



**INDIAN SCHOOL DARSAIT**  
**DEPARTMENT OF CHEMISTRY**



Subject: Chemistry	Topic :Haloalkanes and Haloarenes	Date of Worksheet: 12.4..2017
Resource Person: SREEKALA M		Date of Submission: _____
Name of the Student: _____	Class & Division: XII	Roll Number: _____

1.	Which one of the two compounds, $\text{CH}_3\text{Br}$ and $\text{CH}_3\text{I}$ will react faster in an $\text{S}_{\text{N}}2$ reaction with $\text{OH}^-$ ?	1
2.	(a) Write the structure of the following compound i) 1-Bromo-4-sec-butyl-2-methylbenzene    ii) 4-tert. Butyl-3-iodoheptane	1
3.	Which one of these compounds is more easily hydrolysed by $\text{KOH}$ solution and why? $\text{CH}_3\text{CHClCH}_2\text{CH}_3$ or $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{Cl}$	1
4.	An alkyl halide with molecular formula $\text{C}_4\text{H}_9\text{Br}$ is optically active. What is its structure?	1
5.	A hydrocarbon $\text{C}_5\text{H}_{10}$ does not react with chlorine in dark but gives a single mono chloro compound $\text{C}_5\text{H}_9\text{Cl}$ in bright sunlight. Identify the hydrocarbon.	1
6.	Which has higher boiling point and why? 1-Chloropentane or 2-methyl-2-chlorobutane	1
7.	Give reason : P-nitrochlorobenzene undergoes nucleophilic substitution faster than chlorobenzene. Explain giving structures as well.	1
8.	Write the structures of the major products in the following reactions: i) $\text{CH}_3\text{CH}=\text{C}(\text{CH}_3)_2 + \text{HBr}$ ii) $\text{C}_6\text{H}_5\text{ONa} + \text{C}_2\text{H}_5\text{Cl}$	2
9.	What are enantiomers? Give the structural formula of the alkane with minimum number of Carbon atoms capable of showing chirality.	2
10.	An optically active compound having molecular formula $\text{C}_7\text{H}_{15}\text{Br}$ reacts with aqueous $\text{KOH}$ to give a racemic mixture of products. Write the mechanism involved for this reaction.	2

11	Propose mechanism of the reaction taking place when 2-Bromo pentane is heated with alcoholic KOH to form alkenes.	2
12.	Write the mechanism of the following reaction: $n\text{BuBr} + \text{KCN} \xrightarrow{\text{EtOH-H}_2\text{O}} n\text{BuCN}$	2
13.	What are ambidentnucleophiles ? Explain with an example.	2
14.	Give reasons: i) Allyl chloride is more reactive than n-propyl chloride towards nucleophilic substitution reaction. ii) Haloalkanes react with KCN to give alkyl cyanide as main product while AgCN they form isocyanide as main product. iii) Use of DDT was banned in United States in 1973 iv) Benzylic halides show high reactivity towards $S_N1$ reaction. v) Grignard reagents should be prepared under anhydrous condition. vi) $\text{C}_6\text{H}_5\text{CHClCH}_3$ is hydrolysed more easily with KOH than $\text{C}_6\text{H}_5\text{CH}_2\text{Cl}$ . vii) Aryl halides are less reactive towards nucleophilic substitution reaction. viii) Chloroform is stored in closed dark coloured bottles. ix) Although Chlorine is an electron withdrawing group, yet it is ortho- para directing in electrophilic substitution reaction. x) Sulphuric acid is not used in the reaction of alcohols with KI. xi) The dipole moment of Chlorobenzene is lower than that of cyclohexyl chloride. xii) Alkyl chloride with aqueous KOH leads to the formation of alcohols but in the presence of alcoholic KOH alkenes are major products. xiii) p-Dichlorobenzene has higher melting point and lower solubility than those of o- and m-isomers.	2
15.	Define the following: i) Racemisation    ii) Retention    iii) Chirality	2
16.	Identify the compounds A,B, C and D in the following sequence of reaction $\text{C}_2\text{H}_5\text{OH} \xrightarrow[443\text{K}]{\text{Conc. H}_2\text{SO}_4} \text{A} \xrightarrow{\text{HBr}} \text{B} \xrightarrow{\text{KOH(aq)}} \text{C} \xrightarrow{\text{I}_2, \text{NaOH}} \text{D}$	2
17.	Write the structural formulae of the organic compounds A,B, C and D in the following sequence of reaction. Alc.KOH $\text{CH}_3\text{CH}(\text{Br})\text{CH}_2\text{CH}_3 \xrightarrow{\hspace{2cm}} \text{A}$  $\text{A} \xrightarrow{\text{Br}_2\text{alc.KOH}} \text{B} \xrightarrow{\text{H}_2\text{O, Hg}^{2+}, \text{H}_2\text{SO}_4} \text{C} \xrightarrow{\hspace{2cm}} \text{D}$	2

18.	Write the formula of main product formed in the following chemical reactions Na, dry ether i) $(\text{CH}_3)_2\text{CHCl}$ -----> ii) $\text{CH}_3\text{Br} + \text{AgF}$ -----> Dry acetone iii) $\text{CH}_3\text{CH}_2\text{Br} + \text{NaI}$ ----->	
19.	Answer the following: i) Identify chiral C in $\text{CH}_3\text{CHOHCH}_2\text{CH}_3$ and $\text{CH}_3\text{CHOHCH}_3$ ii) Which of these will react faster in $\text{S}_{\text{N}}2$ displacement and why? 1-bromopentane or 2-bromopentane iii) Which one of the following has the highest dipole moment? i) $\text{CH}_2\text{Cl}_2$ ii) $\text{CHCl}_3$ iii) $\text{CCl}_4$	3
20.	Starting from methyl bromide, how will you prepare i) nitromethane and methyl nitrite? ii) Methyl cyanide and methyl isocyanide. Write the complete reaction involved.	3
21.	How are the following conversions carried out? i) Ethanol to propanenitrile ii) Toluene to Benzyl alcohol iii) Benzene to 4-Bromonitrobenzene iv) But-1-ene to n-Butyliodide. v) Chlorobenzene to p-nitrophenol	1 each
22.	Explain with an example: i) Sandmeyer's reaction ii) Finkelstein reaction iii) Swarts reaction iv) Wurtz reaction v) Fittig reaction vi) Wurtz-Fittig reaction.	1 each
23.	Give the uses of Freon, DDT, Carbontetrachloride and Iodoform.	1 each