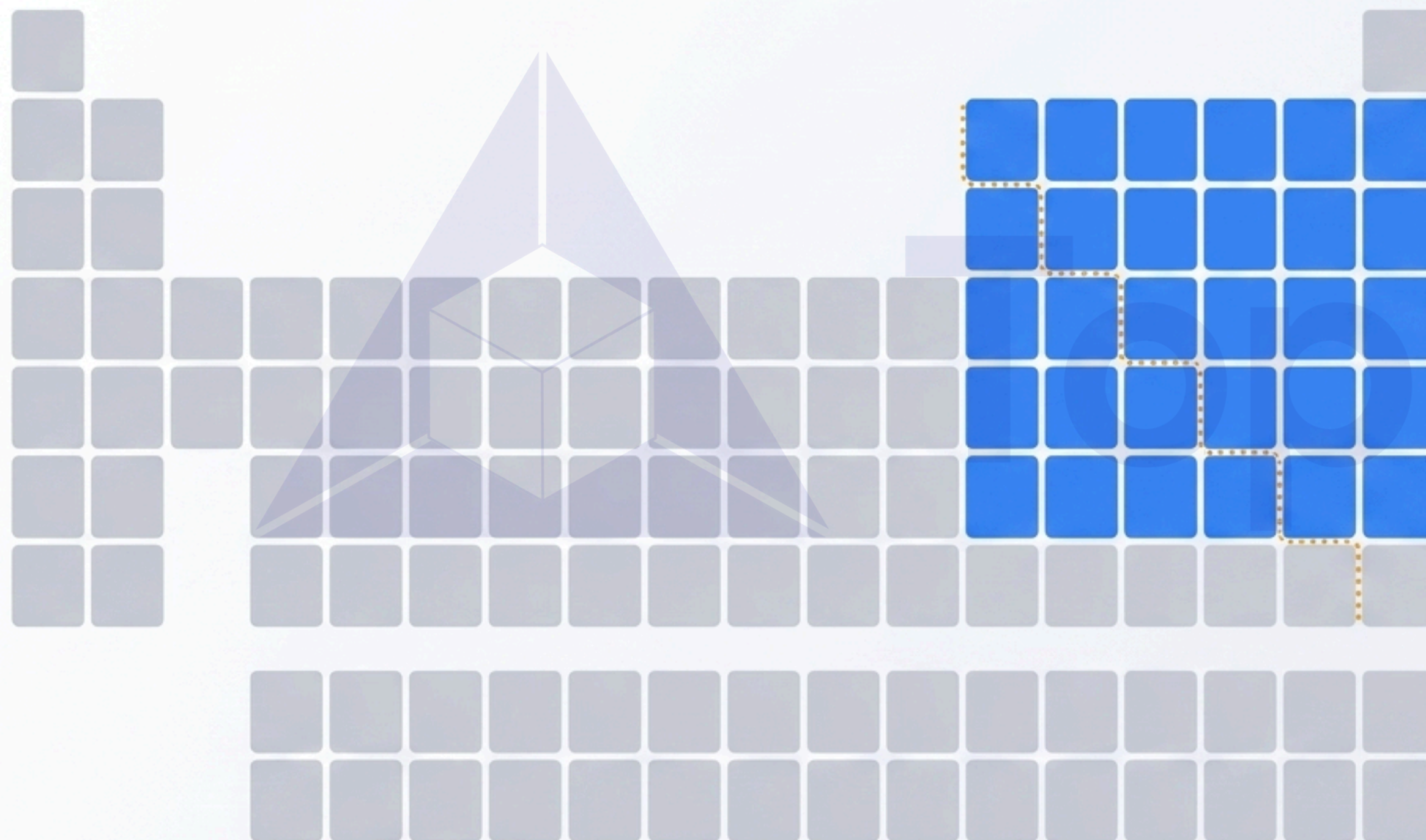


From Halogens to Noble Gases.

Mastering the p-Block for JEE.



