

SALWAN PUBLIC SCHOOL, RAJENDRA NAGAR

CLASS – X

LESSON PLAN

CHAPTER-3 : METALS AND NON-METALS

CHAPTER-1:	Science : (METALS AND NON-METALS)
Class Transaction (7-8 days)	PART-I Total: 5 periods (approx. 35 min each) Sub-Topic: Physical Properties of Metals Sub-Topic: Physical Properties of Non-Metals Sub-Topic: Chemical Properties of Metals Sub-Topic: Chemical Properties of Non-Metals Sub-Topic: Reactivity Series of Metals Sub-Topic: Ionic Bonding Sub-Topic: Properties of Ionic Compounds
Pre-requisite for the course (KNOWLEDGE)	This lesson requires the following pre-knowledge: • Knowledge of metals and non-metals used in daily life. • The properties of Metals like appearance, hardness, lustre are different from Non-Metals. • Uses of metals like iron, gold, silver and Non-metals like graphite in our day- to- day life. • Some metals are more reactive than others. Metals like gold do not rust.
Learning Objectives	Students will be able to: • Understand the physical properties of metals and Non-metals. • Differentiate between the chemical properties of Metals and Non-metals • Remember reactivity series of Metals. • Write chemical reactions of metals and non-metals with Oxygen, water and dil. acids. • Know the difference between acidic, basic and amphoteric oxides. • Explain Ionic Bonding with the help of electron-dot structures. • Understand the properties of Ionic compounds.
Teachers' activity (Methodology used)	• Demonstration based active-learning instructional strategies: • Teacher will introduce the topic by giving examples of metals and non-metals used in our daily life. Some samples of metals and non-metals will be shown to the students. • Physical properties like lustre, hardness, malleability, ductility, sonority, density and conduction of electricity will be explained with the help of these samples.

	• Activity: Testing electrical conductivity of different metals and non-metals using a simple circuit. • Problem solving method (investigating and applying established principles to justify an observation) Chemical Reactions demonstration: ➤ Reactions of Metals like Zn, Fe, Al with dil. HCl ➤ Heating of Copper in a china dish (formation of CuO) ➤ Reaction of Calcium with water. ➤ Displacement Reactions (Reaction of Zn, Fe with Copper Sulphate solution) ➤ Comparison of reactivities of different metals using salt solutions • Discussion points: ➤ Explanation of reasoning questions e.g. Why non-metals do not react with water and dil. acids? ➤ What is the difference between acidic, basic and amphoteric oxides? ➤ Reactivity series of metals • Inquiry based learning (Critical thinking and Problem solving) Activity: Take four test tubes. Add Al powder, Zn granules, Fe filings and Cu turnings to each test tube respectively. Now, add dilute Sulphuric acid to each test tube and make observations. Interpret the observations and write down the conclusions made. • Combination of Metals and Non-metals to form Ionic compounds: Activity: Burning of Magnesium ribbon in air. Ask students to write down the reaction and explain the transfer of electrons from Mg atoms to O atoms with the help of electron-dot structures. Properties of Ionic compounds like physical state, solubility in water to be explained taking the examples of NaCl and MgO. • Recapitulation (Collaborative learning): Example- Frame a MIND-MAP indicating the chemical properties of Metals and Non-metals.
Students' Learning Outcomes	Students would be able to: • Know the physical properties of metals and Non-metals. • Explain the chemical properties of Metals and Non-metals with the help of chemical equations. • Recall the reactivity series of Metals. • Perform chemical reactions of metals with water and dilute acids. • Describe Ionic Bonding with the help of electron-dot structures. • Understand the general properties of Ionic compounds.

Assessment	- Continuously monitor student's learning growth by asking oral questions. - Promoting active involvement of students in their own learning by asking students to focus on written practice of chemical equations in the class. Experiential Learning by hands on experimental activities. Written test
Self-Study, Assignments, Homework	Self-Study (reinforcing the concepts by going through the chapter in the book)-The teacher would ensure that each student should bring NCERT textbook. - Performing simple experiments under the guidance of the teacher. - Discussion of NCERT back exercise questions by the teacher in the class. Students will write the answers in their classwork notebooks. Teacher will take rounds in the class to ensure that all the students do written practice. Homework (Question Bank): On completion of the chapter, students will be answer the following revision questions in their homework notebooks: Q.1.Compare the physical properties of metals and non-metals in a tabular form. Q 2 What happens when: a) Sodium reacts with water b) Potassium reacts with oxygen c) Aluminium is added to dilute HCl d) Zinc reacts with steam Write down the chemical equations involved. Q 3 Explain Ionic bonding in Sodium oxide and Magnesium chloride with the help of electron-dot structures. Q4 List the reactivity series of metals. Q 5 State the general properties of Ionic compounds. Q 6 Give reasons: a) Copper, gold and silver do not react with dil. HCl. b) Sodium oxide is basic in nature. c) Non-metals do not react with acids to displace hydrogen gas. Q 7 Metals are electropositive and Non-metals are electronegative in nature. Justify. Q 8 Explain, why is Aluminium oxide an amphoteric oxide?