CHAPTER-P-BLOCK- LESSON PLAN

Date: **Class:** **Period Required:**

Gist of Unit /Sub Unit	*Activities(Individual or Group)/Demo/ E-class/PPT*
➔appreciate general trends in the chemistry of elements of groups 16,17 and 18; ➔ learn the preparation, properties and uses of dinitrogen and phosphorus and some of their important compounds; ➔ describe the preparation, properties and uses of dioxygen and ozone and chemistry of some simple oxides; ➔ know allotropic forms of sulphur, chemistry of its important compounds and the structures of its oxoacids; ➔ describe the preparation, properties and uses of chlorine and hydrochloric acid; ➔know the chemistry of interhalogens and structures of oxoacids of halogens; ➔ enumerate the uses of noble gases; ➔appreciate the importance of these elements and their compounds in our day to day life	*Diversity in chemistry is the hallmark of p–block elements manifested in their ability to react with the elements of s–, d– and f–blocks as well as with their own.* **The Group 16** elements have general electronic configuration ns^2np^4.The Group members are **O, S, Se, Po, Te**. They show maximum oxidation state, +6. Gradation in physical and chemical properties is observed in the group 16 elements. In laboratory, **Dioxygen** is prepared by heating $KClO_3$ in presence of MnO_2. It forms a number of oxides with metals. Reaction of Group members with Hydrogen , Halogens and Oxygen. **Allotropic form of oxygen is O3 Ozone** which is a highly oxidising agent**. Sulphur** forms a number of allotropes. Of these, α– and β– forms of sulphur are the most important. Sulphur combines with oxygen to give oxides such as **SO2 and SO3**. SO_2 is prepared by the direct union of sulphur with oxygen. SO_2 is used in the manufacture of H_2SO_4. Sulphur forms a number of oxoacids. Amongst them, most important is **H2SO4.** It is prepared by **contact process**. It is a dehydrating and oxidising agent. It is used in the manufacture of several compounds. **Group 17** of the periodic table consists of the following elements **F, Cl, Br, I and At**. These elements are extremely reactive and as such they are found in the combined state only. The common oxidation state of these elements is –1. However, highest oxidation state can be +7. They show regular gradation in physical and chemical properties. They form oxides, hydrogen halides, interhalogen compounds and oxoacids. **Chlorine** is conveniently obtained by the reaction of HCl with $KMnO_4$. **HCl** is prepared by heating NaCl with concentrated H_2SO_4. Halogens combine with one another to form **interhalogen compounds** of the type XX_{1n} (n = 1, 3, 5, 7) where X_1 is lighter than X. A number of **oxoacids of halogens** are known. In the structures of these oxoacids, halogen is the central atom which is bonded in each case with one OH bond as X–OH. In some cases X = 0 bonds are also found. **Group 18** of the periodic table consists of **noble gases He, Ne, Ar, Kr, Xe**. They have ns^2np^6 valence shell electronic configuration except He which has $1s^2$. All the gases except Rn occur in atmosphere. Rn is obtained as the decay product of ^{226}Ra.Due to complete octet of outermost shell, they have less tendency to form compounds. The best characterised compounds are those of xenon with fluorine and oxygen only under certain conditions. These gases have several uses. Argon is used to provide inert atmosphere, helium is used in filling balloons for meteorological observations, neon is used in discharge tubes and fluorescent bulbs.

Remarks/ Suggestion *Teacher Signature*

Date of Commencement : **Expected Date of Completion:**

HOME ASSINGMENT	*HOTS AND MLL*	*CO-RELATION WITH OTHER SUBJECTS*
➔ Students are given the Home assingment to solve all the in text question solved and unsolved exercises of NCERT. ➔ Exemplar problems for students preparing for competitive examinations. 1. What happens when white P is heated with concentrated NaOH solution in an inert atmosphere of CO_2? 2. How do you account for the reducing behaviour of H_3PO_2 on the basis of its structure? 3. Are all the five bonds in PCl_5 molecule equivalent? Justify your answer. 4. Why is BiH_3 the strongest reducing agent among all the hydrides of Group15 elements? 5. Which form of sulphur shows paramagnetic behaviour. 6. Give one oxidizing reaction of Ozone. 7. H_2S is less acidic that H_2Te. Why. 8. Why does O_3 acts a s powerful oxidizing agent? 9. Why is O_2 a gas but Sulphur is a solid. 10. What happens when SO_2 is passed through an aqueous solution of Fe(III) salt. 11. Describe the manufacture of sulpuuric acid by contact process.	**OXYGEN FAMILY** 1) OF_6 is not known whereas SF_6 is known. 2) Oxygen exists as diatomic gaseous molecule whereas other members of the group are solids. 3) Describe the molecular shapes of the following (a) SF_4 (b) SF_6 4) Name the hydrides of group 16. Arrange these hydrides in increasing order of their (a) Bond angle (b) Volatility (c) Reducing behaviour **HALOGEN FAMILY** 1. Why are halogens coloured. 2. Write the balanced equation for the reaction of chlorine with hot and concentrated NaOH. Is this reaction a disproprtionation reaction? Justify. 3. F exhibits only -1 Ox. State whereas other Halogens exhibits +1, +3, +5, +7 Ox state. Explain. 4. Why is ICl more reactive than I_2. 5. Nitric acid becomes yellow in colour on long standing. 6. What are interhalogen compounds? Explain the geometry of ICl_3 7. What is the order of acidic strength of oxoacids of halogens with increasing oxidation state of the halogens? INERT GASES 1. What inspired N. Bartlett for carrying out reaction between Xe and PtF_6? 2. Name the first noble gas compound to be synthesized. How was it possible? 3. How are XeO_3 and $XeOF_4$ prepared? 4. How are XeF_2, XeF_4, XeF_6 prepared? Deduce their structures applying VSEPR theory. Give their reactions with water.	➔ PPT available ➔Lectures on Youtube.

Principal Signature