KJB SCIENCE SCHOOL

A PREMIER INSTITUTE OF EDUCATION

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Q.1 A hydroxide ion is a weaker base than an alkoxide ion. Justify.[1]

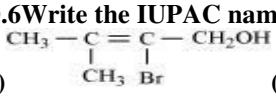
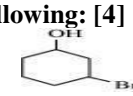
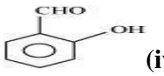
Q.2 Write the structure of the compound 4-tert.Butyl-3-iodoheptane.[1]

Q.3 What happens when bromine attacks $CH_2 = CH\text{-}CH_2\text{-}C \equiv CH$.[1]

Q.4 Which halogen compound undergoes faster SN^1 reaction?$CH_2 = CH - Cl$& $CH_2 = CH - CH_2Cl$. Give reason [1]

Q.5 (i)Expand DDT. Write its structure.(ii)Why is it that haloalkanes are more reactive thanhaloarene towards nucleophiles.

Q.6Write the IUPAC name of the following: [4]

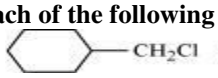
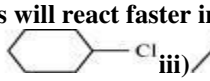
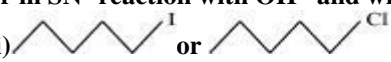
(i)  **(ii)**  **(iii)**  **(iv)$CH_3COCH_2COCH_3$**

Q.7Give the major products that are formed by heating each of following ethers withHI

i. $CH_3CH_2CH(CH_3)CH_2\text{-}O\text{-}CH_2CH_3$ii. $CH_3CH_2CH_2\text{-}O\text{-}C(CH_3)_2CH_2CH_3$.[2]

Q.8 What are chiral objects? Indicate the presence of centre of chirality, if any, in the molecules of 3-bromopent-1-ene.[2]

Q.9Which compound in each of the following pairs will react faster in SN^2 reaction with OH^- and why?[3]

(i) $(CH_3)_3CCl$ or CH_3Cl ii)  **Or**  **iii)** 

Q.10Which alcohol with formula $C_4H_{10}O$ cannot be prepared by hydrogenation ofaldehyde or ketone. Can you obtain this alcohol from corresponding alkyl halide. Ifpossible write the equation.[2]

Q.11(a) Which will have a higher b.p. 1-chloropentane or 2-chloro-2-methyl butane

(b)Give reason:-p- nitrochlorobenzene undergoes nucleophilic substitution faster than chlorobenzene.[2]

Q.12Explain the following behavior:-(a) Alcohols are more soluble in water than the hydrocarbon of comparable masses

(b)Ortho – nitro phenol is more acidic than ortho – methoxy phenol. [2]

Q.13Describe the mechanism of formation of diethyl ether from ethanol in the presence of concentrated sulphuricacid. [2]

Q.14Give suitable reasons for the following :(i) Alkyl halides give cyanides with KCN but isocyanide with AgCN.

(ii) The dipole moment of chlorobenzene is lower than that ofcyclohexyl chloride.

(iii)Allyl chloride is more reactive than n - propyl chloride towards nucleophilic substitution reaction. Explain why?[3]

Q.15(I) Distinguish b/w:-a) Phenol &ethanol. b) Propanol &2-propanol.c) C_2H_5Br & C_2H_5Cl d) Phenol &chlorobenzene

(II)Why are phenols more acidic than alcohols? [5]

Q.16How will you convert :i) Phenol to ethoxybenzene(ii) butan-2-one to but-2-ene(iii) 1-propoxypropane to propanol.[3]

Q.17Answer the following :(i) Haloalkanes easily dissolve in organic solvents, why?

(ii) What is known as a racemic mixture? Give an example.

(iii)Of the two bromoderivatives,$C_6H_5CH(CH_3)Br$ and $C_6H_5CH(C_6H_5)Br$,which one is more reactive in SN^1 substitution reaction and why?[3]

A B H_3O^+,Δ

Q.18Identify A,B& C in the following sequence :- $C_6H_5CH_2OH$ ----------> $C_6H_5CH_2Br$ ----------> $C_6H_5CH_2CN$----------->C [2]

Q.19 Convert the following :-(i) Chloroethane to butane(ii)1-Bromopropane to 2-Bromopropane(iii)Methyl bromide to methyl iodide.(iv)MethylMag.bromide to 2-Methyl propan-2-ol (v)Phenol to 2, 4, 6-tribromophenol.[5]

Q.20Compound A reacts with HBr to form an alkyl bromide which reacts with Mg in ether & produces B. B istreated with methanal followed by hydrolysis to give C 2-Methyl butanol. A on ozonolysis followed by Zn/H_2O gives methanal& propanal .Identify A& B & write the reactions involved.[3]

Q.21Write equations of the following reactions:- (i) Friedel-Crafts reaction−alkylation of anisole. (ii) Nitration of anisole.

(iii) Bromination of anisole in ethanoic acid medium.[3]

Q.22 Complete the following reactions:i)$CH_3CH_2CH_2OCH_3 + HBr$-->(ii)$C_6H_5OC_2H_5 + HBr$-->(iii)$(CH_3)_3COC_2H_5 + HI$ -->

Q.23How will you distinguish between the following pairs of compounds:

(i) Chloroform and carbon tetra chloride.(ii) Benzyl alcohol and chlorobenzene.(iii) Ethanol & methanol [3]

Q.24Write chemical reaction equations to illustrate the following reactions
(i) Williamson synthesis of ethers(ii) Kolbe schimdtreaction (iii)Swarts reaction (iv)Dow's process [4]
Q.25Write the names of reagents and equations in the conversion of (i) Propane-2-ol to acetone (ii)
(ii) phenol to salicylaldehyde(iii) anisole to *p*-methoxyacetophenone(iv) Propene to propan-1-ol (v) Anisole to phenol.[5]
Q.26Explain the mechanism of the following reactions: .(i) Acid catalysed hydration of an alkene forming an alcohol.
(ii) Addition of Grignard's reagent to the carbonyl group of a compound forming an adduct followed by hydrolysis.
(iii) Acid catalysed dehydration of an alcohol forming an alkene.[3]
Q.27 Identify X. Y &Z :- $CH_3CH_2CH_2OH \xrightarrow[170^0C]{\text{conc. } H_2SO_4} X \xrightarrow[\text{(ii)}NaNH_2]{Br_2/CCl_4} Y \xrightarrow{\text{(i)Alc.KOH}} Z$