

Class: XIIth Date:

**Solutions** 

**Subject : CHEMISTRY** 

**DPP No.: 7** 

## **Topic:- Alcohols, Phenols & Ethers**

1 **(c)** 

Presence of two isopropyl groups on oxygen atom of ether shows more powerful inductive effect.

3 **(d)** 

Alcohol is initially protonated by the acid to form protonated alcohol or oxonium ion. It is then attacked by a second molecule of alcohol which acts as nucleophile

$$R - \overset{\bullet}{\overset{\bullet}{\overset{\bullet}{\bigcirc}}} - H + H^{+} \Longrightarrow R - \overset{\overset{\bullet}{\overset{\bullet}{\overset{\bullet}{\bigcirc}}} - H}{\overset{H}{\overset{H}{\overset{\bullet}{\bigcirc}}}}$$

$$(protonated alcohol)$$

$$R - \overset{\bullet}{\overset{\bullet}{\overset{\bullet}{\bigcirc}}} - H$$

$$(slow) \xrightarrow{carbocation} \frac{R - \overset{\bullet}{\overset{\bullet}{\overset{\bullet}{\bigcirc}}} - H}{\overset{\bullet}{\overset{\bullet}{\overset{\bullet}{\bigcirc}}}}$$

$$(fast)$$

$$R - \overset{\bullet}{\overset{\bullet}{\overset{\bullet}{\overset{\bullet}{\bigcirc}}}} - R \xrightarrow{-\overset{\bullet}{\overset{\bullet}{\overset{\bullet}{\bigcirc}}}} - R - O - R$$

$$ether$$

4 **(b)** 

$$2C_2H_5I + \underset{Ether}{Ag_2O} \longrightarrow C_2H_5OC_2H_5$$

5 **(a)** 

Electron withdrawing groups (like  $-NO_2$ ) increase the acidity of phenols by stabilising corresponding phenoxide ion. The effect of  $-NO_2$  group will be minimum at m-position due to lack of increased delocalisation of electrons in it. Hence, m-nitrophenol is the weakest acid among these.

6 **(a)** 

Fusel oil is a mixture of pentanol and butanol with other organic substances.

7 **(d)** 

Benzene sulphonic acid and *p*-nitro phenol react with NaHCO<sub>3</sub> and evolve CO<sub>2</sub> gas.

$$SO_3H$$
 $SO_3Na$ 
 $+ NaHCO_3$ 
 $+ H_2O + CO_2$ 
 $ONa$ 
 $+ H_2O + CO_2$ 
 $+ NaHCO_3$ 
 $+ H_2O + CO_2$ 
 $+ H_2O + CO_2$ 

Because benzene sulphonic acid p-nitrophenol are stronger acids, so they are capable to evolve  $CO_2$  with NaHCO<sub>3</sub>.

$$HCO_3^- + H^+ \rightarrow H_2O + CO_2 \uparrow$$
 acid

8 **(d)** 

Secondary alcohols give blue colour in Victor Meyer test

- 9 **(a)**Conc. HCl+ anhydrous ZnCl<sub>2</sub> is called as Lucas reagent. It is used to distinguish primary, secondary and tertiary alcohol.
- 10 **(a)**

 $CH_3CHO \xrightarrow{Reduction} CH_3CH_2OH$ 

11 (c)

 $CH_3CHOHCH_3 \xrightarrow{K_2Cr_2O_7} CH_3COCH_3 \xrightarrow{\text{oxidation}} CH_3COOH$ 2-propanol acetone acetic acid

13 **(d)** 

Phenol reacts with  $PCl_5$  to form chlorobenzene. Halogenation of phenol does not take place with HX

14 **(d)** 

Alcohol has polar H which makes intermolecular H-bonding possible. Ether is non-polar hence no H-bonding. Lack of H-bonding in ether makes it more volatile than alcohol.

16 **(c**)

In the given sequence of reaction, the alcohol is tertiary.

$$\begin{array}{cccc} \text{CH}_3 & \text{CH}_3 & \text{CH}_3 \\ \text{CH}_3 - \text{C-OH} & \xrightarrow{P+I_2} \text{CH}_3 - \text{C-I} & \xrightarrow{AgNO_2} \\ \text{CH}_3 & \text{CH}_3 & \text{CH}_3 \end{array}$$

No reaction 
$$\stackrel{\text{HNO}_2}{\leftarrow}$$
 CH<sub>3</sub>  $\stackrel{\text{CH}_3}{\leftarrow}$  CH<sub>3</sub>  $\stackrel{\text{CH}_3}{\leftarrow}$  CH<sub>3</sub>

- 17 **(c)** It is better to call nitroglycerine as glycerol trinitrate an inorganic ester of  $HNO_3$  and glycerol.
- 18 **(d)** Br is replaced by OH gp.
- 20 **(c)** Glycerol is dehydrated on heating with KHSO<sub>4</sub>.

$$\begin{array}{c|c} CH_2OH & CH_2 \\ \hline \\ CHOH & \Delta & CH_2 \\ \hline \\ CH_2OH & CHO \\ \\ Glycerol & acraldehyde or acrolein \\ \end{array}$$



ANSWER-KEY										
Q.	1	2	3	4	5	6	7	8	9	10
A.	С	D	D	В	A	A	D	D	A	A
Q.	11	12	13	14	15	16	17	18	19	20
A.	С	A	D	D	В	С	С	D	A	C

