QB365

Important Questions - Alcohols , Phenols and Ethers

12th Standard CBSE

Chemistry Reg.No. : | | | | | | |

Time : 01:00:00 Hrs

Total Marks : 50

Section - A

1) Products obtained when HI reacts with isopropyl methyl ether at 373 K are **1**

(a) isopropyl iodide and methyl alcihol (b) isopropyl alcohol and methyl iodide

(c) isopropyl iodide and water (d) methyl iodide and water

2) Which among the following compounds will give a secondary alcohol on reacting with Grignard reagent followed by acid hydrolysis? I.HCHO II.C_2H_5CHO III.CH_3COCH_3 IV.$RCOOC_2H_5$ Select the correct answer using the code given below: **1**

(a) Only II (b) Only III (c) II and IV (d) III and IV

3) An unknown alcohol is treated with the "Lucas reagent" to determine whether the alcohol is primary,secondary or tertiary.Which alcohol reacts fastest and what mechanism? **1**

(a) tertiary alcohol by S_N2 (b) secondary alcohol by S_N1 (c) tertiary alcohol by S_N1

(d) secondary alcohol by S_N2

4) Which of the following will not be soluble in sodium bicarbonate? **1**

(a) 2, 4, 6-Trinitrophenol (b) Benzoic acid (c) o-Nitrophenol (d) Benzenesulphonic acid

5) Among the following sets of reactants which one produces anisole? **1**

(a) $CH_3CHO;RMgX$ (b) $C_6H_5OH;CH_3I$ (c) C_6H_5OH;neutral $FeCl_3$ (d) $C_6H_5CH_3;CH_3COCl;AlCl_3$

6) Solvent used in perfumes	(1) Ethanol	**1**
7) Wood spirit	(2) Methanol	**1**
8) Kolbe's reaction	(3) Conversion of phenol to o-hydroxybenzoic acid	**1**
9) Reimer-Tiemann reaction	(4) Conversion of phenol to salicyaldehyde	**1**
10) Fermentation	(5) Ethyl alcohol	**1**

Section - B

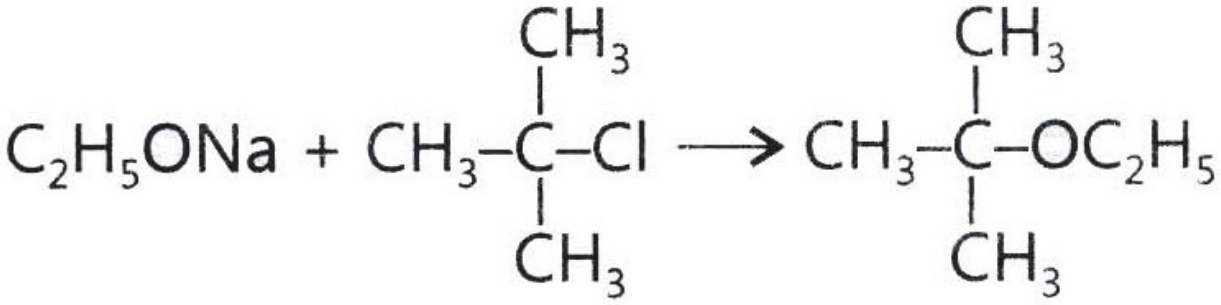
11) Etherial solution of an organic compound 'A' when heated with magnesium gave 'B'. 'B' on treatment with ethanal followed by acid hydrolysis gave 2-propanol. Identify the compound 'A'. What is 'B' known as? **2**

12) Give equations of the following reactions: (i) Oxidation of propan-1-ol with alkaline $KMnO_4$ solution. (ii) Bromine in CS_2 with phenol. (iii) Dilute HNO_3 with phenol. (iv) Treating phenol with chloroform in presence of aqueous NaOH. **2**

13) Illustrate with examples the limitations of Williamson's synthesis for the preparation of certain types of ethers. **2**

