

**National Institute of Open Schooling**  
**Senior Secondary Course : Chemistry**  
**Lesson 18 :General Characteristics of the p-block Elements**  
**Worksheet-18**

		P-BLOCK ELEMENTS							
		13	14	15	16	17	18		
	2	B	C	N	O	F	Ne		
13	Al	Si	P	S	Cl	Ar			
14	Ga	Ge	As	Se	Br	Kr			
15	In	Sn	Sb	Te	I	Xe			
16	Tl	Pb	Bi	Po	At	Rn			
								Group: 17 Halogens	
								Group: 18 Noble Gases	

- One of the elements of group 13 was not known at that time when Mendeleev gave his periodic table. This element has some interesting properties much different from other elements of this group.

Now answer the following questions:

- Name the element which was not known at Mendeleev's time.
- Mention its interesting properties.
- Give its one use.

- Kevlar is a nylon obtained by condensation polymerisation of 1,4- diaminobenzene and 1,4- benzenedicarboxylic acid. Its fibre is five times stronger than steel and hence are used for making bullet- proof vests. There are two compounds of boron which are also used for making bullet-proof vests.

Now answer the following questions:

- Name the two compounds of boron used for making bullet-proof vests and how are they prepared?
  - What are the advantages of using boron based compounds over Kevlar?
- Ammonium nitrate is used as a high nitrogen fertilizer in agriculture. It is also used in instant cold packs. It is mixed with fuel oil and used as explosive. Due to its various uses its production cannot be banned.

- What are cold packs?
- What steps Indian government has taken to avoid the misuse of ammonium nitrate.
- What values are needed by an individual while handling such chemicals?

- In recent years, the excessive uses of some aerosol propellants and refrigerants have depleted the ozone layer.

- Name two chemicals which deplete the ozone layer in the stratosphere.
- What is the importance of ozone in the stratosphere?
- Suggest some measures for minimising global warming.

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	Al	Si	P	S	Cl	Ar
	Ga	Ge	As	Se	Br	Kr
	In	Sn	Sb	Te	I	Xe
	Tl	Pb	Bi	Po	At	Rn

Metals                      Metalloids                      Non-Metals

5. Student accidentally spills concentrated  $H_2SO_4$  on his hand. Before the teacher gets to know, his friend washed his hands with water and also with soap but the burning sensation on hand was still going on. The friend then rubs solid sodium bicarbonate on his hand and then washed with water; finally the burning sensation is relieved.

(i)Mention the values shown by student’s friend.

(ii) Can you recommend any other substance available in the laboratory which can be used instead of sodium bicarbonate?

6. India's top court ruled that authorities must regulate the sale of acid used in a spate of attacks on women. An acid called "Tezaab", which is designed to clean rusted tools but is often used in the attacks, can currently be bought across the counter. But the judges said the buyer of such acids should in future have to provide a photo identity card to any retailer when they make a purchase. The retailers must register the name and address of the buyer.

(i) Why are acid burns harmful?

(ii) What are the values associated with the above discussion?

(iii) What are responsibilities of the citizens in this regard?

7. In a paper industry hydrogen peroxide is used bleaching agent. Satish asked his friend about using chlorine as bleaching agent. His friend told that using hydrogen peroxide was better.

(i) What is the disadvantage of using chlorine as bleaching agent?

8. Give reasons for the following:

(i)  $N_2$  is less reactive at room temperature.

(ii)  $H_2Te$  is the strongest reducing agent amongst all the hydrides of group 16-elements.

(iii) Helium is used in diving apparatus as a diluent for oxygen.

9. (a) Account for the following:

(i) Bond angle in  $NH_4$  is greater than that in  $NH_3$ .

(ii) Reducing character decreases from  $SO_2$  to  $TeO_2$ .

(iii)  $HClO_4$  is a stronger acid than  $HClO$ .

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2	H	B	C	N	O	F	Ne	Group: 18 Noble Gases
13	Al	Si	P	S	Cl	Ar		
31	Ga	Ge	As	Se	Br	Kr		
49	In	Sn	Sb	Te	I	Xe		
81	Tl	Pb	Bi	Po	At	Rn		
		Metals		Metalloids		Non-Metals		

(b) Draw the structures of the following:

(i)  $\text{H}_2\text{S}_2\text{O}_8$

(ii)  $\text{XeOF}_4$ .

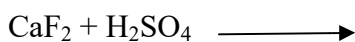
10. (a) Which poisonous gas is evolved when white phosphorus is heated with Cone. NaOH solution? Write the chemical equation.

(b) Write the formula of first noble gas compound prepared by N. Bartlett. What inspired N. Bartlett to prepare this compound?

(c) Fluorine is a stronger oxidising agent than chlorine. Why?

(d) Write one use of chlorine gas.

(e) Complete the following equation:



विद्याधनम् सर्वधर्म प्रधानम्

**NIOS**