

KARACHI EDU COACHING CENTER

Chapter 8: Chemical Reactivity

High-Detail Masterclass Notes for Class IX Chemistry (STBB Board)

Metals Reactivity & Periodic Trends

Examining the chemical behavior of metals down groups and across periods in the periodic table.

Alkali Metals (Group 1)

High Reactivity: Lose single valence electron easily.

Reactivity Trend: Increases down the group ($\text{Cs} > \text{K} > \text{Na} > \text{Li}$).

Storage: Stored under kerosene to prevent air/moisture reaction.

Alkaline Earth Metals (Group 2)

Moderate Reactivity: Lose two valence electrons.

Oxide Layer: Form stable protective oxide films (e.g., Mg, Ca).

Reactivity Trend: Less reactive than Group 1 elements.

Inertness of Noble Metals

Understanding why precious metals resist chemical corrosion and acid attack.

Examples

Gold (Au), Platinum (Pt), and Silver (Ag) form the core group of noble metals.

Low Reactivity

High ionization energies prevent electron loss; do not react with oxygen or dilute acids.

Aqua Regia

Dissolved only by a 3:1 mixture of concentrated HCl and concentrated HNO_3 .

Comparative Reactivity of Non-Metals (Halogens)

Trend of oxidizing power and electron affinity in Group 17 elements.

Halogen Reactivity Trend

Reactivity Order: Fluorine (F_2) > Chlorine (Cl_2) > Bromine (Br_2) > Iodine (I_2).

Reactivity decreases down the group due to increasing atomic radius and shielding effect.

Displacement Reactions

A more reactive halogen displaces a less reactive halogen from its salt solution.

Example: $\text{Cl}_2 + 2\text{NaBr} \rightarrow 2\text{NaCl} + \text{Br}_2$

Significance of Non-Metals

Essential biological and industrial roles played by non-metallic elements.

Oxygen (O₂)

Vital for respiration in living organisms and combustion processes.

Nitrogen (N₂)

Key component of fertilizers, proteins, and inert packaging atmospheres.

Carbon (C)

Backbone of organic compounds, fuels, and biological macromolecules.

Chapter Review & Key Takeaways

Core concepts essential for Karachi Board examinations in Chapter 8.

Metal Reactivity Rules

Group 1: Most reactive metals, increase down group.

Transition Metals: Moderate reactivity, durable structures.

Noble Metals: Extreme chemical inertness.

Non-Metal Reactivity Rules

Halogens: Decrease in reactivity down Group 17.

Oxidizing power: $F_2 > Cl_2 > Br_2 > I_2$.

Applications: Water treatment and chemical synthesis.

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Chapter 8 Mastered Successfully

Practice the periodic trends, displacement reactions, and excel
in your board examinations!

Prepared by Karachi Edu Academic Team