



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



Subject: Chemistry		Topic : p-Block Elements		Date of Worksheet: 7.8.2019		
Resource Person: SREEKALA M		Date of Submission: _____				
Name of the Student: _____		Class & Division: XII		Roll Number: _____		
1.	Which is a stronger acid in aqueous solution, HCl or HI? And why?			1		
2.	Which one has higher electron gain enthalpy with negative sign, sulphur or oxygen?			1		
3.	Which xenon compound is isostructural with $\text{ICl}_4^-$ ?			1		
4.	Which of the following compounds has a lone pair of electrons at the central atom? $\text{H}_2\text{S}_2\text{O}_8$ , $\text{H}_2\text{S}_2\text{O}_7$ , $\text{H}_2\text{SO}_3$ , $\text{H}_2\text{SO}_4$			1		
5.	Complete the following reactions: a) $\text{I}^- + \text{O}_3 + \text{H}_2\text{O} \rightarrow$ b) $\text{NaOH}(\text{ hot and conc.}) + \text{Cl}_2 \rightarrow$ c) $\text{XeF}_4 + \text{O}_2\text{F}_2 (143\text{K}) \rightarrow$ d) $\text{Br}_2 + \text{F}_2 (\text{excess}) \rightarrow$ e) $\text{XeF}_2 + \text{PF}_5 \rightarrow$		f) $\text{Fe}^{3+} + \text{SO}_2 + \text{H}_2\text{O} \rightarrow$ g) $\text{XeF}_6 + \text{H}_2\text{O}(\text{excess}) \rightarrow$ h) $\text{C} + \text{H}_2\text{SO}_4 (\text{conc.}) \rightarrow$ i) $\text{Cl}_2 + \text{F}_2 (\text{excess}) \rightarrow$ j) $\text{F}_{2(\text{g})} + \text{H}_2\text{O}(\text{l}) \rightarrow$		1 mark each	
6.	Give chemical reaction in support of the following observations. a) Sulphuric acid has low volatility b) Iodide ions can be oxidized by oxygen in acidic medium			2		
7.	a) Suggest a quantitative method for estimation of the gas which protects us from UV rays of the sun. b) Nitrogen oxides emitted from the exhaust system of supersonic jet aeroplanes slowly deplete the concentration of ozone layer in upper atmosphere. Comment.			2		
8.	Draw the structures of the following molecules			1 mark each		
	i. $\text{BrF}_3$	vi. $\text{XeF}_4$	xi. $\text{HOClO}_2$			
	ii. $\text{XeOF}_4$	vii. $\text{O}_3$	xii. $\text{XeF}_6$			
	iii. $\text{H}_2\text{S}_2\text{O}_7$	viii. $\text{S}_8$	xiii. $\text{SF}_4$			
	iv. $\text{H}_2\text{S}_2\text{O}_8$	ix. $\text{XeF}_2$	xiv. $\text{ClF}_3$			
	v. $\text{HOCl}$	x. $\text{XeO}_3$	xv. $\text{BrF}_5$			

9.	<p>Arrange the following in the order of property indicated for each set:</p> <p>i) HF, HCl, HBr, HI                      -Increasing acid strength.</p> <p>iii) HCl, HI, HBr, HF                    - Decreasing thermal stability.</p> <p>iv) Xe, He, Kr, Rn, Ne                  - Decreasing order of electron gain enthalpy .</p> <p>v)F<sub>2</sub>, Cl<sub>2</sub>, Br<sub>2</sub>, I<sub>2</sub>                        - Increasing bond dissociation enthalpy.</p>	1 mark each
10.	<p>Write balanced chemical equations for the following reactions:</p> <p>i)        Reaction of Cl<sub>2</sub> with cold and dilute NaOH.</p> <p>ii)       Chlorine reacts with hot concentrated solution of sodium hydroxide..</p> <p>iii)      PtF<sub>6</sub> and Xenon are mixed together.</p>	1 mark each
11.	<p>a)Which neutral molecule would be isoelectronic with ClO<sup>-</sup> ?</p> <p>c)Describe the favourable conditions for the manufacture of sulphuric acid by Contact process..</p>	1 mark each
12	<p>Account for the following:</p> <p>a) Sulphur vapour exhibits paramagnetic behavior.</p> <p>b) O<sub>3</sub> is more powerful oxidizing agent.</p> <p>c) Ozone is thermodynamically unstable.</p> <p>d) Halogens are coloured.</p> <p>e) SF<sub>6</sub> is much less reactive than SF<sub>4</sub>.</p> <p>f) H<sub>2</sub>S is less acidic than H<sub>2</sub>Te.</p> <p>g) SF<sub>4</sub> is hydrolysed whereas SF<sub>6</sub> is not easily hydrolysed.</p> <p>h) H<sub>2</sub>O is liquid while H<sub>2</sub>S is a gas.</p>	1 mark each
13.	<p>Explain the following:</p>	1 mark each
a)	Iron dissolves in HCl to form FeCl <sub>2</sub> and not FeCl <sub>3</sub> .	
b)	Fluorine is a stronger oxidizing agent than chlorine.	
c)	Fluorine does not exhibit any positive oxidation state	
d)	Noble gases are the least reactive elements.	
e)	XeF <sub>2</sub> has a linear shape and not a bent structure.	
f)	Amongst all noble gases only xenon is known to form compounds with oxygen and fluorine.	
g)	Helium is used in diving equipment	
h)	No distinct chemical compound of helium is known.	
i)	Most of the reactions of fluorine are exothermic	
j)	The following order of increase in strength of acids: PH <sub>3</sub> < H <sub>2</sub> S < HCl	
k)	The oxidizing power of oxoacids of chlorine follows the order: HClO <sub>4</sub> < HClO <sub>3</sub> < HClO <sub>2</sub> < HClO	
l)	The acidic property of oxoacids of chlorine follows the order: HClO <sub>4</sub> > HClO <sub>3</sub> > HClO <sub>2</sub> > HClO	
m)	In solution of H <sub>2</sub> SO <sub>4</sub> in water, the second dissociation constant Ka <sub>2</sub> is less than the first dissociation constant Ka <sub>1</sub>	
n)	The pKa value for HOCl is higher than that of HClO <sub>2</sub>	
o)	Inter halogen compounds are more reactive than halogens	