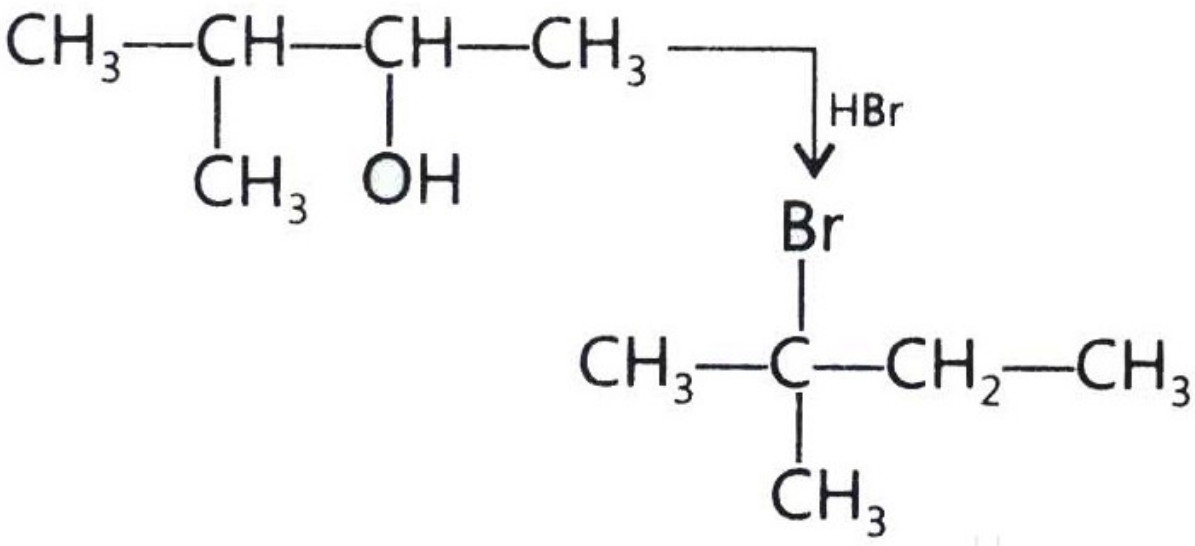
14) Arrange the following sets of compounds in order of their increasing boiling points, (a) Pentan-1-ol, butan-1-ol, butan-2-ol, ethanol, propan-1-ol, methanol (b) Pentan-1-ol, n-butane, pentanal, ethoxyethane. **2**

15) The following is not an appropriate reaction for the preparation of t-butyl ethyl ether. **2**



(i) What would be the major product of this reaction? (ii) Write a suitable reaction for the preparation of i-butyl ethyl ether.

16) When 3-methylbutan-2-ol is treated with HBr following reaction takes place; **2**



Give a mechanism for this reaction. (HInt: The secondary carbocation formed in step II rearranges to a more stable tertiary carbocation by a hydride ion shift from 3rd carbon atom.)

17) Give two reactions that show the acidic nature of phenol. Compare its acidity with that of ethanol. **2**

18) Write the mechanism of the following reaction: **2**

$CH_3CH_2OH \xrightarrow{HBr} CH_3CH_2Br + H_2O$

19) Account for the following: (i) Propanol has higher boiling point than butane. (ii) Ortho-nitrophenol is more acidic than ortho-methoxyphenol. (iii) Preparation of ethers by acid dehydration of secondary or tertiary alcohols is not a suitable method. **2**

20) Give two reactions that show the acidic nature of phenol. Compare acidity of phenol with that of ethanol. **2**

Section - C

21) Explain why alcohols do not react with NaBr but H_2SO_4 is added they form alkyl bromides. **5**

22) Miss Usha was asked to synthesize alcohol by acidic hydration of 'l-butene. She was unaware of the fact that the vessel she used had some coating of a metal, and in addition to alcohol, compound X was I isolated X forms bisulphate compound as well as 2, 4-dinitrophenylhydrazone. Separation of alcohol could be made by physical as well as by chemical methods. **5**

(i) How are alcohol and Xformed?

(ii) Can alcohol and Xgive iodoform test?

(iii) Give different methods of separation?

(iv) What value did Miss. Usha lack?

23) A compound A ($C_4H_{10}O$) is found to be soluble in concentrated sulphuric acid.(A) does not react with sodium metal or potassium permanganate.When (A) is heated with excess of HI,it gives a single alkyl halide.Deduce the structure of compound (A) and explain all the reactions involved. **5**

24) An organic compound (A) on treatment with $CHCl_3$ and KOH gives two compounds B and C.Both B and C give the same product (D) when distilled with zinc dust.Oxidation of D gives E having molecular formula $C_7H_6O_2$.The sodium salt of E on heating with soda-lime gives F which may also be obtained by distilling A with zinc dust.Identify A to F **5**

****