Locating the p-Block



The Main Group

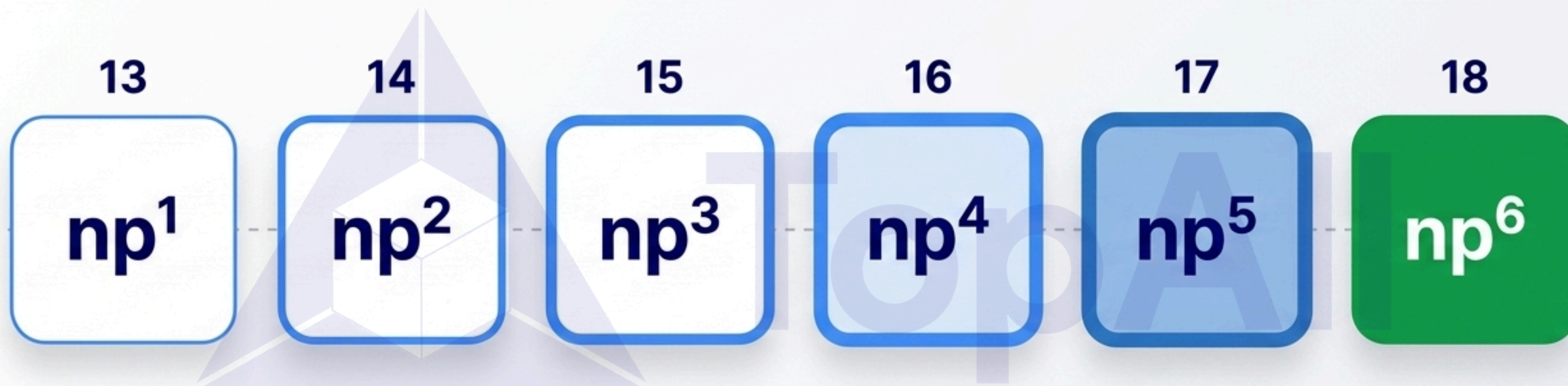
Together with the s-block, these are classified as Representative Elements.

The Metalloid Divide



The p-block is unique—it houses metals, metalloids (e.g., Si, Ge, As), and non-metals all in one block.

The Defining Feature: Filling the p-Orbital



General Outer Electronic Configuration: ns^2np^{1-6}

(Exception: Helium is $1s^2$ but grouped with noble gases due to closed valence shell)



You've Learned the Theory. Let's Test Them Now.

$$E=mc^2$$



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Key Highlights

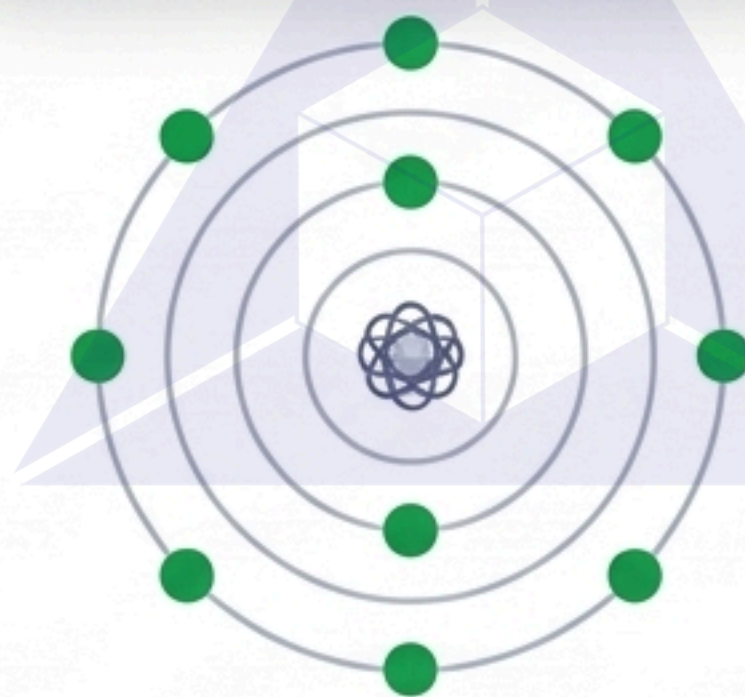
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Group 18: The Noble Gases

The Cause

✓ STABLE CLOSED SHELL



The Effect

High Ionization Enthalpy

Electrons are tightly bound and extremely difficult to remove.

