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Chapter End Test

(2019-20)

Date : ___/__/2019 Duration : ___ min. Max. Marks : ___	**Chemistry** **Topic : Alcohol Phenols and Ethers**	**CLASS** **XII**

General Instructions:

- All questions are compulsory.
- Do not write anything in the question paper.
- Use of calculators is not allowed.

1. IUPAC name of the compound $CH_3—\underset{\displaystyle CH_3}{\underset{|}{CH}}—OCH_3$ is

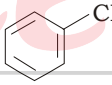
(a) 1-methoxy-1-methylethane (b) 2-methoxy-2-methylethane

(c) 2-methoxypropane (d) isopropylmethyl ether

2. 

On hydroboration-oxidation produces

(a) 

(b) 

(c) 

(d) None of these

3. Monochlorination of toluene in sunlight followed by hydrolysis with aq. NaOH yields.

(a) *o*-Cresol (b) *m*-Cresol

(c) 2, 4-Dihydroxytoluene (d) Benzyl alcohol

4. The product of acid-catalysed hydration of 2-phenylpropene is

(a) 3-phenyl-2-propanol (b) 1-phenyl-2-propanol

(c) 2-phenyl-2-propanol (d) 2-phenyl-1-propanol

5. The process of converting alkyl halides into alcohols involves_____.

(a) addition reaction (b) substitution reaction

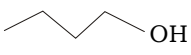
(c) dehydrohalogenation reaction (d) dehalogenation reaction

6. Which of the following will exhibit highest boiling point?

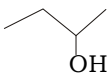
(a) $CH_3CH_2OCH_2CH_3$ (b) $CH_3CH_2CH_2CH_2CH_2OH$

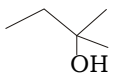
(c) $CH_3CH_2C(CH_3)_2OH$ (d) $CH_3C(CH_3)_2CH_2OH$

7. Which of the following has maximum pK_a value?

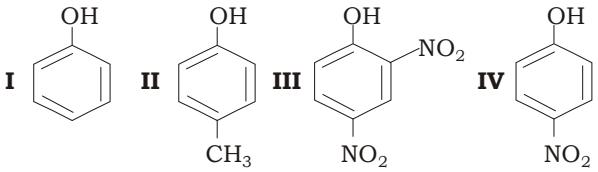
(a) 

(b) 

(c) 

(d) 

8. Strength of acidity is in order



(a) II > I > III > IV (b) III > IV > I > II

(c) I > IV > III > II (d) IV > III > I > II

9. During dehydration of alcohols to alkenes by heating with conc. H_2SO_4, the initial step is

(a) formation of an ester (b) protonation of alcohol molecule

(c) formation of carbocation (d) elimination of water

10. The most suitable reagent for the conversion of primary alcohol into aldehyde with the same number of carbon atoms is

(a) acidified $K_2Cr_2O_7$ (b) alkaline $KMnO_4$

(c) pyridinium chlorochromate (d) CrO_3

11. The ionization constant of phenol is higher than that of ethanol because

(a) Phenoxide ion is a stronger base than ethoxide ion

(b) Phenoxide ion is stabilized through delocalization

(c) Phenoxide ion is less stable than ethoxide ion

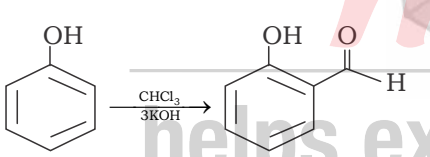
(d) Phenoxide ion is bulkier than ethoxide ion

12. In the reaction given below, X is $C_6H_5MgBr + CH_3OH \rightarrow X$

(a) C_6H_6 (b) C_6H_5OH

(c) $C_6H_5OCH_3$ (d) CH_3COOH

13. What is name of following reaction?



(a) Reimer-Tiemann Reaction (b) Perkin Reaction

(c) Aldol Reaction (d) Cannizzaro Reaction

14. An ether is more volatile than alcohol having the same molecular formula. This is due to

(a) intermolecular hydrogen bonding in alcohols

(b) dipolar character of ethers

(c) alcohols having resonance structures

(d) intermolecular hydrogen bonding in ethers

15. Formation of diethyl ether from ethanol is based on a

(a) dehydration reaction (b) dehydrogenation reaction

(c) hydrogenation reaction (d) heterolytic fission reaction

16. Write the mechanism of hydration of ethene to form ethanol. **[2]**

17. An aromatic compound (A) having molecular formula C_6H_6O, on treatment with $CHCl_3$ and KOH gives a mixture of two isomers B and C. Both B and C given same product D when distilled with zinc dust. Oxidation of D gives E of formula $C_7H_6O_2$. The sodium salt of E on heating with soda-lime gives F which may also be obtained by distillating A with zinc dust. Identify compounds A to F. **[3]**

OR

Give chemical tests to distinguish between (i) Phenol and benzyl alcohol (ii) Butan-2-ol and 2-methylpropan-2-ol. Give the equations also. **[3]**

18. (a) How are the following conversions carried out? **[1+1]**

(i) Ethylmagnesium chloride → Propan-1-ol

(ii) Methylmagnesium bromide → 2-Methylpropan-2-ol

(b) Explain the following observations: **[3]**

(i) The boiling point of ethanol is higher than that of methoxymethane

(ii) Phenol is more acidic than ethanol.

