O bond

3. Action with HI

13. Diethyl ether on heating with an excess of concentrated HI gives 2 moles of
a. Ethanol c. Iodoform b. Ethyl iodide d. Methyl iodide

[C] Reactions involving alkyl group

3. Action with Air

14. Sometimes an explosion occurs while distilling ethers. It is due to the presence of
b. Oxides c. Ketones b. Aldehydes d. Peroxides
15. The explosive formed when ether is exposed to air for some time is
a. TNT b. superoxide c. oxide d. peroxide
16. Ethers can be freed from peroxide by shaking with
a. Ferrous salt solution c. Ferric salt solution
b. Copper sulphate solution d. Sodium sulphate solution

4. Action with Cl₂

17. When diethyl ether is treated with excess chlorine in the presence of sunlight, the product formed is
a. $\text{CH}_3\text{CHCl-O-CH}_2\text{CH}_3$ c. $\text{CH}_3\text{CHCl-O-CHClCH}_3$
b. $\text{CCl}_3\text{CCl}_2\text{-O-CCl}_2\text{CCl}_3$ d. $\text{CH}_3\text{CCl}_2\text{-O-CCl}_2\text{CH}_3$
18. The ether that undergoes electrophilic substitution is
a. $\text{CH}_3\text{OC}_2\text{H}_5$ b. $\text{CH}_3\text{OC}_6\text{H}_5$ c. CH_3OCH_3 d. $\text{C}_2\text{H}_5\text{OC}_2\text{H}_5$
19. Which of the following does not react with sodium metal?
a. Ethanol c. Phenol c. Phenyl methanol d. Anisole

Uses of Ethoxyethane

20. Ethers can be used as
a. General anesthetic b. Refrigerant c. Perfumery d. All of the above
21. Diethyl ether finds use in medicine as
a. Pain killer b. Hypnotic c. Antiseptic d. anaesthetic

Uses of Anisole

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