Positive Electron Gain Enthalpy

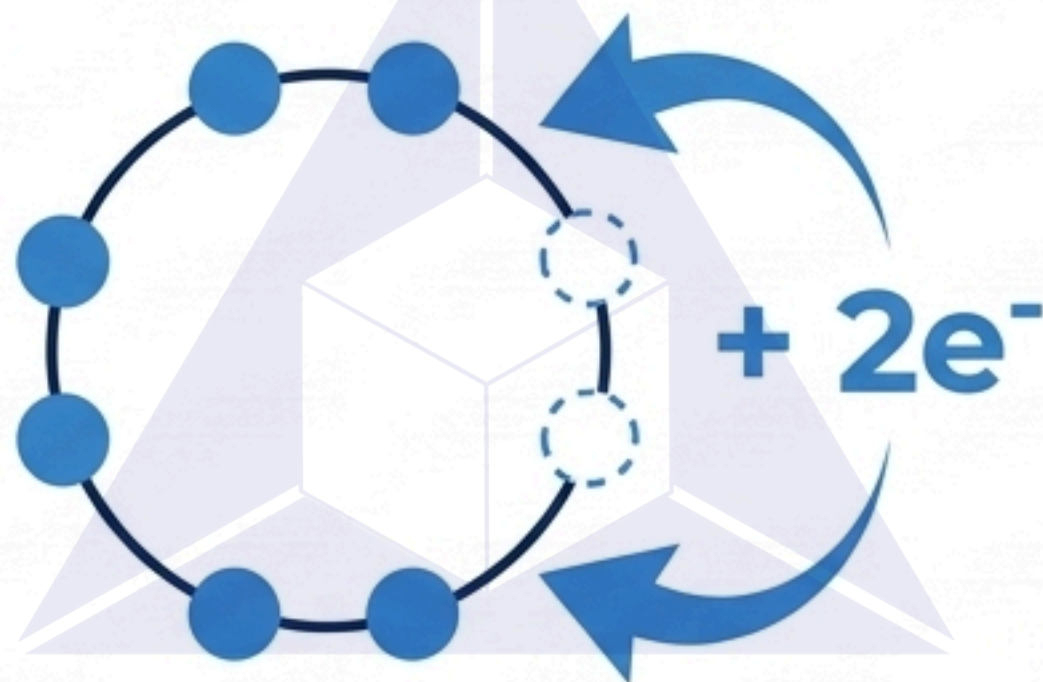
Adding an electron requires forcing it into a higher principal quantum level—making it highly unstable.

Near-Zero Reactivity

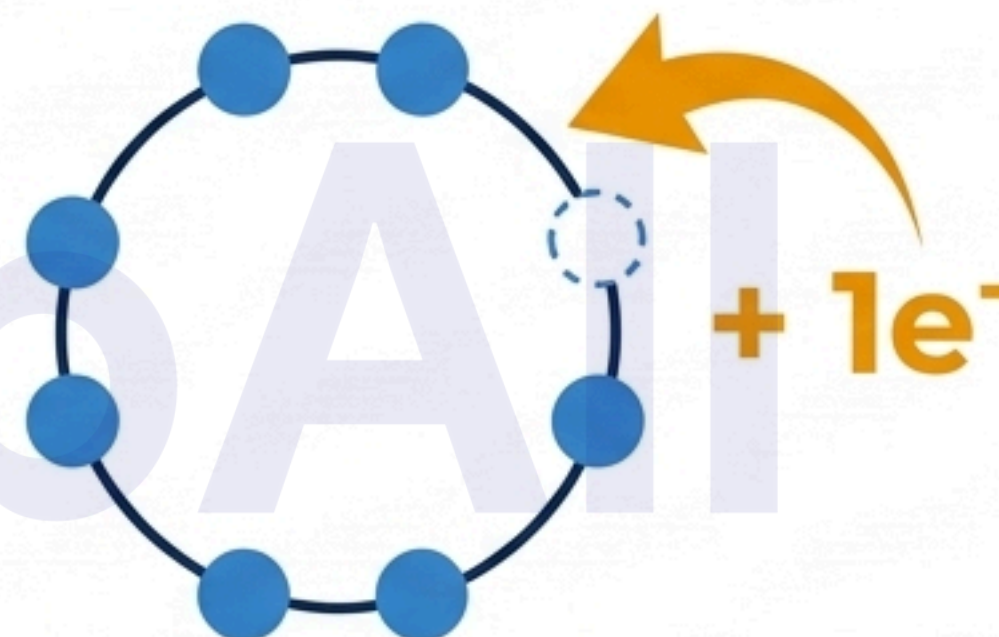
Complete lack of chemical drive to either gain or lose electrons.

The Electron Hunters: Groups 16 & 17

Group 16: Chalcogens



Group 17: Halogens



Highly Negative Electron Gain Enthalpy.

These elements release massive energy when capturing electrons to achieve the ns^2np^6 noble gas configuration (e.g., Chlorine releases -349 kJ mol^{-1}).

JEE Takeaway: Trends Across the Period

Increasing Non-Metallic Character
& Electronegativity

Basic Oxides
(e.g., Na_2O , MgO)

Acidic Oxides
(e.g., Cl_2O_7)

Increasing Metallic Character

Key Takeaway Panel

Reactivity follows a U-curve across representative elements: It peaks at the highly electronegative halogens, and drops to absolute zero at the noble gases.



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