(iii) o- and p- nitrophenols are more acidic than phenol

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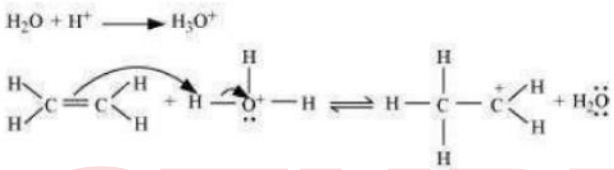
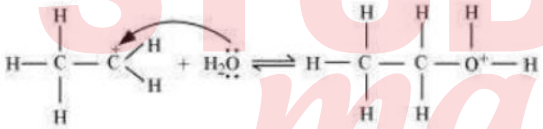
1.	(c)	**2.**	(b)	**3.**	(d)	**4.**	(c)	**5.**	(b)
6.	(b)	**7.**	(d)	**8.**	(b)	**9.**	(b)	**10.**	(c)
11.	(b)	**12.**	(a)	**13.**	(a)	**14.**	(a)	**15.**	(a)

16.



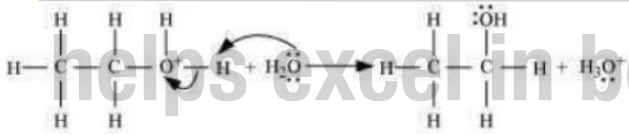
Step 2:

Nucleophilic attack of water on carbocation:

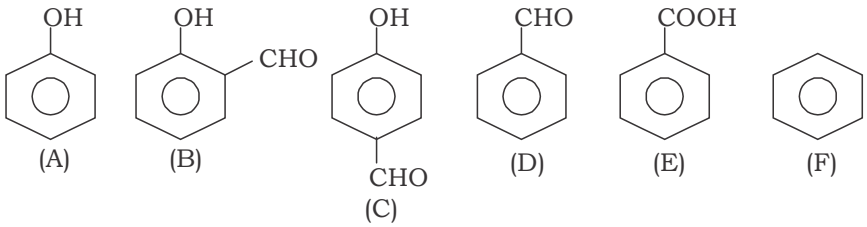


Step 3:

Deprotonation to form ethanol:



17.



OR

(i) Phenol (C_6H_5OH) and benzyl alcohol ($C_6H_5CH_2OH$)

These may be distinguished by the following tests: (any one)

(a) **Litmus test :** Phenol being acidic turns blue litmus red while cyclohexanol being neutral does not give this test.

(b) **$FeCl_3$ test :** Phenol gives a violet colouration with $FeCl_3$ solution but cyclohexanol does not.

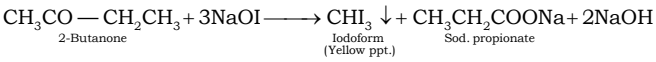
(c) **Br_2-water test :** Phenol decolourises bromine water giving a white ppt. of 2, 4, 6-tribromophenol while cyclohexanol does not give this test.

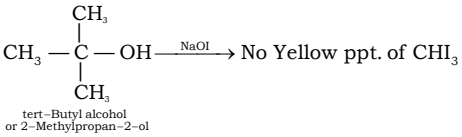
(ii) Butan-2-ol and 2-methylpropan-2-ol

These can be easily distinguished by the following tests:

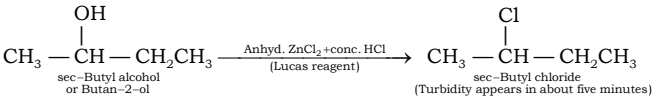
(a) **Iodoform test :**

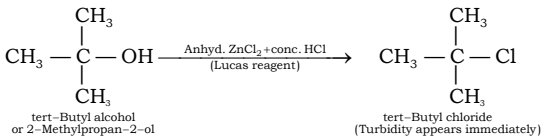
$$\underset{\text{Butan-2-ol}}{CH_3CHOH-CH_2CH_3} + NaOI \longrightarrow \underset{\text{2-Butanone}}{CH_3CO-CH_2CH_3} + NaI + H_2O$$



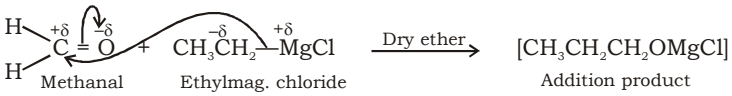


(b) **Lucas test :** Tertiary butyl alcohol or 2-methylpropan-2-ol on treatment with Lucas reagent (anhyd. $ZnCl_2$ + conc. HCl) immediately produces turbidity but secondary butyl alcohol or butan-2-ol produces turbidity in about five minutes.

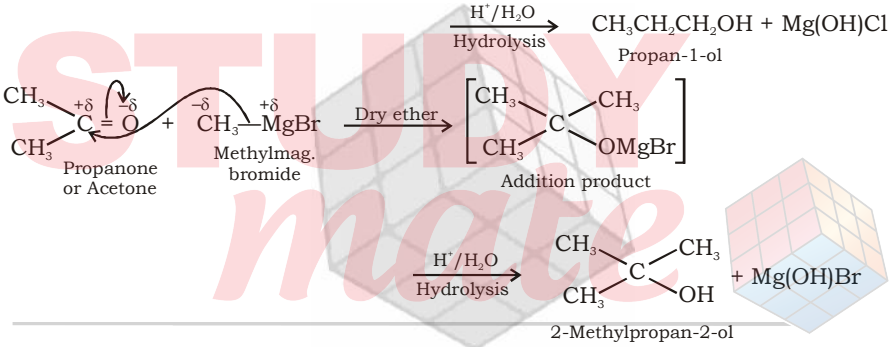




18. (a) (i)



(ii)



(b) (i) Due to hydrogen bonding in ethanol

(ii) Due to greater stablisation of phenoxide ion phenol is more acidic than ethanol

(iii) . . . . . $_2$ group, electron density in the O-H bond decreases.

Hence, bond become weaker.

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